City of Tarpon Springs, Florida

Board of Commissioners
324 East Pine Street
Tarpon Springs, Florida 34689
(727) 938-3711
http://www.ctsfl.us/agenda.htm

REGULAR SESSION
AGENDA
TUESDAY, JULY 28, 2026
6:00 PM - CITY HALL AUDITORIUM

CALL TO ORDER

ROLL CALL

REFLECTION: Bishop Matthew Duesing, Church of Jesus Christ of Latter Day Saints

PLEDGE OF ALLEGIANCE

PUBLIC COMMENTS

COMMISSION COMMITTEE UPDATES

CONSENT AGENDA

1. Attorney Fee: Johnson Jackson PLLC Invoices 17172, 17173 **(Mark Lecouris, City Manager)**
2. Satisfaction/Release Of Liens **(Irene Jacobs, City Clerk)**
3. Terminate for Convenience Task Work Order for File No. 240115-P-JL, Planning Support Services, With Halff Associates Parks and Rec Master Plan **(Jamie Taylor Public Services Assistant Director, Allie Keen Interim Planning & Zoning Director, Janina Lewis Procurement Services Director)**
4. Award File No. 260190-N-JL, Single Source Purchase Of Food And Miscellaneous Supplies **(Janina Lewis, Procurement Services Director)**
5. Approve High Visibility Enforcement Program Contract Agreement **(Jeff Young Police Chief, Kevin Smith Police Corporal, P.J. Harbert Grant Project Specialist)**
6. Award File No. 260192-C-AS, Security And Fire Protection Services And Equipment **(Chris Cotta Public Works Director, Janina Lewis Procurement Services Director)**
7. Reject All Bids for File No. 260136-B-AS, Electrical Upgrades for Advanced Wastewater Treatment Facility **(Tom Kiger Public Services Director, Ray Page Utilities Superintendent, Janina Lewis Procurement Services Director)**

BUSINESS ITEMS

8. PSTA (Pinellas Suncoast Transit Authority) Board Appointment **(Mark Lecouris, City Manager)**

BOARD AND STAFF COMMENTS

ADJOURNMENT

JOHNSON JACKSON PLLC
EMPLOYMENT DEFENSE COUNSEL | TRUSTED ADVICE. STRATEGIC DEFENSE.

INVOICE

Johnson Jackson PLLC
100 N Tampa St, Suite 1800
Tampa, FL 33602

Invoice #: 17172
Date: 07-10-2026
Due On: 08-09-2026

City of Tarpon Springs
324 E Pine Street Tarpon Springs
Tarpon Springs, FL 34689

Matter Number:0010.0001 City of Tarpon Springs/General

7-13-26

Services

Date	TK	Description	Hours	Rate	Total
06-04-26	EGJ	Review leadership training topics and coordinate materials; exchange correspondence with Tabatha Adkins; phone conference with Mark Lecouris regarding training	0.40	225.00	$90.00
06-08-26	EGJ	Conference with Tabatha Adkins and conference with Mark Lecouris regarding employment matter; review correspondence and documents from Tabatha Adkins	1.10	225.00	$247.50
06-09-26	MHM	Revise the acknowledgment and the decision-to-hire letter.	0.50	225.00	$112.50
06-10-26	EGJ	Conduct training regarding ADA, FMLA, PWFA, and interactive process obligations; present materials and respond to questions; attend meeting with Mark LeCouris regarding employment matters	5.00	225.00	$1,125.00
06-10-26	EGJ	Prepare materials for ADA/PWFA/FMLA Training	1.80	225.00	$405.00
06-17-26	EGJ	Phone conference with Mark LeCouris regarding labor matter and review Policy 19	0.50	225.00	$112.50

Services Subtotal: $2,092.50

Expenses

06-30-26		06102026 - EGJ - Travel to and from training sessions	1.00	44.95	$44.95

Expenses Subtotal: $44.95

Subtotal:	$2,137.45
Total Invoice Due:	$2,137.45
Payment	$0.00

Please make all amounts payable to: Johnson Jackson PLLC
TAX ID: 82-0921194

JOHNSON JACKSON PLLC
EMPLOYMENT DEFENSE COUNSEL | TRUSTED ADVICE. STRATEGIC DEFENSE.

INVOICE

Johnson Jackson PLLC
100 N Tampa St, Suite 1800
Tampa, FL 33602

Invoice #: 17173
Date: 07-10-2026
Due On: 08-09-2026

City of Tarpon Springs
324 E Pine Street Tarpon Springs
Tarpon Springs, FL 34689

Matter Number:0010.0020 City of Tarpon Springs/[redacted]

7-13-26

Services

Date	TK	Description	Hours	Rate	Total
06-01-26	EGJ	Phone conference with Tabatha Adkins regarding Tony Manello deposition	0.20	225.00	$45.00
06-02-26	EGJ	Review correspondence regarding witness/supervisor notes and discovery materials; review litigation support documents.	0.30	225.00	$67.50
06-02-26	EGJ	Revise Motion to Dismiss; exchange correspondence with Jaisen Randolph	0.80	225.00	$180.00
06-16-26	EGJ	Review correspondence regarding requests for additional depositions and extensions of discovery; prepare email to counsel for City regarding request for my deposition; review Motion for Extension of Discovery; analyze protective order arguments	1.60	225.00	$360.00
06-16-26	REC	Commence drafting Motion for Protective Order for the deposition of Erin Jackson.	0.60	225.00	$135.00
06-17-26	REC	Finalize first draft of Motion for Protective Order regarding Erin Jackson's deposition and draft declaration for Erin Jackson regarding the same.	1.50	225.00	$337.50
06-19-26	EGJ	Review correspondence from Christine Trombly regarding depositions	0.30	225.00	$67.50

Services Subtotal: $1,192.50

Expenses

06-30-26		2026 Q2 Pacer Research	1.00	0.50	$0.50

Expenses Subtotal: $0.50

Subtotal:	$1,193.00
Total Invoice Due:	$1,193.00
Payment	$0.00

Please make all amounts payable to: Johnson Jackson PLLC
TAX ID: 82-0921194

OFFICE OF THE CITY CLERK

INTER-DEPARTMENTAL MEMO

TO: **HONORABLE MAYOR AND BOARD OF COMMISSIONERS**

SUBJECT: **SATISFACTION/RELEASE OF LIENS** **REGULAR SESSION JULY 28, 2026**

Authorization is requested for the Mayor to execute Satisfaction and/or Release of Lien for the properties listed below. All monies owed the City for delinquent utility liens, street, and/or lot mowing assessments including interest and/or penalties, or administrative fees have been paid in full.

OWNER'S NAME	TYPE OF LIEN	ACCOUNT NUMBER
JOSE MIGUEL GONZALEZ-MARTINEZ LEONARDO SUAREZ-GONZALEZ	UTILITY LIEN	84787-271808971
FOTIS VELIS	UTILITY LIEN	61505-271202869
MARY EDMONDS ESTATE MICHAEL E MAURER	UTILITY LIEN	75085-272411110
CELESTE TROTMAN	UTILITY LIEN	4943-271809836

Memorandum

Date: July 28, 2026
To: Mayor and Board of Commissioners
Through: Janina Lewis, Procurement Services Director
From: Janina Lewis, Procurement Services Director
Subject: Terminate for Convenience Task Work Order for File No. 240115-P-JL, Planning Support Services, With Halff Associates Parks and Rec Master Plan **(Jamie Taylor Public Services Assistant Director, Allie Keen Interim Planning & Zoning Director, Janina Lewis Procurement Services Director)**

Recommendation

Terminate for convenience Task Work Order (TWO) for File No. 240115-P-JL, Planning Support Services, with Halff Associates, the development of a Parks and Recreation Master Plan, for reasons stated in the background, for the Public Services Department - Recreation Division and Public Works Department - Parks and Parkways Division.

Background

On October 14, 2025 the Board approved the award of the TWO for the Parks and Recreation Master Plan in the amount of $248,500.00. This project included a comprehensive community engagement program that includes individual meetings with Commission members, sessions with community groups, online surveys, and various stakeholder forums to gather public input.

The master plan was to provide the City with a long-term roadmap for enhancing parks, recreation amenities, and related services—supporting a high quality of life for residents and visitors of Tarpon Springs.

Halff Associates has completed Phase I and Phase II of the Parks and Recreation Master Plan process. In addition to the community engagement process, Halff Associates has provided the City with a technical needs analysis, an identification of our levels of service, and concept plans for the yard waste property.
The data they provided was outside the expertise of City Staff and will allow our staff the ability to complete the Master Plan internally as schedules allow. Given the budgetary climate, staff recommends it is advantageous to the City, to terminate the remaining portion of the work with Halff Associates which will reduce the City's expenses by $131,220 (see attached memo).

Funding

N/A

Strategic Plan Objective

N/A

Public Services Department
Recreation Division

Memorandum

Date: July 28, 2027, Regular Session

To: Mayor and Board of Commissioners

Through: Mark LeCouris, City Manager
Allie Keen, Planning Director Allie Keen

From: Jamie Taylor, Public Services Assistant Director

Subject: Parks and Recreation Master Plan Update

Recommendation:

Terminate for convenience the remainder of the task work order for the Parks and Recreation Master Plan contract with Halff Associates.

Background:

Halff Associates has completed Phase I and Phase II of the Parks and Recreation Master Plan process. In addition to the community engagement process, Halff Associates has provided the City with a technical needs analysis, an identification of our levels of service, and concept plans for the yard waste property.

The data they provided was outside the expertise of City Staff and will allow our staff the ability to complete the Master Plan internally as schedules allow.

Given the budgetary climate, we believe it is advantageous to terminate the contract with Halff Associates to reduce the City's expenses by $131,220 from the Penny Fund.

CITY OF TARPON SPRINGS, FL

Procurement Services

324 East Pine Street
P.O. Box 5004
Tarpon Springs, Florida 34688-5004
(727) 942-5615

Task Work Order Request

Parks and Recreation Master Plan Consulting Fees

Task Work Order No.: 240115-P-JL. Halff Associates

1. Project Description:

Halff Associates will work through five phases of their scope of work to create an all-inclusive Parks and Recreation Master Plan for the City. Consultant's Fee: $248,500

2. Funding Account No.:

307-8603-572.6300

3. City Project No. (if applicable):

CR2603

4. City Task Work Order Contact:

Name: Jamie Taylor/Caroline Lanford **Telephone:** 727-942-5628 / 727-942-5611

5. Attachments:

X Scope of Services

☐ Concept Plans / Supporting Documents

☐ Other: _____

Authorization and Approval Routing

Recommended by:

Jamie Taylor 11/19/2025

Task Work Order Contact Date

Approved by:

12/1/25

Department Director Date

Reviewed by:

11/29/2025

Project Administration Department Date

Reviewed by:

Janina Lewis 12/01/2025

Procurement Services Department Date

Awarded Contractors List:

Halff Associates

Public Services Department
Recreation Division

Memorandum

Date: October 14, 2025, Regular Session

To: Janina Lewis, Procurement Services Director

Through: Thomas Kiger, Public Services Director TK

From: Jamie Taylor, Public Services Assistant Director

Subject: Parks and Recreation Master Plan Award

Recommendation:
Approve award of Task Work Order to Halff and Associates for the development of a Parks and Recreation Master Plan under the Planning Continuation Services contract. The total cost is $248,500.00.

Background:

Halff and Associates will provide an in-depth review of our Parks and Recreation Amenities, opportunities, and provide guidance that will be relevant and valuable in guiding our capital projects for years to come. Additionally, the master plan will identify funding opportunities to implement the necessary updates to meet the needs of our citizens and visitors.

This project will include an intensive community engagement plan, including individual meetings with Commission members, meetings with community groups, web surveys, and a variety of other stakeholder engagement forums to solicit community feedback. The goal of the master plan is to provide the City a long-term roadmap to improve the parks and recreation amenities and services available in our City to ensure a sound quality of life for our residents and guests of the City of Tarpon Springs. Halff was selected by planning staff for this effort based on their extensive experience with parks and recreation planning in the local area, throughout Florida, as well as bringing national experience to the table.

The development of a parks, recreation, and open space master plan aligns with the Quality-of-Life theme in the Strategic Plan, and it is specifically identified in the Comprehensive and Sustainability Plans:

Comprehensive Plan: Recreation and Open Space Element

- ROS 1.1: Sustain existing public parks and recreation lands and facilities.
- ROS 1.2: Avoid future park deficiencies by addressing parks' needs associated with future population and economic growth.

- ROS 1.2.1: Fund and prepare a parks and recreation master plan, including assessment of current and future needs and priorities; establishment of updated facility and parkland level of service standards; and planning for capital, programming, and operational investments in the parks and recreation system based on identified priorities.
- ROS 1.5: Preserve environmentally sensitive lands and lands that support threatened or endangered species for passive recreation.
- ROS 1.6: Improve equitable accessibility to parks and recreation facilities for all.

Sustainability Plan (Priority actions with 2025-2026 start date implementation timelines)

- Action 11: Adopt a preservation, park, and recreation plan to promote a communitywide network of public spaces that provide recreational benefits while protecting natural, historic, and cultural resources.
- Action 12: Create a long-term funding strategy to acquire, create, and maintain parklands.
- Action 7: Improve connectivity to wildlife corridors by increasing the amount of natural and restored areas directly connected to regional natural systems. Develop a plan to protect and restore natural resources through land conservation, corridor connectivity, and restoration of biological integrity and function in compromised areas.
- Action 8: Develop financing strategies to acquire land or easements including identifying grant funding sources, designating capital dollars, and encouraging donations to the City Land Preservation Fund. Prioritize acquiring land with repeat flooding or vulnerable undeveloped areas to be used for restoration, recreation, or retention.

Funding:

307-8603-572.6300

EXHIBIT A
SCOPE OF SERVICES

City of Tarpon Springs, Florida
Parks and Recreation Master Plan

Halff will provide planning services to the City of Tarpon Springs, Florida, (the "City") to prepare a city-wide Parks and Recreation Master Plan (the "Master Plan"). The Master Plan will optimize the City's open space, recreation facilities, and strategically plan for future investments. It will consider how these resources contribute to the health of residents, enhance the integrity and quality of the natural environment, and support tourism and economic development. The Master Plan will also promote the long-term sustainability of the City's recreation assets and help align programs and facilities with the needs and preferences of the community.

Halff's project involvement and facilitation will be carried out according to this scope of services (Exhibit A), and contingent upon Exhibit B, *Basis of Compensation* and Exhibit C, *Support Services of the City of Tarpon Springs*.

PLANNING PROCESS PARAMETERS

This scope of services is subject to the following parameters:

1. It is anticipated that the Master Plan will take up to 12 months to complete – including submittal of a draft report to the Board of Commissioners. The subsequent timeframe and adoption of the final Master Plan will vary depending on the City's scheduling preferences.
2. The project will begin from the date of contract execution and will follow a task-by-task schedule prepared as part of the project initiation process outlined in this scope of services. Any adjustments made to the project schedule during the project term will be jointly agreed upon between the City and Halff.
3. The study area will include all property within the Tarpon Springs municipal limits. Other surrounding properties or facilities that may be utilized by the City or by municipal residents for recreational purposes within the City's recognized planning area may be considered as applicable and as agreed upon between the City and Halff.
4. Draft and final Master Plan reports will be prepared in Adobe In-Design format. Reports will be provided to the City of Tarpon Springs in INDD and PDF format suitable for distribution electronically and for posting to the City website. Mapping files will be provided in ArcGIS format including shapefiles and layer packages for use by the City.
5. Tasks undertaken as part of this planning effort may occur concurrently where appropriate, or in some cases may vary from the sequence shown in the scope of work.
6. Cost projections prepared as part of this effort are understood to be at a planning (order-of-magnitude) level and are prepared prior to any detailed design for individual projects. Such cost projections will vary as more detailed designs are prepared and as inflationary influences occur following Master Plan adoption. Itemized cost estimates will be provided using Microsoft Excel spreadsheets for future use by City staff.
7. References to a "Trip" within this Exhibit refer to travel to the City by members of the Halff team from outside of the Tampa-St. Petersburg-Clearwater MSA. If deemed necessary and upon agreement between the City and Halff a "Trip" and all associated activities, meetings, and events may be conducted solely as "virtual" engagements using suitable video-conferencing technology.

8. Where possible, stakeholder and planning meetings will be scheduled by Halff and/or the City on concurrent days and evenings for greater project efficiency.
9. Any additional meetings or events beyond those shown in the scope of work will be considered an additional service and are not included in this scope of services.

SCOPE OF WORK

Specific tasks related to the execution of this scope of services include the following:

PHASE 1: PROJECT INITIATION, DATA COLLECTION, AND ADMINISTRATION

TASK 1.1. PROJECT INITIATION

Project organization activities will enable Halff and the City to efficiently initiate the project by ensuring that necessary project information and administrative structures are in place to begin subsequent research and public outreach activities.

A. Project Administration. Halff will conduct administrative activities throughout the project term. Examples of relevant activities may include but not be limited to meeting logistics, contract administration, invoicing, and progress reporting.

B. Project Initiation Meeting and Site Visit (Trip #1). Halff will convene an in-person project initiation and coordination meeting with City staff to discuss project goals, establish communications protocol, discuss data and documentation needs for the project, and determine the final public engagement plan, including meetings with residents and interested parties through the course of this project. As a part of this task, Halff will participate in a full-day tour of parks, open spaces, and recreational facilities with City staff. This meeting will accomplish several pre-planning objectives:

1. **Orientation.** City and Halff staff will become familiar with the project team structure and organization and arrive at a complete understanding of the roles and responsibilities of all project participants. Will include initial discussion of advisory committee and focus group composition (as described in **Task 1.5**).
2. **Review of Key Issues.** Key issues to be addressed during the project term will be reviewed including the overall project objectives, and opportunities and challenges that must be addressed by the planning effort.
3. **Schedule.** The project schedule will be formalized, and key milestone dates will be established.
4. **Park System Tour.** This staff facilitated tour will provide critical context, allow the project team to observe site conditions and understand operational strengths and challenges at a system-wide level.

TASK 1.2. DATA COLLECTION

Halff will submit to the City an initial written request for data, plans, policies and procedures, maps, reports and any other materials required to conduct the activities described in this scope of work. Halff will conduct the following activities in analyzing baseline community conditions and preparing for community outreach:

A. Report / Plan Template. Halff will develop a project report template and graphics program for formatting and organizing plan headings, figures, tables, maps, and other graphics.

B. Assemble a List of Requested Files and Information. Halff will submit a list of required information to City staff, including but not limited to demographic data, usage data, recreational programs, budgets, ordinances, event inventories, summaries of existing facilities in each park, capital projects, other applicable previous or ongoing studies, and applicable GIS files.

C. Plan Review and Documentation. In conjunction with other requested data, City staff will provide Halff with access to a digital copy of all relevant City, regional, and state plans, studies, assessments, policies, and programs that may influence the Master Plan. Halff will review previously completed and on-going

applicable concept plans, studies, assessments, policies, programs, and processes to understand recent planning efforts and document plan findings, including issues, opportunities, and recommendations.

D. Record of Accomplishments. City staff will provide a summary of recent capital expenditures, and changes to operations, policies and procedures enacted extending over at least the preceding five fiscal years related to enhanced parks, trails and recreation service delivery. An understanding of recent accomplishments will assist Halff during engagement with focus groups, committees, and the public and in preparing this Master Plan's subsequent work program.

TASK 1.3. EXISTING CONDITIONS ANALYSIS

Halff and City staff will determine the organizational framework for classifying Tarpon Springs's parks, trails, and recreational facilities to ensure a coordinated approach when interacting with elected and appointed officials, interested parties and the public. The following activities will establish a baseline understanding of Tarpon Springs's parks system assets:

A. Parks Classifications. Following review of the City's existing parkland terminology and classifications as presented in the Tarpon Springs 2045 Comprehensive Plan (and associated documents) Halff will recommend terminology, definitions and standards to be applied to the City's park and trail properties and recreational facilities. Subject to City approval, the resulting hierarchy of parks system assets will inform all subsequent needs assessment activities and plan recommendations.

B. Park Inventory. Halff will utilize data provided by the City (and subject to the agreed upon parks classifications) to generate a presumed inventory of park, open space, and trail properties and recreational facilities by type. This inventory is based solely on existing City data, does not include a field inventory, geo-location of recreational facilities, or a record of all accessory features at each property (e.g. trash cans, park benches, picnic tables, etc.)

Inventories collected as part of this task will be presented by Halff to the City for review in tabular and/or mapped format to ensure that all baseline data is accurate prior to initiating needs assessment tasks. Baseline data will also be incorporated into other project deliverables (i.e., technical memoranda, Master Plan report) as they are prepared.

TASK 1.4 PARKS AND RECREATION ADMINISTRATION

Halff will utilize data provided by the City to generate an overview of the City's existing policies, regulations and funding mechanisms related to parks, recreation, and open space.

A. Administrative Policy Summary. Halff will generate a consolidated summary of current policies that govern park development, land acquisition, and operations and maintenance standards.

B. Financials and Staff Summary. The City will provide Halff with current inventories of all full-time equivalent staff (including full-time and part-time positions) by division and function whose primary responsibilities involve providing municipal parks and recreation services to the residents of Tarpon Springs. Annual operating budgets of the relevant City divisions will also be provided, including the current budget year and up to five preceding fiscal years. This information should include revenues by source (i.e. general fund, revenues earned, grants, etc.) and expenditures by service area (i.e. administration, operations/maintenance, programs, etc.) and should be provided by the City to Halff in a single consolidated document.

TASK 1.5 COMMUNITY ENGAGEMENT AND STAKEHOLDER INPUT

On-site and online community outreach activities will occur throughout the project term. Subtasks include those activities that will be administered on a recurring or ongoing basis. Where applicable, many of the subtasks listed herein are also cross-referenced in subsequent tasks to illustrate their relationship to other project activities.

A. Parks and Recreation Advisory Committee Meetings (4). The Master Plan will be prepared with the input of the City's Parks and Recreation Advisory Committee. These four (4) meetings will be conducted throughout the planning process, providing guidance and feedback at each key stage. Benchmark meetings will occur as follows (although the City and Halff may agree to scheduling and agenda changes as the project progresses):

1. **Meeting #1 (Trip #2): Visioning & Project Overview:** Kickoff meeting to introduce the planning process, goals, and timeline. PRAC members will help shape the Master Plan vision and identify preliminary issues, priorities, and opportunities to guide the planning process.
2. **Meeting #2 (Trip #3): Review of Preliminary Findings:** Halff will meet with the PRAC to present an overview of preliminary Master Plan findings which includes a summary of early public engagement, initial access-based and demand-based needs assessment findings and other preliminary assumptions to move forward.
3. **Meeting #3 (Trip #4): Gap Analysis & Framework Development:** The PRAC will review and provide feedback on early recommendations related to level of service, system-wide operations, and recreational programming. Through discussion and prioritization exercises, PRAC members will help shape the strategic framework that will guide Master Plan recommendations and future investment decisions.
4. **Meeting #4 (Trip #5): Draft Plan & Implementation Recommendations:** The final meeting will present the full draft plan, including recommendations and implementation steps. The PRAC will review, validate, and offer final input to ensure the Master Plan is actionable and community-driven.

B. Board of Commissioner Interviews (Trip #2). Halff will meet one-on-one with City Commissioners and the mayor and members of the Board of Commissioners to discuss their perspectives on parks and recreation issues and opportunities. Commissioner interviews may occur in-person as a part of **Trip #1** or remotely via video-conferencing technology. Video-conference interviews must occur between **Trips #1** and **#2** to ensure the timely participation of elected officials prior to Halff initiating most needs assessment activities (as described in **Phase 2, Needs Assessment and Analysis**).

(Note: Additional activities with the Mayor and Board of Commissioners during the project term are described in subsequent tasks within this scope of work.)

C. Community Focus Groups (Trip #2). Halff will meet with key community representatives to guide initial plan analysis and development. These focus groups will be used to identify important community issues in relation to the future of the City's park properties and facilities, and recreational programs. Meetings will be topical so that a more in-depth discussion may occur on specific issues; however, it is understood that some attendees may participate in meetings based on time availability. A single City staff representative may be invited to provide insight and expertise as it relates to the City's parks system. The following potential interest groups are suggested (list not exclusive), but may be altered based on suggestions by City staff and officials:

- Indoor recreation and services (e.g., recreation center and community center users).
- Sports leagues and active recreation (e.g., coaches groups; league administrators).

- Outdoor recreation (e.g., anglers, boaters, water recreation groups) and passive park users (e.g., dog park users; walking, running, and bicycling groups; sporting clubs; nature/environmental groups; etc.)
- Tourism and local business owners
- Schools and youth recreation
- Cultural, historical, and beautification groups
- Seniors
- Communities of color

Halff will conduct up to four (4) focus group meetings with representatives of key interest groups or organizations as selected by the City (with Halff input). Focus group participants should not exceed up to 12 participants per session.

D. Public Meetings

1. **Facilitated Meetings (Trip #2).** Halff will facilitate a series of public meetings to provide opportunities for area residents to identify park property and facility preferences, recreational programming needs, etc. Public meetings will occur in one of two formats – the preferred option to be determined by the City.

   - **OPTION A: Visioning Open House.** The Visioning Public Open House will be held to solicit community preferences and vision regarding public parks, facilities, and recreational services. During this open house, participants will have the opportunity to visit various interactive stations, each focused on different aspects of the park system (e.g., park amenities, recreation programs, green spaces, and environmental considerations).

   - **OPTION B: Public Information Booths.** As an alternative to public open houses at fixed sites (Option A), abbreviated open house meeting materials may be displayed at public information booths staffed by Halff team members during community-wide events or at key park and trail locations in Tarpon Springs. These events would be identified by the City and Halff would staff up to two (2) events. Public information booths may also be used as an opportunity to disseminate the community preferences survey.

2. **Meetings "In-a-Box."** Halff will develop a portable "Meeting-in-a-Box" toolkit containing all the materials needed for a neighborhood or small group to conduct a self-guided planning input session. These kits are designed to reach hard-to-reach populations by allowing flexible, community-led engagement. Each "box" includes both a question-based activity and a visual mapping exercise to gather spatial and qualitative input.

D. Web-Based Engagement

1. **Online Community Preferences Survey.** Halff will prepare and administer a city-wide online community survey, in English and Spanish (if needed) as to solicit feedback from members of the community. The survey will address public recreational facilities and programming preferences. Developing and administering the online survey includes the following:

   - The electronic online survey will be cross-linked to ConnectTarponSprings.com.

   - Survey announcements shall be drafted which can be transmitted electronically, or as part of a City social media, newsletter or postcard in the mail.

- The raw results of the online survey will be provided to City staff, and a summary overview of pertinent results will be included in the Community Outreach Summary and Master Plan documents.

PHASE 1, MEETING SUMMARY
Phase 1 meetings include: **A)** Kick-off/Tour (Trip #1); B**)** Bi-weekly project coordination meetings (videoconference and ongoing); **C)** Project initiation meeting; **D)** Board of Commissioner interviews (4, Trip #2); **E)** Focus group meetings (4, Trip #2); **F)** PRAC Meeting #1 (Trip #2) and **E)** One public open house or two public information booth (Trip #2).

PHASE 1, ITEMS PROVIDED BY CITY
As described in the task descriptions and Exhibit C, *Support Services of the City of Tarpon Springs*.

PHASE 1, KEY DELIVERABLES
Key **Phase 1** deliverables include: **A)** Monthly progress reports; **B)** Project schedule; **C)** Requests for information spreadsheets; **D)** Parks and trails inventory and maps; **E)** Meeting materials; **F)** Meeting summaries; and **G)** Online survey.

PHASE 2: NEEDS ASSESSMENT AND ANALYSIS

Halff will take the information gathered from data collection tasks and community input to assess current conditions, identify gaps, and highlight opportunities. This analysis will inform strategic recommendations that align with community needs and guide future decision-making.

TASK 2.1. DEMOGRAPHIC AND TRENDS ANALYSIS

A. **Demographic Profile.** Halff will collect and utilize demographic, socioeconomic and health data from the United States Census, other public or private agencies, or from sources previously compiled by the City to utilize (as necessary) when preparing Master Plan assessments and recommendations. The City will direct Halff on which population projections to utilize (compiled from federal, state or local sources) to prepare target level of service calculations.

B. **Parks and Recreation Trends.** Using publicly available data, Halff will summarize the national and regional trends in park usage, recreation activities, and facility types. The findings will be used to inform the master planning process, ensuring that the park system aligns with current and future community needs and preferences.

TASK 2.2 Benchmarking and Best Practices

Using nationally available data, Halff will conduct research on cities of similar size and park systems to compare budgets, staffing levels, and acreage dedicated to parks and recreation. This task will focus on collecting data from comparable municipalities to understand how resources are allocated for park development, maintenance, and staffing, providing insights into how the City's parks system can be optimized.

TASK 2.3 PARK, FACILITY AND PROGRAM GAP ANALYSIS

A. **Standards-Based Assessment.** The results of the parks system inventory, **Task 1.3**, will be used to verify current parkland, trail and recreational facility levels of service, and to develop new targeted levels of service for Tarpon Springs based on quantity and distribution to improve resident access over time. Primary tasks include:

1. **Calculate Current Level of Service (CLOS)**. Halff will review baseline data to verify existing park, trail and facility standards, and to determine if recommended adjustments or new standards are appropriate.

2. **Develop Target Levels of Service (TLOS)**. Halff and City staff will develop a TLOS for parkland, amenities, and facilities to meet the needs of current and future projected populations. (It is intended that the TLOS for trails conform to the recommendations of the City's recent connectivity plan, although Halff and the City may agree to minor adjustments if necessary.) Information from regional or national benchmarks and from community outreach activities will be utilized to establish TLOS goals.

3. **Gap Analysis**. Halff will prepare a written summary of parks and trails system needs, to include areas of significant deficiencies, in terms of land area and specific facility types. Halff will compare recommended TLOS standards to actual conditions to determine deficiencies city-wide and or other political or planning sub-areas as agreed upon by the City and Halff.

   The findings of standards-based assessment will be presented to City staff for review in the form of a technical memorandum. The preliminary technical memorandum will be refined to incorporate one round of consolidated staff comments.

B. Demand-Based Assessment. Halff will compile the results of the community outreach activities described in **Phase 1** into a community outreach summary for review by City staff. The preliminary summary will be refined to incorporate one round of consolidated staff comments and amended again prior to Master Plan adoption to account for the incorporation of community feedback, **Task 1.5**, and the second public meeting in **Phase 5**.

C. Conditions and Access Assessment. Halff will prepare an assessment of existing park conditions for all publicly accessible parks, public grounds, and open spaces maintained by the Tarpon Springs Parks and Recreation Department. The park conditions assessment relies on a visual survey to evaluate the general condition of park structures, facilities, amenities, surfacing, and grounds. Conditions assessments consider apparent signs of facility deterioration, and perceptions of functional obsolescence. Numerical rankings are applied to each facility and composite scores are applied to each park property to determine where facility replacement, rehabilitation, or reconstruction is most warranted**.**

1. **Accessibility Assessment.** Using the 2014 Americans with Disabilities (ADA) Act Title II Compliance Guide as a principal resource, Halff will evaluate the accessibility of park facilities and amenities to Tarpon Springs' residents.

(Note: The park conditions assessment does not include structural, mechanical, electrical, HVAC or plumbing inspections of park department administrative buildings, community centers, recreation centers, aquatics facilities, or golf course.)

D. Trails and Active Transportation Assessment. Halff will conduct an access and connectivity assessment focused on park properties and the broader trail network. This task will include:

1. **Performing a High-Level Review of the Trail Network** using available GIS data and adopted local and regional comprehensive plans to identify major trail corridors, gaps, and potential connections.

2. **Mapping 10-Minute Walksheds** around existing park properties to evaluate park access across neighborhoods and identify underserved areas.

E. **Recreational Programming Assessment.** Halff will review the City of Tarpon Springs recreational programming provided as a part of **Task 1.2.B.** The depth of Halff's recreational programming assessment will be directly influenced by the detail of data that can be provided by the City including program types, frequency/scheduling, attendance (current and trends), registration and rental fees, etc. Subject to the availability of pertinent data, the recreational programming assessment may include an overview of core programs, age and lifecycle analysis, and service classifications to establish recommended cost recovery goals and identify potential adjustments to program offerings – whether provided by the City or a private vendor. The assessment does not include community events that are provided by the city or other community groups.

   The findings of the recreational programming assessment and corresponding recommendations will be presented to City staff for review in the form of a technical memorandum. The preliminary technical memorandum will be refined to incorporate one round of consolidated staff comments.

F. **Operations and Maintenance Assessment.** Halff will review the City of Tarpon Springs parks and recreation operations with an emphasis on parks system maintenance based on data provided as part of **Task 1.3**. The depth of Halff's operations and maintenance assessment will be directly influenced by the detail of data that can be provided by the City including the parks and recreation department's functional work areas, lines of service and associated maintenance modes and schedules.

   The findings of the operations and maintenance assessment and corresponding recommendations will be presented to City staff for review in the form of a technical memorandum. The preliminary technical memorandum will be refined to incorporate one round of consolidated staff comments.

PHASE 2, MEETING SUMMARY
Phase 2 meetings include: **A)** Conditions Assessment Site Visits; **B)** PRAC Meeting #2 (Trip #3), Review of Preliminary Findings; and **C)** Board of Commissioners Briefing #1 (Trip #3).

PHASE 2, ITEMS PROVIDED BY CITY
As described in the task descriptions and Exhibit C, *Support Services of the City of Tarpon Springs*.

PHASE 2, KEY DELIVERABLES
Key **Phase 1** deliverables will include: **A)** Standards assessment memorandum; **B)** Community outreach summary; **C)** Conditions assessment memorandum; **D)** Recreational programming assessment memorandum; and **E)** Operational assessment memorandum.

PHASE 3: VISION, GOALS, AND STRATEGIC FRAMEWORK

In Phase 3, Halff will refine the community-driven vision to establish the framework for the Parks and Recreation Master Plan. Working Closely with the City staff, this phase develops a plan that reflects community values, is grounded in practical goals that will inform the implementation work plan. Additionally, this phase includes the development of a conceptual park plan and prototypical design standards for use by the staff.

TASK 3.1 VISION REFINEMENT
Using community feedback, Halff will work with the City staff to refine the vision for the Master Plan. Establish clear, measurable objectives aligned with community values and priorities. Halff's behind-the-scenes visioning activities may occur throughout the initial project phases but will be augmented by the following key activities:

A. **Refine Vision and Guiding Principles.** Halff will present a refined vision statement, guiding principles and/or goals as part of the review of preliminary Master Plan findings to staff for review to be presented to at Open House Review Meeting in **Phase 5**.

B. **Define Goals and Measurable Objective.** Building on the refined vision and guiding principles, Halff will draft a preliminary set of goals and objectives that reflect needs and gaps of the community and park system. The goals will guide future recommendations and implementation strategies.

TASK 3.2 FRAMEWORK AND STRATEGY DEVELOPMENT

A. **Sustainability and Resiliency Framework.** Halff will identify strategies to incorporate sustainable practices in park development, landscaping, and facility operations. This includes water conservation, native plantings, and green infrastructure, as well as measures to increase climate resilience.

B. **Funding Strategy.** Halff will develop a comprehensive funding strategy to support implementation of the Parks and Recreation Master Plan. This will include identification of relevant local, state, and federal grants, opportunities for public-private partnerships, development impact fees, philanthropic funding, and potential bond measures.

C. **Operations and Maintenance Strategies.** Halff will recommend best practices and tools to ensure long-term operational sustainability. This includes equipment and asset replacement schedule to support lifecycle management of facilities and infrastructure.

TASK 3.3 CONCEPTUAL SITE PLAN FOR FUTURE PARK

Halff will develop a conceptual site plan for an undeveloped parcel identified as a candidate location for a future park. The concept shall be informed by site conditions, potential programming needs, stakeholder input, and best practices in park design and sports facility planning.

A. **Site Review and Programming Summary.** Conduct a site visit and summarize opportunities and constraints.
B. **Community Input.** Seek community input from Task 1.5.D to solicit specific feedback on the park concepts.
C. **Initial Concept Development.** Using the conditions assessment and programming needs from community feedback, Halff will develop two distinct concept plans, illustrating different approaches to layout, amenities, circulation, and programming.
D. **Staff and PRAC Review and Round 1 Revisions**
Present initial concepts to city staff and PRAC (Meeting #2 or #3) for feedback. Incorporate comments and refine both options.
E. **Final Concept Refinement (Round 2 Revisions)**
Based on staff and/or public feedback, prepare final refined concepts for each park. The final deliverables may include a preferred concept or a hybrid solution.
F. **Illustrative Plan and Narrative**
Prepare a high-quality illustrative plan and summary narrative for each final concept, highlighting proposed improvements and key features.

TASK 3.4 DEVELOPMENT OF PROTOTYPICAL PARK DESIGN STANDARDS

Halff will develop up to four (4) prototypical park design standards to serve as off-the-shelf, permit-ready plans for use by the City. These standardized park concepts will provide a consistent framework for the development of small to mid-sized parks across the community (e.g. pocket, trailhead, neighborhood parks), ensuring high-quality design, ease of implementation, and compliance with regulatory requirements. The plans will reflect the City's goals for accessibility, equity, sustainability, and long-term maintenance.

Each prototypical design shall include:

- A detailed site layout illustrating recommended amenities, circulation, and landscape elements

- Multiple park typologies (e.g., mini park, neighborhood park, trail/trailhead)
- ADA-compliant access and design features
- Standardized design specifications and construction details suitable for permitting
- Recommended materials and equipment based on durability and ease of maintenance

Deliverables shall include a set of editable digital design templates (CAD and PDF formats), technical specifications, and an implementation guide outlining how the standards can be applied or modified to fit specific sites. Potential conceptual for programming and keep this flexible for us to not.

PHASE 3, MEETING SUMMARY
Phase 3 meetings include: **A)** PRAC Meeting #3 (Trip #4); and **B)** Staff Conceptual Review

PHASE 3, ITEMS PROVIDED BY CITY
As described in the task descriptions and Exhibit C, *Support Services of the City of Tarpon Springs*.

PHASE 3, KEY DELIVERABLES
Key **Phase 3** deliverables will include: **A)** Vision and framework; **B)** Funding strategies memorandum; and **C)** Operation and maintenance strategy; **D)** Public open house meeting materials, **E)** Park concept; and **G)** Park design standards (up to 4).

PHASE 4: MASTER PLAN DEVELOPMENT

Phase 4 focuses on transforming the vision, goals, and assessments from earlier phases into a clear, actionable plan for the future. Halff will develop a comprehensive preliminary work program that outlines recommended investments, policy actions, and strategic initiatives to guide the city's parks and recreation system forward. Halff will incorporate feedback and prepare a draft master plan for review, bringing together all elements into a cohesive document that reflects the community's aspirations and the city's strategic direction.

TASK 4.1: PRELIMINARY WORK PROGRAM
The assumptions derived from each of the assessments conducted as part of **Phase 2** will be compiled by Halff into the master plan providing the City with a recommended Work Program containing the following:

A. **Investment Program.** Including a list of near-term, site specific improvements with associated cost estimates. The Investment Program will also recommend a series of long-term park, trail, and recreational facility capital projects distributed throughout the City.
B. **Policy Program.** Including a series of recommended actions to address parks and trails system growth, maintenance, recreational programming, and general administration and operations. Policy Program actions may include recommended policies, programs, studies, regulations, investments and operational changes.

The recommendations contained in the consolidated draft Work Program memorandum will be reviewed by City staff after which Halff will prepare a single round of edits prior to the presentation to the PRAC Committee for feedback.

TASK 4.2: DRAFT FINAL REPORT
Halff will submit a full final draft report to the City to gather feedback. Assessments and summaries will be incorporated into the Master Plan Document. The City will have the opportunity to provide up to two rounds of edits before finalization.

PHASE 4, MEETING SUMMARY
Phase 4 meetings include: **A)** PRAC Meeting #4 (Trip #5)

PHASE 4, ITEMS PROVIDED BY CITY
As described in the task descriptions and Exhibit C, *Support Services of the City of Tarpon Springs*.

PHASE 4, KEY DELIVERABLES
Key **Phase 4** deliverables will include: **A)** Work program; and **C)** Draft Master Plan

PHASE 5: PLAN ADOPTION

In the final phase, Halff will present the draft master plan to the public for review through an open house and online platform. Additionally, Halff will support City staff during the adoption process by preparing presentation materials and attending adoption meetings.

TASK 5.1. COMMUNITY REVIEW AND FINALIZATION
Halff will present the draft Parks and Recreation Master Plan to the community through a public open house and online platform. Community feedback will be documented and used to refine the plan, with additional input gathered from stakeholders and City staff.

A. **Online and Open House Review. (Trip #5)** Halff will prepare and facilitate a public open house to present key recommendations and conceptual designs. This event will include visually engaging display boards that highlight the planning process, community input, and proposed outcomes. Materials will also be made available online to broaden access and gather additional feedback.

B. **Final Community Summary.** The feedback from the open house will be consolidated into the preliminary summary from **Task 2.3.B** to incorporate one round of consolidated staff comments.

TASK 5.2 FINAL REPORT AND PRESENTATION
Halff will produce the final master plan document, incorporating assessments, recommendations, conceptual designs, and implementation strategies.

TASK 5.3 PLAN ADOPTION & IMPLEMENTATION SUPPORT
Halff will assist City staff through the plan adoption process by preparing materials for presentation to Board of Commissioners. This may include slide decks, summary documents, and talking points. Halff will be present at the meeting to respond to questions from elected officials, and make minor refinements based on feedback received during the adoption process.

A. **Presentation. (Trip #6)** A final presentation will be delivered to Board of Commissioners to support adoption and implementation.
B. **Implementation Planning Sessions.** Following adoption, Halff will lead implementation session(s) with the City staff to support plan administration and implementation. These session(s) will provide a roadmap for executing the plan's priorities, offering guidance on project phasing, budgeting, and aligning capital improvements with available funding sources. The session(s) will also support internal capacity-building by outlining practical steps for advancing from planning to design, construction, or additional feasibility studies as needed.

TASK 5.4 PROJECT CLOSE-OUT AND TRANSMITTAL
Upon adoption, Halff will complete all final documentation and submit digital files to the City, including the final adopted plan, GIS files, and any supplemental deliverables developed during the project.

PHASE 5, MEETING SUMMARY
Phase 5 meetings include **A)** Community Open House #2 (Trip #5); and **B)** Board of Commissioners Presentation (Trip #6); and **C)** Board Adoption meeting

PHASE 5, ITEMS PROVIDED BY CITY

As described in the task descriptions and Exhibit C, *Support Services of the City of Tarpon Springs*.

PHASE 5, KEY DELIVERABLES

Key **Phase 5** deliverables will include: **A)** Presentation materials; **B)** Open House materials and summary; and **C)** Final Report

EXHIBIT B

BASIS OF COMPENSATION

BASIC SERVICES – FEE SUMMARY.

Planning services as described in Exhibit A, will be provided by Halff on a lump sum basis, with an authorized lump sum contract fee of $248,500 for the Tarpon Spring Parks and Recreation Master Plan. The lump sum fee includes compensation for document copying, printing, travel/mileage and associated expenses necessary for the planning effort. Fees for services will be invoiced monthly, based on the percentage of work completed.

SERVICES	COSTS
Phase 1: Project Initiation, Data Collection, and Administration	$70,000.00
Phase 2: Needs Assessment and Analysis	$60,000.00
Phase 3: Vision, Goals, And Strategic Framework	$68,000.00
Phase 4: Master Plan Development	$24,000.00
Phase 5: Plan Adoption	$22,000.00
Base Services	**$244,000.00**
Reimbursables (travel and supplies)	*$4,500.00*
TOTAL	**$248,500.00**

ADDITIONAL SERVICES AND MEETINGS

During the course or at the conclusion of the Project, the Client may deem it necessary to schedule more meetings, request further research, or otherwise engage Halff in additional work efforts or subsequent phases not anticipated at project initiation or as set out in Attachment A, Scope of Services. Any such additional services shall be specifically authorized by the City Council, as appropriate, and documented through a written amendment to the Professional Services Agreement and Attachment A, Scope of Services, or set out as follow-up additional phase services. This will include a corresponding modification to the maximum not-to-exceed amount set out in Attachment B, Basis of Compensation, and, if necessary, the time of performance as set out in Attachment D, Project Schedule. Additional printing or publication expenses will be charged in accordance with Attachment B, Basis of Compensation. Expenses incurred by the consultant team, such as mileage, materials, food, etc., are integrated into the Base Plan cost in the Scope of Services. Should the need arise for additional services, including meetings, Halff can provide such services on an hourly basis and/or agreed upon fee.

EXHIBIT C

SUPPORT SERVICES OF THE CITY OF TARPON SPRINGS

City of Tarpon Springs, Florida
Parks and Recreation Master Plan

The City of Tarpon Springs (the "City") will provide administrative and technical support services to assist Halff Associates, Inc. ("Halff") in performing the Scope of Services described in Exhibit A, Scope of Services. The support services to be provided by the City will include the following services and tasks:

- Halff's activities will be overseen by the City's Parks and Recreation Department (the "Department"). The Department will identify a single individual to serve as a Project Manager who will be the City's primary point of contact. The designated Project Manager will be the source of day-to-day work program direction for this collaborative planning effort involving both City and Halff personnel, resources, and capabilities.
- Assist Halff in establishing contacts with agencies and organizations for data collection and coordination purposes.
- Ensure that key City personnel and project committee members will participate as needed in the planning process and be available upon request, through arrangements made by the City's Project Manager, to provide information and referrals and offer opinions, insights and suggestions that are necessary for completion of the project. This will include potential formal or informal meetings and briefings with the Mayor and Board of Commissioners and parties as specified in Exhibit A, Scope of Services.
- Upon project initiation the City's Project Manager will coordinate with Halff to transfer spatial data and mapping that the City can make available for the project, including data sets and GIS coverages (and AutoCAD layers, as useful and appropriate) already developed/maintained by the City for its entire planning area or readily available to the City from other sources. The City will be responsible for ensuring that GIS data obtained for this project is compatible, including projections and other formatting elements. Halff is not responsible for increasing the accuracy and precision or otherwise improving data received from the City.
- Provide all available data, maps, aerial imagery, previous reports/plans/studies, ordinances and resolutions, and other information that is available and applicable to Halff in digital or printed format and is pertinent and necessary for development of interim and final deliverables.
- Utilize and administer the City's website to disseminate information and inform, update and educate the public about the ongoing project. As applicable, Halff will support City website development and facilitation by providing already-completed interim documents or GIS maps in an Adobe PDF format, and other pertinent information which can be easily posted on the City's website.
- Conduct public information activities in conjunction with major public meetings/events and other fitting project milestones. The City will be responsible for news media contacts, preparation and distribution of news releases and any other public information materials, promotion and advertising for all public

events and citizen surveys, mailing of engagement announcements (if mailing is utilized), and posting of meeting notices and project information and updates on the City's website.

- Provide such public notice of meetings and hearings as is required by law or deemed desirable by the City.
- Arrange and provide use of public meeting facilities for each scheduled public involvement event and meeting identified in Exhibit A, Scope of Services, including adequate setup for presentations (PowerPoint projector, sound system, screen or white wall, reduced lighting, extension cords and multi-plug power strips, easels, flip pads and markers, etc.). The City's support services will include providing public and news media notification of public meetings, preparing sign-in sheets, producing/mailing/distributing notices, and reproducing agendas and other handout materials. Halff will be responsible for presentations and preparation of necessary graphic aids for all meetings. The City will also be responsible for inviting the Mayor, members of the Board of Commissioners and committees, and representatives of other key agencies and community organizations, to attend public meetings related to the planning process.
- Commit the necessary resources to prepare adequately for the promotion of citizen participation in, and media coverage of, key community involvement events. The City might consider inviting other community organizations to co-sponsor or "co-host" such key events and provide further logistical support.
- Provide Halff written summaries, and copies of any handouts/materials, from all project-related meetings not attended by Halff.
- Reproduce and forward each draft project deliverable submitted by Halff (via email) to the Mayor and City Commissioners, key City staff members, and other project participants as appropriate.
- Consider and act on all deliverables and other interim work items submitted by Halff that require City review, comments or approval within a reasonable period to enable Halff to complete work on schedule. Specific timeframes for such City response may be incorporated into the detailed project schedule approved following project initiation.

TARPON SPRINGS PARKS AND RECREATION MASTER PLAN

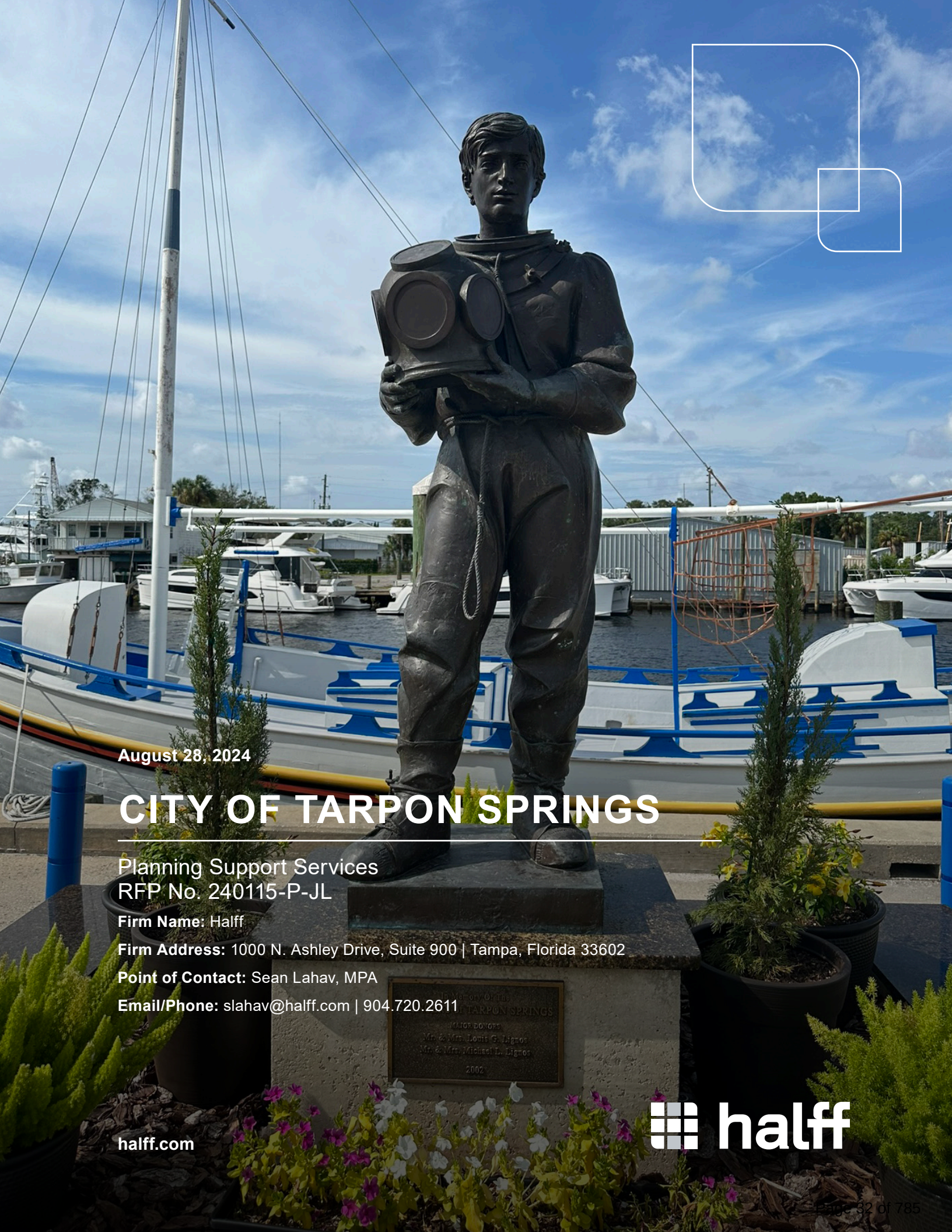
Budget Detail Request

CORE TASKS	DPL/QAQC	Project Manager	LA/Planner IV/DPM	LA/Planner	LA/Planner I/GIS	Intern	Administrative II	TOTAL*
	$255.00	$190.00	$220.00	$105.00	$150.00	$105.00	$102.00	
PHASE I: INITIATION, DATA COLLECTION, ADMIN								**$ 70,000.00**
TASK 1.1 Project Initiation								$ -
Project Administration	2	12					40	$ 7,000.00
Project Initiation Meeting	2	24	8	12		8		$ 9,000.00
TASK 1.2 Data Collection	2	8	8	12		8		$ 6,000.00
TASK 1.3 Existing Conditions		12	32	12		8		$ 11,000.00
TASK 1.4 Parks and Rec Administation	2	8		12		8		$ 4,000.00
TASK 1.5 Community Engagement and Stakeholder								$ -
PRAC meetings (4)		36	8	2		8		$ 10,000.00
City Council Interviews.		12	4	2		8		$ 4,000.00
Community Focus Groups.		12	4	2		8		$ 4,000.00
Public Meetings (1 Visioning/2 Booths/Mtg in a box)		24	12	16	12	16		$ 12,000.00
Web-Based Engagement		8		2		8		$ 3,000.00
TOTAL HOURS PHASE 1	**8**	**156**	**76**	**72**	**12**	**80**	**40**	**444**
PHASE 2: NEEDS ASESSMENT AND ANALYSIS								**$60,000.00**
TASK 2.1. Demographic and Trends Analysis.								$ -
Demographic Profile	2	8		12		16		$ 5,000.00
Parks and Recreation Trends	2	8		12		16		$ 5,000.00
TASK 2.2 Benchmarking and Best Practices	2	12		24		12		$ 6,000.00
TASK 2.3 Facility and Program Gap Analysis								$ -
Standards-Based Assessment		12		24		12		$ 6,000.00
Demand-Based Assessment		12		24		12		$ 6,000.00
Conditions Assessment	4	8	12	12	24	12		$ 11,000.00
Recreational Programming Assessment		12		18		8		$ 5,000.00
Trails & Active Transporation Assessment	4	12	8	24	8	12		$ 10,000.00
Operations and Maintenance Assessment		12		18		12		$ 6,000.00
TOTAL HOURS PHASE 2	**14**	**96**	**20**	**168**	**32**	**112**	**0**	**442**
PHASE 3: VISION, GOALS, & FRAMEWORK								**$ 68,000.00**
TASK 3.1 Vision Refinement								$ -
Vision Refinement and Review	2	12	8	12		8		$ 7,000.00
TASK 3.2 Framework and Strategy Development								$ -

Budget Detail Request

CORE TASKS	DPL/QAQC	Project Manager	LA/Planner IV/DPM	LA/Planner	LA/Planner I/GIS	Intern	Administrative II	TOTAL*
	$255.00	$190.00	$220.00	$105.00	$150.00	$105.00	$102.00	
Sustainability and Resiliency Framework	2	4		12		8		$ 3,000.00
Funding Strategy	2	8		12		8		$ 4,000.00
Operations and Maintenance Strategies	2	12		12		6		$ 5,000.00
Site-Specific Recommendations	2	6	12	6		8		$ 6,000.00
TASK 3.3 Conceptual Design - Sports Park	2	4	40	4	80	4		$ 23,000.00
TASK 3.4 Prototypical Park Design Standards	2	8	32		68	12		$ 20,000.00
TOTAL HOURS PHASE 3	**14**	**54**	**92**	**58**	**148**	**54**	**0**	**420**
PHASE 4: MASTER PLAN DEVELOPMENT								**$ 24,000.00**
TASK 4.1 Preliminary Work Program								$ -
Investment Program		12		24		8		$ 6,000.00
Policy Program		12		24		8		$ 6,000.00
TASK 4.2 Draft Final Report	8	8	8	32		36		$ 12,000.00
TOTAL HOURS PHASE 4	**8**	**32**	**8**	**80**	**0**	**52**	**0**	**180**
PHASE 5: PLAN ADOPTION								**$ 22,000.00**
TASK 5.1 Community Review & Finalization								$ -
Online and Open House Review	2	24		12		6		$ 7,000.00
Final Community Summary		2		4		8		$ 1,000.00
TASK 5.2 Final Report and Presentation	8	8		12		8		$ 6,000.00
TASK 5.3 Plan Adoption Support	2	12		8		8		$ 4,000.00
TASK 5.4 Project Close-out and Transmittal		8		12		8		$ 4,000.00
TOTAL HOURS PHASE 5	**12**	**54**	**0**	**48**	**0**	**38**	**0**	**152**
TOTAL LABOR								**$ 244,000.00**
Supplies and Materials								**$ 2,000.00**
Travel Expenses								**$ 2,500.00**
TOTAL PROJECT FEE								**$ 248,500.00**

**Amounts rounded to the nearest thousandth.*



August 28, 2024

CITY OF TARPON SPRINGS

Planning Support Services
RFP No. 240115-P-JL

Firm Name: Halff

Firm Address: 1000 N. Ashley Drive, Suite 900 | Tampa, Florida 33602

Point of Contact: Sean Lahav, MPA

Email/Phone: slahav@halff.com | 904.720.2611

halff.com

Table of **Contents**

Title Page 01

Table of Contents 02

Tab 1. Executive Summary 03

Tab 2. Ability of Firm and its Professional Personnel 06

Tab 3. Firm Experience with Projects of Similar Size and Past Performance 10

Tab 4. Demonstrated Understanding of the Sub Areas 66

Tab 5. Minority Business Status 94

Tab 6. Cost 95

Tab 7. City Forms 96

August 28, 2024

City of Tarpon Springs
Procurement Services Department
324 E. Pine St
Tarpon Springs, Florida 34689

RE: RFP No. 240115-P-JL Planning Support Services

Dear City of Tarpon Springs,

Halff, a full-service infrastructure consulting firm with a strong track record of providing local and statewide planning services, is pleased to submit our qualifications in support of providing Planning Support Services to the City of Tarpon Springs Planning Department. Halff's overarching objective for this opportunity is to serve as a trusted advisor to staff and local government leadership in navigating both the challenges and opportunities of what the future holds in store.

We are excited to also offer the technical services of multiple small business consulting firms including **SPG (Economic Analysis), Vrana Consulting (Communications and Public Involvement), Community Planning Collaborative, and KSK Preservation (Historic Preservation).** Our combined qualifications and experience include:

Multimodal Transportation Planning and Analysis – Halff's transportation planning services cover the complete project development process, from responsive planning and design to the integration of Intelligent Transportation Systems (ITS) and complete streets. Gary Phillips, AICP, Transportation Planning Lead, has more than 30 years of experience in transportation planning, project development, and conceptual design. He has served as project manager for transportation planning, PD&E, and design projects serving state transportation departments across Florida, Alabama, Mississippi, New Jersey, and Texas. Gary's abilities to provide robust multimodal transportation planning and analysis services will be bolstered by Halff's local and national staff, specialized in the planning and design of complete streets.

Economic Analysis – SPG, Halff's subconsultant for economic services, offers a team of economists who provide practical advice and guidance to clients on complex issues concerning infrastructure, natural and water resources, and socioeconomic impacts. Robert Gray, AICP, Chairman and President of Strategic Planning Group, Inc. (SPG), has more than 30 years of specialized policy analysis experience supporting public sector decision-making based on economic theory.

Communications and Public Involvement – Vrana Consulting, Inc., Halff's subconsultant for communications and public involvement, is a locally based Minority (Woman) Business Enterprise specializing in urban planning and public involvement. Tammy Vrana, AICP, brings more than 30 years of Florida planning experience to local clients. Vrana Consulting recognizes the value of engaging diverse community interests in planning and uses innovative approaches to capturing the attention and input of larger, more representative groups — including traditionally under-served populations.

Urban Design – Halff's planners and landscape architects are committing to shaping and revitalizing communities through ideas that generate economic growth and create sustainable solutions. Halff's award-winning corridor plans, downtown plans, streetscapes, and urban designs focus on the relationship between people, planet, prosperity, and place. Martin Steffen, PLA, Urban Design Lead, is an experienced landscape architect with 12 years of experience based in the Tampa Bay region. Isabelle Albert, AICP, Land Use Lead, previously served as Hillsborough County's Principal Planner.

Spongeorama, Downtown Tarpon Springs

City Hall, Downtown Tarpon Springs

Hellas Resturant & Bakery, Downtown Tarpon Springs

Land Use and Redevelopment – Halff provides all the professional services necessary for successful land development, from large-scale master-planned communities to mixed-use, industrial, and individual site developments. What truly distinguishes our approach is our experience and qualifications in shaping the local comprehensive plan and land development code regulations which inform land development patterns. Lara Diettrich, MPA, Land Use and Redevelopment Lead, has been providing professional planning services to public and private sector clients across Florida for more than 24 years. Her public sector qualifications and knowledge gained through serving as Baker County's Planning Director and as a Planning Commissioner for the City of Jacksonville provides her with an invaluable perspective in advising local planning departments.

Historic Preservation – Community Planning Collaborative, Halff's subconsultant for historic preservation services, is a small business that inspires community-led, history-based planning solutions so that equitable outcomes are possible. Adrienne Burke, AICP, Esq., is a planner and attorney who has more than 15 years of experience in local land use and historic preservation planning. She previously served as the Principal Planner for Miami-Dade County and the Director of Nassau County's Planning Department. Ennis Davis, AICP, is a planner with a passion for cultural heritage preservation and urban planning. A Gullah Geechee descendant with 23 years of experience in planning, architecture, and real estate development, Ennis is a public historian dedicated to inclusively uplifting people, communities, and protecting their culture, heritage, and sense of place.

Community Resilience – Halff's resilience services serve as a focal point of multidisciplinary collaboration across all of our solution groups and practices, including infrastructure, mobility, water, and placemaking. Halff has played a leading role in developing vulnerability assessments and adaptation plans for more than 16 counties and 51 municipalities across Florida. Sean Lahav, MPA, Project Principal and Community Resilience Lead, has advised 23 counties and 76 municipalities across the State of Florida on resilience priorities ranging from flooding and sea level rise to public policy and outreach. Sean is currently serving as Project Manager for the Resilient Pasco Project and recently managed climate resilience projects for the City of Port Richey and Tampa Bay Regional Planning Council (TBRPC).

Community Development and Redevelopment – Redevelopment can bring many excellent benefits to an urban area, but there can also be many unique challenges. Halff provides due-diligence support with our multidisciplinary services and focused approach to identify site-specific constraints and potential extraordinary costs. Max Spann, PLA, Community Development Lead, brings 23 of experience in planning, landscape architecture, design, and project management.

Recreation Master Planning – Halff's talented professionals provide limitless creativity, accentuating the details and forecasting long-term impacts of each recreation project. Our approach to parks, lakefront and recreation tourism master planning is collaborative, innovative and tailored to each community. Laura Duplain, PLA, is an experienced landscape architect with 16 years of experience leading projects of diverse sizes and types, including streetscape enhancements, park revitalization efforts, residential communities, and commercial projects.

Halff is enthusiastic about the opportunity to collaborate with the City of Tarpon Springs to advance its planning goals and initiatives. Our comprehensive suite of services, supported by our distinguished teaming partners and specialists, positions us uniquely to deliver exceptional outcomes tailored to the city's needs. We are committed to leveraging our extensive experience, innovative solutions, and collaborative approach to support Tarpon Springs in achieving its vision for a vibrant, sustainable, and resilient future. We look forward to the possibility of working together to make this vision a reality.

Thank you for considering our proposal. We are eager to discuss how Halff can contribute to the success of your planning endeavors.

Sincerely,

Sean D. Lahav, MPA
Resilience Market Leader
Principal-in-Charge
slahav@halff.com

Max Spann, PLA
Planning/Landscape Architecture Team Leader
Project Manager
mspann@halff.com

Halff facilitating Resilient Pasco Project Intergovernmental Workshop on Resilience and Sustainability with representatives from Pasco County, municipalities, SWFWMD, FDEP, TBRPC, and TBEP. Halff's Sean Lahav led the workshop with Tammy Vrana from Vrana Consulting in attendance.

Tab 2. Ability of Firm and its Professional Personnel

HALFF'S QUALIFICATIONS AND EXPERIENCE

Halff is recognized as one of the nation's top infrastructure consulting firms, distinguished by our comprehensive approach to planning, design, engineering, and implementation of innovative solutions. The core objective of Halff's people-focused mission and technical services is to serve as a trusted advisor to local communities in building a more sustainable, resilient, and thriving future.

We have been continuously recognized by *Engineering News Record* (ENR) as a top 100 design firm in the U.S., providing nationally recognized services in comprehensive planning, land development, transportation planning, climate resilience services, and civil engineering. Halff helps communities adapt to changing conditions by proactively planning for the future.

Halff is consistently named one of America's Top Workplaces because of an environment built around "people first." That's because everything we do is engineered for people — whether it's our company culture, career development, caring philanthropy or the client projects that truly touch lives and improve the world around us.

Halff, Tampa Office at the 2024 State of Tampa's Downtown Forum with Mayor Jane Castor

HALFF'S APPROACH TO PLANNING

Halff's award-winning comprehensive plans, parks master plans, corridor plans, downtown planning, active transportation plans, vulnerability assessments, adaptation plans, streetscapes, and master-planned communities focus on the relationship between people, planet, prosperity and place. These strategic visions influenced by public engagement help imagine the future.

Halff has more than 80 planning and landscape architecture professionals across our offices. With nearly 40 years of local project experience, we have successfully supported planning projects for various Florida municipalities, such as Pasco County, New Port Richey, Port Richey, and St. Pete Beach. We maintain a balanced project load to verify the delivery of our best work to clients, recognizing the uniqueness of each client's goals and objectives.

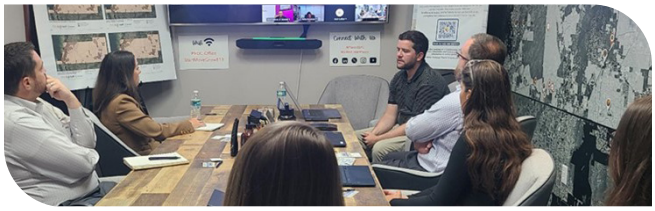
Based on our experience, involving the community through meetings and engagement with residents and business owners enhances a project outcome. Halff's skilled staff is prepared to address public concerns, feedback, and education with extensive experience in customizing presentations to address specific project-related concerns in public settings. We offer a range of support options, from stakeholder meetings to hosting informative web pages on our site.

GRANT WRITING SERVICES

Halff has obtained more than $100M in grants for our clients over the past decade. We are committed to supporting local governments across Florida in applying for regional, state, and federal grants. Lisa King, Halff's Grant Funding Strategy Lead, has obtained a cumulative total of $300M in state and federal grants for local governments over her career. Identifying and prioritizing projects eligible for grant funding will be one of Halff's most important priorities for this project. By leveraging her expertise, Halff aims to optimize the chances of obtaining significant grant funding, thereby advancing the project's objectives and contributing to the success of local resilience initiatives.

BUILDING RESILIENT COMMUNITIES

Tarpon Springs, situated on Florida's Gulf Coast, is characterized by its low-lying topography and extensive waterfront, which make it particularly vulnerable to climate-related hazards. Taking lessons from Hurricane Idalia (2023) and Hurricane Debby (2024), we recognize the urgency of mitigating and adapting to climate-related hazards. Halff has addressed these vulnerabilities through detailed neighborhood-scale flood mapping and analysis, with a notable focus on the nearby community of Holiday. By evaluating local drainage systems and floodplain dynamics, Halff has identified specific areas at risk and is currently developing tailored strategies to enhance resilience. This includes improving stormwater management, recommending infrastructure upgrades, and advising on land use and building codes to better manage flood risks and adapt to future climate impacts.



INTRODUCING OUR SUBCONSULTANTS

In providing the City of Tarpon Springs with the very best of what Halff has to offer, we are thrilled to introduce our carefully selected subconsultants. Each of these small businesses has been chosen not only for their technical expertise but also for their profound and passionate understanding of the urban planning issues that are unique to Florida communities.

Our subconsultants bring a deep-rooted knowledge and commitment to addressing the specific challenges and opportunities faced by urban areas in Florida. Their specialized insights into local planning dynamics, coupled with their hands-on experience in navigating the region's distinctive urban landscape, making sure that we deliver solutions that are both innovative and deeply relevant.

vranaconsulting

Vrana Consulting, Inc. is a professional services firm specializing in urban planning and public involvement for governmental entities, including municipalities, MPOs, and FDOT. To facilitate equitable and synergistic outcomes, Vrana Consulting seeks to understand the history, sociocultural context, and aspirations of planning area communities by investigating existing conditions and past actions and by engaging diverse publics. Vrana Consulting recognizes the value of engaging diverse community interests in planning and uses innovative approaches to capturing the attention and input of larger, more representative groups—including traditionally under-served populations. Established in 2007, Vrana Consulting is a Florida corporation and is certified by the State of Florida as a Minority (Woman) Business Enterprise and by FDOT as a Disadvantaged Business Enterprise (DBE).

COMMUNITY PLANNING COLLABORATIVE

Community Planning Collaborative was founded with the goal to change the way the profession practices planning and historic preservation. They are intent on building a shared culture of equity, working with team members and communities with different backgrounds, skills, and views. This means nurturing relationships with people of varied race, color, nationality, gender identity, sexual orientation, age, religion, neurodiversity, ability, veteran status, or criminal history. They understand intersectionality and how that impacts people's lived experience. Equity is essential to their mission of elevating the voices and culture of those traditionally excluded from urban planning, land use and zoning.

SPG

SPG is a collaborative group of interdisciplinary professional land planners, real estate planners, real estate economists, and real estate development professionals with considerable experience in serving both public- and private-sector clients. They have an in-depth understanding of urban and regional planning, development economics, and real estate analysis. SPG is considered an international leader in the emerging field of Growth Management and Comprehensive Development Planning. They have experience in long-range Land Use Planning, Demographics, Land Development Regulations, Impact Fee Preparation, Capital Improvement Planning, and Economic Development Planning.

Tarpon Spring Splash Park

KSK Preservation, LLC is a historic restoration and consulting firm founded in 2017 with over 24 years of experience. KSK Preservation has provided technical assistance, research, and documentation for the restoration of historic properties, both commercial and residential, around the state of Florida. The firm specializes in planning studies and architectural surveys, cultural resource assessments, existing conditions studies, design guidelines, National Register of Historic Places nominations, Section 106 Reviews, and local tax exemption and Federal tax credit projects. The firm meets the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology, history, architecture, architectural history, or historic architecture.

Downtown Tarpon Springs Street Art

PROFESSIONAL RESOURCES AVAILABLE

In response to the Request for Proposals (RFP) from the City of Tarpon Springs, we are committed to delivering exceptional service by leveraging a comprehensive array of professional resources. Our approach integrates a diverse set of expertise and tools that confirm we meet and exceed the project requirements outlined in the RFP.

EXPERIENCED TEAM OF PROFESSIONALS

Our team comprises highly qualified professionals with extensive local and statewide experience applicable to all of the services outlined in the RFP. Each member brings specialized knowledge and a proven track record in their respective fields, confirming a robust and multidisciplinary approach to the project. From urban planners with deep familiarity with Florida's municipal regulations to landscape architects and engineers adept at navigating complex design projects, our team is equipped to address all aspects of the RFP's requirements.

Most importantly, our team assembled for this project includes professionals who have served in public sector planning leadership capacities and understand the complexities of local planning department decisions. Lara Diettrich, Max Spann, and Adrienne Burke each previously served as Planning Directors both for municipalities and counties across Florida. Sean Lahav previously worked for a regional planning council where he advised numerous planning departments on both current and long-range priorities. These qualifications provide our team with a unique understanding of both the challenges and opportunities facing the City of Tarpon Springs in planning for the future.

SPECIALIZED SUBCONSULTANTS

We have carefully selected a group of small businesses and subconsultants who possess a profound understanding of urban planning challenges specific to Florida. These subconsultants are not only experts in their technical domains but also have a passionate commitment to addressing the unique needs of Florida's communities. Their localized knowledge enhances our ability to tailor solutions effectively, making sure relevance and efficacy in every facet of the project.

Our subconsultants have a proven track record of successful projects within Florida, demonstrating their capability to deliver high-quality outcomes. Their previous collaborations with municipalities, state agencies, and private sector clients highlight their ability to navigate the intricacies of urban planning and achieve results that align with project goals and community expectations.

BALANCED WORKLOAD

We understand the importance of balancing workload and delivering professional resources promptly to meet the needs of the City of Tarpon Springs. Our approach is grounded in a strategic framework designed to make sure each project receives the attention it deserves, while maintaining efficiency and meeting deadlines. This commitment is central to our ability to provide high-quality services and achieve the project's objectives effectively.

Our project management is a core strength we offer. We're dedicated to meeting deadlines and can expedite our efforts as needed. Our team structure is designed to be flexible and scalable, allowing us to adjust resource

levels based on project demands. Whether the project requires additional expertise or increased manpower at specific stages, we can adapt by bringing in additional team members or subconsultants. This scalability confirms that we can handle varying project sizes and complexities without compromising on the quality of our deliverables or the timeliness of our services.

TRUSTED ADVISORS IN NAVIGATING UNFORESEEN CIRCUMSTANCES

At Halff, our role as trusted advisors extends beyond conventional project management; we are steadfast partners committed to guiding our clients through unforeseen circumstances with expertise and resilience. Our deep-seated experience and strategic approach enable us to address unexpected challenges effectively,making sure project continuity and success even in the face of adversity.

PROACTIVE RISK MANAGEMENT

Our commitment to anticipating and managing risks is a cornerstone of our project management philosophy. We conduct thorough risk assessments at the outset of each project to identify potential issues that may arise. By developing comprehensive risk mitigation strategies, we prepare for possible contingencies before they become significant problems. This proactive stance enables us to handle unforeseen circumstances with agility and minimize their impact on the project's timeline and objectives.

RAPID RESPONSE AND ADAPTABILITY

In the event of unforeseen challenges, our team's ability to respond quickly and adapt to changing conditions is crucial. We have established protocols for crisis management and resource reallocation that allow us to address issues promptly. Whether dealing with unexpected regulatory changes, environmental concerns, or logistical disruptions, our project managers and specialists are trained to implement swift solutions that keep the project on track. Our agility confirms that we can navigate disruptions without compromising on the quality or integrity of our deliverables.

EXPERT GUIDANCE AND STRATEGIC SOLUTIONS

As trusted advisors, we leverage our extensive knowledge and experience to provide strategic solutions during times of uncertainty. Our team offers informed guidance on the best course of action, drawing on industry best practices and innovative approaches to overcome challenges. We work closely with our clients to understand their unique needs and develop tailored strategies that address specific issues while aligning with overall project goals.

TRANSPARENT COMMUNICATION AND COLLABORATION

Effective communication is integral to successfully navigating unforeseen circumstances. We maintain transparent and open lines of communication with our clients throughout the project, safeguarding that they are informed of any developments and potential impacts. Our collaborative approach involves regular updates and consultations, allowing us to work together to devise and implement solutions. This transparency builds trust that all stakeholders are aligned and confident in the strategies being employed.

LEVERAGING A ROBUST NETWORK OF RESOURCES

Our extensive network of industry contacts and resources is a valuable asset in managing unforeseen challenges. When necessary, we tap into our network to seek additional expertise, gather insights, or secure resources that may be required to address unexpected issues. This network enhances our capacity to find innovative solutions and implement them effectively, confirming that we can overcome obstacles and maintain project momentum.

Downtown Tarpon Springs Street Art

Tab 3. Firm Experience with Projects of Similar Size and Past Performance

PROJECT TEAM ORGANIZATIONAL CHART

The organizational chart for the City of Tarpon Springs Planning Support Services outlines a structured team dedicated to comprehensive planning and development. At the core of this team are roles focused on project management, technical advisory, and quality control. Specialized leads drive initiatives in transportation planning, economic analysis, public involvement, and urban design. The team also encompasses land use, historic preservation, community resilience, and redevelopment expertise. Recreation master planning and value-added services, including grant funding strategy, are additional focal areas. Each segment of the team collaborates to deliver integrated and innovative solutions tailored to the city's needs.

LEGEND
1 Halff
2 SPG
3 Vrana Consulting, Inc.
4 Community Planning Collaborative
5 KSK Preservation, LLC

CITY OF TARPON SPRINGS

Max Spann, PLA, CLARB
Project Manager

Sean Lahav, MPA
Principal-in-Charge

Martin Steffen, PLA
QA/QC Manager

Matt Bucchin, AICP
Senior Technical Advisor

Technical Staff

Multimodal Transportation Planning & Analysis
Gary Phillips, AICP[1]

Economic Analysis
Robert Gray, AICP[2]

Communications & Public Involvement
Tammy Vrana, AICP[3]
Sean Lahav, MPA[1]

Urban Design
Isabelle Albert, AICP[1]
Brice Pinson[1]

Land Use and Redevelopment
Lara Diettrich, MPA[1]

Historic Preservation
Mike Mudd, RPA[1]
Annie Carter[1]
Adrienne Burke, AICP, Esq[4]
Ennis Davis, AICP[4]
Kathleen Kauffman[5]

Community Resilience
Sean Lahav, MPA[1]

Community Development & Redevelopment
Max Spann, PLA, CLARB[1]
Joseph Loretta,PLA, LEED®AP BD+C[1]

Recreation Master Planning
Laura Duplain, PLA[1]
Dave Muntean, PE[1]

Value-Added Services
Lisa King, GPC[1]

APPENDIX

Sean Lahav, MPA

Sean Lahav is a Resilience Market Leader for Halff where he is responsible for growing resilience services across the firm. He brings highly specialized and senior level experience to Tarpon Springs having navigated resilience and climate adaptation planning priorities across academia and both the public and private sectors. Sean's work has benefited 23 counties and 76 municipalities across the State of Florida and he has been invited to speak before elected commissions and civic organizations on more than 100 occasions in a policy advisory role. He is currently a Doctoral Candidate in Florida State University's Department of Urban and Regional Planning where his dissertation research is focused on evaluating the role of collaborative planning and governance in advancing Nature-Based Solutions. He was recognized with an Environmental Achievement Award by the City of Jacksonville's Environmental Protection Board in 2021.

ROLE

Principal-in-Charge/ Community Resilience Lead/ Communications & Public Involvement

EXPERIENCE

8 Years

EDUCATION

PhD, Urban and Regional Planning, Florida State University (Course Work Completed, Defense Expected 2025)

MPA, Public Administration & Policy, University of North Florida

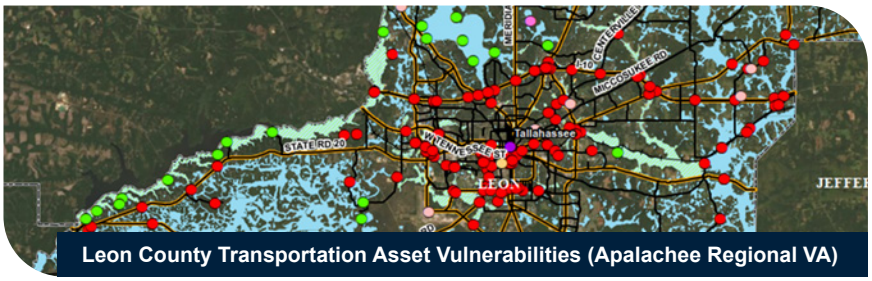
BA, Political Science, University of North Florida

REPRESENTATIVE PROJECT EXPERIENCE

Municipal and County Vulnerability Assessments, FL.
Project Manager and Senior Technical Advisor who has managed the development of vulnerability assessments and adaptation plans for Flagler County, Pasco County, Panama City, Port Richey, and Fernandina Beach. Currently advising local governments on Resilient Florida requirements set forth in Section 380.093, Florida Statutes. Serving as Halff's lead professional for vulnerability assessments in Florida.

Apalachee Vulnerability Assessment, Leon, Calhoun, Franklin, Gadsden, Gulf, Jackson, Jefferson, Liberty & Wakulla Counties, FL.
Project Manager who was responsible for leading the ARPC's development of a regional vulnerability assessment for 9 counties and 28 municipalities, including the City of Tallahassee and Leon County. Led a multidisciplinary team of civil and coastal engineers, GIS analysts, and planners to evaluate the vulnerabilities of more than 17,000 critical assets to current and future tidal flooding, storm surge, sea level rise, rainfall, and compound flooding.

Tampa Bay Regional Inundation Coordination, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee & Sarasota Counties, FL.
Stakeholder Engagement Lead who oversaw all research, stakeholder engagement, and regional outreach components of a flood mapping initiative which benefited 7 counties and 21 municipalities. Led interviews with leading authorities on flooding modeling from the private, public, and nonprofit sectors, including UF, FIU, USF, SFWMD, NOAA, and USACE.



Leon County Transportation Asset Vulnerabilities (Apalachee Regional VA)

Grant Writing for Fernandina Beach and DeLand, FL.
Grant Writer who successfully advised the Cities of Fernandina Beach and DeLand in preparing and submitting Resilient Florida planning grant applications totaling $270K to support the development of respective flood vulnerability assessment and adaptation planning projects.

***Grant Writing for Putnam, Flagler and St. Johns Counties, FL.**
Grant Writer who successfully advised Putnam, Flagler, and St. Johns Counties in preparing and submitting Resilient Florida grant applications to support the development of infrastructure vulnerability assessments. Cumulative total of $750K was awarded with vulnerability assessment projects encompassing 2,220 square miles.

***USACE South Atlantic Coastal Study (SACS), Northeast FL.**
Technical Advisor who aided USACE while the Northeast Florida Focus Area of SACS was being conducted. SACS was a $16M Congressionally-Authorized Study focused on evaluating flood vulnerabilities across the USACE South Atlantic Division. Provided USACE with stakeholder inventory, coordinated study efforts with Northeast Florida local governments, and wrote official vision statement for Northeast Florida Focus Area.

***Special Committee on Resiliency, Jacksonville, FL.**
Lead External Advisor who advised Council Members throughout City of Jacksonville City Council established Special Committee on Resiliency. Assisted in developing the committee's work plan, wrote the charges for three subcommittees, and coordinated efforts between the City of Jacksonville and local, state, and national partners. Authored the policy statement and job description which enabled the City of Jacksonville to appoint its first Chief Resilience Officer (CRO). Served as primary author of the Special Committee's Final Report and coordinated the technical development of the report with more than 50 subject matter experts, including scholars, attorneys, planners, engineers, scientists, and community leaders.

***EDA CARES Act Supplemental Award for COVID-19. Northeast FL.**
Project Manager who was responsible for administering a non-competitive grant awarded to Northeast Florida Region through the U.S. Economic Development Administration (EDA). Served as Chairman of the Northeast Florida Economic Resilience Task Force, a policy group comprised of 20 regional leaders from government, private, and nonprofit sectors. Formalized partnerships with more than 24 organizations and local governments to identify economic recovery strategies for bouncing back from the national effects of the COVID-19 pandemic. Developed the "Northeast Florida COVID-19 Economic Recovery Plan" and presented recommendations from plan to local government commissions on more than 22 occasions. Advised local government spending priorities related to allocations provided through the American Rescue Plan Act (ARPA).

***Flagler County-Wide Approach to Resilience Planning, Flagler County, FL.**
Project Manager who led a planning project funded by the FDEP Resilient Coastlines Program focused on cross-jurisdictional resilience planning and collaborative governance. Assisted Flagler County and the municipalities of Marineland, Beverly Beach, Flagler Beach, Palm Coast, and Bunnell in identifying linkages between planning, emergency management, and floodplain management. Developed Goals, Objectives, and Policies to satisfy 'Peril of Flood' statutory requirements and advised local planning boards through the transmittal of multiple comprehensive plan amendments.

***Mayport Naval Air Station (NAS) Resilience Study, Jacksonville, FL.**
Steering Committee Member appointed by North Florida Transportation Planning Organization (TPO) to advise and provide technical assistance to RS&H while the Mayport NAS Transportation Resilience Study was being conducted. Coordinated GIS data requests applicable to current and future flood conditions and supported local stakeholder engagement priorities.

© Halff - 2024

Max Spann, PLA, CLARB

Max brings 24 of experience in planning, landscape architecture, design, and project management with a simple goal: to provide clients with solutions of lasting value in a time and cost-efficient manner. Throughout his career he has implemented this concept through experience in short and long-range planning, large and small site design, and construction of both public-sector and private-sector projects. His project background includes large and small scale master planned and mixed-use developments, large and small scale lifestyle (commercial) center development, botanical garden design, theme park design, resort and hospitality amenity design and construction, comprehensive plan amendments and land development code creation, municipal department management, development agreements, master planned community amenity design, public and private design charrette facilitation, parks and recreation master plans, urban and community redevelopment plans, regional and specialty use parks, streetscape and corridor design, and construction administration services.

ROLE

Project Manager/Community Development & Redevelopment Lead

EXPERIENCE

24 Years

EDUCATION

Bachelor of Landscape Architecture, Kansas State University

REGISTRATIONS

Professional Landscape Architect, FL No. LA6666780

CERTIFICATIONS

CLARB Certified Landscape Architect No. 31691

REPRESENTATIVE PROJECT EXPERIENCE

Hogans Creek Restoration & Trail Plan, Jacksonville, FL. Providing landscape architecture design oversight for this multi-year 2.5-mile stream restoration project through diverse urban environments. Max assists with program and graphics development for community outreach meetings. The project is currently at 30 percent conceptual design for the client to pursue further funding.

St. Johns Park at Friendship Fountain, Jacksonville, FL. Assisting the design and construction team in providing limited construction administration and coordination for St. John's Park. The project included revitalization of the entire park grounds surrounding the Friendship Fountain as a community waterfront gathering and active open space.

Latham Plaza Design, Jacksonville Beach, FL. Assisting in design development for the 2.5-acre Latham Plaza/Seawalk Pavilion in the City of Jacksonville Beach. The design advancement involves working with city staff and the Community Redevelopment Agency (CRA) to finalize the design elements and budget for the CRA Board and City Council to accept. The concept includes improvements to both the Seawalk Pavilion and Latham Plaza as a centerpiece to events in downtown Jacksonville Beach. The first phase of construction is scheduled to occur in 2025.

Casselberry Parks Master Planning, Casselberry, FL.
Served as the lead landscape architect for design, preliminary engineering and cost opinions for both Wirz and Sunnytown Park(s) in the City. Subsequent to the design, public involvement was conducted to gain consensus from each community.

© Halff - 2024

Martin Steffen, PLA

Martin has been active in landscape architecture, site design, and land planning for more than 12 years. His experience encompasses both private and public-sector projects. Project experience includes master planning services, special use permits, design for residential subdivisions, office/commercial site design, and residential landscape design as well as due diligence for eminent domain cases.

ROLE
QA/QC Manager/Urban Design Lead

EXPERIENCE
12 Years

EDUCATION
BS, Landscape Architecture, University of Kentucky

REGISTRATION
Professional Landscape Architect, Florida No. 6667386

REPRESENTATIVE PROJECT EXPERIENCE

Anclote River Park and Trail, Pasco County, FL.
Landscape Architect responsible for internal design coordination, site design, program management, overall amenity design, and maintaining client relationships for one of Pasco County's most utilized park. This waterfront park is enjoyed by many and is known for its boat access, recreational activities, and providing an overall family-friendly park experience.

St. Johns Park at Friendship Fountain, Jacksonville, FL.
Landscape Architect responsible for design assistance and QA/QC for the revitalization of the entire park grounds surrounding the Friendship Fountain as a community waterfront gathering and active open space.

Gloria Swanson Parking Lot Expansion, New Port Richey, FL.
Martin was responsible for providing landscape and irrigation improvements to Gloria Swanson Parking lot to provide overflow parking for the historic La Hacienda Hotel as well as the recently renovated Simms Park. Design included working with engineers on parking lot layout and providing landscape enhancements for streetscape which served as the main entrance to the hotel and park. Care was taken to re-use existing trees on site where possible. The City of New Port Richey has designated a majority of its City as a Community Redevelopment Area (CRA). Halff conducted a parking study along, and parallel to, Main Street extending from US 19 to the west and Madison Avenue to the east to confirm that the City has adequate parking to support existing uses, as well as planning for future growth in the Downtown District.

Airport Gateway Corridor and Trail, Tallahassee, FL.
Landscape Architect responsible for the planning and design of several roadway corridors and trails leading to downtown Tallahassee. Halff has completed public engagement, technical, and administrative coordination; data gathering; preliminary reviews (cultural, environmental, geotechnical); sociocultural effects; traffic and stormwater evaluation; and conceptualization. Covering over seven miles of roadway and over 12 miles sidewalks, trails, and bicycle lanes, the Airport Gateway intends to substantially improve transportation in our community.

© Halff - 2024

Matt Bucchin, AICP, LEED GA

Matt is a Deputy Practice Lead over planning at Halff with 27 years of public and private sector experience at the city, state, and special district levels of government. Matt has served many Texas communities on comprehensive, solution-oriented plans that are tailored to each city's unique characteristics. Matt also leads Halff's Connected Solutions and Innovation Technologies Initiative, working with technology specialists from across the company advancing transportation-related projects in connected and autonomous vehicle technologies, ITS, information communication technologies (ICT), machine learning and artificial intelligence, asset management, cyber security and more.

ROLE
Senior Technical Advisor

EXPERIENCE
27 Years

EDUCATION
Master of Environmental Planning, Arizona State University

BA, Business Administration, Pennsylvania State University

CERTIFICATION
Certified Planner, AICP No. 022097

LEED Green Associate, U.S. Green Building Council

REPRESENTATIVE PROJECT EXPERIENCE

US 380 Overlay District Design Strategy, Frisco TX.
QA/QC Manager responsible for reviewing green design components along the US 380 corridor. The design framework included creating walkable development with connections to hike and bike trails. Another focus was building placement to execute placemaking strategies to form a distinct identity.

Airport Boulevard Corridor Mobility Plan, Austin, TX.
Lead Planning Project Manager for a 6.2-mile corridor study and schematic plan for an urban arterial in the City of Austin. Planning tasks included preparation of an access management study to minimize impacts to adjacent land uses, development of a placemaking toolkit, and identification of locations for placemaking design interventions.

Texas Department of Transportation (TxDOT) El Paso District Alternative Transportation Study, El Paso, TX.
Lead Planner responsible for the development of an alternative transportation implementation plan for 13 key state corridors within the TxDOT El Paso District. The project included an existing condition analysis of 13 corridors, identification of possible alternative treatments to improve bicycle facilities, selection of interim and ultimate facility configuration options, and a prioritized implementation action plan for moving forward. In association with our engineers, this project also included the schematic designs for facility improvements for several key corridors.

OTHER REPRESENTATIVE PROJECTS

Place Based Comprehensive Plans
- Uniquely Boerne: The Boerne Comprehensive Plan, Boerne, TX
- Forward Fate Comprehensive Plan, Fate, TX
- RENEW Texarkana Comprehensive Plan, Texarkana, TX

Small Area/Corridor Plans
- Lancaster Corridor Studies for I-35E and Loop 9, Lancaster, TX
- San Marcos Transportation Corridors Study, San Marcos, TX
- FM 78 Corridor Plan, Cibolo, TX

Design Guidelines & Code Development
- Marble Falls Development Code, Marble Falls, TX

© Halff - 2024

Gary Phillips, AICP

Gary has 36 years of experience working for both private and public engineering firms and specializes in Transportation Planning, Public Engagement, Project Development and Environmental (PD&E) Studies, and Conceptual Design. He has served as project manager for transportation master plans, planning and traffic studies, PD&Es, conceptual design projects and statewide policy contracts. His clients have included Alabama DOT, Mississippi DOT, New Jersey DOT, Texas DOT, FDOT District 2, Florida Turnpike Enterprise, FDOT Central Office - Office of Environmental Management and Office of Policy Planning, FDOT Office of Toll Operations, Florida Department of Environmental Protection, and numerous municipalities.

ROLE

Multimodal Transportation Planning & Analysis Lead

EXPERIENCE

36 Years

EDUCATION

BS, Civil Engineering, Florida Institute of Technology

REGISTRATION

American Institute of Certified Planners #118919

REPRESENTATIVE PROJECT EXPERIENCE

Blueprint 2000 Intergovernmental Agency, Capital Cascades Connector Bridge, Master Plan, Design and Construction, Tallahassee, FL.

Served as Project Manager for the master plan, preliminary design of a new pedestrian bridge in downtown Tallahassee. A design charette was held with the community to elicit their preference for the new bridge. Community participants representing neighborhood associations, local businesses, and other civic groups and voted on bridge preferences including bridge concept, abutment design aesthetics and lighting. This modern post tensioned concrete bridge deck is supported by a series of ten circular columns positioned at angles. The columns support canopies made of solar fabric that capture the sun's energy while providing shade for the bridge users. This gateway signature pedestrian bridge is 180ft in length and crosses over South Monroe Street near the State Capitol.

Blueprint 2000 Intergovernmental Agency, Franklin Boulevard Flood Control Project, Tallahassee, FL.

Served as Project Manager for the planning, design and permitting phase of the Franklin Boulevard Project. The existing four-lane urban collector with an open ditch conveyance in the median contained no pedestrian or bicycle facilities. The project redesigned Franklin Boulevard into a two-lane facility with turn lanes, 4 ft. bike lanes in each direction and a 10ft. multi-use trail on the west side. The project placed the open water conveyance into an underground 8' x 12' box culvert that connected to an existing box culvert downstream. The project relocated and upgraded underground utilities and comprised architectural lighting, landscaping and irrigation.

Capital Region Planning Transportation Agency (CRTPA), Bloxham Cutoff Trail Feasibility Study, Wakulla County, FL.

Served as Project Manager for the SR 267/Bloxham Cutoff Road Shared-Use Trail Feasibility Study in Wakulla County. The study evaluated a proposed shared-use trail envisioned to connect Edward Ball Wakulla Springs State Park with the St. Marks Trail. The proposed connector route is approximately 4.78 miles in length.

© Halff - 2024

Robert Gray, AICP

As Chairman and President of Strategic Planning Group, Inc. (SPG), Robert Gray leads the resource team with over 30 years of consulting experience in Community and Neighborhood Redevelopment, Economic Development/Site Location, Development Economics/Feasibility, Growth Management/Comprehensive Land-Use Planning and Strategic Planning. His broad range of experience provides SPG's clients detailed accuracy, proven programs, and consistent professionalism. Robert has created effective CRA redevelopment plans/strategies for over 40 local, regional, and national governments including Australia, Egypt, the Caribbean, and locations throughout the United States.

ROLE
Economic Analysis Lead

EXPERIENCE
30 Years

EDUCATION
Doctoral Courses, University of Florida

MA, Economics, University of Florida

BA, Economic Geography/ Planning, University of Florida

REGISTRATION
American Institute of Certified Planners #005830

SPG

REPRESENTATIVE PROJECT EXPERIENCE

Mr. Gray has completed over 40 economic development plans and economic repositioning studies worldwide, including the following Florida Programs:

- Bradenton Central CRA (2 Plans)
- Central Leesburg CRA including Findings
- Cocoa (3 CRAs)/Findings and Master Plans
- Delray Beach CRA (2 Plans)
- Jacksonville CRA (5 Plans/ Updates/Findings)
- Hallandale Beach CRA Update
- Lincolnville CRA Update
- Melbourne Downtown CRA Update
- Ormond Beach CRA (2 Plans)
- Palm Coast SR100 CRA including Findings

Economic Development/Site Location

- Over 50 site location studies for industrial, retail, financial, biomedical, medical and headquarters throughout the throughout the United States resulting in relocation/creation of over 60,000 jobs.
- Prepared workforce development programs and cost/wage surveys for local governments

Economic Repositioning/Redevelopment Experience

He is a leader in preparing Redevelopment Programs, having prepared over 35 for local governments, 20 within the State of Florida. He is a member of the Florida Redevelopment Association. Mr. Gray is a Florida Real Estate Broker. He is currently completing the Hallandale Beach CRA Redevelopment Plan which is including pandemic impact policies and strategies.

He has created effective CRA redevelopment plans/strategies for local, regional, and national governments in-luding

- 12 Downtown CRAs
- 12 African American CRAs
- 10 Corridor CRAs
- 6 Tourism Related CRAs

Comprehensive Planning/Urban Planning

Prepared Land Use and Growth Management Programs for over 30 local and regional governments throughout North America, the Caribbean and the Pacific, including 12 in Florida (9J-5) including Polk County.

© Halff - 2024

Tammy Vrana, AICP

Tammy has 37 years of Florida planning experience serving local governments, MPOs, and the Florida Department of Transportation. Her experience encompasses comprehensive planning, community development, community impact and equity assessment, and public engagement. Tammy is adept at working across disciplines and with diverse stakeholders to identify community issues and practicable, consensus-driven solutions. She specializes in outreach, education, and engagement techniques to increase public awareness and participation, inform decision making, and build support for community plans and projects.

ROLE

Communications & Public Involvement

EXPERIENCE

37 Years

EDUCATION

BA Economic Geography, University of Florida

Coursework, Sustainable Community Design, University of South Florida

REGISTRATION

American Institute of Certified Planners (AICP)

vranaconsulting

REPRESENTATIVE PROJECT EXPERIENCE.

Project Manager, On-Call Planning Support, City of Port Richey (2012-Present).
Serves as city planner performing development review, plan and zoning amendments, coastal management policy/strategy, community engagement, and other tasks as needed.

Subconsultant, Resilient Pinellas Action Plan, Pinellas County (2020-2023).
Led community engagement tasks, including a detailed opinion survey (1,200 responses) and a 21-member advisory group to lay the foundation for the County's robust (and first) sustainability and resiliency plan. Supported strategy development and documentation.

Subconsultant, Historic Roser Park Neighborhood Plan and Historic Uptown Neighborhood Plan, City of St. Petersburg (2012-2014)
Facilitated community workshops with neighborhood groups/interests and developed neighborhood plans.

Subconsultant, Gateway Master Plan, Forward Pinellas (2018-2019)
Organized community outreach and engagement activities for diverse stakeholders, including a 35-member Study Management Team and community groups, convened to explore regional mobility and connectivity, transit-oriented development, industrial redevelopment, housing opportunities, and resiliency strategies.

Subconsultant, Downtown and Edge District Parking Demand Study, City of St. Petersburg (2015):
Developed/implemented the public involvement plan and performed outreach for opinion surveys and public workshops to inform the recommendations.

Subconsultant, Focus Group for Advantage Pinellas Long Range Transportation Plan, Forward Pinellas (2018-2019).
Performed outreach, assembled a geographically diverse focus group, organized meetings, and reported outcomes to inform the major update.

Subconsultant, Greenways Master Plan Update, Hillsborough County (2022-2023).
Led community engagement tasks and supported planning for the update of the 1996 plan.

© Halff - 2024

Isabelle Albert, AICP

Isabelle has more than 25 years of experience with urban planning, zoning, and the public hearing process. She provides professional services related to land use issues, special and conditional uses, as well as zoning, community planning, subdivision regulations, and growth management regulations. Her previous experience as Principal Planner for Hillsborough County provides a unique understanding of local planning issues.

ROLE

Due Diligence Lead

EXPERIENCE

25 Years

EDUCATION

BS, Urban & Regional Planning & Co-op Program

REGISTRATION

American Institute of Certified Planners, No. 030904

REPRESENTATIVE PROJECT EXPERIENCE

Escambia County Comprehensive Plan Review, Escambia County, FL. Project Manager responsible for assisting in the data and analysis of the County's Comprehensive Plan, land use, zoning, population growth, existing residential development and the consideration for new residential development within the rural areas of Escambia (comprised of +/- 60% of the land). Analysis of the County's agricultural land, businesses and economy played a vital factor in determining where the County could potentially direct growth while preserving these agricultural lands within the rural area. Halff provided suggested revisions to their Comprehensive Plan and presented to the general public through workshops as well as the County's Planning Agencies.

Walden Lake, Plant City, FL. Prepared conceptual master planning of the Walden Lake Golf and Country Club located in the City of Plant City. The 2,060-acre development is located at the southeast of Turkey Creek Road and Sydney Road. The golf course is approximately on 290-acres surrounded by Walked Lake Community Unit District. The project consists of redevelopment of the terminated golf course area with a community that includes a variety of housing styles and a mixed-use town center.

Hillsborough County School Board, Tampa, FL. Coordinated analysis of two sites located in Hillsborough County for an interlocal agreement for school facilties planning, siting, and concurrency report.

Firestone/Bloxham Redevelopment, Tallahassee, FL. Coordinated redevelopment project for the 5.3-acre site mixed-use development (residential, commercial, hotel). Required master plan and firm-base site design.

Pinecrest Land Property, Tampa, FL. Coordinated development project for a +/- 164-acre school site in Riverview, Florida. Project required zoning amendment and school siting analysis.

Brandon Main Street, Brandon, FL. Coordinated redevelopment project for a +/- 56-acre site mixed-use development (residential, commercial, open space). This project required a master plan and zoning amendment including crafting Traditional Neighborhood Design guidelines.

© Halff - 2024

Brice Pinson

Brice has nine years of experience in A/E marketing for public- and private-sector clients throughout Florida. She transitioned into an urban/community planning role, providing professional services related to zoning and land use issues, community planning, real estate due diligence, and growth management regulations. Brice also leads many of Halff's public involvement meetings, giving her the insight into what policies will be best for Edgewater stakeholders.

ROLE
Urban Planning Support

EXPERIENCE
9 Years

EDUCATION
BS, Information, Community and Technology

REPRESENTATIVE PROJECT EXPERIENCE

Harney Road Townhomes, Hillsborough County, FL.
Project Planner responsible for assisting with the application for a Major Modification to a Planned Development for a 9.83-acre property to permit a wireless communication facility onsite. The application consisted of preparing a zoning site plan, preparing a planning report with supporting graphics to provide justification for the modifications, and presenting the petitions to the Zoning Hearing Master and Board of County Commissioners.

Escambia County Comprehensive Plan Review, Escambia County, FL.
Project Planner responsible for assisting in the data and analysis of the County's Comprehensive Plan, land use, zoning, population growth, existing residential development and the consideration for new residential development within the rural areas of Escambia (comprised of +/- 60% of the land). Analysis of the County's agricultural land, businesses and economy played a vital factor in determining where the County could potentially direct growth while preserving these agricultural lands within the rural area. Halff provided suggested revisions to their Comprehensive Plan and presented to the general public through workshops as well as the County's Planning Agencies.

Riverview Landing, Riverview, FL.
Project Planner responsible for assisting with the application for a Planned Development rezoning to develop the 9.45-acre site with 92 townhomes. The application consisted of assisting the client with updates to the rezoning site plan, preparing a planning report with supporting graphics to provide justification for the rezoning and presenting the petitions to the Zoning Hearing Master and Board of County Commissioners.

Walden Lake, Plant City, FL.
Project Planner responsible for assisting with a modification to a portion of the existing 2,080-acre Walden Lake Planned Development. The subject parcels encompass approximately 319.22-acres and were developed as a currently abandoned golf course and country club. The community's feedback at various meetings and surveys, as well as comments received by reviewing agencies, yielded a plan that is proposed to develop up to 743 residential units along with a mixed-use Village Town Center. This project has consisted of the production of several conceptual plans, neighborhood meetings, discussions with City staff and coordinating with land use attorney's, public outreach professionals and more.

© Halff - 2024

Lara Diettrich

Lara is the Senior Planner and Project Manager for Halff's Land Planning Services in the Northeast Florida region. With over 24 years of professional experience, she has worked on a wide range of urban, rural, and regional planning projects across Northeast Florida and other areas in the state. Lara's extensive background includes experience in both the public and private sectors. Notably, she has served as the planning consultant for the Florida Army National Guard's Readiness Centers statewide. These services include but are not limited to: Comprehensive Plan and Zoning Code/ Land Development Regulation management, application, and updates; Community Redevelopment Area planning and implementation; economic development initiatives; charrette and community outreach facilitation; urban infill, new development, and redevelopment; expert witness testimony; and public hearing representation.

ROLE

Land Use and Redevelopment Lead

EXPERIENCE

24 Years

EDUCATION

MA, Public Administration, Policy, and Analysis, University of North Florida

BA, Political Science University of North Florida

REPRESENTATIVE PROJECT EXPERIENCE.

Community Redevelopment Area (CRA) Planning, Northeast, FL. Having established CRA's throughout Northeast Florida by conducting community outreach meetings and charettes, performing the due diligence to create the Finding of Necessities, preparing the CRA Plans, creating the Tax Increment Finance Trust Funds, presenting them to public administration elected and appointed bodies; implementing and management of the CRA Plans and their priorities; and either updating or sunsetting the Plans based upon revenue generation success, life of Plan expiration, or wanting to continue the Plan.

Kanine Social, The Block, Jacksonville, FL. Planned, designed, and engineered an indoor/outdoor dog park and dog bar with dog boarding and grooming facilities, pop up restaurants, two-story mezzanine and bar with large, covered pavilion for music and festivals, with multiple parks for family and friends, with private and restricted access dog parks.

Raydient Places + Properties, Nassau County, FL. Full-service master planning, design, engineering, hydraulic and hydrological modeling for large tracts of land ranging from 500-3,000-acre sites for residential and equine estates throughout North Florida and Texas.

Georgia-Pacific Palatka, LLC, Palatka, FL. Expansion of industrial and warehouse facilities in Putnam County that include survey and combination of parcels, recording of land, exemption of subdivision of newly created parcels, rezoning, site planning and civil engineering.

Florida Power & Light Company Solar Voltaic Facilities, Northeast FL. land planning, team coordination support, permitting, public outreach, public hearing representation for multiple solar voltaic facilities exceeding 800+ acres and 300,000 solar panels in Nassau and Baker Counties.

Sawgrass Village Town Center, Ponte Vedra, FL. Redesign and redevelopment of a legacy town center in the heart of Ponte Vedra at the entrance of the Marriott Sawgrass and the PGA Tour Headquarters involving strategic outreach and guidance with multiple property associations, business owners, and stakeholders to reimagine the layout, access, and infrastructure of the mixed-use development.

© Halff - 2024

Mike Mudd, RPA

Mike brings experience in Archeology and Cultural Resource Management (CRM), a strong background in environmental consultation, and a thorough knowledge of the regulatory policies for various environmental disciplines. His CRM projects have been in conjunction with roadway, railroad, pipeline, transmission line, water line, and other commercial construction projects under the purview of NEPA, Section 106 of the National Historic Preservation Act, and the Texas Antiquities Code. He meets the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation, is a Registered Professional Archaeologist (RPA) and is Texas Department of Transportation (TxDOT) pre-certified for Archeological Surveys, Documentation, Excavation and Testing Reports.

ROLE
Environmental

EXPERIENCE
19 Years

EDUCATION
MA, Anthropology/Archaeology, Texas State University

BA, Cultural Anthropology, Texas State University

REGISTRATION
Professional Archaeologist, TX No.44090906
(Obtained 2017)

REPRESENTATIVE PROJECT EXPERIENCE

Trinity River Authority (TRA), Ten Mile Creek Erosion Design & Preliminary Design Report, Ferris, TX. Cultural Resources Task Lead for this project that involved the design of erosion protection at the TM6 Pipeline crossing along Ten Mile Creek and a preliminary design report for the relocation of the TMCRWS Effluent Discharge Outfall. Scope included rock riprap slopes and chute underneath the crossing to stabilize the channel as well as construction administration services.

City of Belton, South Belton Sewer Interceptor Phases II and III, Belton, TX. Cultural Resources Survey Task Lead responsible for an intensive pedestrian survey of new sewer line under purview of the Antiquities Code of Texas. His role included project management, scope development, background research, Texas Antiquities Code coordination with THC, conducting archaeological field investigations, and authoring the archaeological survey report.

City of Fort Worth, Marine Creek Parallel Sanitary Sewer Interceptor M-365, Fort Worth, TX. Cultural Resources Task Lead for this project that involved developing plans and specifications for the replacement of 7,600 lf of existing 36-, 30-, 21- and 18-inch sanitary sewer interceptor at Marine Creek. Halff monitored existing flows to develop the design flows. Phase II of the improvements will begin at the dead end of Ten Mile Bridge Road at the Marine Creek Reservoir and continue to the northwest where it will connect to Phase I of the improvements, currently under construction.

City of Grand Prairie, Tarrant Road, Grand Prairie, TX. Cultural Resources Task Lead for this project that involved paving design, grading, drainage, water and sanitary sewer relocations, and traffic control plan for approximately 900 lf of Tarrant Road at Arbor Creek. The roadway profile was adjusted to alleviate flooding in frequent storm events and required the addition of a bridge and retaining walls. The scope also included sidewalks, driveway replacement, lighting, and utility coordination.

© Halff - 2024

Annie Carter

Annie is a teamwork-oriented, cultural resource management archeologist with over a decade's worth of survey and excavation experience. In addition to her knowledge of archeological research, Annie has strong leadership experience from working as crew chief on a variety of projects with multiple firms.

ROLE
Historic Preservation

LOCATION
Austin, TX

EXPERIENCE
12 Years

EDUCATION
BA, Anthropology, New College of Florida

MS, Disaster Science & Management

REPRESENTATIVE PROJECT EXPERIENCE

Lake Denham Trail PD&E, Leesburg, FL.
Construction of a 15 ft paved multi-use, non-motorized bicycle, pedestrian, equestrian trail from a trail head at 1311 West Main Street, south west along the abandoned railroad bed, across Magnolia Trail, continuing south west, then south to CR 25A, past Owens Rd and the Flat Island Preserve then south along US 27 to CR 33, then south west along CR 33 to SR 48 then along SR 48 to the Lake-Sumter County Line.

City of Austin, Urban Trails-North Walnut Creek, Austin, TX.
This project involved planning and designing services for approximately 8.2 miles of a limited access shared-use path that connects the existing Southern Walnut Creek Trail system to newly constructed portions to the west of IH 35 in Austin, Texas. This multi-use urban trail completes an active transportation loop around the City's core, which is critical to connecting a significant portion of Austin's population to area neighborhoods, community nodes and other bicycle and pedestrian facilities. A feasibility assessment was conducted of the current proposed alignment, design services, bidding services, construction management services and post-construction services.

City of Frisco, Dominion Trail Phase 2, Frisco, TX.
This project involved renovations to 1.25 miles of a neighborhood wilderness trail in Frisco, Texas. Located in the Dominion housing division, the trail was widened from 8-10 feet to 12 feet to accommodate a shared-use path and connect multiple neighborhoods together. Because the trail was located on a large floodplain, three bridge crossings, 270 feet of boardwalk, retaining walls and handrails were installed to verify safety for pedestrians and protection of the floodplain. Halff performed extensive hydraulic analysis, flood risk analysis, surveying and environmental site analysis to verify grading design and location of the trail were conducive to the floodplain.

Texas General Land Office, LRGV Pedestrian Egress Study, Weslaco, TX.
Project Archaeologist responsible for evaluating how populations in vulnerable, flood prone areas can evacuate to shelters on foot or alternative means of mobility, during a high-rainfall, flash flood, and high-tide events. Project includes the collection and assessment of land use, mobility networks, transportation infrastructure, socioeconomic data, traffic count and emergency responder data.

© Halff - 2024

Adrienne Burke, AICP, ESQ

Adrienne is a certified planner and licensed attorney who brings 16 years of experience in local government and nonprofit management, budgeting, and leadership in the areas of land use planning and historic preservation. She has served as a planner and Planning Director for several local governments in Florida, including Nassau County. Her expertise is in cultural and natural resource policy, as well as land development code and comprehensive plan management. Preservation specialties include cemeteries, African American history, and resilience.

ROLE

Historic Preservation Legal Lead

EXPERIENCE

16 Years

EDUCATION

JD, University of Florida

MS, Architectural Studies, University of Florida

BA, History, University of Virginia

Advanced Oral History Summer Institut, University of California Berkeley

Native American Studies Graduate Certificate (In Progress), Montana State University

REGISTRATION

American Institute of Certified Planners (AICP), FL No. 31190

Florida Bar No. 50602

COMMUNITY PLANNING COLLABORATIVE

REPRESENTATIVE PROJECT EXPERIENCE.

Nassau County, American Beach Neighborhood Planning, Nassau County, FL. Designated to the National Register of Historic Places in 2002, American Beach is a historic beach resort developed by and for African Americans in 1935 that emerged as a popular destination for vacationers during segregation. As part of Nassau County staff, experience includes leadership in facilitating strategic planning to identify strategies to protect and highlight the historic character of the community, as determined by the neighborhood in a community-driven process. Extensive community outreach around planning, zoning and historic preservation options, surveying residents, initiation of a Community Redevelopment Area, and changes to the zoning code were a part of the planning efforts. Currently serves as consultant to Nassau County to continue American Beach planning implementation efforts.

Jacksonville Downtown Investment Authority, LeVilla Cultural Heritage Trail, Jacksonville, FL. Founded in 1866, LaVilla is the oldest urban Black community in the state and a key contributor to the country's early ragtime, blues and jazz music genres. Negatively impacted by redlining, urban renewal and facing development pressure, the LaVilla Heritage Trail and Gateway project was launched in May 2022. Community Planning Collaborative was selected to assist in implementation of the Cultural Heritage Trail plan. Community Planning Collaborative was selected to assist in implementation of the Cultural Heritage Trail plan. The Community Planning Collaborative team includes Carla Jones and Erin Kendrick to assist with storytelling, marketing, branding, and artistic vision. The project includes creation of a trail implementation strategy that will include video, public art and banners, developing the trail's physical markers, historical narrative work, and technical coordination for bidding, fabrication and installation.

Florida Chitlin' Circuit Group, Chitlin' Circuit Historic Research and Documentation Project, Various Sites, FL. The Chitlin' Circuit was the collective name given to a series of Black-owned nightclubs and entertainment venues that were safe and acceptable for African American entertainers to perform in during segregation. As consultant to the Florida Chitlin' Circuit Group, a collective of African American Florida Main Street communities, served as the lead for a historic research and documentation project evaluating Chitlin' Circuit venues in St. Petersburg, Fort Pierce, Jacksonville, and Eatonville. The project involved extensive historic research and resulted in a completed narrative report with associated imagery and resources.

© Halff - 2024

Ennis Davis, AICP

Ennis brings over 22 years of experience in the preservation, cultural heritage, architectural design, real estate development and planning fields. Mr. Davis has served as a project manager, consultant and urban planner on numerous projects throughout Florida and the Southeastern United States. He currently serves as Vice-President for the Florida Trust for Historic Preservation. Mr. Davis is also the author of award-winning books Reclaiming Jacksonville, Images of Modern America: Jacksonville, and Cohen Brothers: The Big Store.

ROLE

Historical Preservation Technical Lead

EXPERIENCE

22 Years

EDUCATION

B. Architecture, Florida A&M University

REGISTRATION

American Institute of Certified Planners (AICP), FL No. 026224

COMMUNITY PLANNING COLLABORATIVE

REPRESENTATIVE PROJECT EXPERIENCE.

Nassau County, American Beach Neighborhood Planning, Nassau County, FL. Served as part of the team on the American Beach Cultural Heritage Experience Enhancement Initiative, completed in 2021. Initiative goals included capturing the essence of the community, protecting the sense of place, honoring the rich cultural heritage of the community and authentically telling the story of American Beach through the built and natural environment. Tasks included extensive community engagement, cultural heritage planning, long-range planning, historic preservation, parks, placekeeping, resilience and transportation planning strategies. Currently serves as consultant to Nassau County to assist with Initiative implementation efforts.

Jacksonville Downtown Investment Authority, LeVilla Cultural Heritage Trail, Jacksonville, FL. Founded in 1866, LaVilla is the oldest urban Black community in the state and a key contributor to the country's early ragtime, blues and jazz music genres. Negatively impacted by redlining, urban renewal and facing development pressure, the LaVilla Heritage Trail and Gateway project was launched in May 2022. Community Planning Collaborative was selected to assist in implementation of the Cultural Heritage Trail plan. Community Planning Collaborative was selected to assist in implementation of the Cultural Heritage Trail plan. The Community Planning Collaborative team includes Carla Jones and Erin Kendrick to assist with storytelling, marketing, branding, and artistic vision. The project includes creation of a trail implementation strategy that will include video, public art and banners, developing the trail's physical markers, historical narrative work, and technical coordination for bidding, fabrication and installation.

Florida Chitlin' Circuit Group, Chitlin' Circuit Historic Research and Documentation Project, Various Sites, FL. The Chitlin' Circuit was the collective name given to a series of Black-owned nightclubs and entertainment venues that were safe and acceptable for African American entertainers to perform in during segregation. As consultant to the Florida Chitlin' Circuit Group, a collective of African American Florida Main Street communities, served as the lead for a historic research and documentation project evaluating Chitlin' Circuit venues in St. Petersburg, Fort Pierce, Jacksonville, and Eatonville. The project involved extensive historic research and resulted in a completed narrative report with associated imagery and resources.

© Halff - 2024

Kathleen Kauffman

Kathleen has extensive experience in tax credit applications, grant writing, cultural resource surveys, designations, and National Register nominations. They meet the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology, history, architecture, architectural history, or historic architecture. Their clients include the Miami-Dade Expressway Authority, Treasure Coast Regional Planning Council, Fort Partners Development Firm, Barry University, Miami-Dade County Parks and Recreation, the City of Lake Worth, and the City of Delray Beach.

ROLE
Historical Preservation

EXPERIENCE
29 Years

EDUCATION
B. Architecture,
Florida A&M University

REPRESENTATIVE PROJECT EXPERIENCE.

Historic Preservation Chief
- Miami-Dade County | 2008-2017

Historic Preservation Officer
- City of Miami | 2005-2008

Executive Director
- Florida Trust for Historic Preservation, Tallahassee, FL | 2003-2005

Historic Preservation Officer/Urban Designer
- City of Fort Pierce, FL | 2000-2003

Historic Preservation Officer/Assistant Town Manager
- Town of Lake Park, FL | 1999-2000

Historic Sites Specialist
- FL Department of State, Bureau of Historic Preservation | 1997-1999

Joe Loretta, PLA, LEED®AP BD+C

Joe Loretta has 24 years of experience in the field of expert witness/ litigation support services. His current position is the operations manager for the Jacksonville Office of Halff. Joe's primary responsibilities include internal project management, land planning, regulatory and engineering analysis and cure determination. His team is known for high quality graphics and work product which assists the attorney and appraiser during mitigation and trial. Joe has been deposed and has testified in court and as vast experience with public and private sector clients. He has managed the right-of-way services for more than 300 public sector parcels and has been involved with more than 30 other private sector eminent domain acquisitions.

ROLE
Community Development & Redevelopment

EXPERIENCE
25 Years

EDUCATION
BA, Landscape Architecture, Kansas State University

REGISTRATION
Professional Landscape Architect - Florida No. LA6666755

CERTIFICATIONS
LEED AP Building Design+Construction

REPRESENTATIVE PROJECT EXPERIENCE

Hogans Creek Stream Restoration and Trail, Jacksonville, FL.
Lead designer and landscape architect on the 30% design plans for the 2.5-mile Hogans Creek restoration, recreation plan, and trail master plan. The project includes a natural restoration of Hogans Creek, utilizing multiple natural vegetated design cross-sections within the overall corridor. The plan will include a trail master plan for Hogans Creek, associated with the 30-mile segment of the Emerald Trail.

Adaptation Action Area Working Group, Jacksonville, FL.
Served as a mayoral appointed member on the City of Jacksonville's Adaptation Action Area (AAA) Working Group. The purpose of designating an AAA was to prioritize funding and resources for infrastructure needs and adaptation planning.

Cascades Trail & Park, Tallahassee, FL.
Design Landscape Architect involved in the planning and design of the Capital Cascades Trail and Park. Responsibilities included community involvement, trail master planning, conceptual through detail design plans for hardscape and landscape areas throughout the park. The Capital Cascades Trail Master Plan addressed a comprehensive program for new passive recreation development and extensive stormwater management facilities in a 5.2-mile corridor through downtown Tallahassee's Southeast quadrant.

City of Jacksonville, Design Build Parks, Jacksonville, FL.
Served as the primary park designer and landscape architect for 4 park projects in the City of Jacksonville, including Pickwick Park, Ivey Road Park, Archie Dickenson Park, and Earl Johnson Park. Led community visioning charrettes through construction documentation. Currently the project manager over the landscape architecture and hardscape design for three COJ Design Build Parks that are currently ongoing. These include the Downtown Jacksonville Musical Park, an update to the St. Johns Park which surrounds the redevelopment of Friendship Fountain, and Freedom Park. There are significant stormwater and resiliency components to each of these City park projects.

© Halff - 2024

Laura Duplain, PLA

With more than 17 years of experience in the landscape architecture industry, Laura has managed numerous continuing service contracts for local municipalities across Florida. Serving as a Project Manager, she has led projects diverse sizes and types, including streetscape enhancements, park revitalization efforts, residential communities, and commercial projects.

ROLE

Recreation Master Planning Lead

EXPERIENCE

17 Years

EDUCATION

BS, Landscape Architecture, Ohio State University

REGISTRATION

Registered Landscape Architect, Florida No. 6667408

REPRESENTATIVE PROJECT EXPERIENCE

Navarre Park, Santa Rosa County, FL.

Landscape Architect for the two-acre park along the Santa Rosa Sound, reprogramming it to include seating, a kayak launch, playground, splash pad, picnic shelters, trellis swings, walking paths, and updated ADA access. In addition to creating a multi-use space for festivals and farmer markets. Project involved enhanced landscape design, designing gateway signage, preservation of historic signage and memorials, and assisting with decorative pavement treatment and site furnishings.

Benny Russell Park, Santa Rosa County, FL.

Landscape Architect responsible for overseeing and helping prepare and provide permitting plans, illustrative graphics, irrigation plans, and enhanced landscape design. This project involved the expansion of the 30-acre existing park to provide a world-class recreational experience. The park master plan was divided into four phases encompassing additional parking, restroom facility, picnic pavilions, site furnishings, multi-purpose sport fields, fitness zone, play area, interactive splash pad, and a multi-use trail weaving through the expansive tree preservation area.

SR 30 (US 98) from SR 61 to St. Mark's Trail Landscaping, FDOT District 3, Wakulla County, FL.

Provided landscape improvements along a recently constructed multi-use trail beginning at Wakulla High School extending east approximately 12 miles terminating into the historic St. Mark's Trail. Trail crossed through forested rural areas, in front of businesses, residences, a boat launch, and crossed US 98 at multiple locations. Landscape design focused on providing safety for the users by utilizing selective clearing to not only remove nuisance and exotic species from the site but to improve visibility and therefore increase safety for the users. Safety was also considered at trail crossings as plantings were used to alert users of potential pedestrian/vehicular conflicts. Fall color and wildflower areas along the trail to visual interest. Project involvement included landscape design, preparation of construction documents and submittal packages as well as monitoring project schedule and budget and incorporating concerns of client and other stake holders.

Paradise Blvd Streetscape Improvements, Treasure Island, FL.

Paradise Blvd has experienced recurring storm and tidal flooding, prompting the City to seek a resilient plant palette based on residential input. Laura, as project manager, has closely collaborated with the City to develop a plant palette and create two conceptual designs for gathering residential feedback via in person public meetings. These designs prioritizes FDOT safety criteria and address resident and maintenance safety concerns.

© Halff - 2024

Dave Muntean, Jr., PE

Dave is experienced in transportation engineering, planning, and project management experience with particular emphasis on traffic operations analyses, crash analysis, intersection and roadway safety improvements, corridor studies, DRI/traffic impact studies and review, origin-destination studies, ITS Project Management, expert testimony, and numerous data collection studies. He has managed multidisciplinary teams on major and minor infrastructure projects and led workshop sessions with governmental agencies regarding roadway, data collection, analyses, and safety recommendations.

ROLE
Recreation Master Planning

EXPERIENCE
39 Years

EDUCATION
BS, Civil Engineering, Virginia Polytechnic Institute and State University

REGISTRATION
Professional Engineer, FL No. 43368

REPRESENTATIVE PROJECT EXPERIENCE

Capital Region Transportation Planning Agency (CRTPA), Congestion Management Plan Update, Tallahassee, FL.

Senior Traffic Engineer for evaluating safety issues with an emphasis on fatalities and serious injury crashes for the region's top 10 rural and top 10 urban worst roadway segments as well as the top 10 worst intersections. Crash data were analyzed and potential countermeasures/ solutions likely to resolve problem crash types were identified for each location. Various elements of safety were involved, including, but not limited to, access management, signal operations, pedestrians, high speeds, roadway geometry, roadway maintenance, sight distances, and failure to obey traffic control.

Blueprint Intergovernmental Agency, Airport Gateway LOA 2 Traffic Study, Tallahassee, FL.

Senior Transportation Engineer responsible for evaluating transportation safety improvements on rural and urban facilities for 24 intersections over seven miles within City of Tallahassee and Leon County between the Tallahassee International Airport and the Downtown Tallahassee area. Dave directed turn movement count (TMC) data, then observed on-site intersection operations, reviewed existing intersection Synchro traffic models entered into the traffic controllers by the City, then conducted intersection LOS analyses for AM and PM traffic conditions to evaluate conceptual operational and physical intersection design alternative improvements. Other tasks also included researching other available traffic data, related design services, and report documentation.

City of Groveland, Groveland Professional Engineering Services, Groveland, FL.

Halff has been providing continuing services to the City of Groveland since 2017. Dave's involvement focuses on conducting miscellaneous transportation/traffic-related peer review services on an as-needed basis for submitted traffic impacts studies, access management studies/ permits, safety studies, roadway/intersection studies, traffic signal design plans, and methodology reports. Related services also include meetings with relevant parties to the project, documentation, research, transportation/traffic analyses, status reports and summaries, client coordination, and project management.

© Halff - 2024

Lisa King, GPC

Lisa has more than 33 years of experience in providing grant writing and grant administration consulting services to local governments in Florida. She is specialized in projects related to the life cycle of water, transportation, and resilience including emergency management and mitigation. **Lisa has successfully obtained over $300 million in grants to Florida local governments.**

ROLE
Grant Funding Strategy Lead

LOCATION
Jacksonville, FL

EXPERIENCE
33 Years

EDUCATION
BA, Political Science, Stetson University

REGISTRATION
Grant Professional Certified, Grant Professional Certification Institute

REPRESENTATIVE PROJECT EXPERIENCE

Pasco County Grant Consulting Services, Pasco County, FL.
Lisa has been providing comprehensive grant writing services since 2019. Funding Resource Strategy development. Highlights of successful projects include: Multiple applications for HMGP stormwater and drainage projects. CDBG-MIT and BRIC applications for critical facility hardening. Technical assistance on HLMP. Technical assistance on American Rescue Plan and Infrastructure Investment and Jobs Act funding. (Dollar value of project: various).

City of Panama City Grant Consulting Services, Panama City, FL.
Lisa has been providing comprehensive grant writing services since 1992. Funding Resource Strategy development. Highlights of successful projects include: Resilient Florida Vulnerability Assessment, Environmental land acquisition of three parks (Oaks by the Bay, Venetia Sunset and Sweetbay Wetlands Preserve) Multiple park development projects through FRDAP, CPI and LWCF programs. Restoration of historic properties such as the McKenzie House and Panama City Publishing Company, Multiple planning efforts funded through CPI and DEO's CPTA. Technical assistance on BRIC, CDBG-DR and CDBG-MIT. Technical assistance on American Rescue Plan and Infrastructure Investment and Jobs Act funding. (Dollar value of project: various).

Seminole County Grant Consulting Services, Seminole County, FL.
Lisa has been providing comprehensive grant writing services since 2014. Funding Resource Strategy development. Highlights of successful projects include: Multiple HMGP projects associated with Hurricanes Matthew and Irma for drainage and stormwater projects. Applications for CDBG-MIT and BRIC. Pending applications for Resilient Florida Planning and Implementation and HMGP-COVID. Technical assistance on American Rescue Plan and Infrastructure Investment and Jobs Act funding. (Dollar value of project: various).

City of Arcadia Grant Consulting Services, Arcadia, FL.
Lisa has been providing comprehensive grant writing services since 2017. Highlights of successful projects include: Multiple HMGP projects associated with Hurricanes Matthew and Irma. Applications for CDBG-MIT Stormwater. Multiple successful Historic Preservation grant projects for building restoration planning and implementation. 1926 City Hall, vacant for 15 years being restored with grant funding. Pending application for FDEP Wastewater grant for WWTP replacement. (Dollar value of project: various).

© Halff - 2024

MULTIMODAL TRANSPORTATION PLANNING AND ANALYSIS

Tav-Lee Trail PD&E

City of Leesburg | Leesburg, FL

The Tav-Lee Trail begins at Canal Street and follows a route that is adjacent to US 441 on the north side, until it reaches Bentley Road just past Herlong Park. The Tav-Lee Trail Phase is generally divided into two sections for the purpose of this study. Section 1 begins at the intersection of US 441 with Canal Street at Station 0+00 and ends at CR44/Sleepy Hollow Road at Station 145+00. Section 2 begins at CR 44/Sleepy Hollow Road (Station 145+00) and ends at the end of the project near Lakes Boulevard (Station 350+50).

The purpose of this study is to provide all tasks necessary to obtain Federal Highway Administration (FHWA) approval under the National Environmental Policy Act for Tav-Lee Trail. Halff will analyze and assess the Project's impact on the social, economic, cultural, natural, and physical environment, in order to develop the location and design concept of the project in accordance with FDOT policy, procedures, and requirements.

Halff will review and become familiar with Project documents and materials that have been prepared prior to the PD&E phase. Halff will also review concepts and reports (e.g., typical sections, alignments, planning reports) developed from prior planning studies to adequately address potential resources of concern to this project.

Client Name: City of Leesburg

Contact Information:
Cliff Kelsey
cliff.kelsy@leesburgflorida.gov
352.435.9442

Project Name: Tav-Lee Trail PD&E

Project Location: Leesburg, FL

FDOT US-19 Connected Vehicle and SPaT Support

FDOT Central Office | Tallahassee, FL

This project involves providing Connected and Automated Vehicle (CAV) support, specifically including Signal Phase and Timing (SPaT) data, to the Florida Department of Transportation (FDOT). The ongoing effort aims to deploy a Connected Vehicle Traffic Signal System to broadcast SPaT and MAP data at 23 signalized intersections along US 19, from Beckett Way to Ulmerton Road, and at two intersections within the Traffic Engineering Research Laboratory (TERL) campus in Tallahassee, FL.

Client Name: FDOT Central Office

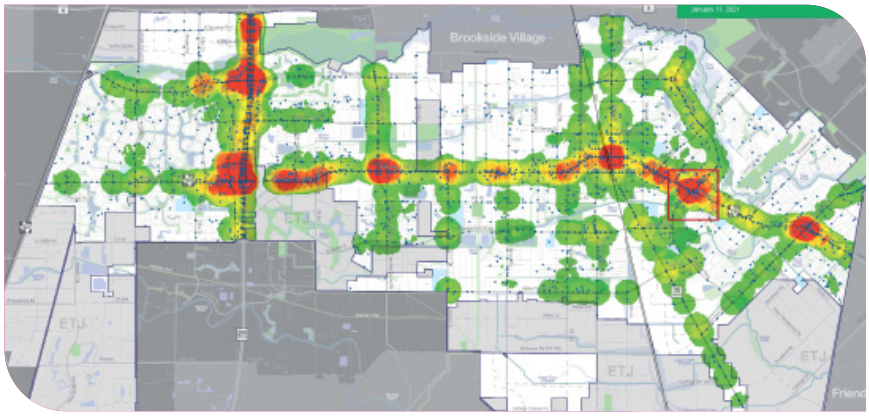
Contact Information:
Alex Brum
abrum@hntb.com
850.878.9777

Project Name: FDOT US-19 Connected Vehicle and SPaT Support

Project Location: Tallahassee, FL

Pearland Multi-Modal Master Plan

City of Pearland | Pearland, TX



Client Name: City of Pearland

Contact Information:
Jameson Appel
jappel@pearlandtx.gov
281.652.1757

Project Name: Pearland Multi-Modal Master Plan

Project Location: Pearland, TX

Halff formulated a multi-phased active transportation plan to provide safe and connected access from points of origin (neighborhoods and subdivisions) to critical destinations (schools, parks, commercial/retail centers). Pedestrian facilities were planned for over 25 principal thoroughfares to link together the City's key activity centers and consisted of a network of 10-foot wide and eight-foot-wide sidewalks and 10-foot wide off-street recreational trails.

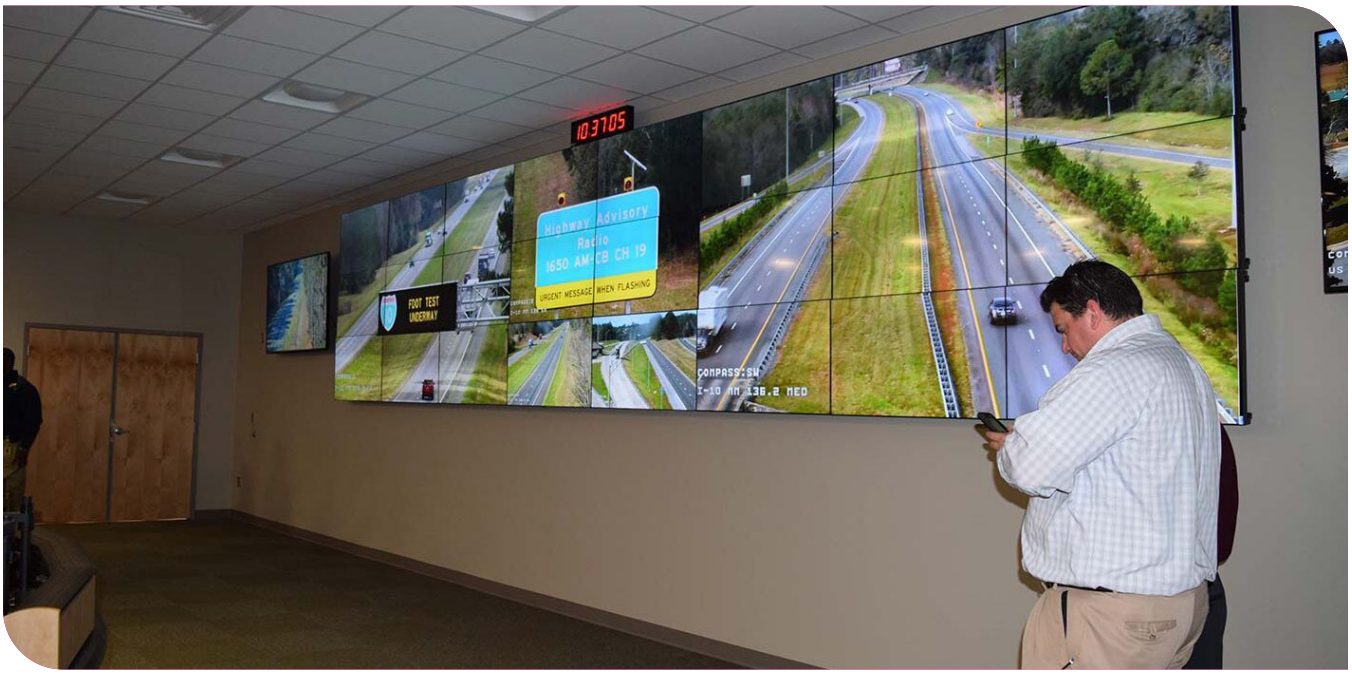
Halff professionals facilitated public engagement, analyzed existing conditions, as well as the City's thoroughfare and pedestrian facility standards and regulations, and formulated an active transportation plan consisting of several miles of sidewalks (10 feet wide and 8 feet wide) and off-street recreational trails.

Specific services Halff provided included facilitating a robust public engagement program; origin/destination analysis; corridor analysis; neighborhood analysis; regulatory analysis; connectivity analysis; pedestrian and bicycle level of service (PLOS) analysis for existing sidewalks and trails; and formulation of a multi-phased conceptual development plan; complete with an order of magnitude costs.

© Halff - 2024

Regional Fiber Optic Network/ITS Plans

FDOT District 3 | FDOT District 3



Halff completed the design of a $24 million fiber-optic network and ITS project along Interstate 10 and Highway 231 in north Florida. Designed as the largest rural ITS deployment in the United States at the time of its construction, this project expanded the ITS communication network from the Pensacola Freeway Management System to the Tallahassee Freeway Management System.

The scope of work included the design and installation of 223 miles of fiber optic, 189 cameras, eight highway advisory radio (HAR) stations, three roadway weather information stations (RWIS), 40 travel time systems (TTS), 19 dynamic message signs (DMS) and 141 microwave vehicle detection systems (MVDS) sensor deployment. Halff also completed the design for the construction of a new Regional Transportation Management Center (RTMC) with a new video wall, and provided construction plans and construction project management for the project.

This system provides FDOT real-time traffic information throughout the project limits to effectively manage incident response. Vehicle detection systems were designed to send alerts to the RTMC when traffic flow dropped below a threshold. The decrease in flow indicates an incident, such as debris on the highway or traffic collisions, which can be verified by CCTV cameras prior to dispatching the appropriate agency to assist in mitigating the conflict. Dynamic message signs and highway advisory radio are used to alert drivers of public safety and travel advisory information.

Client Name: FDOT District 3

Contact Information:
Amy DiRusso
Amy.Dirusso@DOT.State.FL.US
850.330.1241

Project Name: Regional Fiber Optic Network/ITS Plans

Project Location: FDOT District 3

© Halff - 2024

FAMU Way Planning & Design

City of Tallahassee | Tallahassee, FL

Halff completed traffic analyses, transportation planning, and roadway design for the FAMU Way Corridor which runs between the campuses of FAMU and FSU. The traffic analyses identified the anticipated operation and intersection needs along the corridor and included utilizing the CRTPA 2035 traffic model and projecting future traffic volumes. The transportation planning included recommendations such as turn lanes, vehicle storage requirements, intersection and throughlane segment configurations, and other operations and safety enhancements. Following the completion of the traffic studies and planning, Halff participated on the design team with City of Tallahassee staff to provide roadway design, signalization design, permitting, and stormwater design for the three phases of construction.

Client Name: City of Tallahassee

Contact Information:
Eric Houge
eric.houge@talgov.com
850.891.2858

Project Name: FAMU Way Planning and Design

Project Location:
Tallahassee, FL

AWARDS: FAMU Way (Phase I-Phase III) Civil Engineer + Structural Magazine - Yearbook of Engineering Achievement and Summit Award; FAMU Way (Phase I-Phase III) 2022 Project of the Year (Transportation More Than $25 Million Category); Florida Chapter of the American Public Works Association (APWA); 2021 American Council of Engineering Companies Florida Engineering Excellence Gold - Transportation; 2018 FAMU Way Phase 2 Roadway Improvements & Capital Cascades Trail Segment 3d-A, Project of the Year (Multifunction Category, Greater than $5 million), Big Bend Chapter of the American Public Works Association (AWPA); 2016 APWA Big Bend Chapter Project of the Year Award, Multi-Function Category.

© Halff - 2024

ECONOMIC ANALYSIS

Pinellas County (and Municipalities) Housing Market Assessment

Housing Finance Authority of Pinellas County | Pinellas County, FL

Client Name: Housing Finance Authority of Pinellas County

Contact Information: Unknown

Project Name: Pinellas County (and Municipalities) Housing Market Assessment

Project Location: Pinellas County, FL

STRATEGIC PLANNING GROUP INC. (SPG)

Pinellas County is Florida's most densely populated County. SPG prepared a comprehensive market grade and affordable/workforce housing assessment of the County and its 24 municipalities.

The study was organized into ten sections:

- Executive Summary
- Regional (MSA) Overview
- Pinellas County Municipal Housing Market Overview
- Pinellas County Residential Ownership Housing Supply and Demand
- Pinellas County Residential Rental Supply and Demand
- Pinellas County Market Conditions
- Pinellas County Needs Assessment
- Sustainability Factors
- Best Practices

Recommendations: The County is experiencing countywide housing affordability problems that are expected to increase over the decade. SPG recommends that the Housing Finance Authority focuses its existing resources in saving and renovating existing rental housing, especially existing affordable multifamily rentals. Given the current depressed housing market, the Authority may wish to consider land banking existing affordable units, either for inventory, or to aggregate land for the purpose of development of affordable/workforce multifamily housing.

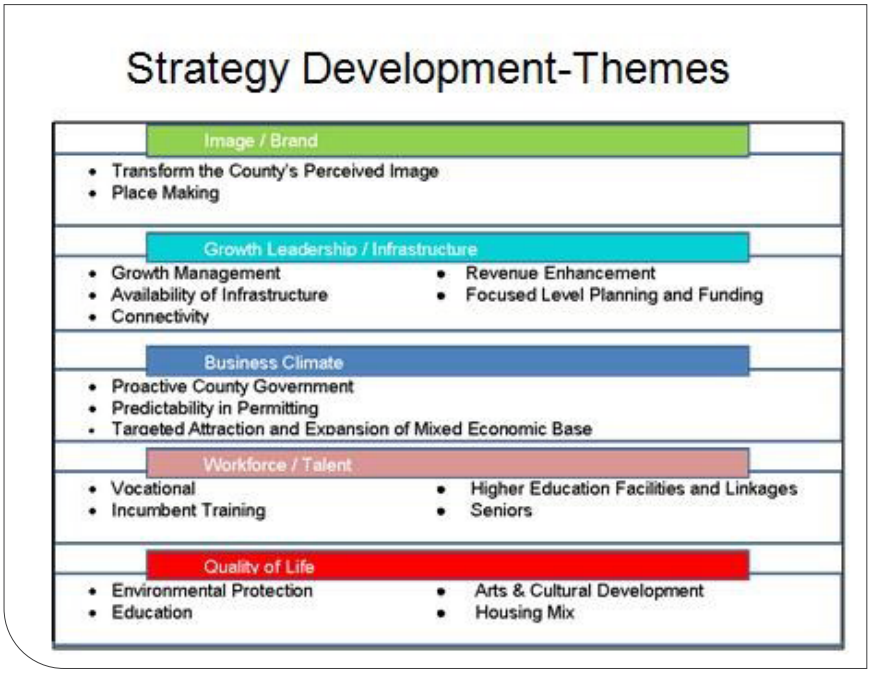
SPG recommends that the Authority take a major role and voice in working with other agencies to develop a holistic housing strategy to increase the overall density of housing, thereby, increasing the County's housing inventory, especially for affordable/workforce households. loss and a declining economy.

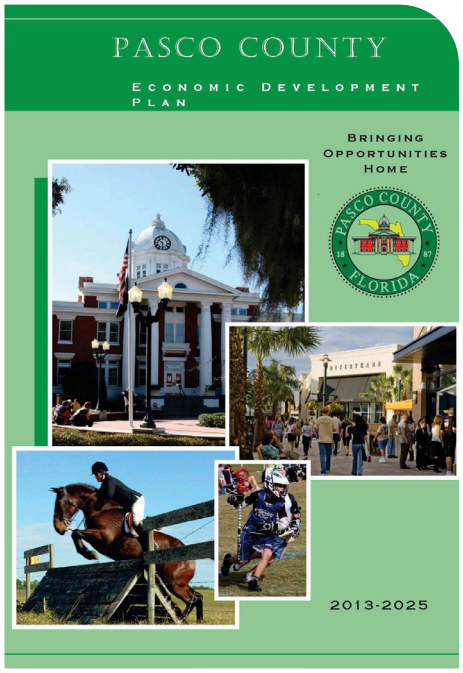
While the County has a large percentage of older housing, SPG recommends that programs involving rehabilitation and modernization be required to have a return on investment analysis to determine if the rehabilitation/modernization makes economic sense. Lastly, investments for modernization and/or new construction should focus on multifamily units, particularly in the 2-8 unit range, which will also assist in increasing overall density and inventory within the County. Because of stricter mortgage credit criteria, SPG recommends that the Authority continue its programs to educate perspective buyers as to how to build and maintain credit, but should limit providing direct financial assistance, as limited resources are better utilized on affordable/workforce rental housing. Given the age of County residents, age assistant housing (rental) should continue to be a major focus of Authority resources along with programs aimed at persons with special needs for which demand exceeds the capacity of the private sector market in meeting the housing needs of this population group.

© Halff - 2024

Pasco County Strategic Economic Development Plan

Pasco County | Pasco County, FL





STRATEGIC PLANNING GROUP INC. (SPG)

SPG

Pasco County, with a population of 475,000, is part of the Tampa, St. Petersburg, Clearwater MSA. The County had competing political opinions as to growth and economic development which resulted in a ULI lead assessment of the County. The ULI report called for major changes in how the County should implement and management is development efforts which in turn led SPG to be retained to develop the County's first complete Strategic Plan. The SEDP included not only County-wide Goals, Objectives and Actions but also divided the County into five (4) market areas with separate Goals, Objectives, and Strategic Actions for each of the Market Areas. The SEDP included numerous workshops and throughout the County as well as developing Countywide and Market Area Profiles, SWOT Analyses and a final Implementation Plan. The planning effort was used to assist the County in passing its Penny for Pasco ordinance.

Client Name: Pasco County

Contact Information: Unknown

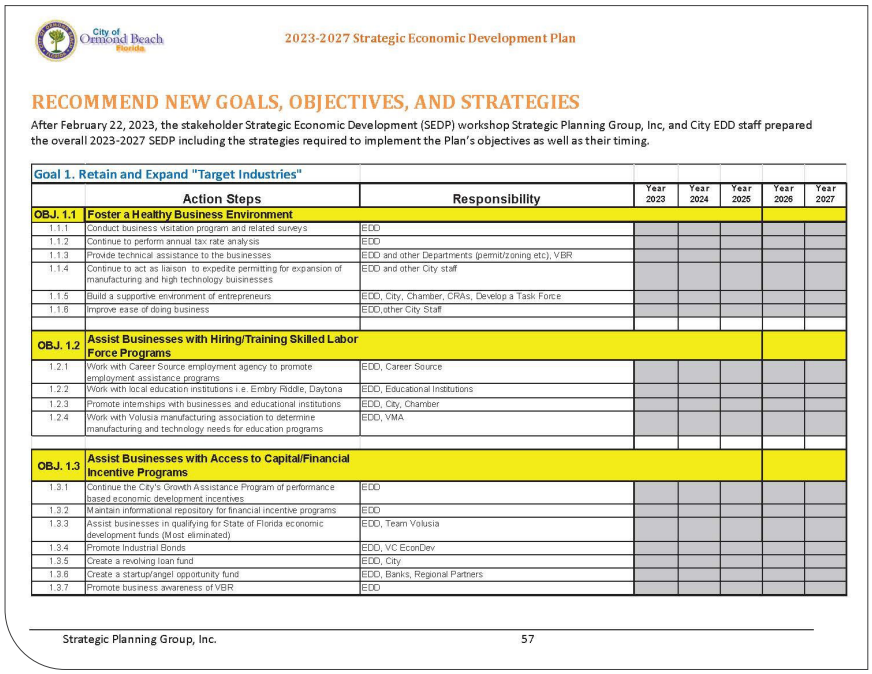
Project Name: Pasco County Strategic Economic Development Plan

Project Location: Pasco County, FL

© Halff - 2024

Ormond Beach Economic Development Strategic Plan

City Ormond Beach | Ormond Beach, FL



City of Ormond Beach Florida

2023-2027 Strategic Economic Development Plan

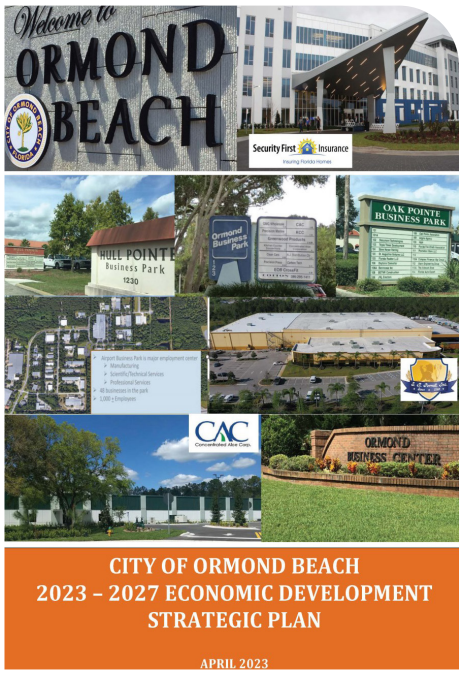
RECOMMEND NEW GOALS, OBJECTIVES, AND STRATEGIES

After February 22, 2023, the stakeholder Strategic Economic Development (SEDP) workshop Strategic Planning Group, Inc, and City EDD staff prepared the overall 2023-2027 SEDP including the strategies required to implement the Plan's objectives as well as their timing.

Goal 1. Retain and Expand "Target Industries"

	Action Steps	Responsibility	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
OBJ. 1.1	Foster a Healthy Business Environment						
1.1.1	Conduct business visitation program and related surveys	EDD					
1.1.2	Continue to perform annual tax rate analysis	EDD					
1.1.3	Provide technical assistance to the businesses	EDD and other Departments (permit/zoning etc); VBR					
1.1.4	Continue to act as liaison to expedite permitting for expansion of manufacturing and high technology buisinesses	EDD and other City staff					
1.1.5	Build a supportive environment of entrepreneurs	EDD, City, Chamber, CRAs, Develop a Task Force					
1.1.6	Improve ease of doing business	EDD,other City Staff					
OBJ. 1.2	Assist Businesses with Hiring/Training Skilled Labor Force Programs						
1.2.1	Work with Career Source employment agency to promote employment assistance programs	EDD, Career Source					
1.2.2	Work with local education institutions i.e. Embry Riddle, Daytona	EDD, Educational Institutions					
1.2.3	Promote internships with businesses and educational institutions	EDD, City, Chamber					
1.2.4	Work with Volusia manufacturing association to determine manufacturing and technology needs for education programs	EDD, VMA					
OBJ. 1.3	Assist Businesses with Access to Capital/Financial Incentive Programs						
1.3.1	Continue the City's Growth Assistance Program of performance based economic development incentives	EDD					
1.3.2	Maintain informational repository for financial incentive programs	EDD					
1.3.3	Assist businesses in qualifying for State of Florida economic development funds (Most eliminated)	EDD, Team Volusia					
1.3.4	Promote Industrial Bonds	EDD, VC EconDev					
1.3.5	Create a revolving loan fund	EDD, City					
1.3.6	Create a startup/angel opportunity fund	EDD, Banks, Regional Partners					
1.3.7	Promote business awareness of VBR	EDD					

Strategic Planning Group, Inc. 57



STRATEGIC PLANNING GROUP INC. (SPG)

SPG

Strategic Planning Group, Inc prepared the Ormond Beach Economic Development Strategic Plan update which was based on a community Vision Process to establish a five year strategic process for the City in 2023. This is the third SEDP prepared by SPG. **SPG continues to assist the City in the implementation of this plan.**

Client Name: City of Ormond Beach

Contact Information: Brian Rademacher, CEcD
Director of Economic Development

Project Name: Ormond Beach Economic Development Strategic Plan

Project Location: Ormond Beach, FL

Tarpon Springs Economic Repositioning Program

City of Tarpon Springs | Tarpon Springs, FL

Client Name: City of Tarpon Springs

Contact Information: Unknown

Project Name: Tarpon Springs Economic Repositioning Program

Project Location: Tarpon Springs, FL

STRATEGIC PLANNING GROUP INC. (SPG)

SPG

SPG/RMPK Group prepared the redevelopment plan for downtown Tarpon Springs. SPG was responsible for developing an economic repositioning strategy as part of the overall redevelopment planning effort. Other efforts included public participation/and meetings.

COMMUNICATIONS AND PUBLIC INVOLVEMENT

Resilient Pasco Project

Pasco County | Pasco County, FL

Halff continues to support Pasco County with the development of the Resilient Pasco Project, anticipated to be completed in Spring 2025. The project is a first-of-its-kind initiative for Pasco County that aims to develop a comprehensive resilience and sustainability strategy. The project's scope of work has included developing a risk and vulnerability assessment, living shorelines plan, and resilience and sustainability action plan.

Halff developed a living shorelines plan by evaluating the conditions of three coastal parks and developing construction plans to inform implementation. The plan also included extensive guidelines for informing the planning and implementation of living shorelines across both coastal and riverine areas of the county.

In June 2024, Halff facilitated eight workshops across Pasco County, including four public engagement workshops and four internal stakeholder engagement workshops comprised of government staff and private industry representatives.

Halff is currently in the final phase of the project, where a resilience and sustainability action plan comprised of 40 goals is currently being developed to guide implementation objectives over the next decade and beyond.

Client Name: Pasco County

Contact Information:
Amandla Hill
ahill@pascocountyfl.net
727.847.8140 x7319

Project Name: Resilient Pasco Project

Project Location: Pasco County, FL

© Halff - 2024

Zephyrhills Mobility Plan

City of Zephyrhills | City of Zephyrhills, FL

VRANA CONSULTING, INC

vranaconsulting

Vrana Consulting is involved in planning and engagement for this project, which includes multimodal strategies to move people and goods safely and efficiently throughout the greater Zephyrhills areas over the next 10 years. The plan identifies current and future-year traffic circulation needs in consideration of economic development, population growth, and neighborhood livability.

The plan aims to enhance safety, comfort, and function for all travel modes within key corridors; leverage agency partnerships to identify solutions that accommodate travel demand; and identify projects and policy amendments based on needs assessment, prior planning, and community input.

Tammy Vrana helped the City secure the $75,000 grant funding for this project.

All grant deadlines have been met and the project is on budget.

Client Name: City of Zephyrhills

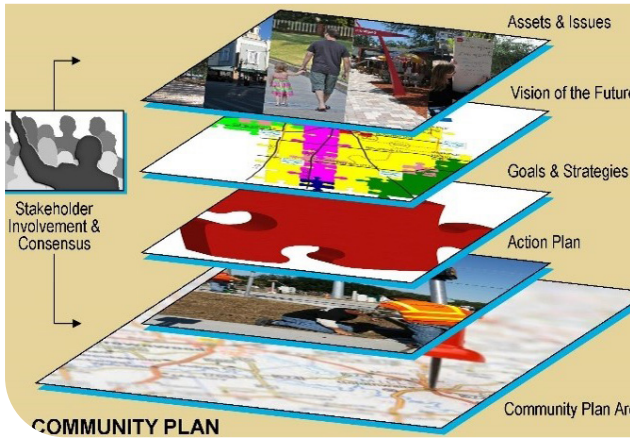
Contact Information:
Todd Vande Berg
tvandeberg@ci.zephyrhills.fl.us
813.780.0010

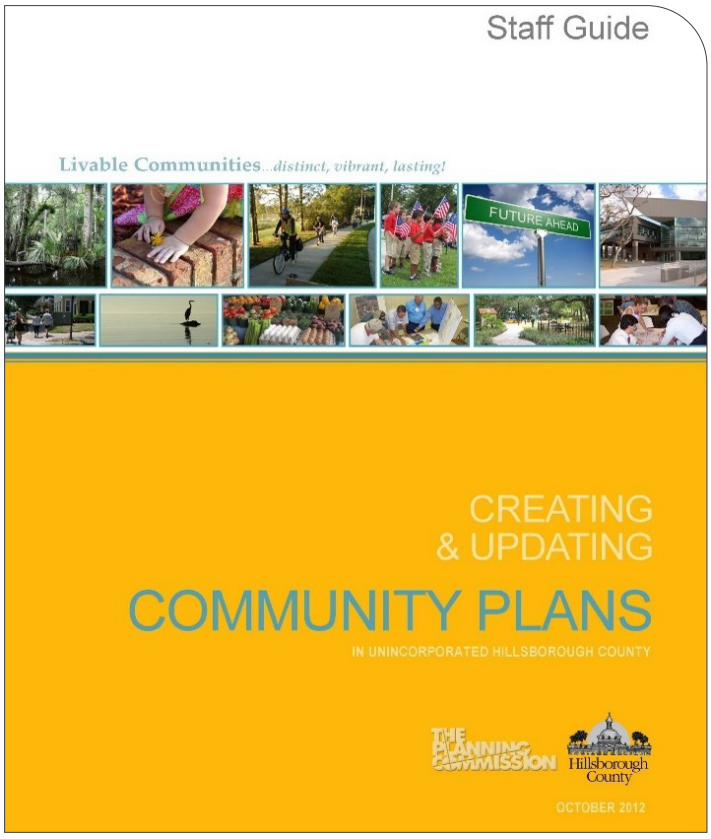
Project Name: Zephyrhills Mobility Plan

Project Location: City of Zephyrhills, FL

Guide to Creating & Updating Community Plans

Hillsborough County | Hillsborough County, FL





VRANA CONSULTING, INC

vranaconsulting

The Hillsborough County City-County Planning Commission and Hillsborough County Development Services Department collaborated on standardizing the process for creating new community plans and updating existing ones. The effort resulted in an award-winning best practices guide.

The process included a review of plans and processes created under the County's decade-long community planning program, research of best practices in community planning across the U.S., and key person interviews. Three community meetings were held, and two opinion surveys were distributed to learn about stakeholder preferences and insights.

Each new or updated plan will have an action plan that prioritizes strategies and assigns responsibilities and timeframes for plan implementation. These plans will also establish a basis for measuring progress over the plan period.

Client Name: Hillsborough County

Contact Information:
Lisa Silva, AICP, RLA
silval@plancom.org
813.625.6600

Project Name: Guide to Creating & Updating Community Plans

Project Location: Hillsborough County, FL

Resilient Pinellas Action Plan

Pinellas County | Pinellas County, FL

Client Name: Pinellas County

Contact Information: Hank Hodde, CFM, ENV SP
hhodde@co.pinellas.fl.us
727.464.3485

Project Name: Resilient Pinellas Action Plan

Project Location: Pinellas County, FL

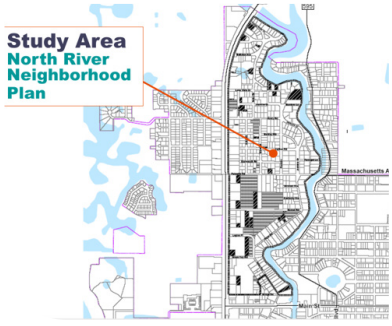
VRANA CONSULTING, INC

Pinellas County developed its first comprehensive sustainability and resiliency action plan, setting a foundation for all County policies and initiatives. Along with environmental considerations, the action plan prioritizes the economic and social case for environmental stewardship, community resiliency, hazard mitigation, and climate change adaptation, including cost savings and economic opportunity, and social equity.

Vrana Consulting led the external stakeholder engagement tasks including preparation of the engagement strategy and community opinion survey, performing community outreach to diverse populations and geographic communities, and establishing a Sustainability and Resiliency Advisory Committee for plan development and implementation.

Comprehensive Plan Evaluation & Update & As-Needed Planning Services

City of New Port Richey | New Port Richey, FL



Client Name: City of New Port Richey

Contact Information:
Debbie Manns
mannsd@cityofnewportrichey.org
727.853.1021

Project Name: Comprehensive Plan Evaluation & Update & As-Needed Planning Services

Project Location: New Port Richey, FL

VRANA CONSULTING, INC

Work on the city's Evaluation and Appraisal Report and Comprehensive Plan update was initiated with a community visioning workshop. Workshop exercises explored growth and development issues and opportunities and captured local preferences for future (re)development and urban design.

The workshop featured a visual preference survey (a series of images grouped by place-making element types and rated by workshop participants using a rating scale). Participants answered questions (What to preserve? What to improve? What to attract?) to guide development of sustainable neighborhoods and districts in the community. The input provided context for evaluation the city's land use and development policies and the foundation for a new Livable City Element and other major updates to the plan.

Vrana Consulting also provided as-needed planning services to the City. Tasks have included a neighborhood plan for one of the City's 19 delineated neighborhoods, Water Supply Facilities Work Plans (2), and a Future Land Use Map amendment solving for a development modification request in the CRA district and Coastal High Hazard Area.

© Halff - 2024

URBAN DESIGN

Cascades Park

Blueprint Intergovernmental Agency | Tallahassee, FL

The Capital Cascades Trail Master Plan addressed a comprehensive program for new passive recreation development and extensive stormwater management facilities in a 5.2-mile corridor through downtown Tallahassee's Southeast quadrant. Cascades Park, the centerpiece of this new green urban corridor, lies on a former EPA Superfund site and is a model for reuse of an abandoned industrial site for recreational uses and stormwater management.

Stormwater Management & Stream Restoration - The 25-acre Cascades Park is essentially a "floodable" park. The park is designed around the overarching stormwater retrofit master plan, providing much needed flood relief for this low-lying section of the Florida's Capital city.

Landscape Design - The landscape design was planned to define and enhance the network of outdoor use areas throughout the site. Landscaping, lighting, and emergency call stations are integrated throughout to verify safety for all.

Park Amenities - A 1,546-seat amphitheater, the Cascade Fountain waterfall; Signature bridges; Smokey Hollow (historic community) Commemoration; Korean War Memorial; Meridian Plaza; Discovery and Adventure Garden; an interactive fountain and water play area; 2.3 miles of trails; plus, many other park amenities.

Client Name:
Blueprint Intergovernmental Agency

Contact Information:
Wayne Tedder, AICP
wayne.tedder@talgov.com
850.891.8328

Project Name: Cascades Park

Project Location:
Tallahassee, FL

© Halff - 2024

Hogans Creek Stream Restoration and Trail Design

Groundwork Jacksonville, Inc. | Jacksonville, FL

GWJax contracted Halff to design the Hogans Creek stream restoration and trail project. Hogans Creek is a 2.6-mile tidal and freshwater creek that begins in the City of Jacksonville's Brentwood neighborhood, north of University of Florida's Health campus, and flows south through Springfield, the Cathedral District, and historical Eastside before discharging into the St. Johns River near the Shipyards. The restoration of Hogans Creek into a more natural waterway is a crucial part of GWJax's vision of a 30-mile Emerald Trail system of parks, trails, and waterways reconnecting historic neighborhoods in the heart of the city. Project goals include flood reduction, water quality improvements, creation of fish and wildlife habitat, safe access to the creek, and enhanced recreation features, all under the umbrella of resilience.

Client Name:
Groundwork Jacksonville, Inc.

Contact Information:
Kay Ehas
kay@groundworkjacksonville.org
904.401.0453

Project Name:
Hogans Creek Stream Restoration and Trail Design

Project Location:
Jacksonville, FL

Project tasks include community engagement; survey and right-of-way services; site planning; surface and subsurface utility coordination and relocation; geotechnical and environmental assessment; hydraulic modeling (including future flooding and compound riverine and coastal flood effects); stream monitoring and stream morphology; removal of sections channelized creek; channel improvements through Jacksonville Electric Authority's water treatment plant site; tree mitigation; structural design of five vehicular roads and various pedestrian crossings; soil contamination assessment; stormwater best management practices; living shoreline design; and appraisal services. Halff will develop final drawings and technical specifications for construction and will support the client's permitting efforts.

Through coordination of a multidisciplinary team and extensive community and stakeholder outreach, Halff's stream restoration design will result in a more natural creek, provide safe access to the creek, and create neighborhood connections. Project tasks include stream restoration, hydraulic modeling, alternatives analysis, trail planning and design, environmental assessment, surveying, and outreach support.

© Halff - 2024

St. Johns River Park and Friendship Fountain

City of Jacksonville | Jacksonville, FL

St. Johns River Park is located on the Southbank waterfront between the Main Street and Acosta bridges and home to Friendship Fountain. Halff is the lead landscape architect taking this project through a major transformation build around the theme of "Exploring the St. Johns River." The design includes Bartram Garden, a Timucuan Indian Themed Concession Area, a Jean Ribault Themed Playground with large ship, wedding garden, restrooms, sunnken deck garden,, shade structures, seating areas, Riverwalk Connections, and connected lighitng and sound with the fountain itself.

Themed $1.2 million playground, splash pad, restroom and concession building, picnic areas, seating areas, refined trellis shade structure, wedding venues, and updated overall hardscape design and appearance to the park.

Client Name: City of Jacksonville

Contact Information:
Jill Enz, PLA, ASLA
jenz@coj.net
904.255.7941

Project Name:
St. John River Park and friendship Fountain

Project Location:
Jacksonville, FL

© Halff - 2024

Jacksonville Heritage Music Garden

City of Jacksonville | Jacksonville, FL

Client Name: City of Jacksonville

Contact Information:
Jill Enz, PLA, ASLA
jenz@coj.net
904.255.7941

Project Name: Jacksonville Heritage Music Garden

Project Location: Jacksonville, FL

Halff provided professional services for this proposed City of Jacksonville musical themed park on the waterfront of the St. John's River. This project involved the design of the hardscape, landscape, irrigation, lighting, and audio & visual elements. The hardscape design included unique paving patterns and materials in the shape of musical notes, shade structures, seating, seatwalls, synthetic lawn area, sculptures, active musical elements, railings, stairs, and ramps. The landscape design comprised of both formal and informal gardens. The formal gardens were large parterre garden that radiated from the Times Union building columns. The informal gardens were large flowing swaths of ornamental grasses with groupings of palm trees. The lighting included both overhead lighting and bollard lighting, along with special RGB lighting effects. The audio and visual elements involved sound for video to be shown on the large white face of the CSX building. The musical park also included multiple themed areas to be designed that taught individual park goers' knowledge about different musical items.

Cascades Form-Based Development

North American Properties | Tallahassee, FL

Client Name: North American Properties

Contact Information:
Shawn McIntyre
shawn.mcintyre@naproperties.com
239.850.3764

Project Name: Cascades Form-Based Development

Project Location: Tallahassee, FL

Halff has provided planning and civil engineering services for the complex mixed use development throughout the life of the project. According to the Downtown Plan, Cascades Park is identified as the most significant environmental and recreational asset in the downtown redevelopment area. Adjacent to Cascades Park, the Cascades Development will be the preeminent development in downtown Tallahassee. Designed on two parcels located in the elbow of the Park, the development includes residential units, commercial use including retail and restaurant uses, office use, a hotel and accessory use for the existing amphitheater located at the southeast corner of the site.

The site layout is designed to meet the vision of the City of a viable, mixed use development that attracts residents as well as providing employment, retail and entertainment opportunities. The plan includes a historical plaza to honor the significant history which has taken place in Tallahassee, as well as a public plaza which serves as a meeting and gathering point for all members of the public. The western property contains the Old Leon County Health Department, also referred to as the Work Progress Administration (WPA) Bloxham Building. This building was rehabilitated allowing for active use while celebrating the Art Modern architecture.

© Halff - 2024

LAND USE AND REDEVELOPMENT

Cigar Factory PD Rezoning

Black Orchid & Co., LLC | Tampa, FL

Source: Tampa Bay Times

This project involves the adaptive reuse of an existing building located at the southwest corner of 18th Street and 17th Avenue (folio 187487.0000), with the goal of converting the first floor into retail space and the second floor into five residential units. To support this development, the adjacent site at the southeast corner of 18th Street and 17th Avenue (folio 187483.0000) is proposed for overflow parking.

The property currently falls under a Future Land Use category of Residential 20, which permits adaptive reuse to encourage the preservation of historic structures without requiring a comprehensive land use plan amendment, per Policy 5.1.7. However, the site is presently zoned Residential Single Family (RS-50). To facilitate the planned refurbishment, a rezoning to Planned Development (PD) is necessary.

Halff is responsible for preparing and submitting the rezoning application, including a comprehensive planning report with supporting graphics to justify the rezoning. Halff is also monitoring the review process and presenting the petition to the City of Tampa City Council. Additionally, Halff is conducting an arborist evaluation to identify any potential “Grand Tree” on the site.

Client Name: Black Orchid & Co., LLC

Contact Information:
Liana Fuente
lfuente05@gmail.com

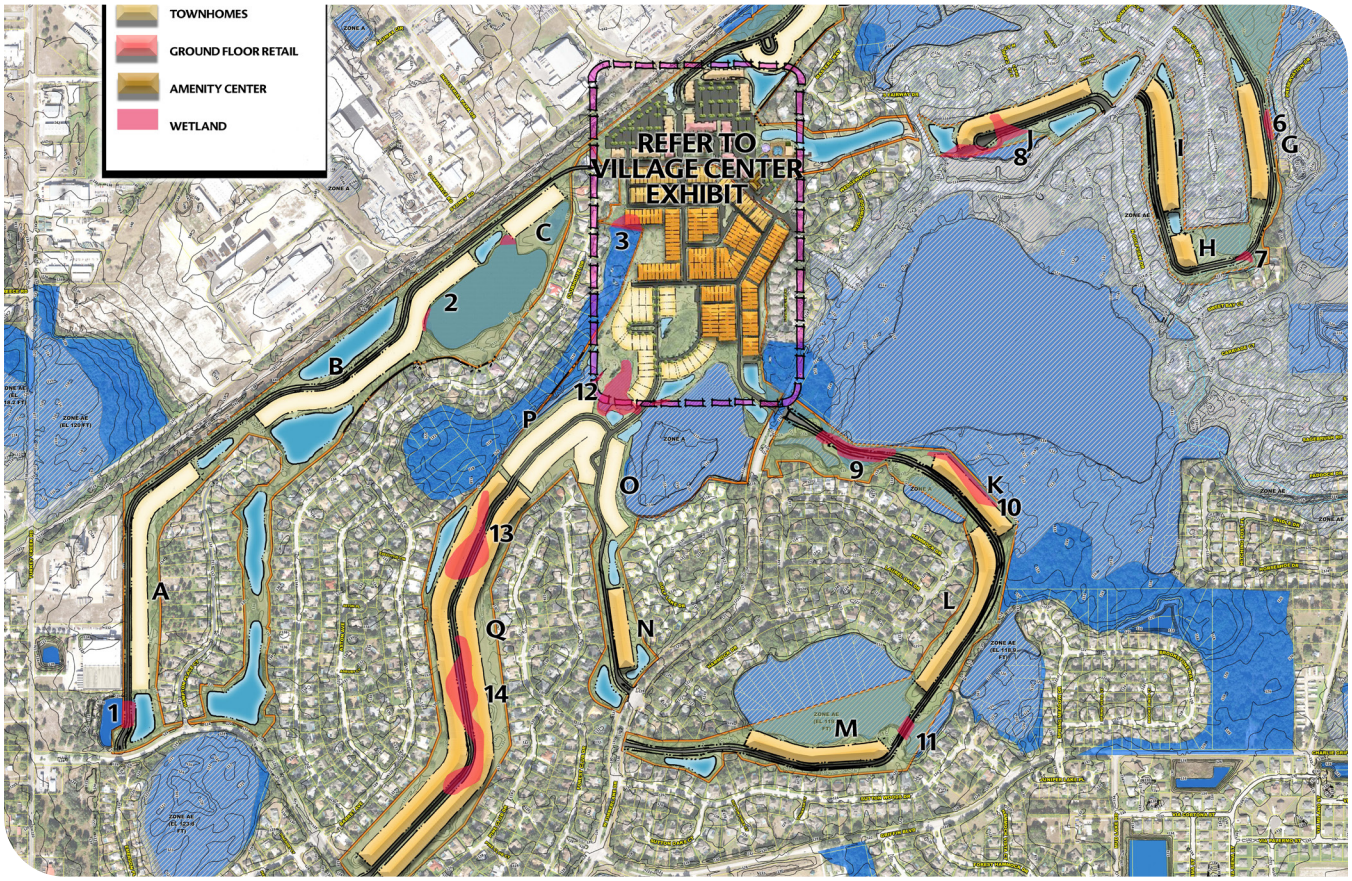
Project Name: Cigar Factory PD Rezoning

Project Location: Tampa, FL

© Halff - 2024

Walden Lake

Walden Lake, LLC | Planet City, FL



Halff is providing conceptual master planning of The Walden Lake Golf and Country Club located in the City of Plant City. The 2,060 acre development is located at the southeast of Turkey Creek Road and Sydney Road. The golf course is approximately on 319 acres surrounded by Walked Lake Community Unit District. The project consists of redevelopment of the terminated golf course area with a community that includes a variety of housing styles and a mixed-use town center.

The Village Town Center is being proposed as a mixed-use development with various housing types. The limited retail commercial use in the village center is proposed to be developed with the proposed multi-family residential above the retail, creating the vertically integrated development. The type of residential proposed in this town center is a blend of single-family homes, town homes, villas, and multi-family units.

Client Name:
Walden Lake, LLC.

Contact Information: Joshua Berman
jab@antonoff.com
813.754.8999

Project Name:
Walden Lake

Project Location:
Plant City, FL

Stormwater - Stormwater management also played a major role in the design of the project. Through the working evolution of the plan, a stormwater management specialist analyzed the area and provided input into each step of the design.

Public Outreach - Halff hosted numerous workshops and meetings with the Board of Directors of the Walden Lake Community Association, the Walden Lake Resident Advisory Council, and members of the community. Included among these meetings was a well-attended town hall meeting, which introduced the proposed development.

Traffic - A traffic engineer provided input on road network in order to minimize impact on existing traffic pattern.

© Halff - 2024

Posner Commons

Trammell Crow | Polk County, Florida

This regional commercial center is viewed as the “Gateway to Polk County”. The Halff team was involved in the comprehensive master planning, entitlements, engineering and landscape architecture services for the first phase of the Posner City Center DRI mixed use development. The design focused on creating approximately 630,000 sf of retail space on an 80 acre parcel located at the intersection of I-4 and US 27 in Polk County, Florida. Our team worked with county officials to integrate the design within the Northridge SAP sector plan and existing infrastructure and future improvements to the area. The design utilized extensive landscaping that will be irrigated initially from a well source and will be converted to reclaimed county water when available.

Client Name: Trammel Crow

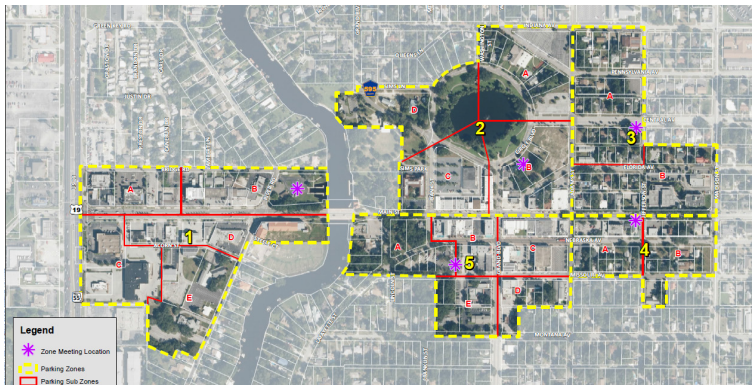
Contact Information:
Andy Hawkins
Trammell Crow
407.353.7211

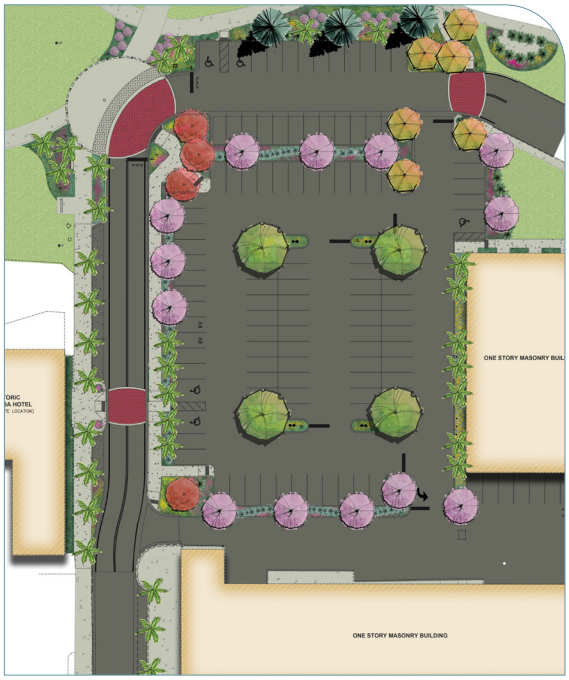
Project Name:
Posner Commons

Project Location:
Polk County, FL

City of New Port Richey Community Redevelopment Area

City of New Port Richey | New Port Richey, FL





The City of New Port Richey has designated a majority of its City as a Community Redevelopment Area (CRA). Halff conducted a parking study along, and parallel to, Main Street extending from US 19 to the west and Madison Avenue to the east to make sure that the City has adequate parking to support existing uses, as well as planning for future growth in the Downtown District. This parking study let to the construction of Gloria Swanson Parking lot. Improvements to the Gloria Swanson parking lot would benefit Sims Park visitors as well as the Hacienda Hotel.

Client Name:
City of New Port Richey

Contact Information: Robert Rivera
riverar@cityofnewportrichey.org
727.853.1056

Project Name: City of New Port Richey Community Redevelopment Area

Project Location:
New Port Richey, FL

After assisting the City to develop the annual non-advorem street assessment, Halff has prepared multiple years of street improvement plans. The street improvement program is designed to complete a maintenance cycle of all of the City's roads within a 20 year period. The roadways have been ranked by need and each year the lowest ranked roads are included in that year's project. The plans are prepared using aerial photographs, GIS data, limited topographic survey, and field observations. This data is combined to determine the limits of patching, base replacements, and milling. Valley gutter and drainage flumes are installed in limited circumstances to address pavement failure caused by historic flooding. This hybrid plan preparation process allows Halff to provide cost-effective construction plans that correct minor damage problems without the high cost of right-of-way acquisition, full survey or unnecessary studies.

Halff also provided services to enhance existing landscaping in selected roadway medians and roadside areas located within the rights-of-way of Main Street, US 19 to Congress Street; Grand Boulevard; Delaware Avenue to Main Street; and parking lot frontage improvements. This assignment is to provide design services and construction document preparation for landscape plans depicting relocation of downtown street trees along Main Street and Grand Avenue, and replacement with appropriate species.

© Halff - 2024

HISTORIC PRESERVATION

LaVilla Hertitage Trail

Jacksonville Downtown Investment Authority | Jacksonville, FL

COMMUNITY PLANNING COLLABORATIVE (CPC)

Founded in 1866, LaVilla is the oldest urban Black community in the state and a key contributor to the country's early ragtime, blues and jazz music genres. Negatively impacted by redlining, urban renewal and facing development pressure, the LaVilla Heritage Trail and Gateway project was launched in May 2022 to build consensus between the Jacksonville Downtown Investment Authority and the historically excluded community for the development of a neighborhood logo and branding strategy, cultural heritage trail and gateways paying homage to LaVilla's historical significance.

Client Name: Jacksonville Downtown Investment Authority

Contact Information:
Ina Mezini
Downtown Investment Authority
904.255.5302

Project Name:
Lavilla Heritage Trail

Project Location:
Jacksonville, FL

Community Planning Collaborative was selected to assist in implementation of the Cultural Heritage Trail plan. The Community Planning Collaborative team includes Carla Jones and Erin Kendrick to assist with storytelling, marketing, branding, and artistic vision. The project includes creation of a trail implementation strategy that will include video, public art and banners, developing the trail's physical markers, historical narrative work, and technical coordination for bidding, fabrication and installation.

METHODS TO ACHIEVE GOALS

The primary consideration for implementation of the LaVilla Cultural Heritage Trail project is meaningful and regular engagement with community stakeholders. Project tasks include:

- On-going meetings and communication with project stakeholders including review of draft materials and narratives.
- Site visits to make sure ground-truthing of existing conditions.
- Best practices research of other African American heritage trails in the United States.
- Development of an overall heritage trail vision and strategy.
- Historic research, identifying and securing historic imagery, and creation of narrative text.
- Creation of marker design and branding, as well as recommendations for additional digital and media content, all to include cost estimates.
- Technical coordination regarding marker fabrication and installation.

PROJECT SUCCESS, TIMELINESS, BUDGET

Implementation of the trail strategy is in progress and on-time, started in June 2023 with an estimated completion in January 2024. Physical marker fabrication and installation is anticipated to be completed in 2024. The budget for this phase of the project is $179,515.00.

© Halff - 2024

American Beach Neighborhood Planning and Cultural Heritage Plan

Nassau County Board of County Commissioners | Amelia Island, FL

COMMUNITY PLANNING COLLABORATIVE (CPC)

Community Planning Collaborative's American Beach experience includes six years of community engagement and a variety of planning projects, including historic preservation. Team experience includes facilitating strategic planning while on staff with Nassau County in order to identify strategies to protect and highlight the historic character of the community, as determined by the neighborhood in a community-driven process. In addition, the Community Planning Collaborative team was part of a multidisciplinary consultant team that produced the American Beach Cultural Heritage Experience Enhancement Initiative master plan. Today, CPC is a consultant for Nassau County working on implementation of master plan goals.

Client Name: Nassau County Board of County Commissioners

Contact Information:
Taco Pope, AICP
County Manager
904.530.6010

Elizabeth Backe, AICP
Planning Director
905.530.6300

Project Name:
American Beach Neighborhood Planning and Cultural Heritage Plan

Project Location:
Jacksonville, FL

METHODS TO ACHIEVE GOALS

Team experience working with the American Beach community began in 2018 and continues today. Efforts include:

- Extensive community engagement through regular meetings and surveys
- Ongoing communication with key stakeholders like the American Beach
- Property Owners' Association and Friends of American Beach.
- Regular email updates and follow-ups with 160 members of the American Beach email list.
- Research and sharing best practices in planning, zoning, and historic preservation.
- Initiated a Community Redevelopment Area study.
- Updated zoning code to align with community goals.
- Secured National Park Service grant for a historic structure report on Evans' Rendezvous.
- Integrated resilience, infrastructure, and land use planning with cultural preservation.
- Developed strategies for public spaces and amenities reflecting community goals.
- Created a master plan guiding investment, historic site markers, infrastructure enhancements, and resource protection.
- Facilitated discussions on future plans for Evans' Rendezvous and the historic Crossroads area.

PROJECT SUCCESS, TIMELINESS, BUDGET

The key success to American Beach planning efforts is a sustained relationship with community members. CPC team members engage with the community beyond the scope of the projects and stay in communication with community stakeholders. In recognition of this relationship, CPC is currently under contract with Nassau County to continue planning efforts in the neighborhood that implement elements of the cultural heritage master plan. The cultural heritage master plan and current work have been completed on-time and within budget.

© Halff - 2024

Historic Eastside Neighborhood Withintrification Planning

LIFT Jax, Inc. | Jacksonville, FL

COMMUNITY PLANNING COLLABORATIVE (CPC)

Many cities are looking for solutions to combat gentrification and displacement. One emerging strategy is 'withintrification,' where revitalization initiatives are lead by current residents instead of outside developers, planners, consultants, and politicians. Platted in 1869, the Eastside is a Gullah Geechee neighborhood is working to become an example of successful withintrification. Through a collaboration being spearheaded by Eastside nonprofits and residents, the Community Planning Collaborative team has provided consulting services that include retrofitting systemic discriminatory public policies to and guide market rate public and private development in a pattern that tackles a variety of community needs, including historic preservation, affordable housing, economic development and preserving the neighborhood's cultural heritage, character and sense of community and place.

Client Name: LIFT Jax, Inc.

Contact Information:
David Garfunkel
President
617.935.2791

Suzanne Pickett
Historic Eastside CDC
904.537.3364

Project Name:
Historic Eastside Neighborhood Withintrification Planning

Project Location:
Jacksonville, FL

METHODS TO ACHIEVE GOALS

- Prioritizing meaningful community engagement with members of the Eastside community including partnering with neighborhood Subject Matter Experts.
- Drafting a culturally-sensitive zoning overlay that seeks to preserve the neighborhood character, encourage reuse of historic structures, manage growth and in-fill construction, and support economic opportunities for the neighborhood, allowing residents to prosper in place.
- Seeking Florida Main Street designation for the "Avenue," the Eastside's primary historic commercial corridor.
- Working with community partners on related efforts including infill affordable housing, resolving heirs property, pro-bono home repair for vulnerable residents, community events, public art, streetscape improvements, heritage trail, and park improvements.
- Successful grant writing assistance for the restoration of a historic structure into a grocery store and financial services hub (Debs Store), eliminating the neighborhood's food desert status.

PROJECT SUCCESS, TIMELINESS, BUDGET

All contracted projects with Lift Jax, Inc. have been completed on time and budget. The Eastside was officially listed as Florida's largest historic Black neighborhood on the National Register of Historic Places in July 2023. Awarded $1 million in preservation grant funds, the Deb's Store project is under construction and the Florida Main Street application was approved in January 2024. The Eastside zoning overlay project is still ongoing with an estimated 2024 completion date.

© Halff - 2024

St. Scholastica Monastery Lidar

Saint Scholastica Monastery | Fort Smith, AR

Client Name: Saint Scholastica Monastery

Contact Information: Unknown

Project Name: St. Scholastica Monastery Lidar

Project Location: Fort Smith, AR

Earlier this year, the 98-year-old St. Scholastica Monastery in Fort Smith, an iconic structure designed in the Gothic Revival style, was demolished due to the extensive and costly repairs needed to preserve it. The building, which opened in 1924, had been a cornerstone of the community, housing thousands of students and Benedictine Sisters over its long history. The loss of this historic site was deeply felt by residents and historians alike.

In response, Halff's Geospatial team undertook a project to digitally preserve the memories and intricate architectural details of St. Scholastica Monastery. Utilizing advanced lidar and laser scanning technology, the team was able to create a detailed digital record of the structure, verifying that its legacy and historical significance will not be lost to time.

This project represents a commitment to preserving the history and cultural heritage of the Fort Smith community through modern technological innovation.

Allen Historic Water Station Park

City of Allen | Allen, TX

Client Name: City of Allen

Contact Information:
Matthew McComb
214.509.4721

Project Name: Allen Historic Water Station Park

Project Location:
Allen, TX

The Historic Water Station, located along Cottonwood Creek, features the 1874 Stone Dam and remnants of a once-vital industry crucial to North Texas's development. After being decommissioned in the 1940s, the site fell into neglect, forgotten by the community and weathered by Texas's harsh conditions. In 2014, Halff was hired to restore the area, carefully preserving the dam and creating a low-impact pedestrian trail.

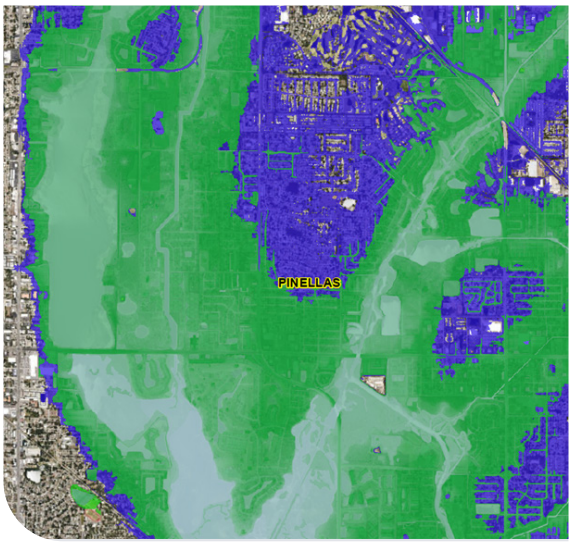
Completed in 2017, the project includes a pedestrian bridge connecting the site to an existing trail. Within the historical area, a soft surface trail and boardwalk allow visitors to view the ruins while minimizing environmental impact. Interpretive signage, featuring graphics, art, maps, and diagrams, highlights the site's history, based on research from the Texas Historical Commission, Southern Methodist University, and local historical committees. Park benches and signs, inspired by railroad architecture, reinforce the site's unique heritage. Halff received a "Historical Honor Award" from Preservation Texas for this work.

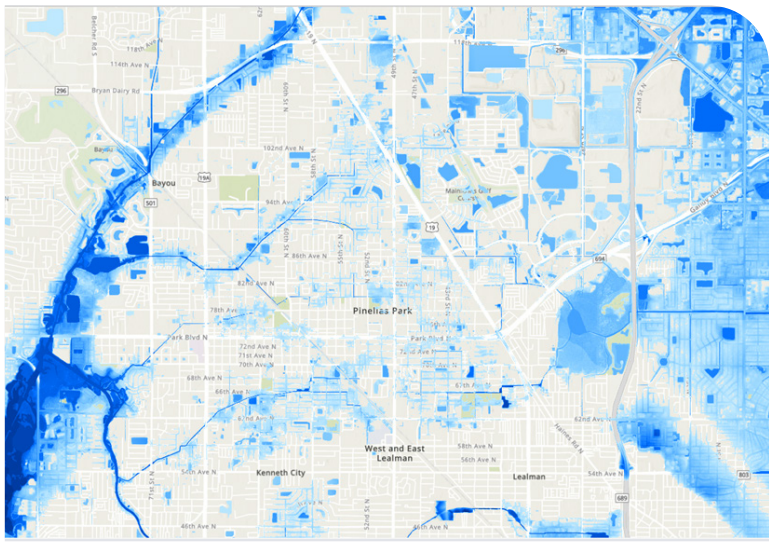
© Halff - 2024

COMMUNITY RESILIENCE

Tampa Bay Regional Inundation Coordination (TBRIC)

Tampa Bay Regional Planning Council | Citrus, Hernando, Hillsborough, Manatee, Pasco, and Pinellas Counties, FL





Halff supported the Tampa Bay Regional Planning Council (TBRPC) in 2023 in developing a regional approach to flood inundation mapping. The project was focused on identifying best practices for vulnerability assessments across the Tampa Bay region and developing a GIS geoprocessing application to be utilized by member counties and municipalities in conducting vulnerability assessments pursuant to the requirements of Section 380.093, Florida Statutes.

Halff launched the project by conducting research interviews with more than a dozen subject matter experts representing government, industry, and academia. The purpose of these interviews was to identify best practices and gaps applicable to the current state of flood modeling and mapping across the State of Florida. Steps in subsequent phases of the project were focused on engaging key governmental representatives and stakeholders on regional needs and priorities.

Client Name: Tampa Bay Regional Planning Council

Contact Information:
Cara Serra Woods
cara@tbrpc.org
727.570.5151

Project Name: Tampa Bay Regional Inundation Coordination (TBRIC)

Project Location: Citrus, Hernando, Hillsborough, Manatee, Pasco, and Pinellas Counties, FL

Following extensive stakeholder engagement activities, the remainder of the project was focused on developing a GIS geoprocessing application capable of ingesting flood data from a variety of both public and private sources and producing flood risk maps. Outputs from the project included the regional inundation mapping application, datasets which depict flood risks, and a matrix of data sources available to local governments in conducting vulnerability assessments. Halff worked in collaboration with the University of Florida on this project where university representatives conducted a third-party review of the geoprocessing application.

Moving into the future, the Tampa Bay region and its member governments are now prepared to hit the ground running in conducting local vulnerability assessments because of the data and resources made available through this project.

© Halff - 2024

Resilient Pasco Project

Pasco County | Pasco County, FL

Halff is supporting Pasco County in developing the Resilient Pasco Project, focusing on resilience and sustainability priorities, a risk assessment, a resilience action plan, and a living shorelines plan. After Hurricane Idalia, Halff facilitated a kickoff meeting and workshop to discuss key challenges and priorities, while site visits provided insights into resilience in action. Currently, Halff's team is creating a critical asset inventory for the vulnerability assessment and exploring nature-based solutions and living shorelines for public sites.

Client Name: Pasco County

Contact Information:
Roberto Becerril, PLA, AICP, CFM
Assistant Director Planning and Development Department
rbecerril@pascocountyfl.net
727.847.8140 ext. 7457

Project Name:
Resilient Pasco Project

Project Location:
Pasco County, FL

Port Richey Vulnerability Assessment & Adaptation Plan

City of Port Richey | Port Richey, FL

Halff is helping Port Richey assess vulnerabilities, adopt a 'Peril of Flood' plan amendment, and develop an adaptation plan to address flood risks like storm surge and sea level rise. Since the project began in 2022, Halff has facilitated strategic planning and briefed City Council to outline project goals. In 2023, Halff completed a vulnerability assessment, revealing Port Richey's significant exposure due to its low-lying coastal location. The final phase focuses on creating an adaptation plan to reduce identified vulnerabilities and integrate findings into FEMA's CRS Program and Pasco County's LMS.

Client Name:
City of Port Richey

Contact Information:
Pamela Lynch
CRA/Grant Coordinator
p.lynch@cityofportrichey.com
727.835.1270 ext. 130

Project Name: Port Richey Vulnerability Assessment & Adaptation Plan

Project Location:
Port Richey, FL

Sea Level Rise Adaptation Plan Don CeSar Neighborhood

City of St. Pete Beach | St. Pete Beach, FL

The City of St. Pete Beach needed to address resiliency associated with sea level rise (SLR) and impacts to neighborhoods during various storm events. In collaboration with the City and other consultants, Halff provided two adaptation alternatives for the Don CeSar neighborhood. Utilizing the City's Coastal Resiliency Plan Stormwater Master Plan Update, GIS layers, along with other existing information, Halff characterized the neighborhood's environmental and manmade conditions. Using readily available information, Halff articulated the range of high tide, nuisance, and SLR flooding risks related to the existing neighborhood. Factoring in the City's 2050 SLR projections, Halff developed two conceptual designs to graphically illustrate potential strategies to help the neighborhood adapt to future risks. Objectives for the Conceptual Designs for Adaptation included:

- Reducing nuisance flooding frequency
- Mitigating damage to structures and infrastructure associated with flooding
- Enhancing neighborhood aesthetics through engineering with nature approach
- Identifying solutions for relocating, retrofitting or armoring water, wastewater and drainage utilities and roadways at risk

The conceptual designs for adaptation built on existing strengths and assets in the Don CeSar neighborhood, including Lazarillo Park, adjacent mangrove vegetation and wildlife habitat, as well as the neighborhood street network and seawall-adjacent rights of way. The resulting landscape and engineering graphics illustrated how these concepts not only addressed infrastructure challenges, but also improved the long-term resilience and livability of the neighborhood.

Client Name:
City of St. Pete Beach

Contact Information:
Brett Warner, PE
bwarner@stpetebeach.org
727.363.9254

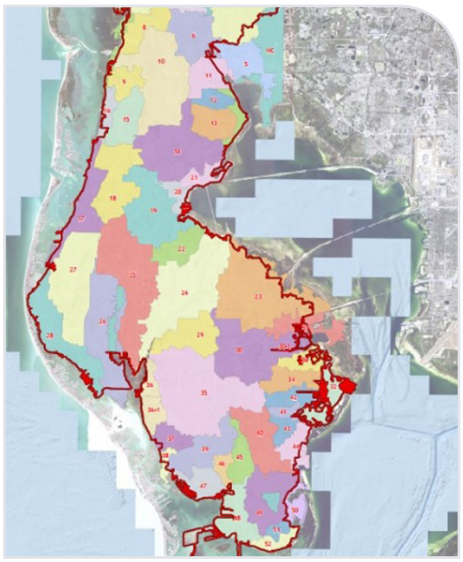
Project Name: Sea Level Rise Adaptation Plan Don CeSar Neighborhood

Project Location:
St. Pete Beach, FL

© Halff - 2024

County-Wide Stormwater Model and Flood Forecasting Tool Development

Pinellas County Public Works Department | Pinellas County, FL



Singhofen Halff developed a county-wide model to forecast flooding across various storm events, enhancing the County's planning capabilities. The project updated 14 ICPR and 15 SWMM models to their latest versions, reconciling data discrepancies and integrating GIS data. A comprehensive GIS model network was established, with the main ICPR models covering 161 square miles and separate SWMM models for St. Petersburg. For the ICPR models, spatial GIS data was utilized, and new spatial GIS networks were developed for the SWMM models from existing nodal network/subbasin maps. A unified GIS model network was created using GWISv2.1, consolidating the ICPR models into a single model covering about 161 square miles. The SWMM models, covering around 45 square miles in St. Petersburg, remained separate due to the city's ongoing efforts to develop a new H&H model.

Client Name: Pinellas County Public Works Department

Contact Information:
Lisa Foster, CFM
Floodplain Administrator
lfoster@pinellas.gov
727.464.8962

Project Name: County-Wide Stormwater Model and Flood Forecasting Tool Development

Project Location:
Pinellas County, FL

The rest of the watershed, approximately 78 square miles, was modeled using a 2D Rapid Flood Hazard Assessment (RFHA) approach. This method employed a conservative model with 2D features for broad analysis and 1D features for major conveyance structures like channels and significant culverts, using the County's infrastructure data or DEM and aerial imagery where needed. Strategic placement of structural weirs prevented unrealistic flooding simulations at critical points. The RFHA approach was initially validated in a pilot area (Oldsmar Watershed).

A notable feature added to enhance the utility of these resources was an ESRI tool equipped with sliders, allowing floodplain managers and maintenance personnel to navigate through the time series of each synthetic storm event. This functionality enables them to correlate real-time gage data with potential flood impacts, facilitating proactive management measures.

© Halff - 2024

COMMUNITY DEVELOPMENT AND REDEVELOPMENT

Escambia County Comprehensive Plan Review

Escambia County | Escambia County, FL

Halff was hired by Escambia County to complete a data analysis of the County's Comprehensive Plan, land use, zoning, population growth, existing residential development, and the consideration for new residential development within the rural areas of Escambia (comprised of +/- 60% of the land). Analysis of the County's agricultural land, businesses, and economy played a vital factor in determining where the County could potentially direct growth while preserving these agricultural lands within the rural area. Halff provided suggested revisions to their Comprehensive Plan and presented the revision to the general public through workshops and the County's Planning Agencies.

Client Name: Escambia County

Contact Information:
Alison Rogers
aarogers@co.escambia.fl.us
850.595.4993

Project Name: Escambia County Comprehensive Plan Review

Project Location:
Escambia County, FL

© Halff - 2024

Bainbridge Downtown & Waterfront Revitalization

City of Bainbridge | Bainbridge, GA

Halff completed a connectivity master plan for the Flint River waterfront, which included revitalizing Cheney Griffin Park and an environmental interpretation center, along with enhancements to an existing amphitheater, a 10-foot-wide, multi-use trail along the river, a marina, a boat launch facility and associated parking, and a swim complex that included an outdoor park.

With funding from the Georgia Department of Natural Resources GoFish Georgia program, improvements to the existing boat ramps at Earle May Boat Basin Park in Bainbridge, Georgia has raised to the site the status of Mega Ramp. With three double boat ramps, event parking for 120 vehicles and trailers and overflow parking for 125 vehicles and trailers, the site is ready to host large fishing tournaments while still accommodating the weekend sport fisherman.

Halff reviewed the existing site conditions and provided design and permitting services for the ramps, parking, supporting day-use docks, pedestrian access, landscaping, and power and lighting. In order to accommodate the boat ramps, Boat Basin Road was re-aligned and traffic control devices designed to accommodate the revised traffic pattern.

Client Name: City of Bainbridge

Contact Information:
Chris Hobby
bbarnett@bainbridgecity.com
229.248.2000

Project Name: Escambia County Comprehensive Plan Review

Project Location:
Bainbridge, GA

© Halff - 2024

Anclote River Park and Trail

Pasco County | Holiday, FL

Anclote River Park is one of Pasco County's premier parks. This waterfront park is enjoyed by many and is known for its boat access, recreational activities, family-friendly park experience, and the premier attraction along the Coastal Anclote Trail. The Coastal Anclote Trail is a 12-foot-wide multi-use paved trail that travels through 4.5 miles, interconnecting three county parks: Anclote River Park, Anclote Gulf Park and Key Vista Nature Park. Eventually the route will join with the Pinellas Trail when the planned Elfers Spur Trail extension is built. The demand and utilization of the parks and trails has soared due to the unprecedented population and economic growth within the region. The demand for outdoor recreational activities has generated a snowball effect due to an increasing number of families rediscovering the importance and benefits of parks, trails, park amenities, and the "great outdoors."

Client Name: Pasco County

Contact Information:
Tim Wilson
twilson@pascocountyfl.net
727.207.6723

Project Name: Anclote River Park and Trail

Project Location:
Holiday, FL

As a part of the redesign, the County has acquired additional property that will expand the park by 14 acres and includes a documented Bald Eagle nesting site. Park enhancements will include recognition of the eagle nest, additional trail connections, updated circulation to reduce vehicle and pedestrian conflicts, boat ramp improvements for easier launching and maneuvering, improved trail circulation within the park, expanded trailer parking, and ADA compliant parking.

© Halff - 2024

RECREATION MASTER PLANNING

Babcock Ranch Preserve Recreation Master Plan

Florida Fish and Wildlife Conservation Commission | Charlotte & Lee Counties, FL

The Babcock Ranch Preserve (BRP) is a 73,239 acre publicly owned conservation area located in southern Charlotte and northern Lee Counties. The Preserve was acquired by the State of Florida and Lee County in July of 2006, under the State's Florida Forever and Lee County's 20/20 environmental land conservation programs in order to conserve and protect a working landscape with its unique natural resources and cultural heritage.

In order to achieve the desired future condition for eco-tourism operations, public access and use, an important Management Plan goal was to provide diverse natural resource-based recreational opportunities that are compatible with natural and cultural resource management and the working ranch and silviculture operations. The Recreation Master Plan provides guidance for the development of recreation opportunities on the Preserve.

BRP is a unique area and any recreation that occurs on the property should relate to the landscape, the natural communities found on the site and its connection to Florida's ranching cultural heritage. While there are abundant opportunities for a diverse array of recreational activities to occur on the Preserve, the underlying theme to these activities will be how the working landscape and natural systems combine to form this unique public land.

Client Name: Florida Fish and Wildlife Conservation Commission

Contact Information:
Jerrie Lindsey
Florida Fish and Wildlife Conservation Commission
850.410.4951

Project Name: Babcock Ranch Preserve Recreation Master Plan

Project Location:
Charlotte & Lee Counties, FL

Walter E. Long Metropolitan Park Master Plan

City of Austin | Austin, TX

Client Name: City of Austin

Contact Information:
Gregory Montes
gregory.montes@austintexas.gov
512.974.9458

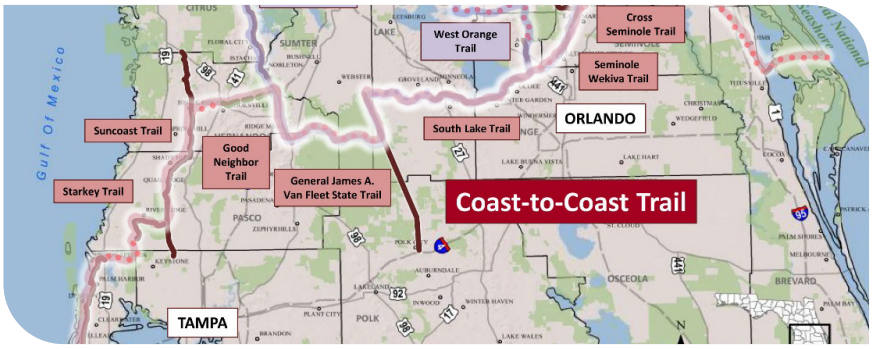
Project Name: Walter E. Long Metropolitan Park Master Plan

Project Location:
Austin, TX

Walter E. Long Park is the largest park in Austin, Texas, boasting beautiful rolling hills, thick woodlands, precious wetlands and a monumental lake. In partnership with the City of Austin, Halff's planning and landscape architecture team developed a comprehensive vision plan to transform the mostly unprogrammed and underutilized park into an extraordinary recreational and environmental resource. Located in an underserved area of central-east Austin, this plan demonstrates how community-driven design solutions can plant the seed for amazing transformation.

Close the Gaps

Florida Greenways and Trails Foundation | Central and Northwest FL



Client Name: Florida Greenways and Trails Foundation

Contact Information:
W. Dale Allen
wm.dale.allen@gmail.com
850.591.7646

Project Name: Close the Gaps

Project Location:
Central and Northwest FL

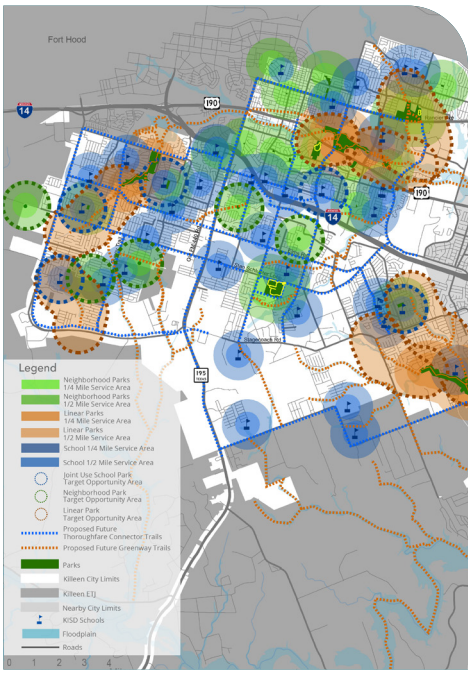
In the mid-1980s the State of Florida created new linear parks called greenways. These long and narrow corridors of land usually follow abandoned railroad rights-of-way, or along drainage canals, historic roads or electric/gas transmission lines. Since the creation of the first linear parks almost three decades ago, dozens of these greenway trails have surfaced across the Sunshine State — from the Florida Keys to the Panhandle.

For phase one of this project, Halff assisted the Florida Greenways and Trails Foundation (FGTF) to market an opportunity to link a series of existing non-continuous trails into a connected greenway loop through our State's heartland. By CLOSING THE GAPS, Florida is poised to connect numerous smaller communities with the major cities of Orlando, Tampa, St. Petersburg, and Jacksonville. The trail will create many new small business opportunities along the way and will establish a scenic, safe bicycle and pedestrian experience in the "Heart of Florida." Halff also worked on the second phase of this task for the Panhandle focusing on Escambia County, Santa Rosa County, Walton County, Bay County, Gadsden County, Taylor County, Wakulla County, and Leon County.

© Halff - 2024

Killeen Parks and Recreation Master Plan

City of Killeen | Killeen, FL



Halff performed an update to the City's existing parks and recreation master plan. The focus of this plan was to reevaluate the City's long-term plan of action considering two new large-scale developments that would have a great impact on the City's park and recreation system. The goal included establishing a better community-wide trail system linking parks and other areas of the City. In addition, the plan provided the framework for new parkland dedication regulations to be adopted after the plan was adopted.

The plan incorporated extensive citizen input and established park and recreation priorities for the next decade. The plan focused on both the renovation and enhancements of existing parks, as well as the need to address needed facilities in the fast-growing southern quadrants of Killeen. An additional focus of this plan was to incorporate two major new additions that would have a great impact on the City's park and recreation system. The plan also focused on enhancing trail corridors throughout the city and funding for the development of major new parks in the city.

Client Name: City of Killeen

Contact Information:
Wallis Meshier
wmeshier@killeentexas.gov
251.501.7621

Project Name: Killeen Parks and Recreation Master Plan

Project Location:
Killeen, FL

Capital Cascades Trail Master Plan

Blueprint Intergovernmental Agency | Tallahassee, FL

Halff has been involved in the development of Capital Cascades Trail & Park since 2002, starting with a topographic survey. In 2006, Halff created a Trail Master Plan, this multi-million dollar project entails a greenway plan for a 5.2 mile corridor through Tallahassee, Florida. The park details consist of; planning for trails, park and greenway amenities in combination with a stormwater retrofit master plan. The highlight of the project will be the park itself, which will provide opportunities for community and cultural facilities.

The stormwater aspect includes the St. Augustine Branch and the Central Drainage Ditch with a total contributing drainage area of approximately 5,146 acres. Box culverts were installed and will help provide the much needed flood relief.

In addition, the park highlights include a; history fence, pond overlooks, signature bridges, Korean War Memorial, Meridian Plaza stage, interactive water play area, walking and bicycle trails, restrooms, and additional park amenities.

Client Name: Blueprint Intergovernmental Agency

Contact Information:
Autumn Calder, AICP
autumn.calder@blueprintia.org
850.219.1098

Project Name: Capital Cascades Trail Master Plan

Project Location:
Tallahassee, FL

© Halff - 2024

Tab 4. Demonstrated Understanding of the Sub Areas

MULTIMODAL TRANSPORTATION PLANNING AND ANALYSIS

Halff has successfully completed multimodal transportation planning and design projects for numerous municipalities which involve transportation planning, project development, traffic engineering, intersection analysis, signal design, roundabout feasibility, intelligent transportation systems, and much more.

From analysis to operation, our Multimodal Transportation Planning and Analysis teams have the experience required to provide the services requested by the City of Tarpon Springs in the RFP. From modeling and simulation to mobility and demand management, parking and circulation, bicycle and pedestrian facility planning and design, and complete streets policies and principles, the Halff team has the expertise to compete the required Task Work Orders within the agreed upon budget and schedule.

A. MODELING AND SIMULATION

The Halff team has extensive, local transportation demand modeling expertise ranging from model creation, calibration, and validation to modeling scenario analysis. Halff offers travel demand modeling expertise in the Cube Voyager environment and micro-simulation services in Synchro, CORSIM, and VISSIM environments. Our team has experience in the application of regional transportation systems travel demand models, to land use projections for the purpose of forecasting future travel demands by mode of travel.

In addition, we utilize the latest versions of Sidra Intersection, Trafficware Synchro, SimTraffic, Autodesk Vehicle Tracking, and Highway Capacity Software (HCS) for modeling traffic operations.

PROJECT EXAMPLE

Halff teamed with World Fiber Technologies on a Design-Build Telecommunications Infrastructure, Freeway Management System (FMS),and Regional Traffic Management Center (RTMC) project with FDOT and the local municipality. The project included the design and installation of more than 20 miles of fiber optic cable, 50 vehicle detectors, 26 closed circuit television (CCTV) cameras, six dynamic message signs, a weather monitoring station, and an RTMC with a two-story array of 40 monitors. This project has been a vital asset for efficiently managing the local traffic signal system.

Regional Transportation Management Center (RTMC)

B. BICYCLE AND PEDESTRIAN FACILITIES

Our team's unique qualifications and experience within the past several decades include planning and designing more than 100 miles of bike and pedestrian trails and more than 50 major signature and destination parks throughout Florida and Texas, many of which included community branding and wayfinding. Our approach is a collaborative and innovative process that is tailored to each project, with a focus on client and stakeholder engagement and the deliverance of detailed professional products with strong implementation strategies.

Using our decades of local, regional, and state bike and pedestrian trail planning, design, permitting, and construction experience, we educated stakeholders about project realities, pros and cons of trail locations, connections, access, safety, surface materials, as well as environmental and permitting hurdles. This information was then used to establish planning/ design parameters for trail connection options. Two- and three-dimensional concept graphics, models, and plans are generated to communicate the vision, limitations, and options for consideration.

From a design perspective, the Halff team utilizes several essential resources when designing pedestrian and bicycle facilities including: FDOT Plans

Preparation Manual, FDOT Design Standards, Florida Greenbook, Manual on Uniform Traffic Control Devices (FHWA) and the Guide for the Development of Bicycle Facilities (AASHTO).

PROJECT EXAMPLE

The Babcock Ranch Preserve (BRP) is a 73,239-acre, publicly owned conservation area. Halff created the Recreation Master Plan based on the Recreation Opportunity Spectrum planning guidelines developed by the U.S. Forest Service. The Recreation Master Plan provides guidance for the development of recreation opportunities on the Preserve. BRP is a unique area and any recreation that occurs on the property should relate to the landscape, the natural communities found on the site, and its connection to Florida's ranching cultural heritage. While there are abundant opportunities for a diverse array of recreational activities to occur on the Preserve, the master plan provided recommendations for hiking, equestrian, and bicycle trails throughout this vast managed area.

Babcock Ranch Preserve

C. TRANSPORTATION DISADVANTAGED

The Halff team prepares Sociocultural Effects Evaluations as part of various Planning and PD&E studies for roadway improvement projects. The Community Characteristics included in the Sociocultural Data Report (SDR) for a municipality or county area includes information such as the racial/ethnic minority populations, percent of population below the poverty line, and limited English proficiency populations. In addition, the Transportation Disadvantaged Census Tracks are identified which includes the percent of residents without a vehicle. As part of an equity analysis, information available through various databases such as: American Census Survey, U.S. Census Bureau(2021), Historically Disadvantaged Communities, USDOT (2021); and Areas of Persistent Poverty, USDOT (2021) are utilized to assess the impact of projects on various demographic groups to achieve equitable outcomes.

D. DATA COLLECTION, DEVELOPMENT AND MANAGEMENT

The Halff team recognizes the importance of accurate data collection, development and management. The team regularly collects data from various sources including local, state and federal databases. It is imperative that the accuracy of the data is verified, cross-referenced and summarized for completeness before performing the required analyses. In addition, data utilized will be referenced in the project documentation and footnoted accordingly.

E. ACCESS MANAGEMENT

There are two main functions of transportation facilities: to provide mobility and to provide access. Mobility is best defined as the ability for people and goods to be moved in an efficient manner while access allows people and goods the ability to enter or exit the system or property. For motorized traffic, these are competing functions that must be balanced depending on the highest need or desired result. Effectively balancing one's mobility with access is a high priority of roadway and land use planning. While access and mobility are competing factors for vehicles, they are synergetic and complimentary for bicyclists and pedestrians. Increased pedestrian and bicycle access along a facility improves pedestrian and bicycle mobility by providing more opportunities for convenient and direct paths to adjacent properties with fewer conflict points with motor vehicle traffic. Limited pedestrian and bicycle access can create longer walking and biking distances, and result in unsafe conditions with increased conflict points and unintentionally promoting the use of undesignated paths. The Halff team has experience evaluating access management requirements based on the functional classification and context classification of a roadway facility, while balancing multimodal mobility.

F. MOBILITY AND DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a set of policies and strategies that increase traveler choices and help people meet their travel needs while also minimizing the air quality, congestion, and delay impacts of single-occupant vehicle(SOV) travel. While TDM has traditionally focused on reducing vehicle travel, its scope has expanded in recent years to more directly

© Halff - 2024

address bicycle and pedestrian safety, environmental education, and improving mobility for seniors, people with disabilities, low-income residents, and others who may lack access to personal transportation. Emerging technologies and services have dramatically changed the transportation industry by creating opportunities to improve the traveler experience and advance regional transportation goals while confirming that investments provide benefits that are equitable and cost-effective. The Halff team can assist the city by developing a framework to coordinate efforts in support of mobility and accessibility. Our team has experience providing background research, travel trends analysis, and ultimately selecting TDM and mobility strategies that work best for city and the region.

G. TRANSPORTATION/MOBILITY IMPACT FEES

Transportation/mobility impact fees are a crucial tool used by municipalities like the City of Tarpon Springs to manage the effects of new developments on the local transportation network. Impact fees help make sure that the city can maintain a safe and efficient transportation system. The fees are calculated based on the expected transportation impacts of a development, such as additional road usage, the need for new traffic signals, or enhancements to public transit. By imposing these fees, the city can fund necessary road expansions, intersection upgrades, and other mobility-related improvements without overburdening existing residents with the costs.

The use of transportation/mobility impact fees aligns with the broader goals of sustainable urban planning. In Tarpon Springs, these fees help to verify that growth is managed in a way that supports the long-term viability of the city's transportation infrastructure. This approach not only improves the quality of life for current residents but also makes sure that future developments contribute to the maintenance and improvement of the city's transportation network.

H. PARKING AND CIRCULATION

Conducting parking and circulation analyses involves a multi-faceted analysis of existing conditions, identification of key challenges, and the development of targeted strategies to improve the overall parking experience and traffic flow. The Halff team will conduct a comprehensive data collection effort, which includes on-site observations, occupancy surveys, and the analysis of existing parking supply and demand. This will help identify areas of underutilized parking, peak demand times, and traffic congestion points. Additionally, it is essential to engage stakeholders, including local businesses, residents, and visitors, to gather input on parking and circulation challenges and needs. This data-driven foundation will allow for a detailed assessment of the current parking inventory, circulation patterns, and land use, forming the basis for an effective strategy.

Next, the Halff team will focus on developing and evaluating alternative parking management strategies that are tailored to the unique characteristics of Tarpon Springs. This may include the optimization of existing parking facilities, such as reconfiguring layouts or improving signage and wayfinding to enhance usability. The introduction of smart parking technologies and demand-responsive pricing can also be explored to manage peak demand and improve turnover rates in high-demand areas. Additionally, improving traffic circulation through better street design, signal timing adjustments, and the implementation of complete streets principles can enhance safety and accessibility for all users, including pedestrians, cyclists, and drivers. The strategic placement of loading zones, rideshare drop-off points, and short-term parking spaces can further reduce congestion in critical areas.

Finally, the Halff team will consider the long-term sustainability and adaptability of the parking and circulation system. This includes exploring shared parking agreements, especially in mixed-use areas, to maximize the utilization of parking resources. Integrating parking management with broader transportation and land-use planning efforts will make sure that parking and circulation strategies support the city's economic development goals and preserve its historic charm. Regular monitoring and adjustment of parking policies based on changing demand and emerging trends, such as the rise of electric vehicles and micromobility, will confirm the system remains efficient and responsive to the community's needs.

I. WATERBORNE TRANSPORTATION

Waterborne transportation plays a significant role in the City of Tarpon Springs, reflecting its historical and cultural ties to the waterfront. This mode of transportation is integral to both the local economy and the community's quality of life. It supports commercial activities such as fishing, tourism, and marine services, while also providing an alternative to land-

based transportation, reducing traffic congestion, and promoting sustainability. The city's focus on enhancing waterborne transportation aims to preserve its maritime heritage, improve connectivity, and bolster economic opportunities linked to the waterfront.

J. FEASIBILITY STUDIES

Feasibility Studies are utilized to evaluate project alternatives by comparing the project's potential effect on the social, cultural, natural, and physical resources. In addition, a feasibility study typically includes coordination with resource and regulatory agencies and the public, as well as developing a cost summary for comparison purposes. The information contained in a feasibility study is used to assist with preparing a PD&E or moving directly into design of the recommended or preferred alternative. The Halff team has completed dozens of feasibility studies for trails, pedestrian and bicycle facilities, roadways, transit and other infrastructure investments.

K. COMPLETE STREETS

Complete Streets serve the transportation needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers. With a Complete Streets approach, every non-limited access state roadway project is uniquely planned and designed to serve the context of that roadway and the safety, comfort, and mobility of all users. Halff's team has extensive experience designing projects using context sensitive, complete streets approach that builds on flexibility and innovation to make sure roadway planning and design consider community needs.

PROJECT EXAMPLE

Gaines Street previously consisted of a four-lane roadway with limited pedestrian facilities. Halff was entrusted with planning the substantial corridor revitalization which included a road diet (reduction to two-vehicle lanes), pedestrian and cyclist-friendly amenities, and landscaping. Emphasizing pedestrian safety at intersections required narrower roadways, bulb-outs, and wider crosswalks. School buses and transit vehicles making left and right turns onto Gaines Street required larger turning radii. Rather than widening the roadway, a flush median with granite pavers was installed to safely accommodate larger vehicle movements.

Gaines Street Complete Streets Project

L. RESILIENCE AND SUSTAINABILITY

Resilience and sustainability are central to the City of Tarpon Springs' approach to managing its transportation infrastructure amid the challenges posed by climate change, economic shifts, and urban growth. The city is dedicated to developing a robust transportation system that can adapt to and recover from various environmental, social, and economic stressors. This commitment involves integrating sustainable practices into the planning, design, and maintenance of transportation networks, making sure they are resilient to adverse events and capable of supporting the community's mobility needs. By prioritizing resilience and sustainability in transportation, Tarpon Springs aims to protect its infrastructure, promote economic stability, and enhance the quality of life for its residents, now and in the future.

M. SAFETY ASSESSMENTS

Halff's safety services include a wide range of task related areas such as pedestrian/bicycle/vehicle crash history analysis and safety countermeasure design, traffic impact safety studies, sidewalk viability studies and design, safety study data collection, traffic control design and plans, as well as traffic signal systems and signing and pavement marking design and plans. Our firm has been located in Tallahassee for more than three decades giving us a unique history and insight into safety issues with the local municipalities, adjacent counties, and with the FDOT. With our history in the area, we are knowledgeable with the geographic characteristics of the current infrastructure and are mindful of the concerns of the public with this existing infrastructure and subsequent issues facing the City.

© Halff - 2024

Halff has prepared numerous vehicular and pedestrian safety studies throughout Florida and the southeast leading to improved safety for the traveling public.

N. TRUCK ROUTE ANALYSIS

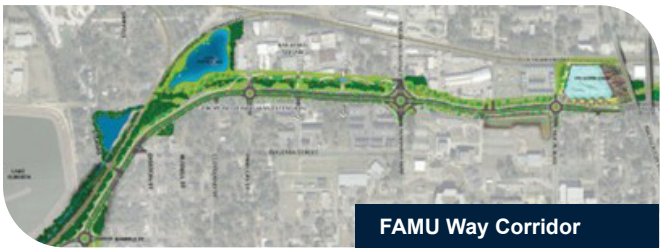
Truck route analysis is a critical component of transportation planning in the City of Tarpon Springs, aimed at optimizing the flow of commercial vehicles while minimizing impacts on residential areas and local traffic. This analysis involves assessing current truck routes, identifying bottlenecks or areas of congestion, and exploring alternative paths that balance efficiency with community needs. The goal is to verify that truck traffic supports the city's economic activities, particularly in key sectors like logistics and manufacturing, while preserving the safety and quality of life for residents. By carefully planning and managing truck routes, Tarpon Springs can enhance its transportation network's effectiveness and reduce the environmental and infrastructural impacts of heavy vehicle traffic.

O. CORRIDOR STUDIES

The Halff team is made up of individuals who have worked tirelessly and are passionate about planning and designing transportation solutions to support community expansion. The Halff team has conducted hundreds of corridors and sub-area studies throughout the country in rural, urbanizing, and urban areas along the collector, arterial, highway, and freeway corridors. These studies have identified strategies that included transportation-specific solutions (e.g. roadway redesign, sidewalk additions, or transit service changes); traffic operational changes and improvements (e.g. TSMO, ITS, or signal changes), to access management, to community branding and marketing (e.g. wayfinding); area-wide network changes (e.g. new street connection, new trail or sidewalk connections); and land use development and policy recommendations (e.g. development pattern, site design, and lot layout). Our projects strive to achieve the optimum context sensitive solutions to meet community needs including retaining a "sense of place", protecting historic elements, and preserving community-established points of destination. We work to identify constructable and practical solutions with these issues in mind that will both improve vehicular operations and at the same time enhance bicycle, pedestrian, and transit conditions within the project corridor.

PROJECT EXAMPLE

Halff completed extensive corridor planning for FAMU Way which runs between the campuses of FAMU and FSU, in Tallahassee. The planning of FAMU Way required the successful completion of every specific corridor planning service likely to be completed under this contract. Multiple corridor alignments were considered and traffic analyses were completed to identify the anticipated operation and intersection needs along the corridor, including forecasting future traffic volumes. The corridor planning included recommendations such as pedestrian and bicycle facilities, trail connections, turn lane storage requirements, intersection and through-lane segment configurations, and other operation and safety enhancements.



FAMU Way Corridor

ECONOMIC ANALYSIS

A. COMPREHENSIVE PLAN ECONOMIC ELEMENT

The Comprehensive Plan Economic Element outlines the vision for Tarpon Springs' economic future, integrating goals, objectives, and policies that guide the city's growth and development. This element provides a framework for promoting economic stability, diversity, and sustainability by leveraging local assets and addressing economic challenges.

B. ASSET BASED ECONOMIC DEVELOPMENT STRATEGY/PLAN

An Asset-Based Economic Development Strategy for Tarpon Springs focuses on leveraging the city's unique strengths, such as its historical sites, waterfront, and cultural heritage. This strategy aims to enhance the local economy by building on existing assets, encouraging entrepreneurship, and attracting investment that aligns with the city's character and long-term goals.

C. MARKET STUDIES AND ANALYSIS

Market studies and analysis are essential for understanding the economic landscape of Tarpon Springs. These studies provide insights into local demand, consumer behavior, and industry trends, enabling informed decision-making for both public and private sectors. The analysis helps identify opportunities for business growth, workforce development, and targeted economic initiatives.

D. PROPERTY OR FACILITY VALUATION

Property and facility valuation is a critical component of economic analysis, providing an accurate assessment of real estate values within Tarpon Springs. This valuation supports various initiatives, including redevelopment projects, public-private partnerships, and investment strategies, verifying that decisions are grounded in reliable financial data.

E. FISCAL IMPACT ANALYSIS

Fiscal impact analysis evaluates the economic effects of proposed developments on the city's budget. By analyzing the costs and revenues associated with new projects, Tarpon Springs can make informed decisions that balance growth with fiscal responsibility, making sure that developments contribute positively to the city's financial health.

F. DEVELOPMENT FINANCE AND JOINT DEVELOPMENT

Development finance involves identifying and securing funding for economic projects in Tarpon Springs. Joint development initiatives, which involve collaboration between public and private entities, are essential for maximizing resources and achieving shared economic goals. This approach supports sustainable growth and enhances the city's economic infrastructure.

© Halff - 2024

G. ECONOMIC MODELING

Economic modeling provides a structured approach to forecasting economic outcomes based on various scenarios. For Tarpon Springs, these models help predict the impact of policy changes, development projects, and market shifts, enabling the city to plan strategically and respond effectively to economic challenges and opportunities.

H. COST-BENEFIT ANALYSIS

Cost-benefit analysis is a crucial tool for evaluating the potential return on investment for economic projects in Tarpon Springs. This analysis compares the projected costs of a project against its anticipated benefits, guiding decision-makers in prioritizing initiatives that offer the greatest economic and social value to the community.

I. FINANCIAL ANALYSIS

Financial analysis involves a detailed examination of the city's financial performance, including revenue streams, expenditure patterns, and debt levels. For Tarpon Springs, this analysis is vital for maintaining fiscal health, planning for future investments, and making sure that economic development efforts are financially sustainable.

J. FINANCIAL/SCENARIO PLANNING

Financial and scenario planning helps Tarpon Springs prepare for various economic futures by exploring different financial scenarios and their potential impacts. This approach enables the city to develop flexible strategies that can adapt to changing economic conditions, verifying long-term resilience and stability.

K. ECONOMIC DEVELOPMENT CAPITAL PROJECT PLANNING

Capital project planning for economic development involves identifying, prioritizing, and financing infrastructure and development projects that support Tarpon Springs' economic goals. This planning verifies that the city invests in projects that will drive economic growth, create jobs, and enhance the quality of life for residents.

L. LAND ASSEMBLY PLANNING

Land assembly planning is the process of acquiring and consolidating land for development projects in Tarpon Springs. This approach is critical for facilitating large-scale developments, redevelopment initiatives, and strategic land use planning, verifying that the city can accommodate future growth and economic activities.

M. INFRASTRUCTURE PLANNING

Infrastructure planning involves the strategic development and maintenance of essential public services and facilities. For Tarpon Springs, this includes transportation networks, utilities, and public spaces, all of which are vital for supporting economic development and improving the overall quality of life.

N. BEST PRACTICES AND CASE STUDIES

Identifying and implementing best practices and learning from case studies are essential for successful economic development in Tarpon Springs. By studying successful models from other cities and regions, Tarpon Springs can adopt proven strategies that align with its unique context and economic objectives.

O. WORKING WATERFRONT ECONOMIC DEV. & ANALYSIS

Tarpon Springs' working waterfront is a critical economic asset, supporting industries such as fishing, tourism, and marine services. Economic development and analysis in this area focus on sustaining and enhancing the waterfront's economic contributions while balancing environmental and community interests. This approach verifies that the waterfront remains a vibrant and vital part of the city's economy.

© Halff - 2024

COMMUNICATIONS AND PUBLIC INVOLVEMENT

The Halff team brings extensive experience and a diverse range of tools to effectively engage with the Tarpon Springs community and the City's agency partners to achieve planning objectives. We recognize the importance of community-centered engagement, verifying that all voices are heard and considered in decision-making to build trust and foster lasting, productive relationships.

The demographic data suggests that the City's community engagement efforts should be multi-faceted to address the diverse needs of the Tarpon Springs community. Key takeaways from the data include:

- **Seasonal Population Fluctuations.** The city has 25,849 year-round residents (BEBR, 2023). During peak season, the city's population increases by 30% or more.

  To design engagement strategies for maximum reach, it is essential to accommodate both year-round and seasonal residents. The Halff Team will coordinate with the City to utilize the City's online engagement hub, social media feeds, and dedicated project webpages to verify that all residents are informed, have opportunities to participate, and can help influence decision making.

- The minority population in Tarpon Springs has doubled since 1990. Today, approximately one in five residents identify as non-White Alone (race) and/or Hispanic or Latino (ethnicity).

  Minority populations can be challenging to engage due to factors such as language barriers, cultural differences, economic challenges, mistrust, and a lack of awareness about how planning initiatives might directly affect them. Reaching and effectively engaging with these populations can be improved by selecting event locations where minority populations live and work, offering meetings at various times to accommodate different schedules, and providing virtual options. Verifying minority representation on project advisory or focus groups is essential for gaining direct input on planning initiatives. Addressing the unique concerns of minority communities and clearly communicating how planning efforts can positively impact them are key strategies for fostering meaningful involvement.

- **Aging Population.** A significant portion of the city population is older adults, with one-third of residents aged 65 or over and one-quarter aged 50-64, nearing retirement age.

  To effectively meet the needs of older adults, engagement efforts should prioritize accessibility through convenient scheduling (e.g., avoiding rush-hour traffic or driving after dark); choosing locations that are ADA accessible; providing printed materials in easy-to-read fonts; offering close-captioned videos and text-to-speech functional documents; and providing flexible, easy to use ways to provide feedback including written, verbal, and digital options.

- **Household Poverty.** Around 13% of city households are below poverty level, almost two percentage points higher than countywide households.

  The poverty rate indicates a need for targeted support and outreach to lower-income households, which are traditionally harder to reach. The Halff Team's engagement strategies will address potential barriers to participation, such as time and travel constraints and access to digital resources.

- **Limited English Proficiency (LEP).** The age five an over population that speaks English "less than very well" represents about 6% of the citywide population. Low literacy can also affect a person's ability to read, write, or understand English. The population age 25 years and over with less than a 12th grade education and no diploma accounts for roughly 7.1% of the city's age 25 and over population or 1,425 persons.

  To verify that all community members have the opportunity to participate and contribute, the Halff Team will design accessible and inclusive communications and engagement opportunities. We will use simple, clear, and jargon-free language, supplemented with visual aids to bridge language and literacy barriers. Additionally, project communications will offer free language assistance services upon request to verify compliance with Title VI of the Civil Rights Act, consistent with City policy.

- **Transportation Accessibility.** The City of Tarpon Springs encompasses 9.26 square miles (2023). One in 12 city households have no vehicle available, accounting for an estimated 2,100 residents.

  The presence of households with no vehicle highlights the need to offer engagement opportunities at accessible locations, such as community centers, parks, and places of worship in neighborhoods with transportation disadvantaged populations, and via virtual platforms.

- **Technological Barriers.** Households with no computer (793) or no internet subscription (1,711), account for roughly 6.6% of city households.

  To accommodate households lacking computers or internet access, digital engagement strategies will be complemented with non-digital methods, including making information available at community centers, libraries, and other community focal points.

A. COMMUNITY OUTREACH, ENGAGEMENT, AND FACILITATION

Halff's approach to this element of the requested planning services begins with a tailored Community Engagement Plan with details about the following:

- Project description
- Engagement scope, goals, objectives, and performance metrics
- Context and stakeholder identification
- Outreach strategy
- Engagement opportunities
- Engagement tools
- Accessibility needs
- Information sharing and transparency
- Performance evaluation

Setting clear engagement goals, objectives, and performance metrics is essential to guiding community outreach and effectively supporting the planning process. The Halff Team employs a comprehensive, three-pronged approach to understanding the context and stakeholders: analyzing desktop data (e.g., American Community Survey and EJ Screen), visiting the planning area, and conducting interviews with context experts (locals). This thorough understanding enables us to develop a strategic mix of digital and traditional outreach methods that resonate with and effectively engage the target audience.

© Halff - 2024

Facilitated community workshops are a cornerstone of our approach, designed to elevate the community's planning experience and produce valuable insights for city decision-making. The Halff Team will organize workshops in accessible locations. Our skilled and experienced facilitators will educate and lead interactive discussions to help participants to engage meaningfully and contribute effectively to the planning process. These sessions could include small- and large-group brainstorming, table-top mapping exercises, real-time polling, and other participatory tools to gather input and feedback on planning initiatives.

The Halff team will assist the City in organizing multiple participation options to accommodate varying preferences, including in-person and virtual public meetings and interactive, online engagement. This flexibility verifies that all community members can participate according to their convenience and comfort levels.

Our engagement approach emphasizes communication and transparency throughout the engagement process. By regularly monitoring performance metrics, we can adjust the engagement strategies as needed to verify that outreach efforts remain responsive and impactful. Like the City, the Halff team views the community as a vital planning partner and is committed to delivering community-centric solutions that reflect the collective vision and needs of the residents.

B. GRAPHIC DESIGN AND VISUALIZATION

Halff's approach to providing graphic design and visualization services is centered on enhancing public-facing planning deliverables through engaging and easily understandable visual information. By promoting city initiatives effectively and making complex planning concepts more accessible, we seek to generate interest and foster community involvement. Visual storytelling is at the core of our strategy, using graphics, 3D modeling, and video content to clearly convey key messages and ideas to a broad audience.

Our team brings together a blend of creative, analytical, and technical skillsets to produce a wide range of visual materials, including eye-catching flyers, factsheets, infographics, social media assets, maps, reports, plans, and presentations. For each City assignment, we will collaborate closely with Planning Department staff to verify that all materials align with City standards and messaging and maintain a consistent visual identity. Consistency helps distinguish city planning initiatives from other activities, verifying that the public can easily recognize and connect with efforts that matter to them.

Using advanced visualization tools, Halff will assist the City in creating clear and compelling representations of proposed development scenarios, urban design alternatives, and transportation solutions. Our approach leverages 3D modeling and dynamic video content

© Halff - 2024

to break down complex concepts into accessible, engaging visuals that bring planning proposals to life.

C. WRITING, EDITING, AND DIGITAL PUBLICATION

The Halff Team is dedicated to delivering clear, concise, and accessible written materials. Our writing style will be tailored to the work product at hand but will always use plain language to make sure project information is easily understood by the general public. Our technical editors will rigorously review and refine all documents to verify accuracy, coherence, and polish, focusing on clarity, grammar, readability, and overall impact.

To adhere to accessibility standards, Halff develops all written materials to accommodate diverse needs, including those of individuals with disabilities. We will verify that all documents are formatted for easy readability and comply with relevant accessibility guidelines, including Section 508 of the Rehabilitation Act of 1973, outlining standards based on the Web Content Accessibility Guidelines (WCAG) 2.0.

Our approach to digital publications emphasizes engagement and inclusivity. We will develop digital communications, including newsletters, flyers, and social media content that inform, inspire, and resonate with the target audience. All materials will be crafted to comply with accessibility standards to expand their reach and usefulness.

D. DIGITAL AND THEMATIC STORYTELLING

The Halff Team leverages digital and thematic storytelling to educate and engage the community, fostering meaningful participation in City planning initiatives. We seek to develop compelling narratives that resonate with the community's values, history, and vision for the future. By integrating community stories and case studies, we make community planning more relatable and understandable.

Halff uses spatial storytelling techniques, including interactive Story Maps, to bridge technical data with engaging narratives. This method allows residents to explore projects through dynamic visuals, enhancing their understanding of proposed changes and tradeoffs. To further enrich the storytelling experience, Halff integrates a variety of multimedia elements such as videos, photography, maps, and text. These elements make information more engaging and accessible, helping to illustrate key details in a compelling and understandable manner.

E. WEBSITE DESIGN AND MAINTENANCE

The Halff Team routinely assists municipal clients with creating easily accessible, informative, intuitive, and interesting content on both city websites and online engagement hubs, such as EngagementHQ. In supporting the development of project information on the City's online platforms, Halff will work closely with city staff to verify that these tools for public communication and engagement are utilized to their full potential. Our goal is to create an online environment that not only informs but also invites active participation in City planning initiatives.

To keep the online presence of each planning assignment current and relevant, we will establish a maintenance schedule for regular updates, verifying that content conveys latest news, notifications, documents, and other resources. Monitoring of website analytics helps us know where to make adjustments to improve user engagement.

F. MARKET AND SURVEY RESEARCH

Halff's approach to providing market and survey research services for planning projects integrates survey design, data analysis and reporting, and community feedback loops and evaluation.

© Halff - 2024

Our team thoughtfully designs surveys to gather actionable data on community needs, preferences, and behaviors. We strive to create questions that are clear, unbiased, straightforward. Surveys can be distributed through various methods—online platforms, phone surveys, and paper surveys at community events—to capture a broad range of responses. We have had success using visual preference surveys (VPS) to understand community preferences. A recent survey for the City of Port Richey, a community of 3,200, captured 766 responses with thousands of data points to help inform a vision for waterfront development. We used VPS for the Hillsborough County Greenways Master Plan update to understand community preferences for trail features. This VPS was integrated into the County's online engagement hub.

Following a survey, our team will assist the City in analyzing the data using statistical methods and GIS tools to extract meaningful insights. Detailed reports will be produced, featuring charts and graphs to illustrate key findings. These reports will translate complex data into accessible information, supporting informed planning decisions and effective communication strategies.

Halff has experience conducting focus groups to delve deeper into community attitudes and preferences for more nuanced feedback on issues and solutions. We will develop mechanisms to report back to the community on how their feedback has influenced decision-making. This could involve follow-up surveys, community meetings, or digital updates through social media and email to the contacts list. By demonstrating the impact of community input, we build trust and encourage ongoing engagement. Our team organized a geographically diverse focus group for the Advantage Pinellas Long Range Transportation Plan as a follow-up to a statistically valid opinion survey by Forward Pinellas. Several focus group members went on to join MPO committees, prompted by their focus group experience.

URBAN DESIGN

Tomorrow's future begins as an idea today. We believe in the power of ideas and strive to imagine, plan and design a future where great ideas lead to enduring places. Our focus is on the interrelationship between the built environment, the landscapes that surround them, the people who use them, and the prosperity it creates today and for future generations.

We focus on people because we believe in protecting and enhancing social connections and sense of community. We strive to improve society by focusing on making places that become the foundation for great communities.

We focus on place because we believe in creating a strong sense of identity and lasting memories. We strive to celebrate culture and heritage, and we endeavor to create quality, destination places.

We focus on planet because we believe improving the built and natural environments are not mutually exclusive. We strive to think globally, but act locally, to balance and strengthen the relationship between the built and natural environment.

We focus on prosperity because we believe our efforts should lead to added value and a strengthened economy. We strive to understand the benefits, costs, and ultimately, the return on investment for those we work for and the communities they live in.

A. SITE AND AREA MASTER PLANS

Our approach to developing Site and Area Master Plans for the City of Tarpon Springs involves a thorough analysis of the existing urban fabric, land use patterns, and community needs. We will engage in extensive stakeholder consultations, including public workshops and meetings with local businesses and residents, to verify that the master plans reflect the community's vision and priorities. The plans will address key issues such as land use compatibility, sustainable development practices, and the integration of green spaces. We will also identify opportunities for economic development, cultural preservation, and environmental stewardship, creating a roadmap for the future growth and enhancement of Tarpon Springs.

B. CORRIDOR AND STREETSCAPE DESIGN

In designing corridors and streetscapes, our goal is to create vibrant, safe, and accessible public spaces that enhance the overall urban experience. For Tarpon Springs, this will involve the development of design guidelines that promote walkability, incorporate native landscaping, and improve traffic flow while maintaining the historic character of the city. We will focus on creating pedestrian-friendly environments with appropriate lighting, street furniture, and shade, as well as verifying that streetscapes are resilient to the impacts of climate change. Our design process will include detailed studies of key corridors, considering current and future transportation needs, and integrating multimodal transportation options such as biking and public transit.

C. VISUALIZATION/ ILLUSTRATIONS

A picture speaks a thousand words. Halff has the capability to create high-quality graphic plans and 3D visualizations to effectively communicate the "vision"

and the intent for the City's public spaces and facilities. This aids in exploring options and alternatives quickly, and offers a realistic idea of what the final project outcome will be. Halff's visualization team transforms designs into 3D simulations that bring projects to life — offering a tangible representation of the design. Utilizing state-of-the-art software and hardware, we provide a multitude of dynamic capabilities for analysis and interactive understanding. Our visualizations range from artistic, freehand-style sketches to photorealistic 3D animations.

Realistic renderings of proposed park improvements can help generate enthusiasm and momentum for a project. At Halff, we have an entire team dedicated to 3D visualization to help clients picture what proposed improvements would look like when implemented. We can create realistic renderings and fly-through videos to help sell a project to the public.

D. GATEWAY, WAYFINDING AND SIGNAGE PLANS

The development of Gateway, Wayfinding, and Signage Plans for Tarpon Springs will focus on enhancing the city's identity and improving navigation for residents and visitors. We will design gateway features that celebrate the unique cultural and historical heritage of Tarpon Springs, creating memorable entrances to the city. Gateway signage is a defining feature within the community elevating a sense of place by creating a moment of arrival or creating a sense of destination within the region. Our wayfinding strategies will be intuitive and accessible, incorporating clear, consistent signage that helps people navigate the city's streets, parks, and public spaces. The signage designs will be aesthetically aligned with the city's character, verifying they contribute to the overall visual coherence of the urban environment.

E. PARKING NEEDS ANALYSIS

Our Parking Needs Analysis will assess current and projected parking demands in Tarpon Springs, considering factors such as land use, population growth, and transportation trends. We will conduct field surveys, analyze parking utilization data, and engage with stakeholders to understand parking challenges and identify opportunities for improvement. Our analysis will include recommendations for optimizing existing parking resources, exploring the potential for shared parking arrangements, and integrating new technologies such as smart parking systems. The goal is to verify that parking solutions are sustainable, efficient, and supportive of the city's broader urban design objectives.

F. OPEN SPACE AND PUBLIC REALM

The creation and enhancement of Open Space and Public Realm areas are critical to fostering a sense of community and improving the quality of life in Tarpon Springs. Our approach will focus on designing inclusive, multifunctional public spaces that cater to a wide range of activities and user groups. We will prioritize the preservation and enhancement of natural features, such as waterways and green spaces, while also incorporating new amenities like playgrounds, plazas, and outdoor gathering areas. Our designs will emphasize connectivity, verifying that open spaces are easily accessible from surrounding neighborhoods and linked to a broader network of parks, trails, and recreational facilities. Additionally, we will incorporate sustainable practices in the design and maintenance of these spaces, verifying they remain vibrant and resilient over time.

LAND USE AND REDEVELOPMENT

A. COMPREHENSIVE, ACTIVITY CENTER & MULTIMODAL CORRIDOR PLANS

This approach will involve the development of a Comprehensive Plan, which serves as a long-term vision and policy document outlining overall development and land-use strategies for the City of Tarpon Springs. It will cover topics such as transportation, housing, economic development, open spaces, and infrastructure. We will also focus on Transportation and Corridor Plans that address transportation and mobility issues, proposing strategies to improve systems, reduce congestion, enhance public transit, and promote active transportation modes like walking and cycling.

B. LAND DEVELOPMENT CODES (TRADITIONAL)

We will define specific Land Development Regulations that set out permitted uses and development standards for each zone within Tarpon Springs, verifying appropriate land use and consistent urban growth. This will be supported by Development Review Submittals, where Halff staff provide planning support, landscape architectural and arborist reviews, as well as engineering and stormwater reviews.

C. FORM BASED CODES

Our design approach will incorporate Urban Design Guidelines to verify that new developments and buildings align with the city's character and aesthetics. These guidelines will cover architectural styles, building heights, public spaces, and more, verifying that the form-based codes contribute to a cohesive and attractive urban environment.

D. SIGN REGULATIONS

The development of Gateway, Wayfinding, and Signage Plans for Tarpon Springs will focus on enhancing the city's identity and improving navigation for residents and visitors. We will design gateway features that celebrate the unique cultural and historical heritage of Tarpon Springs, and our wayfinding strategies will include clear, consistent signage that is aesthetically aligned with the city's character.

E. STATION AREA PLANS/TRANSIT ORIENTED DEVELOPMENT

Transportation and Corridor Plans will be integrated with Station Area Plans to support transit-oriented development. This will enhance connectivity and accessibility around key transit hubs, verifying that the city's transportation infrastructure supports sustainable growth.

F. SCENARIO PLANNING

Incorporating Scenario Planning and advanced visualization tools, we will explore various future development scenarios for Tarpon Springs. This will help stakeholders and community members understand potential impacts and benefits, facilitating informed decision-making and verifying that development aligns with the city's long-term vision.

G. SPECIAL AREA PLANNING

Special Area Planning will address the unique needs of specific neighborhoods or districts within Tarpon Springs. This includes tailored strategies for economic development, cultural preservation, and enhancing the character of each area while aligning with the city's overarching goals. This will also involve Historic Preservation Reports to identify and protect historic buildings, landmarks, and cultural heritage sites within the city.

H. TREE CANOPY PRESERVATION ORDINANCES

Halff will conduct an arborist evaluation to identify any potential "Grand Tree" on site, verifying compliance with Tree Canopy Preservation Ordinances. Our design approach will prioritize the preservation of existing trees and the integration of new plantings to enhance the city's green infrastructure and urban canopy.

I. ENVIRONMENTAL PROTECTION / BIOLOGIST SERVICES

Our Parking Needs Analysis and corridor planning efforts will incorporate environmental protection measures. We will assess the environmental impact of proposed developments and parking demands, verifying that solutions are sustainable and support the city's broader environmental goals. Additionally, our ecosystem, habitat, and wildlife corridor planning efforts will focus on preserving biodiversity, maintaining habitat connectivity, and supporting sustainable development in Tarpon Springs.

© Halff - 2024

HISTORIC PRESERVATION

A. ARCHAEOLOGICAL AND HISTORIC RESOURCE SURVEYS

KSK Preservation has extensive experience in both historic resource surveys and conditions assessments that include the built environment, landscapes, and other types of structures such as bridges, canals, and railway corridors. Our survey work includes assisting clients with appropriate scopes, determination of boundaries, field work and photography, research and preparation of historical narratives, map preparation, and Florida Master Site File preparation. Some of our state projects (FDOT) also included an archaeological component, and we do have an archaeologist if needed. We provide archaeological and historic resource surveys to Miami-Dade Expressway Authority on an ongoing basis.

Another type of “historic resource survey” are Existing Conditions Assessments and Reports. These are an important initial step for subsequently determining project budgets, identifying critical needs and endangerments, proposing phases for large-scale projects, and helping prioritize funding. Conditions assessments typically include the preparation of historical narratives, photography of a building’s interior and exterior, and a detailed review of observable conditions from the roof to the foundation. Conditions Assessments that KSK Preservation prepared include the Stone House at the Charles Deering Estate in Miami for Miami-Dade County, Orchid Jungle for Miami-Dade County Parks and Recreation, the Congregational Church in Coral Gables and the Butler House in Deerfield Beach.

CPC team members have varied experience managing historic resource survey projects, from reconnaissance-level to specific historic districts. This expertise includes scoping such surveys, soliciting consultant assistance and managing the project, and reviewing final products of historic surveys before completion. CPC also has participated in completion of historic resource surveys including field work and drafting narrative components of historic resource surveys. CPC can assist with identifying potential areas for survey, scoping the survey, establishing survey methodology, and assisting with historic research and narrative components of the survey report. CPC has assisted with various components of survey projects across Florida in Fernandina Beach, Nassau County, Sarasota, Jacksonville, and Miami-Dade County.

B. PRESERVATION PLANNING

CPC team members have years of experience in preservation planning, from drafting comprehensive plan elements to working on more specialized preservation plans for cultural resources such as cemeteries. Preservation planning efforts are viewed holistically so that historic preservation is connected to larger long-range planning and integrates preservation into important issues facing communities today like affordable housing, resilience, sea level rise and flooding, sustainability, and inclusivity. Specific planning experience includes drafting the City of Fernandina Beach Preservation Element in the City’s Comprehensive Plan, drafting preservation planning recommendations for the cities of Marathon and Titusville, completing consistency reviews for preservation with the Miami-Dade Comprehensive Development Master Plan, working on cemetery

master plans in Fernandina Beach and Bradenton, and managing long-range strategic planning efforts such as the West Nassau Heritage Preservation Plan in Nassau County. Additionally, Adrienne Burke is a National Alliance of Preservation Commissions trainer and teaches preservation planning to local governments across the country.

C. NATIONAL REGISTER EVALUATIONS AND NOMINATIONS

KSK Preservation is proficient at NR nominations, as well as preparing federal tax credit applications for projects that often result from a successful nomination. Our firm prepared the National Register nomination for Barry University in Miami Shores, a district that was listed in 2019 which led the school to successfully obtain preservation grants for the restoration of several key buildings. We worked closely with State architects on a federal historic tax credit for the restoration of the NR designated La Palma Hotel in Coral Gables. Ms. Kauffman is the Vice-Chair of the State's National Register Review Board and is currently preparing an NR nomination for a theater in Gainesville, Florida.

D. ARCHAEOLOGICAL MONITORING AND EXCAVATIONS

Our team will provide Archaeological Monitoring and Excavations during construction and development projects to verify that any potential archaeological resources are identified and protected. This proactive approach minimizes the risk of damaging historical artifacts or sites, and supports compliance with local, state, and federal preservation regulations.

E. MEMORANDA OF UNDERSTANDING AND MEMORANDA OF AGREEMENT

Ms. Kauffman has experience in the preparation of MOUs and MOAs, which included coordination between stakeholders, appropriate government agencies, the SHPO (State Historic Preservation Officer) and Tribal leaders. We are familiar with consulting with the Advisory Council on Historic Preservation for best practices, especially during particularly challenging projects such as the restoration vs replacement issue of the Venetian Causeway in Miami. Project Advisory Groups were organized between 2014 and 2017, with an MOU finally executed in 2022. Ms. Kauffman successfully navigated a crucial MOA between Miami-Dade County and the SHPO for a development effort within the Miami International Airport complex. In relation to the MOUs and MOAs, KSK Preservation is very knowledgeable of Section 106 regulations and its process, having performed Section 106 reviews for many government agencies including the City of Fort Pierce, the City of Miami, Miami-Dade County and the City of Gainesville.

F. TRAINING AND WORKSHOPS

CPC team members have conducted countless trainings and workshops over the past 20 years related to a variety of planning topics. With regards to preservation, workshops and trainings have included the following topics: design guidelines, preservation ordinances, preservation planning, preservation law, preservation for realtors, historic preservation 101, differences between local and national designation, inclusion in preservation, cemetery master planning, Main Street designation, intersection of preservation and sea level rise/flooding, and community engagement and outreach for preservation. CPC team members are comfortable with presenting to a variety of audiences and in a variety of settings from elected officials to community groups. Adrienne Burke is a National Alliance of Preservation Commissions trainer and teaches preservation to local governments across the country.

G. HISTORIC DISTRICT AND BUILDING SURVEYS

Ms. Kauffman has done numerous survey projects since 2001, most of which resulted in the designation of those properties and districts. Five of the six historic districts in the City of Fort Pierce were a result of Ms. Kauffman's work. In 2020, KSK Preservation performed a 5-District survey of all the residential districts, and in 2021 was hired to survey Delray Beach's downtown commercial corridor of Atlantic Avenue. An important aspect of district and building survey is the completion of Florida Master Site File forms, which Ms. Kauffman has submitted over 1300 of to the State. Ms. Kauffman is a regular guest lecturer in historic preservation classes at the University of Florida. This semester she is assisting a class that is teaching traditional survey methods as well as using the latest technology to make survey work more efficient, using a data collection application created by the University of Florida that will auto-populate the State's Florida Master Site File forms.

H. CULTURAL RESOURCE ASSESSMENT SURVEY (CRAS) REPORTS

The KSK Preservation team has provided cultural resource assessment reports for State review, including archaeological, building, and cultural landscape surveys. We follow all State requirements as outlined in Chapter 1A-46 (Standards and Guidelines for Reports) and Federal regulations including those outlined in 36 C.F.R. Part 800: Protection of Historic Properties. We are very familiar with the Division of Historical Resources' "Module 3," which outlines the methodology, report inclusions, and deliverables for both Phase I and Phase II CRAS necessary for compliance with state submittal requirements. KSK has been part of consulting teams in large-scale federal and state transportation projects requiring cultural resource surveys and is an ongoing consultant to Miami-Dade Expressway Authority for such purposes.

I. HISTORIC/HERITAGE/ CULTURAL/CONSERVATION DISTRICT GUIDELINES AND REGULATIONS

CPC team members have extensive expertise with historic, heritage, cultural, conservation district guidelines and regulations. Knowledge of preservation law and regulations combined with years of local government experience in Florida have positioned CPC well to support these types of preservation projects. CPC stays engaged in national preservation conversations around best practices for district guidelines and regulations including inclusion of cultural significance and intangible heritage, bringing historic preservation beyond just architecture. CPC additionally has experience drafting a variety of land development code updates beyond preservation and this familiarity is beneficial to understanding how preservation can be comprehensively addressed throughout code sections related to other planning issues. Past projects include drafting updates to the City of Fernandina Beach preservation ordinance, management of design guideline update projects in Fernandina Beach and Miami-Dade County, and working on architectural components of a transect-based overlay in Nassau County. Current projects include drafting a cultural zoning overlay for a historically African American neighborhood in Jacksonville and updating historic preservation policy in Bozeman, MT.

COMMUNITY RESILIENCE

A. COMMUNITY RESILIENCE SERVICES

Community resilience is the ability of a community to withstand, adapt to, and recover from adverse events. For the City of Tarpon Springs, Halff brings extensive experience to bolster community resilience through strategic planning and implementation.

B. HAZARD MITIGATION AND PRE-DISASTER MITIGATION

Halff's experience in hazard mitigation and pre-disaster preparedness is exemplified through our work with the America's Water Infrastructure Act (AWIA) of 2018. This legislation requires community and wholesale water systems serving over 3,300 people to conduct risk and resilience assessments and certify their compliance with the Environmental Protection Agency (EPA). In response to this mandate, Halff has formed a specialized team dedicated to helping communities meet these requirements efficiently, while also enhancing their resilience against a variety of threats.

Beyond our focus on utility risk assessments, Halff offers a broad range of services that support effective hazard mitigation and pre-disaster planning. These include asset management, Geographic Information Systems (GIS), Supervisory Control and Data Acquisition (SCADA) systems, utility financial management, cybersecurity, floodplain mapping, and emergency response planning. Our extensive operational history with utilities and municipalities allows us to deliver actionable insights and improvements that align with AWWA criteria and contribute to overall resilience. Halff helps communities proactively address potential hazards and implement strategies that enhance their ability to withstand and recover from disasters.

C. VULNERABILITY AND RISK ASSESSMENTS

Halff has been instrumental in advancing flood vulnerability assessments (VAs) across Florida. Our teams have significantly contributed to resilience planning efforts in over 16 counties and 51 municipalities, driving substantial investments under the Resilient Florida Program. Our assessments span extensive areas throughout the state, including the Tampa Bay, Apalachee, Northeast, East Central, Central, and Emerald Coast regions.

In 2022, Halff conducted a thorough regional vulnerability assessment for the Apalachee Region. This assessment evaluated over 17,000 critical infrastructure assets across nine counties and 28 municipalities, providing valuable insights into regional risks and vulnerabilities. Building on this methodology, in 2023, we carried out a similar assessment for the Tampa Bay region. This project involved developing detailed flood inundation maps for seven counties and 19 municipalities.

Our recent projects highlight our ongoing commitment to vulnerability and risk assessments. Notable assessments include those for Port Richey, Fernandina Beach, Panama City, Pasco County, and Flagler County. We are also actively engaged in projects in DeLand, Marion County, and Lake County.

Halff's work often goes beyond statutory requirements to address emerging risks and long-term planning needs. For instance, Pasco County's Risk and Vulnerability Assessment, developed by our team, incorporated a forward-looking 2100 planning horizon. This assessment not only addressed potential flood risks but also examined the impacts of extreme heat, with a specific focus on Holiday — a community adjacent to Tarpon Springs. Our detailed focus area mapping for Holiday provides a deeper understanding of local vulnerabilities and supports targeted adaptation strategies.

© Halff - 2024

D. ADAPTATION PLANNING

Halff's adaptation planning services are grounded in a collaborative, interdisciplinary approach that integrates skillsets across infrastructure, water, mobility, and placemaking. Our methodology is carefully aligned with the Florida Department of Environmental Protection's (FDEP) Adaptation Planning Guidebook, safeguarding that our strategies are both effective and compliant with state guidelines.

We take a holistic view in developing adaptation strategies, addressing a wide array of challenges through protection, accommodation, avoidance, managed relocation, and procedural adaptation. Protection strategies involve designing measures to shield communities from climate impacts, such as constructing robust sea walls or enhancing natural barriers. Accommodation focuses on adapting existing systems and infrastructure to changing conditions, like elevating buildings or implementing flexible design features. Avoidance entails making strategic decisions to prevent development in high-risk areas, thereby reducing exposure to potential hazards. Managed relocation involves strategically moving vulnerable populations and infrastructure to safer locations to mitigate long-term risks. Procedural adaptation updates policies and procedures to integrate climate considerations, reaffirming resilience in planning and development practices.

Our approach is not just about identifying these strategies but also about innovating and implementing them effectively through our design and engineering teams. For instance, in Port Richey and Panama City, we developed tailored adaptation plans that address specific local vulnerabilities and enhance community resilience. Our current efforts in DeLand and Marion County continue this work.

Port Richey Flooding

One notable project was our adaptation planning work in St. Pete Beach, where we led a design-based initiative. This project involved a comprehensive analysis of local neighborhood conditions to understand specific vulnerabilities. We crafted conceptual designs aimed at reducing nuisance flooding, mitigating potential damage to structures and infrastructure, and enhancing resilience to sea level rise.

E. RESILIENT DESIGN AND CRITICAL INFRASTRUCTURE PROTECTION

Halff's flood mitigation design philosophy centers on creating infrastructure solutions that enhance long-term flood resilience while improving community quality of life. Our projects include large-scale civil infrastructure such as regional detention systems, tunnels, dams, and levees.

A notable example is our work on the Capital Cascades Trail and Cascades Park in Tallahassee. Since 2002, Halff has been instrumental in developing a green urban corridor with extensive stormwater management features. Cascades Park, situated on a former EPA Superfund site, functions as a "floodable" park designed to manage significant rainfall and provide flood relief for approximately 1,478 acres, including the St. Augustine Branch.

In Texas, Halff is leading the Mill Creek/Peaks Branch/ State-Thomas Drainage Relief Tunnel project, a $320 million endeavor and the largest tunnel construction currently in the U.S. This 5-mile tunnel will offer 100-year flood protection for nearly 2,200 properties in east Dallas. Our team developed XPSWMM hydrodynamic models and detailed construction plans, including a 30,000 gpm dewatering station, to reinforce the tunnel's effectiveness in managing stormwater and alleviating flood risks. We seek opportunities to integrate flood infrastructure design with water quality improvements and water supply efforts, making sure a holistic approach to water management.

F. GREEN INFRASTRUCTURE PLANNING

Halff's multidisciplinary team includes engineers, modelers, planners, and landscape architects experienced in Green Infrastructure and sustainable design. We are proficient in the use of the Envision™ rating system and are dedicated to addressing the challenges associated with Green Infrastructure.

© Halff - 2024

Key challenges include fostering collaboration across different engineering disciplines and municipal departments, developing measurable and achievable design criteria, and making sure effective maintenance. Our Green Infrastructure and Low Impact Development (LID) techniques aim to mitigate development impacts, maintain pre-development stormwater runoff conditions, encourage infiltration and groundwater recharge, reduce pollutant loading in drinking water, and promote water conservation and reuse practices. Halff's approach involves overcoming these challenges through continued innovation and collaboration.

The two largest hurdles to implementing LID are usually cost and maintenance. It does typically cost more than conventional drainage methods. The challenge becomes whether you can turn an unsightly drainage feature into a more aesthetically pleasing amenity for the site. By being a good steward of the land and incorporating LID design, you can potentially create more developable area with a greater return on investment that can offset LID costs. The bottom line is LID components may not be possible for every project, but they can play a large role in a development's stormwater management program.

G. POST-DISASTER RECOVERY, REDEVELOPMENT, AND HOUSING

Halff brings a wealth of experience in post-disaster recovery, redevelopment, and housing, all of which are essential to supporting the City of Tarpon Springs in navigating its recovery journey. Our approach combines technical proficiency with a deep commitment to community engagement, confirming that our solutions are both effective and reflective of local needs.

In the realm of post-disaster recovery, Halff has a solid track record of guiding communities through the complex process of rebuilding and revitalization. We excel in conducting detailed damage assessments, which utilize advanced technologies to evaluate the extent of impact and prioritize recovery efforts. Our experience extends to developing comprehensive recovery strategies that address both immediate needs and long-term resilience. We work closely with federal and state agencies to secure essential resources and funding, reassuring that recovery efforts are well-supported and aligned with broader disaster management frameworks.

Halff's approach to land use planning and zoning is strategic, focusing on identifying redevelopment opportunities that enhance safety and sustainability. We provide critical support in designing and upgrading infrastructure, such as transportation networks and utilities, to make sure they are resilient against future disasters. We conduct thorough housing needs assessments to understand the specific requirements of displaced populations and identify gaps in housing availability.

H. HAZARD MITIGATION GRANT PROGRAM ACTIVITIES

Securing funding is critical for successful project implementation. Halff's experience in identifying and securing grants includes navigating the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). The IIJA, passed in 2021, represents the largest infrastructure investment since the New Deal, while the IRA provides additional funding for renewable energy and other projects.

Halff has obtained over $100M in grants for clients over the past decade. Lisa King, Halff's Grant Funding Strategy Lead, has secured a total of $300M in state and federal grants throughout her career, demonstrating our capability to support clients in accessing essential funding resources.

The Hazard Mitigation Grant Program (HMGP) is a cornerstone of FEMA's strategy to reduce disaster risk and mitigate future hazards. Halff's extensive knowledge in this area allows us to provide crucial support to the City of Tarpon Springs in navigating the complexities of hazard mitigation funding. Our approach begins with identifying and securing grant opportunities through HMGP, confirming that we guide clients through the multifaceted application process. This includes reinforcing compliance with federal guidelines and maximizing the likelihood of securing essential financial resources.

I. NATIONAL FLOOD INSURANCE PROGRAM ACTIVITIES

Halff's involvement with the National Flood Insurance Program (NFIP) reflects our deep commitment to effective floodplain management and resilience. Our extensive experience with FEMA's mapping programs has positioned us as a key player in creating accurate and actionable flood risk information. We conduct

© Halff - 2024

detailed Hydrology & Hydraulics (H&H) studies and develop Flood Insurance Rate Maps (FIRMs) to provide communities with essential data for floodplain management and insurance planning.

As a Cooperating Technical Partner (CTP) with FEMA's Risk MAP Program, Halff collaborates with FEMA and other partners to improve floodplain mapping and risk communication. This role involves contributing technical knowledge and supporting the development of updated flood risk data. Our understanding of NFIP regulations is pivotal in assisting communities with compliance, including implementing effective floodplain management practices and updating local regulations.

J. POST DISASTER HOUSING PLAN

A Post-Disaster Housing Plan is essential for the City of Tarpon Springs to verify rapid and effective recovery in the aftermath of a disaster. This plan outlines strategies and procedures for providing temporary and permanent housing solutions to residents who may be displaced due to natural disasters, such as hurricanes or flooding. It involves identifying potential sites for temporary housing, streamlining the permitting process for rebuilding, and coordinating with local, state, and federal agencies to secure resources and support. The plan also considers the needs of vulnerable populations and aims to rebuild in a way that enhances community resilience and reduces future risks. By having a comprehensive Post-Disaster Housing Plan in place, Tarpon Springs can better protect its residents, maintain social cohesion, and have an efficient recovery process.

K. CONSERVATION EASEMENTS AND INCENTIVES

Conservation easements are vital for preserving natural resources and open spaces, offering landowners financial and environmental benefits. Halff's approach to conservation easements involves working closely with landowners and communities to design and implement effective conservation strategies. We provide guidance on the legal and practical aspects of establishing easements, reinforcing they meet conservation objectives and comply with regulatory standards.

In securing funding and incentives for conservation efforts, Halff identifies and leverages various financial mechanisms, including federal and state grants and tax benefits. Our proficiency in navigating these resources helps landowners achieve their conservation goals. We also focus on the long-term management of conservation easements, assisting with monitoring and enforcement to make sure that conservation commitments are maintained over time.

L. ENERGY PLANNING FOR SUSTAINABILITY

Energy planning for sustainability is essential for developing resilient, efficient, and environmentally responsible energy systems. Halff's knowledge in this field supports the City of Tarpon Springs in transitioning to sustainable energy practices. Our approach includes implementing energy efficiency programs designed to reduce consumption and operational costs. We conduct comprehensive assessments of current energy use, identify opportunities for improvement, and recommend strategies for energy savings.

Access to funding and incentives for energy projects is a critical aspect of our support. Halff helps communities navigate various financial mechanisms, including federal and state grants, tax credits, and other resources. Additionally, we focus on enhancing energy resilience, developing strategies to improve system reliability, incorporate backup power solutions, and address the potential impacts of climate change.

Trusted Advisors in Navigating Uncertainty

Halff has a proven track record of supporting municipalities, counties, regional planning councils, and state agencies across a broad geographic footprint covering both coastal and inland areas. Halff has played a pivotal role in helping communities of all sizes respond to climate-related shocks and stresses, offering tailored solutions that enhance resilience and promote long-term sustainability.

COMMUNITY DEVELOPMENT AND REDEVELOPMENT

A. AFFORDABLE HOUSING STUDIES & NEEDS ANALYSIS

Our approach to Affordable Housing Studies & Needs Analysis involves a comprehensive assessment of current and future housing demands within the City of Tarpon Springs. We will analyze demographic trends, income levels, and housing market conditions to identify the need for affordable housing. This analysis will support the development of targeted strategies to address housing shortages and promote equitable access to housing for all community members.

B. COMMUNITY REDEVELOPMENT AREA (CRA) PLANNING

For Community Redevelopment Area (CRA) Planning, we will work closely with stakeholders to revitalize and rejuvenate designated areas within Tarpon Springs. Our planning process will involve identifying opportunities for economic development, infrastructure improvements, and community engagement, with the goal of creating vibrant, sustainable neighborhoods that reflect the needs and aspirations of residents.

C. AFFORDABLE HOUSING AND MIXED-USE DESIGN PLANS

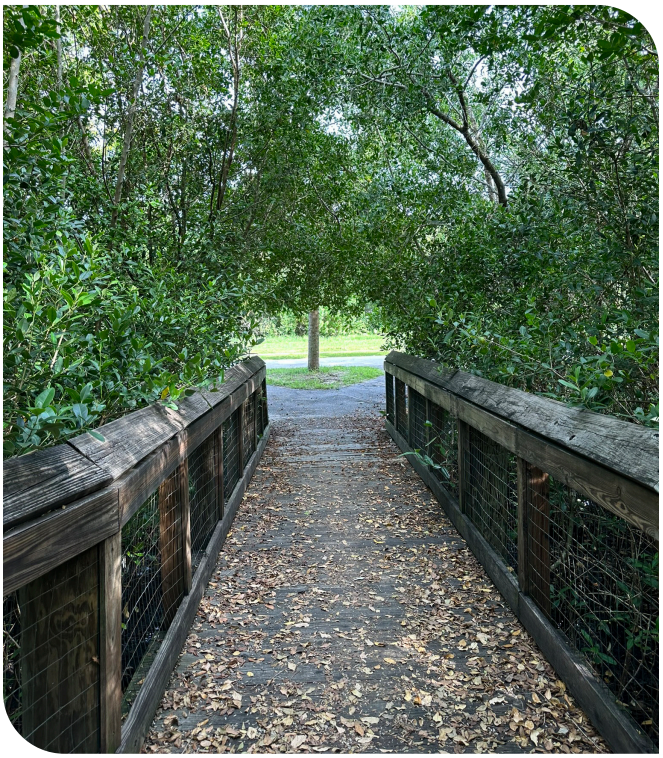
We will develop Affordable Housing and Mixed-Use Design Plans that integrate residential, commercial, and public spaces in a cohesive manner. Our designs will prioritize accessibility, sustainability, and community integration, promoting a balanced approach to urban development that meets the needs of diverse populations while enhancing the overall quality of life in Tarpon Springs.

D. TRANSITIONAL HOUSING AND TENANT RELOCATION SERVICES

Our team will provide Transitional Housing and Tenant Relocation Services to support residents affected by redevelopment projects. This includes identifying suitable temporary housing options, coordinating relocation logistics, and offering support services to minimize disruption and assist residents in transitioning smoothly to new accommodations.

E. ARCHITECTURAL SERVICES

Although Halff does not offer architectural services in house, we have a number of partners we will engage based on project needs. Architectural services are a fundamental aspect of community development and redevelopment in the City of Tarpon Springs. These services involve the planning, design, and implementation of projects that enhance the aesthetic, functional, and cultural value of the city's built environment. In the context of community development, architectural services play a crucial role in creating spaces that reflect the unique character of Tarpon Springs, promoting a sense of place and community identity. For redevelopment projects, these services are essential in revitalizing older neighborhoods and commercial areas, verifying that new developments are harmonious with the existing urban fabric while meeting modern standards for sustainability and resilience. By integrating high-quality architectural services into community development and redevelopment efforts, Tarpon Springs can foster vibrant, attractive, and livable spaces that support the city's long-term growth and prosperity.



© Halff - 2024

F. LANDSCAPE ARCHITECTURAL SERVICES

Our Landscape Architectural Services aim to create attractive, functional, and sustainable outdoor spaces that enhance the livability of Tarpon Springs. We will design parks, streetscapes, and open spaces that foster community interaction, support local ecosystems, and contribute to the city's aesthetic and environmental goals.

G. DEVELOPER QUALIFICATIONS EVALUATIONS

In Developer Qualifications Evaluations, we will assess the credentials, experience, and track records of developers interested in participating in community redevelopment projects. Our evaluations will help identify qualified partners who are capable of delivering high-quality projects that align with the city's vision and standards.

H. CONSTRUCTION ADMINISTRATION SERVICES

We provide Construction Administration Services to oversee the construction process, from groundbreaking to project completion. Our team will monitor construction activities, coordinate with contractors, and manage project timelines and budgets, all while maintaining the highest standards of quality and safety.

If desired, Halff will also prepare the construction documents and technical specifications. Based on your preference, we can assist the City in assembling the "front end" construction documents, including quantity tabulation, contract summary scope narrative, and other necessary documents. Halff is experienced in assembling bid books, hosting pre-bid meetings, and providing support to municipal purchasing departments. Additionally, we have assisted clients with "piggybacking" on existing local government construction contracts, often resulting in time savings and better unit prices.

Once construction begins, Halff can provide Construction Engineering Inspection (CEI) services to monitor the site construction and verify that the project is being built according to the approved plans and specifications.

I. PERMIT READY RESIDENTIAL AND MIXED-USE PLANS AND RENDERINGS

Our approach includes delivering Permit Ready Residential and Mixed-Use Plans and Renderings that are fully compliant with local regulations and ready for immediate implementation. These plans will be developed with attention to detail, considering all aspects of design, functionality, and community impact, to facilitate a smooth approval process and successful project execution.

© Halff - 2024

RECREATION MASTER PLANNING

A. RECREATION FACILITY NEEDS ANALYSIS, INCLUDING RECOMMENDED LEVELS OF SERVICE

Comprehensive Needs Analysis

In order to provide a comprehensive needs analysis, it is essential to take inventory of both current and future needs. This is where our design team puts their boots on the ground and walks through all of the recreational facilities such as parks, open spaces, aquatic facilities and community centers to provide a condition assessment of existing recreation facilities and program offerings. This assessment includes, but is not limited to, vegetation and canopy trees, site furnishings, historical elements, amenities along with regular uses and programs utilizing the space. Through inventory analysis and ranking existing recreation facilities and program offerings, Halff and the City can work together identifying the level of improvements for each site, preservation of existing amenities and any gaps.

Pinellas Trail, Tarpon Springs

Maintenance and Budgetary Considerations

Halff understands that the success isn't always the at the finish line of a project but it is what happens after a project in completed. Being good stewards of not only to the environment but also to our clients is a hallmark of a project well done. By working closely with the City, we gain valuable insights into the specific needs and constraints to be taken into consideration. This allows us to tailor our recommendations and any design guidelines to help promote the longevity and optimal performance of the facilities.

Community Engagement

Community engagement is a critical component to any public planning project. At Halff, we enjoy getting the opportunity to meet with residents and business owners to view existing and future projects through their lens and better understand why they chose to be a part of the community. Our goal to share and educate the community on the process, gain community feedback, and identify and address any potential concerns or challenges that may exist. By fostering open communication and collaboration, we aim to create a plan that truly reflects the community's needs and aspirations.

Creating a Vision for the Future

Halff will take a bird's eye approach to create a vision that promotes continuity and equity across all recreational facilities. By establishing guidelines, Halff will outline the core values and aesthetic principles that define the community's identity, fostering a sense of harmony and continuity throughout all recreational spaces. This will also allow for creative designs and elements at each facility, allowing individual character while adhering to the overarching vision.

Implementation

Based on findings from the previous activities, Halff collaborate with the City to develop a comprehensive implementation plan. This plan will serve as a roadway for prioritizing needs and outlining goals over a specified period along with providing a clear and structured approach. In addition to detailed timelines, budget considerations, and specific actions needed to achieve outlined goals.

B. ECOSYSTEM, HABITAT AND WILDLIFE CORRIDOR PLANNING

Ecosystem, habitat and wildlife corridor planning is a vital conservation strategy aimed at preserving biodiversity and reaffirming the resilience of ecosystems. Halff utilizes this approach to focus on creating and maintaining connections between fragmented habitats, providing protected corridors which allow wildlife to move freely and safely across landscape. By identifying critical habitats in advance and mapping potential corridors within projects to maintain and promote habitat connectivity, our team of planners and scientist can design pathways that facilitate species migration, genetic exchange, and adaptation to environmental changes. These corridors often incorporate a mosaic of habitats and natural features, and, where appropriate, man-made features and structures to provide safe wildlife crossings.

Halff recognizes the crucial importance of engaging local communities, landowners, and policymakers to align conservation efforts with social and economic interests,making sure long-term support and sustainability. Implementation of involves establishing

© Halff - 2024

protected areas, restoring degraded habitats, and managing land use to maintain corridor integrity, which may include reforestation, controlling invasive species, and mitigating human-wildlife conflicts. Continuous monitoring and adaptive management are essential to evaluate the effectiveness of corridors and implement required management needs, tracking wildlife movements and habitat changes to make sure the sustained functionality of the corridors. By integrating ecological science with practical conservation strategies, ecosystem and wildlife corridor planning helps preserve biodiversity, enhance ecosystem resilience, and support sustainable development, ultimately fostering a harmonious coexistence between nature and human activities.

C. OPEN SPACE AND PARK PLANNING

Open Spaces and Parks are an important component and amenity to any community. Developing meaningful open spaces and parks are extremely important not only for the area it will be serving but also for providing connectivity within and through the City. Halff takes a unique approach by incorporating equity as a part of equality within specific communities that maintains a measurement for a successful open space and park should include the following:

- Connectivity is determined by how well a park of open space is integrated with its surrounding environment. It involves identifying amenities, pedestrian and vehicular connections, future connection with other parks and trail projects.
- Safety is a crucial aspect of any public space. This includes adequate lighting to provide visibility during evening hours, clear sight lines to prevent hidden areas, and regular maintenance to keep the area clean and free of hazards. Enhanced cleanliness also contributes to a sense of safety, as a well-maintained park is less likely to attract vandalism or other negative behaviors.
- A successful park should foster a sense of community. This can be achieved through activating the space with amenities to encourage social interaction such as picnic areas, playgrounds, sport facilities, and planned events.
- Offering a variety of activities and programs can make a park more attractive and useful to a wider range of people. This includes providing design considerations that include multiple generations and user groups.
- Providing a maintained park goes beyond just the upkeep. It involves considering how the space can drive local economics by attracting both neighborhood residents and visitors. The goal is to provide a connection or the ability to go on a day “adventure” to experience the City of Tarpon Springs.

D. AQUATIC FACILITY PLANNING AND MANAGEMENT

Aquatic Facility Planning and Management is a key component of recreation master planning in the City of Tarpon Springs, aimed at enhancing the community’s recreational offerings and promoting public health and wellness. This process involves the strategic design, development, and management of aquatic facilities such as swimming pools, splash pads, and water parks to meet the needs of residents of all ages. Effective planning verifies that these facilities are accessible, safe, and sustainable, incorporating features that cater to diverse recreational and competitive uses. Management focuses on maintaining high standards of cleanliness, safety, and operational efficiency, as well as offering programs that encourage community engagement and active lifestyles. By prioritizing Aquatic Facility Planning and Management within the broader recreation master plan, Tarpon Springs can provide high-quality aquatic amenities that enrich the lives of its residents and contribute to the overall vitality of the community.

We have a number of partners we use for aquatic management that we will engage if needed.

E. PROVIDING FOR RECREATION NEEDS WITHIN RESIDENTIAL DEVELOPMENTS.

Integrating recreational needs within residential developments is essential for fostering a vibrant and healthy community. By conducting a comprehensive needs assessment, we can identify the specific recreational preferences of residents and create a master plan that caters to a wide range of age groups and lifestyles. Thoughtful considerations include accessibility, safety, and sustainability; in addition to organized program activities such as group activities and community events.

Tarpon Spring Splash Park Playground

F. UTILIZING WATERFRONT IMPROVEMENTS FOR RECREATION, CLIMATE ADAPTATION AND COASTAL RESTORATION.

Halff has the experience and connections to work closely with the City of Tarpon Springs, U.S. Army Corps Engineering (USACE), Environmental Protection Agency (EPC), Southwest Florida Water Management District (SWFWMD), and other applicable agencies to develop solutions for preserving and enhancing the existing environment as well as long-term planning for the community's well-being. These improvements can facilitate recreational amenities such as kayaking, fishing, observation tower, and boardwalks to enhance the user experience. They also provide a picturesque and natural corridor that maximizes scenic views and educational opportunities.

Meanwhile climate restoration improvements may include green infrastructure, such as wetlands, mangroves, and vegetated buffers, which can help absorb storm surges, reduce flooding, and protect against erosion. These natural barriers also enhance biodiversity and provide habitats for wildlife, contributing to the overall ecological health of the area. Additionally, restoring natural shorelines, planting native vegetation, and removing of invasive species to improve water quality and increase resilience of coastal ecosystems.

As a result, these improvements can create sustainable and resilient communities that are better equipped to face future challenges while providing enjoyable and accessible spaces for residents and visitors alike.

G. RECREATION IMPACT FEE ANALYSIS

The recreation impact analysis for the City of Tarpon Springs evaluates how new construction projects affect local recreational services, factoring in the city's impact fee structure designed to mitigate the effects of growth. These fees, imposed on residential and nonresidential developments, help fund capital expenditures for parks and recreation, making sure that the city can maintain and enhance its recreational facilities as the population grows. Notably, the fees vary based on the type of construction, with residential units incurring a set fee per unit and nonresidential structures being charged per square foot. The analysis also considers exemptions for certain types of construction, such as government buildings or projects that don't add substantial new demand. By aligning development with resource management, this analysis supports the city's commitment to sustaining high-quality recreational opportunities for all residents.

Waterfront open field in Tarpon Spring Splash Park, next to Anclote River

Tab 5. Minority Business Status

Halff is not a MBE/DBE firm; however, we are committed to providing opportunities to MBE/DBE firms by proactively identifying MBE/DBE subconsultants and incorporating them into our project teams in meaningful roles. For this contract, we have included the following W/MBE firms: **Community Planning Collaborative, Vrana Consulting, Inc., SPG, and KSK Preservation, LLC.**

Halff is and will continue to be committed to affording equal opportunity in employment to all individuals without regard to race, color, religion, sex, or national origin.

AFFIRMATIVE ACTION WILL BE TAKEN TO:

1. Recruit, hire and promote all job classifications without regard to race, color, religion, sex, or national origin.
2. Impose only valid requirements for promotional opportunities to make certain that promotion decisions are in accordance with the principles of equal employment opportunities.
3. Make certain that all personnel actions such as compensation, benefits, transfers, layoffs, return from layoffs, training, will be administered without regard to race, color, religion, sex, or national origin.
4. To make certain that all social and recreational programs sponsored for employees are open to participation without regard to race, color, religion, sex or national origin.

Each supervisor within the organization has the responsibility of supporting our Affirmative Action Program. The successful achievement of a non-discriminatory employment program requires the cooperation of all Halff employees. The President of the Company is responsible for the overall Equal Employment Opportunity Program. These responsibilities include leading the way by establishing and implementing affirmative procedures and practices which will achieve the objective of equity to all individuals in employment opportunities.

Tab 6. Cost

PROFESSIONAL SERVICES RATES

Labor Category	Level	Low	Average	High
Engineer	I	124.40	129.18	178.85
	II	144.30	154.50	188.26
	III	185.77	203.32	304.54
	IV	240.50	259.14	320.64
	V	301.88	334.33	516.50
Scientist	I	97.86	102.53	110.30
	II	127.72	132.51	157.57
	III	161.72	180.89	199.04
	IV	223.92	236.63	258.75
	V	275.34	313.49	394.76
Landscape/Planner	I	96.20	100.93	107.81
	II	115.28	125.38	161.00
	III	163.38	168.37	185.77
	IV	199.04	215.09	243.82
	V	255.43	286.81	366.56
Surveyor	I	112.08	125.93	137.66
	II	131.10	136.23	144.90
	III	161.72	162.13	167.52
	IV	187.43	200.02	215.63
	V	227.24	261.85	359.93
Administrative	I	72.45	76.47	86.25
	II	87.11	94.29	107.81
	III	110.40	116.36	130.20
	IV	139.33	145.57	157.57
	V	218.94	274.06	362.25
CEI Services	I	86.25	96.29	127.82
	II	96.60	108.01	134.55
	III	109.54	120.28	150.94
	IV	138.00	151.90	208.99
	V	172.50	213.22	258.75

Tab 7. City Forms

Rev 01/24

RFP No. 2400115-P-JL

ACKNOWLEDGEMENT FORM

SUBMIT RESPONSES ELECTRONICALLY VIA BONFIRE

TO: PROCUREMENT SERVICES DEPARTMENT

MAILING ADDRESS: P.O. BOX 5004
TARPON SPRINGS, FL 34688-5004

TAX NUMBER: 85-8012621696C-2

NUMBER OF COPIES REQUIRED: One (1) electronic proposal. Proposers shall submit their responses electronically via Bonfire.

SUBMITTALS WILL BE OPENED:

AUGUST 28, 2024 @ 3:00 p.m.
Via Teams Calendar Invite – To be posted on Bonfire.

DEADLINE FOR WRITTEN QUESTIONS: August 7, 2024@ 5:00 p.m. Questions regarding this RFP should be directed to Janina Lewis, Procurement Services Director, at jlewis@ctsfl.us.

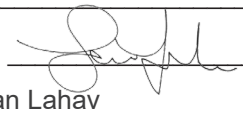
SUBMITTALS MAY NOT BE WITHDRAWN FOR 90 DAYS AFTER SUCH DATE & TIME.

OFFEROR NAME: Halff Associates, Inc.

OFFEROR MAILING ADDRESS: 1000 N Ashley Dr, Suite 900

CITY-STATE-ZIP: Tampa, FL 33602

TELEPHONE NUMBER: 904.720.2611

AUTHORIZED SIGNATURE: 

SIGNATORY'S NAME: Sean Lahav

SIGNATORY'S TITLE: Resilience Market Leader

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

ADDENDA FORM

The City of Tarpon Springs intends to award a single contract or may award multiple contracts to a qualified firm(s) in accordance with the Scope of Services and all other requirements of the RFP documents.

ADDENDA: The undersigned acknowledges receipt of the following addenda to the documents:

Addendum No. 1 Dated 8/8/24

Addendum No._____ Dated_____

Addendum No._____ Dated_____

FAILURE TO ACKNOWLEDGE RECEIPT OF ANY/ALL ADDENDA MAY CAUSE THE SUBMITTAL TO BE CONSIDERED NON-RESPONSIVE TO THE SOLICITATION. ACKNOWLEDGED RECEIPT OF EACH ADDENDUM MUST BE CLEARLY ESTABLISHED AND INCLUDED WITH THE OFFER.

Exceptions: Have you taken any exceptions to the specifications? YES OR NO. If YES, indicate them on a separate sheet marked EXCEPTIONS TO SPECIFICATIONS.

This submittal must be signed by a person authorized to act for the company in their own name. UNSIGNED SUBMITTAL will be cause for rejection.

Company Halff Associates, Inc.

Address 1000 N Ashley Dr, Suite 900

City Tampa State FL
Zip Code 33602

Telephone 904.720.2611

Signature _____ Date 08/28/2024

Signatory's Name & Title Sean Lahav, Resilience Market Leader

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

EXCEPTIONS TO SCOPE OF SERVICES

Section / Paragraph No. Description

I. GENERAL SCOPE OF THIS AGREEMENT

A. The relationship of the CONSULTANT to the CITY will be that of a professional consultant, and the CONSULTANT will provide the professional and technical services required under this Agreement in accordance with acceptable engineering practices and ethical standards of a professional practicing in the same field and in same or similar circumstances (the "standard of care"). No employer/employee relationships shall be deemed to be established and the CONSULTANT, its agents, and employees shall be independent contractors at all times.

B. Professional and Technical Services: It shall be the responsibility of the CONSULTANT to work with the CITY and apprise it of solutions to design problems and the approach or technique to be used towards accomplishment of the CITY'S objectives as set forth in the Scope of Services, which is made a part of this Agreement upon execution by both parties.

C. The CONSULTANT shall be responsible for the professional quality; technical accuracy; timely completion; compliance with regulations, codes, and rules; and the coordination with all appropriate agencies of all designs, drawings, specifications, reports, and other services furnished by the CONSULTANT under this Agreement. If the CITY reasonably determines there is any breach of the standard of care in the CONSULTANT'S designs, drawings, specifications, reports and other services, the CONSULTANT shall, without additional compensation, correct or revise said breach to the satisfaction of the CITY.

D. Approval by the CITY of drawings, designs, specifications, reports, and incidental engineering work or materials furnished hereunder shall not in any way relieve the CONSULTANT of responsibility for the technical adequacy of its work. The CITY'S review, approval, or acceptance of or payment for any of the services shall not be construed to operate as a waiver of any rights under this AGREEMENT or of any cause of action arising out of the performance of this AGREEMENT.

E. The CONSULTANT shall be and remain liable in accordance with applicable law for all damages to the CITY caused by the CONSULTANT'S negligent performance of any of the services furnished under this AGREEMENT.

F. The parties recognize that the CONSULTANT is an independent contractor. The CONSULTANT agrees to indemnify and hold harmless CITY, from, and against all liability and expense, including reimbursement of reasonable attorney's fees, in connection with

IV. GENERAL CONSIDERATIONS

A. All final original sketches, reproducible Mylar drawings, computations, details, design calculations, and other documents and plans that result from the CONSULTANT'S services under this AGREEMENT shall become and remain the property of the CITY, including copyright rights, upon receipt of payment by the CONSULTANT from the CITY for services rendered in connection with preparation of said sketches, drawings, etc. Where such documents are required to be filed with governmental agencies, the CONSULTANT will furnish copies to the CITY upon request.

Rev 01/24

RFP No. 2400115-P-JL

PROPOSAL FORMS

The information below is required to complete your proposal packet. Type or print only.

Company Name	Halff Associates, Inc.
Address 1	1000 N Ashley Dr, Suite 900
Address 2	
City	Tampa
State	Florida
Zip	33602
Ph. Number	904.720.2611
Project Point of Contact	Sean Lahav
e-mail address	slahav@halff.com
Remittance Information	
Address 1	Halff Associates, Inc.
Address 2	PO Box 678316
City	Richardson
State	Texas
Zip	75267-8316
Ph. Number	214.217.6409
Project Point of Contact	Jami Kubik
e-mail address	jkubik@halff.com
Federal Tax ID No.	75-1308699

Tax ID Type: X Federal Tax ID __ Social Security Number

Attach a Copy of W9 with this information.

© Halff - 2024

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

HALFF ASSOCIATES, INC

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor ☑ C corporation ☐ S corporation ☐ Partnership ☐ Trust/estate

☐ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) . . . . .

Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions)

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any)

(Applies to accounts maintained outside the United States.)

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions . . . . . ☐

5 Address (number, street, and apt. or suite no.). See instructions.

PO BOX 4897, DEPT 331

Requester's name and address (optional)

6 City, state, and ZIP code

HOUSTON, TX 77210

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

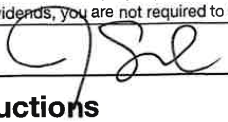
7	5	–	1	3	0	8	6	9	9

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person**  **Date** 6/1/2024

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

Cat. No. 10231X

Form **W-9** (Rev. 3-2024)

Rev 01/24

RFP No. 2400115-P-JL

RFP No. 240115-P-JL
Planning Support Services
REFERENCES – INCLUDE IN TAB 7

#1 Agency	City of St. Pete Beach	
Address	155 Corey Avenue	
City, State, Zip	St. Pete Beach, FL 33706	
Contact Person	Jennifer McMahon	
Telephone:	727.363.9274	Email: rddirector@stpetebeach.org
Date(s) of Service	2012-Ongoing	
Type of Service	Environmental, Landscape Architecture, Civil Engineering, Resilience, Planning	
Comments		
#2 Agency	Pasco County	
Address	8919 Government Drive	
City, State, Zip	New Port Richey, FL 34654	
Contact Person	Tim Wilson	
Telephone:	727.207.6723	Email: twilson@pascocountyfl.net
Date(s) of Service	2022-Ongoing	
Type of Service	Environmental, Landscape Architecture, Civil Engineering, Resilience, Planning	
Comments		
#3 Agency	City of Treasure Island	
Address	120 108th Avenue	
City, State, Zip	Treasure Island, FL 33706	
Contact Person	Stacy Boyles	
Telephone:	727.547.4575 x257	Email: stacy.boyles@mytreasureisland.org

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

Date(s) of Service	2019-Ongoing	
Type of Service	Environmental, Landscape Architecture, Planning	
Comments		
#4 Agency	City of New Port Richey	
Address	6132 Pine Hill Road	
City, State, Zip	New Port Richey, FL 34668	
Contact Person	Robert Rivera	
Telephone:	727.853.1056	Email: riverar@cityofnewportrichey.org
Date(s) of Service	2012-Ongoing	
Type of Service	Environmental, Landscape Architecture, Civil Engineering, Planning	
Comments		
#5 Agency	Groundwork Jacksonville	
Address	101 W State St, Building A, Room 1003	
City, State, Zip	Jacksonville, FL 32202	
Contact Person	Kay Ehas	
Telephone:	904.401.0453	Email: kay@groundworkjacksonville.org
Date(s) of Service	2021-Ongoing	
Type of Service	Environmental, Landscape Architecture, Survey, Utility Coordination, Planning	
Comments		

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

NON-COLLUSION AFFIDAVIT

I, Sean Lahav, depose and say that:
1. I am Resilience Market Leader of the firm of
Halff Associates, Inc.,
the firm submitting the response described in this Request for Proposals for:
RFP No. 240115-P-JL, Planning Support Services, and that I executed the said response with full authority to do so:

2. the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

3. unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to bid opening, directly or indirectly, to any other bidder or to any competitor; and

4. no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit, or not to submit, a bid for the purpose of restricting competition;

5. the statements contained in this affidavit are true and correct, and made with full knowledge that the City of Tarpon Springs relies upon the truth of the statements contained in this affidavit in awarding contracts for said project.

Signature of Bidder: _____ Date: 08/28/2024

STATE OF: Florida CITY OF: Hillsborough

PERSONALLY APPEARED BEFORE ME, the undersigned authority,
who, after first being sworn by me, (name of individual signing) affixed his/her signature in the space provided above on this 26th day of 2024.

NOTARY PUBLIC
My Commission Expires: May 3, 2025

Notary Public State of Florida
Kori K. Warriner
My Commission HH 125634
Expires 05/03/2025

31

Rev 01/24

RFP No. 2400115-P-JL

DRUG FREE WORKPLACE CERTIFICATION

The SIGNED PROPOSER (Below) CERTIFIES that it has implemented a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under quote a copy of the statement specified in subsection 1.

4. In the statement specified in subsection 1, notify the employees that, as a condition of working on the commodities or contractual services that are under quote, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in, drug abuse assistance or rehabilitation program if such is available in employee's community, by any employee who is convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

Name: Sean Lahav
(Typed or Printed)

Signature: _____

Date: 08/28/2024

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

LOBBYING AND CONFLICT OF INTEREST CLAUSE ETHICS CLAUSE

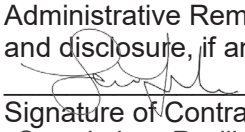
(Company) Halff Associates, Inc. The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. The Contractor, Halff Associates, Inc., certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.



Signature of Contractor’s Authorized Official

Sean Lahav, Resilience Market Leader

Name and Title of Contractor’s Authorized Official

Date: 08/28/2024

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

TRUTH – IN – NEGOTIATION CERTIFICATE

The undersigned warrants (i) that it has not employed or retained any company or person, other than bona fide employees working solely for the undersigned, to solicit or secure the Agreement and (ii) that it has not paid or agreed to pay any person, company, corporation, individual, or firm other than its bona fide employees working solely for the undersigned or agreed to pay any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the award or making of the Agreement.

The undersigned certifies that the wage rates and other factual unit costs used to determine the compensation provided for in the Agreement are accurate, complete, and current as of the date of the Agreement.

(This document must be executed by a Corporate Officer.)

Name: Sean Lahav

Title: Resilience Market Leader

Date: 08/28/2024

Signature:

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS
PRIMARY COVERED TRANSACTIONS

This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000.

The Bidder certifies that, neither the firm nor any person associated therewith in the capacity of owner, partner, director, officer, principal, investigator, project director, manager, auditor, and/or position involving the administration of federal funds:

a) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions, as defined in 49 CFR s29.110(a), by any federal department or agency;

b) has within a three-year period preceding this certification been convicted of or had a civil judgment rendered against it for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state, or local government transaction or public contract; violation of federal or state antitrust statutes; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c) is presently indicted for or otherwise criminally or civilly charged by a federal, state, or local governmental entity with commission of any of the offenses enumerated in paragraph (b) of this certification; and

d) has within a three-year period preceding this certification had one or more federal, state, or local government public transactions terminated for cause or default.

The Bidder certifies that it shall not knowingly enter into any transaction with any subcontractor, material supplier, or vendor who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this project by any federal agency unless authorized by the City of Tarpon Springs.

The Bidder must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

This certification is a material representation of fact relied upon by the City of Tarpon Springs. If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the City of Tarpon Springs, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

© Halff - 2024

Rev 01/24

RFP No. 2400115-P-JL

The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

Halff Associates, Inc.	75-1308699	015013165
Company (Bidder) Name	Tax ID Number	DUNS Number

Sean Lahav
Authorized Representative Name

Authorized Representative Signature

0PPK6
CAGE Code issued through www.sam.gov
Identification Number
(If Social Security number
DO NOT enter)

Memorandum

Date: July 28, 2026
To: Mayor and Board of Commissioners
Through: Janina Lewis, Procurement Services Director
From: Janina Lewis, Procurement Services Director
Subject: Award File No. 260190-N-JL, Single Source Purchase of Food and Miscellaneous Supplies **(Janina Lewis, Procurement Services Director)**

Recommendation

Award File No. 260190-N-JL, Single Source Purchase of Food and Miscellaneous Supplies to SAM's Club of Florida in an estimated annual amount of $40,000, for the period of September 1, 2026, through August 31, 2028, for City wide usage.

Background

The purpose of this contract is to provide for the purchase of food and miscellaneous items. Spot comparisons were made on select items at Sam's Club to the pricing offered on similar items available at local area supermarkets and the discount warehouse items were found to be the better value for these consumables. Items purchased for resale are provided at City sponsored events. Supplies are also purchased for use at the Cops and Kids Center, the Recreation Division's summer children's program and miscellaneous items for various other City departments.

The current price of Sam's Club Plus membership is $120.00, (an increase of $10 from 2025-2026) with an additional $220.00 for add on cards. The City currently pays a total of $340.00 annually for membership as this includes the City card plus 1, Cops and Kids Center, Recreation Division, Cultural & Civic Services, and the City Clerks. At Sam's Club, cash rewards are earned at 2% in Sam's Cash on qualifying pre-tax purchases with a maximum reward of $500 per 12-month membership period. The City has accumulated over $100 in cash rewards over the past 12 months. This cash reward is usually reimbursed to the City for annual functions supported by the staff such as the Craig Park Fourth of July Picnic.

A price comparison was made with other local warehouses of the same type, and Sam's currently provides the best value. For 6 physical cards, the City must buy a primary corporate membership (which includes 2 cards: a Primary and 1 Additional Company card) and the purchase of 4 additional add-on cards.

Cost Component	Sam's Club	BJ's Business Premium	Costco Executive Business
Primary Annual Fee	$120	$120	$130
Included Cards	2 cards	2 cards	2 cards
Price per Add-on Card	$45	$30	$65
Total Annual Cost (6 Cards):	$340 *($120 + $220)*	$240 *($120 + $120)*	$390 *($130 + $260)*

- Costco Executive Business and BJ's Business Premium used as comp for the 2% cash back.

- Costco charges full price ($65) for every single additional employee card. There is no "add-on discount" like BJ's ($30) or Sam's ($45).

The City recommends Sam’s Club as the preferred vendor based on geographic proximity and ease of use. Located just 6.3 miles away, Sam’s Club offers a more advantageous location than BJ’s (10 miles) or Costco (15 miles). Total expenditures over the previous 12 months totaled $30,700.

Funding

Funding will be identified as orders are placed.

Strategic Plan Objective

N/A

Project Administration Department

324 East Pine Street
Tarpon Springs FL 34689
(727) 942-5638

Memorandum

Date: July 14, 2026

To: Mayor, Board of Commissioners, and City Manager

Through: Jeffrey Young, Chief of Police

From: P.J. Harbert, Grant Project Specialist
Corporal Kevin Smith, Tarpon Springs Police

Subject: Institute of Police Technology and Management Contract

---

Recommendation
Approval is recommended for the Mayor or his designee per City resolution to execute a subcontract agreement with the Institute of Police Technology and Management (IPTM) in the amount of $5000 to conduct overtime high visibility education and enforcement operations through May 7, 2026.

Summary
The purpose of this agreement is for approval of contractual services between IPTM and the City of Tarpon Springs in the amount of $5000 for the Tarpon Springs Police Department to conduct overtime high visibility education and enforcement through May 8, 2026. There is no match from the City for this agreement.

The City Attorney has reviewed this agreement.

The agreement document is attached.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

Institute of Police Technology and Management

University of North Florida
12000 Alumni Drive | Jacksonville, Florida 32224
Phone: (904) 620-4786 | Fax: (904) 620-2453
www.iptm.org

July 1, 2026

Mr. Chris Craig
Traffic Safety Administrator
Florida Department of Transportation
605 Suwannee Street, MS 53
Tallahassee, Florida 32399

RE: Pedestrian and Bicycle Safety High Visibility Enforcement and Support Program
Project Number: 433144-1-8404
Contract Number: G3P01

Dear Mr. Craig,

We are requesting subcontract approval under the aforementioned subgrant agreement. The request is for approval of a contractual services agreement between IPTM and City of Tarpon Springs in the amount of $5,000.00. Under the contract, Tarpon Springs Police Department will conduct overtime high visibility education and enforcement operations through May 7, 2027.

I appreciate your consideration of this request.

Sincerely,

Angel Williams
Coordinator

Attachment

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

Letter of Agreement and Contract

In this contract between the City of Tarpon Springs ("Agency") and University of North Florida Training and Services Institute, Inc., d/b/a Institute of Police Technology and Management ("IPTM"), a direct support organization of the University of North Florida ("University"), the Agency shall perform the services as outlined in the scope of services (Exhibits A & B). The contract period will begin upon execution and will end on May 7, 2027.

Total contract amount will not exceed $5,000.00

The parties to this contract shall be bound by all applicable state and federal requirements as outlined in Florida Department of Transportation (FDOT) Project # 433144-1-8404, FDOT Contract # G3P01. All services must be completed by May 7, 2027. The final invoice must be received by June 4, 2027 or payment will be forfeited.

It is expressly understood that the Agency is an independent contractor, and not an agent of the FDOT or the University of North Florida. The FDOT and the University's ("State Agencies" or individually "State Agency") respective total liability in negligence or indemnity for acts of its employees or officers shall not exceed the limits of their waiver of sovereign immunity provided under Section 768.28, Florida Statutes. The FDOT, the University, and the Agency shall each be responsible for its own attorney fees in the event of a dispute.

To the fullest extent permitted by law, the Agency shall indemnify and hold harmless IPTM and the State of Florida, Department of Transportation, including the Department's officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness or intentional wrongful misconduct of the contractor/consultant and persons employed or utilized by the contractor/consultant in the performance of this Agreement.

This indemnification shall survive the termination of this Agreement. Nothing contained in this paragraph is intended to nor shall it constitute a waiver of the State of Florida and IPTM's sovereign immunity.

Agency is a subdivision, as defined in Section 768.28, Florida Statutes, and Agency agrees to be fully responsible only to the extent provided by Section 768.28, Florida Statutes, for the negligent or wrongful acts or omission of any employee of the Agency while the employee is acting within the course and scope of the employee's employment, and for any damages proximately caused by said acts or omissions or torts.

Nothing herein shall be construed as consent by a State Agency or political subdivision of the State of Florida to be sued by third parties in any matter arising out of this contract. No State Agency or subdivision indemnifies any other party or person beyond the extent permitted under the law, no matter what the circumstances. Nothing herein shall be construed as a waiver by the FDOT, the University, and the Agency of any rights or limits to liability existing under Section 768.28, Florida Statutes.

In accordance with the contract, the Agency is authorized to perform the tasks detailed in the scope of services (Exhibits A & B) and is fully responsible for satisfactory completion of all services. Services performed prior to receiving an executed contract from the University will not be eligible for reimbursement. This contract does not involve the purchase of Tangible Personal Property, as defined in Chapter 273, Florida Statutes.

This is a cost reimbursable contract. To be eligible for reimbursement, all costs must be allowable pursuant to state and federal expenditure laws, rules and regulations and must be essential to the successful completion of the tasks identified in this contract for services.

If a cost benefits more than one project, a determination must be made and documentation provided to support that the cost is distributed in a reasonable and consistent manner across all benefiting projects.

CANCELLATION: This contract may be unilaterally cancelled by FDOT or the University for refusal by the Agency to allow public access to all documents, papers, letters, or other material made or received by the Agency in conjunction with this contract, unless Florida law provides that the records are confidential and/or exempt from the disclosure requirements of section 24(1) of Article 1 of the state constitution and section 119.07(1), Florida Statutes.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

EXHIBIT "A"

SCOPE OF SERVICES
PEDESTRIAN AND BICYCLE SAFETY
HIGH VISIBILITY EDUCATION AND ENFORCEMENT CAMPAIGN

I. OBJECTIVE:

The Florida Department of Transportation ("FDOT"), through a subgrant with University of North Florida ("University"), will utilize law enforcement support to reinforce safe pedestrian, bicyclist, and driver behaviors in priority counties in Florida. The goal of this effort is to reduce traffic crashes resulting in serious and fatal injuries to pedestrians and bicyclists using high visibility education and enforcement details.

II. PURPOSE:

In 2024, 3,098 people lost their lives in traffic crashes on Florida's roadways. More than 21% of them were pedestrians (678) and more than 6% were bicyclists (209).

The **Purpose** of this funding opportunity is to develop and implement effective community level High Visibility education and enforcement details in areas with the highest representation of traffic crashes resulting in serious and fatal injuries to pedestrians and bicyclists.

The project **Goal** is to mitigate crashes by increasing awareness of and compliance with traffic laws that protect the safety of pedestrians and bicyclists on Florida's roads.

Pedestrians and bicyclists are more vulnerable than all other road users. Traffic crashes involving pedestrians and bicyclists are more likely to result in fatal or serious injuries than any other types of traffic crashes.

Speed, impairment, and distractions contribute to unsafe conditions for pedestrians and bicyclists and may be included in enforcement operations where there is data to support the need for these interventions to improve the safety of pedestrians and bicyclists.

Pedestrian decoys may only be included in enforcement operations to improve driver yield rates at mid-block crossing locations to improve the safety of pedestrians and bicyclists.

This campaign is a component of Florida's Bicycle/Pedestrian Focused Initiative and is implemented by the Institute of Police Technology and Management (IPTM) under the direction of the Florida Department of Transportation (FDOT). This campaign supports the goals established in Florida's Pedestrian and Bicycle Strategic Safety Plan. High Visibility Enforcement activities are being implemented to mitigate crashes by educating pedestrians, bicyclists, and motorists on traffic laws pertaining to pedestrian and bicycle safety and increasing compliance with those laws.

III. IPTM RESPONSIBILITIES:

IPTM will provide the required training/training materials, a copy of Florida's Pedestrian and Bicycle Strategic Safety Plan, and educational materials to the Agency for distribution during enforcement operations upon contract execution. Additional educational materials, bicycle lights, and electronic media may be requested by the Agency but are subject to availability. IPTM reserves the right to review and audit the Agency's compliance with the terms of this Letter of Agreement and Contract. IPTM also reserves the right to reduce the amount of funding allocated under this Letter of Agreement and Contract when it is determined that the Agency will be unable to properly utilize the full funding amount as outlined herein.

IV. AGENCY SERVICES AND RESPONSIBILITIES:

Agency will provide high visibility education and enforcement of all road users, including pedestrians, bicyclists, and motorists, to change behaviors and improve the safety of pedestrians and bicyclists. Agency will conduct on-street education and enforcement details at pre-approved locations within pre-approved times and distribute educational materials with each contact. Education is the preferred method of behavior correction. Warnings and/or citations to pedestrians, bicyclists, and motorists will be guided by

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

the Agency's policies and procedures and must comply with Florida law. These operations are designed to reach more than just the individuals who are stopped or contacted, they should also be highly visible to anyone driving, walking, or biking in the area in a way that associates the enforcement activity with the safety awareness campaign. The Agency shall record all detail activity that documents the education and enforcement outputs for each detail conducted during the contract period using the provided online platform.

To be reimbursable, activities conducted by the Agency must meet the requirements listed in this Letter of Agreement and Contract to include the following:

- Operations must begin within 60 days of the contract execution date. Exceptions require the approval of IPTM.
- Only overtime hours for sworn law enforcement officers are eligible for reimbursement (non-sworn civilian personnel are not eligible unless explicitly approved in writing by IPTM).
- Operations must be highly visible to anyone driving, walking, or biking in the area. It is strongly suggested that operations include a combination of high visibility elements with a coordinated media awareness campaign similar to those used in sobriety checkpoints or other enforcement mobilizations.
- Funds may not to be used to supplant the Agency's enforcement and educational efforts funded by other local, state, or federal sources. Duplicated efforts are not eligible for reimbursement.
- Agency will not be reimbursed for education and enforcement details that take place at locations outside of those pre-approved by the FDOT and outlined in Exhibit C of this agreement.
- Agency will not be reimbursed for education and enforcement details that take place outside of the day(s) and times of day pre-approved by the FDOT and outlined in Exhibit C of this agreement (each detail location may have different pre-approved days and times of day).

Minimum Level of Service

Agency shall conduct highly visible education and enforcement operations at each of the identified locations outlined in Exhibit C of this agreement, prioritizing efforts towards higher ranked (Tier 1) locations.

☒Both Tier 1 and Tier 2 locations: Tier 1 locations shall be worked from contract execution through May 7, 2027. Tier 2 locations can be worked in addition to Tier 1 locations from February 1, 2027 through May 7, 2027.

☐Only Tier 2 locations shall be worked from contract execution through May 7, 2027.

A minimum of two (2) media engagements should be conducted in conjunction with these high visibility enforcement operations during the contract period.

Agency performance will be evaluated based on their prioritization of enforcement details to areas with the highest representation of traffic crashes resulting in serious and fatal injuries to pedestrians and bicyclists and on the visibility of the mobilization.

- Agency will not be reimbursed for administrative time, travel time, meal breaks or other hours that are not for participation in the education and enforcement overtime details aimed at reducing traffic crashes resulting in serious or fatal injuries to pedestrians or bicyclists, or attendance at required training outside of the training requirement listed within this contractual service agreement.
- Each officer is limited to a maximum of eight (8) hours of reimbursable overtime in any single day (defined as 12:00 a.m. to 11:59 p.m.), unless there are extenuating circumstances at the end of a shift

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

that causes the hours to exceed this limit. **Extenuating circumstances must be documented in the activity report.** There is no pay period limit.

- Officer training is mandatory. For their overtime hours to be reimbursable, officers working the education and enforcement details must first complete the required four-hour training course titled *"Pedestrian and Bicycle Law Enforcement: Laws, Procedures and Best Practices."* To remain eligible, officer "refresher training" is required for any officer who completed the four-hour training course titled *"Pedestrian and Bicycle Law Enforcement: Laws, Procedures and Best Practices"* **prior to June 30, 2025.** The refresher training class titled "*Pedestrian & Bicycle Safety: A Law Enforcement Review"* is not a substitute for the 4-hour classroom course for initial eligibility into this program.

- Agency may be reimbursed for a limited number of sworn law enforcement officers to attend the required four-hour training course titled *"Pedestrian and Bicycle Law Enforcement: Laws, Procedures and Best Practices"* or the two (2) hour online refresher training course titled "*Pedestrian & Bicycle Safety: A Law Enforcement Review".* For their overtime hours to be reimbursable, attendance at the training must be within the contract period and must be on overtime status. Although every sworn law enforcement officer may attend the training, overtime reimbursement is limited to those officers who will actually take part in education and enforcement details.

- Public awareness is a key element of the high visibility enforcement model. The Agency is strongly encouraged to distribute a minimum of two (2) media releases during the contract period. The first media release announcing that operations are beginning should be distributed a minimum of seven (7) days in advance of the first education/enforcement detail. The second media release should include a reminder that details are ongoing. This second media release should be distributed approximately halfway through the contract period. Additional media engagement is also encouraged throughout the contract period. Media releases may include social or digital media but must also be distributed through local media outlets. Proof of media engagement should be provided within 30 days of the press release or news report.

- The Agency shall distribute the provided safety educational materials during all education and enforcement details. Materials will be provided to Agency free of charge for this purpose.

- Agency may elect to participate in bicycle light distribution to improve nighttime visibility and compliance with F.S. 316.2065(7). A Bicycle Light Distribution Assurance Form provided by IPTM is required for each bicycle light set that is distributed. The required documentation must be signed by the officer and submitted to IPTM or through the provided online platform along with the detail report for the period in which the lights were distributed.

- Invoice submissions must document that each officer was on overtime status while working the education and enforcement details in order to be eligible for reimbursement.

HIGH VISIBILITY ENFORCEMENT (HVE)

All law enforcement agencies shall conduct High Visibility Enforcement while conducting enforcement under this contractual service agreement.

High Visibility Enforcement is defined as:

Intense:	Enforcement activities are over and above what normally takes place.
Frequent:	Enforcement occurs often enough to create general deterrence.
Visible:	A majority of the public sees or hears about the enforcement.
Strategic:	Enforcement targets high-risk locations during high-risk times.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

APPROVED PERSONNEL LIST

Prior to commencing the services outlined under this contract, Agency must submit a list of personnel authorized to participate in overtime details under this agreement through the provided online platform. The name and fully loaded hourly overtime rates to be used for each officer must be submitted. The overtime rates may include the costs of hourly overtime plus associated fringe benefits paid upon the overtime. Only hours from officers listed shown on the authorized personnel list are eligible for reimbursement under this agreement. The authorized personnel list shall be updated as needed to add officers and update overtime pay rates.

METHOD OF COMPENSATION/PAYMENT SCHEDULE

Invoices must be submitted at least monthly (every 30 days), beginning within 90 days of the contract execution date. Invoices must contain the following:

- **Invoice** to include summary of hours charged and total due.

- **Payroll documentation:** Agency must submit payroll documentation to accompany each invoice. This payroll documentation should clearly indicate that the detail hours worked under this contract were on overtime status along with the overtime rates that were paid. As this is a cost-reimbursable contract, IPTM can only reimburse the Agency for an amount up to the total costs incurred for the overtime worked; therefore, Agency must include either a pay stub or payroll ledger documenting payment to each officer for which reimbursement is requested. It is the responsibility of the Agency to redact any personally identifiable information such as Social Security numbers prior to submission.

  The overtime pay rate for personnel shall be based on the actual cost per employee in accordance with the agency's payroll policy. Each agency shall comply with Fair Labor Standards Act (FLSA) requirements and thresholds for overtime accrual and payment and its own policies and procedures, insofar as those policies apply uniformly to both federally financed and other activities of the agency, as required by 2 CFR 200.403(c). Additional hours may be called overtime, call-out, off duty, extra, additional, etc.

  As part of the "fully burdened" overtime costs, the agency can be reimbursed for the additional benefit costs paid on the overtime worked. These benefit costs must be additional costs incurred specifically as a result of the overtime being reimbursed. These benefits may include associated portions of FICA (Social Security and Medicare), Worker's Compensation, Retirement benefits, and fixed shift differential costs. Prorated portions of leave accrual, health/life insurance, uniform allowance, vehicle usage, salary incentive, and other standard benefits cannot be reimbursed as they are not additional costs incurred specifically as a result of the overtime worked.

- **Detail Activity:** Agency shall record detail activity that documents the education and enforcement outputs for each detail conducted through the provided online platform. The activity will document that each detail conducted meets the minimum level of service as outlined in this agreement and show the officers assigned, date, days and/or times, location, contacts made, number of materials distributed, and the numbers of educational contacts, warnings and citations issued to motorists, pedestrians, and bicyclists for each statute. Detail Activity submissions shall be consistent with the corresponding invoices and payroll documentation.

All invoices must be submitted through the provided online platform. In case the provided online platform is unavailable, invoice documentation can be sent electronically to ped.bike.safety@iptm.org.

All requests for reimbursement shall be signed by an Authorized Representative of the Agency, or their delegate.

The University has 40-days to review and process invoices for services. This process begins on the date the Agency invoice is received, inspected, and approved. Invoices may be returned if not completed properly. If a payment is not available within 40 days from the University approval, a separate interest

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

penalty at a rate as established pursuant to Section 55.03(1), F.S., will be due and payable, in addition to the invoice amount, to the Agency. Interest penalties of less than one (1) dollar will not be enforced unless the Agency requests payment. Invoices that have to be returned to a Agency because of Agency preparation errors will result in a delay in the payment and is not subject to the interest penalty. The Agency payment requirements do not start until a properly completed financial reimbursement request is provided to the University.

FINANCIAL CONSEQUENCES

Payment shall be made only after receipt and approval of services provided. If the University determines that the performance of the Agency does not comply with the contract requirements, the University shall notify the Agency of the deficiency to be corrected, and the correction shall be made within a timeframe to be specified by the University. If the deficiency is subsequently resolved, the University agrees to pay the invoice(s) for the unpaid amount(s) during the next billing period. If the Agency is unable to resolve the deficiency, the funds shall be forfeited at the end of this contractual service agreement.

PRE-APPROVED HVE LOCATIONS

Education and enforcement overtime details are only authorized at locations (specific intersections, corridors, and/or regions) that have been pre-approved by the FDOT. Agency may not be reimbursed for efforts conducted at locations that have not been pre-approved, that take place prior to the date of the approval of this agreement, or that do not comply with the minimum level of service as outlined in this agreement.

Maximum number of officers permitted at pre-approved locations:

- 0.5 mile or less - 3 officers permitted
- 0.51 miles to 0.75 miles – 5 officers permitted
- 0.76 miles or more – 8 officers permitted

The Agency will not be eligible for reimbursement for officers that exceed the maximum number permitted.

Each pre-approved location will have clearly defined boundaries; day(s) and times of day in which the overtime details can be worked and will be outlined in Exhibit C.

REQUESTS FOR ADDITIONAL FUNDING

The Agency may request an increase to the total funding amount of this contract during the contract period. If the funding is available, the increased funding request may be considered if the Agency has:

- satisfied all of the provision listed within this contract
- submitted timely invoices and record of detail activity submissions
- conducted HVE overtime detail efforts in a manner that supports the stated goal
- expended 80% or more of the current contract funding amount
- pedestrian and bicyclist crash circumstances within the Agency's jurisdiction support the increased funding amount

Increased funding will be based upon availability and must be approved by the FDOT.

Increased funding will be accomplished through an amendment to this contract which must be signed by the FDOT, Agency, and IPTM.

Requests for increased funding must be submitted to IPTM and received on or before February 27, 2027.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

NON-DISCRIMINATION AND ETHICAL STANDARDS

No person shall, on the ground of race, color, religion, sex, handicap, or national origin, be subjected to discrimination under any program or activity supported by this contract. The agency agrees to comply with the Florida Civil Rights Act (F.S. 760)
http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0700-0799/0760/0760.html

All officers participating in High Visibility Enforcement activities are required to comply with the Law Enforcement Officer Ethical Standards of Conduct as established by the Florida Department of Law Enforcement. https://www.fdle.state.fl.us/Content/CJST/Menu/Officer-Requirements-Main-Page/LE-Ethical-Standards-of-Conduct.aspx

CORE ACTIVITY PERFORMANCE MEASURES / MINIMUM LEVEL OF SERVICE TO BE PERFORMED AND CRITERIA FOR EVALUATING SUCCESSFUL COMPLETION.

Each law enforcement agency is encouraged to complete all of the tasks as outlined within this contract. All agencies are required to complete a minimum of (80%) eighty percent of contracted efforts within the contract period to be eligible for "agency of the year award" consideration. Each successive fiscal year, agencies will be prioritized for funding based on percentage of performance expectations that were met.

CONSEQUENCES FOR NON-PERFORMANCE

If the Agency is unable to properly utilize the full funding amount as outlined herein, the amount of funding for subsequent periods may be reduced. In the event that the required services are in dispute, the invoice may be pro-rated, reduced, or payment withheld until adequate documentation is provided to support the completion of such services and the dispute is resolved. If requirements are not met, the invoice will be pro-rated and payment will only be made for services that were completed as outlined in this agreement. Failure to submit invoices, detail activity reports, or other deliverables as outlined in this contract may result in termination of the agreement.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

EXHIBIT "B"

EFFORT SUMMARY

FLORIDA'S PEDESTRIAN AND BICYCLE FOCUSED INTITIATIVE
HIGH VISIBILITY ENFORCEMENT CAMPAIGN

QUANTIFIABLE, MEASURABLE, AND VERIFIABLE DELIVERABLES

- A minimum of two (2) media engagements should be conducted in conjunction with these high visibility enforcement operations during the contract period.
- Detail Activity Reports shall be submitted for each education and enforcement detail worked.
- Bicycle Light Distribution Assurance Forms shall be submitted for each bicycle light kit distributed.
- Invoices shall be submitted for each month or payroll period in which overtime details were performed beginning the month following contract execution.

PERFORMANCE MEASURES

Proof of performance documentation shall be submitted. This includes, but is not limited to, the following:

- Detail Activity Submissions
- Proof of media engagements
- Proof of overtime hours worked

BUDGET/COST ANALYSIS

- The name and fully loaded hourly overtime rates to be used for each officer must be submitted.
- The overtime rates may include the costs of hourly overtime plus associated fringe benefits paid upon the overtime.
- Only hours from officers listed and shown on the authorized personnel list are eligible for reimbursement under this agreement.
- Only overtime hours for sworn law enforcement officers are eligible for reimbursement (non-sworn civilian personnel are not eligible unless explicitly approved in writing by IPTM).
- Each officer is limited to a maximum of eight (8) hours of reimbursable overtime in any single day (defined as 12:00 a.m. to 11:59 p.m.).
- Only maximum number of officers permitted at pre-approved locations are eligible for reimbursement under this agreement.
- Payroll documentation should clearly indicate that the detail hours worked under this contract were on overtime status along with the overtime rates that were paid.
- ☒Both Tier 1 and Tier 2 locations: Tier 1 locations shall be worked from contract execution through May 7, 2027. Tier 2 locations can be worked in addition to Tier 1 locations from February 1, 2027 through May 7, 2027.
  ☐Only Tier 2 locations shall be worked from contract execution through May 7, 2027.
- Payment shall be made only after receipt and approval of services provided.

Total contract amount not to exceed: $5,000.00

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

EXHIBIT "C"

Locations for Tarpon Springs Police Department
Florida's Pedestrian and Bicycle Focused Initiative
High Visibility Enforcement Campaign

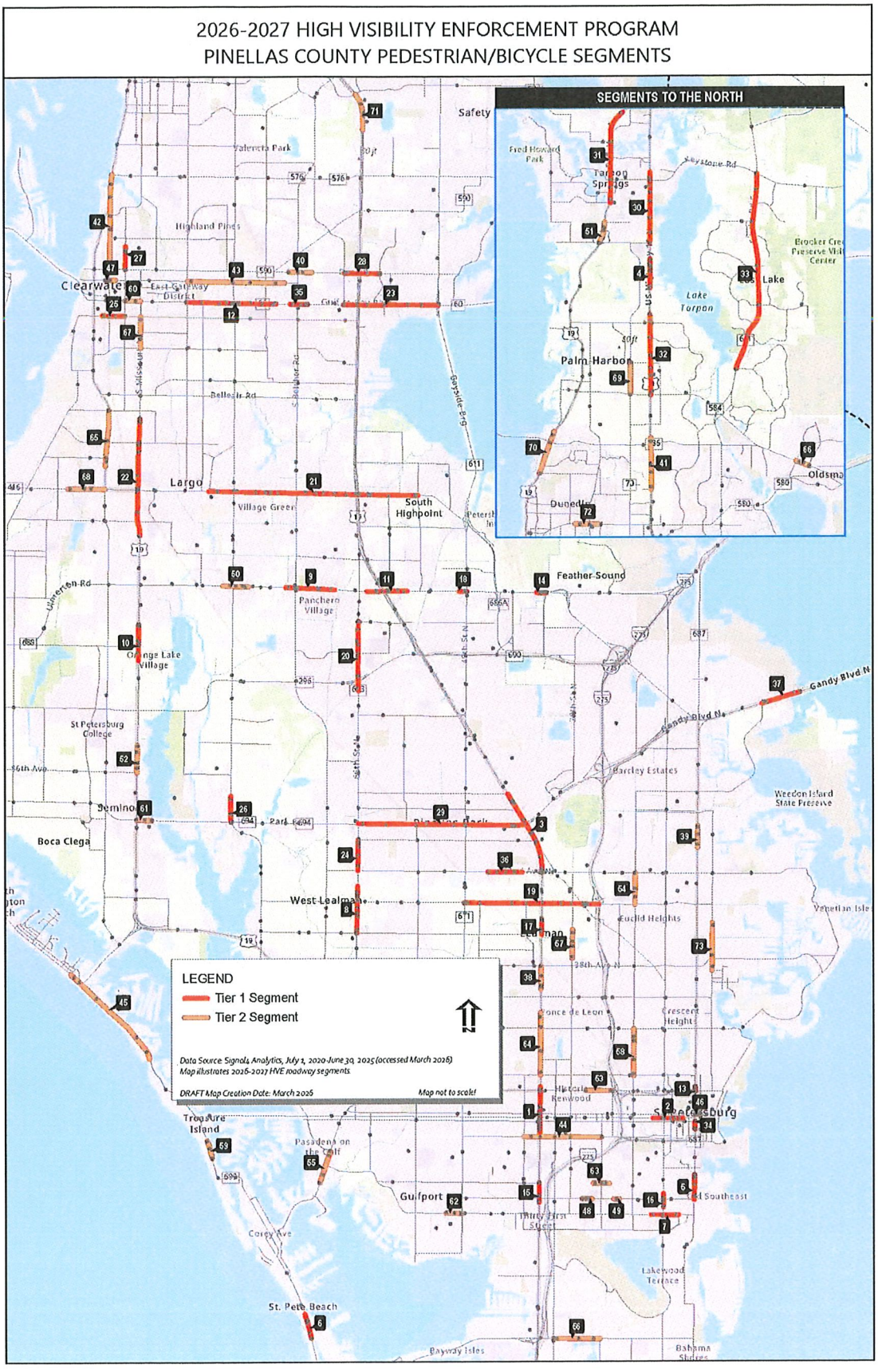
PINELLAS COUNTY PEDESTRIAN/BICYCLE HIGH CRASH SEGMENTS

Rank	Roadway Name	From	To	Length (miles)	Tier	Time Range		Day of the Week
						From	To	
30	US 19	KLOSTERMAN ROAD	CYPRESS STREET	1.80	1	1200	500	Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday
31	S PINELLAS AVENUE	MERES BOULEVARD	BERKLEY AVENUE	2.40	1	500	2400	Monday, Tuesday, Thursday, Friday, and Saturday
51	S PINELLAS AVENUE	E KLOSTERMAN ROAD	E CURLEW PLACE	0.54	2	1400	2200	Tuesday, Thursday, Friday, and Sunday

Data Source: Signal 4 Analytics 7/1/2020 to 6/30/2025 (downloaded February 2026). Table lists roadway segments with high representation of traffic crashes resulting in serious injuries and fatalities to pedestrians and bicyclists.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

EXHIBIT "C"



Letter of Agreement and Contract

Execution of Agreement. This Agreement may be simultaneously executed in a minimum of two counterparts, each of which so executed shall be deemed to be an original, and such counterparts together shall constitute one in the same instrument.

University of North Florida Training and Services Institute, Inc.
d/b/a Institute of Police Technology and Management

George Androuin, Assistant Vice President — Date

Cameron Pucci, Director — Date

AGENCY ACKNOWLEDGEMENT: By signing below, I certify that I have read the entire document, agree to abide by the pricing and all terms and conditions of this Letter of Agreement and Contract, and that I am authorized to sign for the Agency.

Agency Name: City of Tarpon Springs

Address: 324 Pine Street, Tarpon Springs, FL 34689

Agency's Authorized Agent Signature — Date

Printed Name — Title

DocuSigned by:
Chris Craig
B67DFADA5D7C4E4...

FDOT APPROVAL — 07/15/2026 | 12:56 PM EDT
Date

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

Exhibit "D"

FY2026 - Subcontract Agreement Required Federal Clauses, Per Part V

i. The parties to this subcontract shall be bound by all applicable sections of Part V: Acceptance and Agreement of Project # 433144-1-8404, FDOT Contract #G3P01. A final invoice must be received by June 4, 2027 or payment will be forfeited.

ii. **Buy American Act.** The Buy America Act prohibits the use of Federal highway safety grant funds to purchase any manufactured product or software/information technology systems whose unit purchase price is $5,000 or more, including motor vehicles, that is not produced in the United States. NHTSA and/or FHWA may waive those requirements if (1) their application would be inconsistent with the public interest; (2) such materials and products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) the inclusion of domestic material will increase the cost of the overall Project contract by more than 25 percent.

iii. **Certification Regarding Federal Lobbying.** The subcontractor certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 31 U.S.C 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

iv. **Cooperation with the Inspector General.** It is the duty of every subcontractor to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing pursuant to this Agreement. Section 20.055(5), F.S.

v. **DBE Assurance**. The consultant or contractor and subconsultant or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The consultant or contractor shall carry out applicable requirements of 49 CFR, Part 26 in the award and administration of USDOT-assisted contracts. Failure by the consultant or contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the Subrecipient or the Department deems appropriate.

vi. **E-Verify**. Any subcontractors performing work or providing services pursuant to the subgrant agreement are required to utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the term of the Agreement.

Docusign Envelope ID: 226F182A-28A0-8C34-8084-00B1B08DFA79

vii. **Nondiscrimination**. During the performance of this subcontract, the Subcontractor agrees:

1. To comply with all Federal nondiscrimination laws and regulations, as may be amended from time to time

2. Not to participate directly or indirectly in the discrimination prohibited by any Federal non-discrimination law or regulation, as set forth in Appendix B of 49 CFR part 21 and herein

3. To permit access to its books, records, accounts, other sources of information, and its facilities as required by the FDOT State Safety Office, USDOT, NHTSA, or FHWA

4. That, in the event a Subcontractor fails to comply with any nondiscrimination provisions in this subgrant, the Subrecipient will have the right to impose such subgrant sanctions as it or NHTSA and/or FHWA determines are appropriate, including but not limited to withholding payments to the Subcontractor under the contract/agreement until the Subcontractor complies; and/or canceling, terminating, or suspending a contract or funding agreement, in whole or in part.

viii. **Clean Air Act and Federal Water Pollution Control Act**. Subcontracts for amounts in excess of $150,000 must comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) as amended, and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387) as amended. Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

ix. **Integrity Certification**. The Subcontractor certifies that neither it nor its contractors are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this Agreement by any federal department or agency. This certification is a material representation of fact upon which the Department is relying in entering this Agreement. If it is later determined that the Subcontractor knowingly rendered an erroneous certification, in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. The Subcontractor shall provide to the Department immediate written notice if at any time the Subcontractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

x. **Contract Work Hours and Safety Standards Act**. All subcontracts in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

xi. **Indemnification and Insurance**. To the extent permitted by law and as limited by and pursuant to the provisions of Section 768.28, F.S., the Subcontractor shall indemnify and hold harmless the Subrecipient and the State of Florida, Department of Transportation, including the Department's officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness or intentional wrongful misconduct of the contractor/consultant and persons employed or utilized by the contractor/consultant in the performance of this Agreement. This indemnification shall survive the termination of this Agreement. Nothing contained in this paragraph is intended to nor shall it constitute a waiver of the State of Florida and the Subrecipient's sovereign immunity.

xii. **Policy on Banning Text Messaging While Driving Act**. In accordance with Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving, and DOT Order 3902.10, Text Messaging While Driving, subcontractors are encouraged to:

Adopt and enforce workplace safety policies to decrease crashes caused by distracted driving, including policies to ban text messaging while driving company-owned or rented vehicles, Government-owned, leased or rented vehicles, or privately-owned vehicles when on official business or when performing any work on behalf of the Subrecipient agency and/or the Government.

Conduct workplace safety initiatives in a manner commensurate with the size of the business, such as establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving, and education, awareness, and other outreach to employees about the safety risks associated with texting and driving.

Insert the substance of this section, including this sentence, in all sub-agreement/subcontracts funded with the subaward provided under this Agreement that are $15,000 or more.

xiii. **Human Trafficking**. The Subcontractor agrees that it and its employees that perform any work on the subcontract shall not, during the term of this Agreement, engage in trafficking in persons, procure a commercial sex act, or use forced labor in the performance of work on the subcontract.

xiv. **Contracting with Small and Minority Businesses, Women's Business Enterprises, and Labor Surplus Area Firms.** The Subcontractor agrees to take the following affirmative steps to assure that minority businesses, women's business enterprise, and labor surplus are used when possible:

1. Place qualified small and minority businesses and women's business enterprises on solicitation lists;
2. Assure that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
3. Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
4. Establish delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
5. Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
6. Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (b)(1) through (5) of this section.

xv. **Termination for Convenience**. In accordance with Appendix II to 2 CFR Part 200—Contract Provisions for Non-Federal Entity Contracts Under Federal Awards, either Party may terminate this Agreement for convenience upon thirty (30) calendar days' advance written notice to the other Party. Termination of this Agreement, as such, will not affect payment for services satisfactorily furnished prior to the termination.

Memorandum

Date: July 28, 2026
To: Mayor and Board of Commissioners
Through: Janina Lewis, Procurement Services Director
From: Anela Saday, Senior Procurement Analyst
Subject: Award File No. 260192-C-AS, Security and Fire Protection Services and Equipment **(Chris Cotta Public Works Director, Janina Lewis Procurement Services Director)**

Recommendation

Award File No. 260192-C-AS, Security and Fire Protection Equipment and Related Services, utilizing Sourcewell Contract No. 121024-JHN (Master Agreement No. 121024), to Johnson Controls Security Solutions LLC, effective from the date of award through February 18, 2029, in an estimated annual amount not to exceed $75,000, for various departments.

Background

The City utilizes Johnson Controls for security door locks, cameras, and fire alarm sprinkler systems at several City-owned properties as the systems were originally installed by Johnson Controls. Approval of this contract will provide uninterrupted security and fire projection services and as needed equipment for these buildings. The pricing offered through use of the Sourcewell contract was considered fair and reasonable based on competition and the City's historical spend.

Funding

Funding will be identified as purchases are placed.

Strategic Plan Objective

N/A

Public Works Department
Office of the Director

To: Janina Lewis, Procurement Services Director

From: Chris Cotta, Public Works Director

Date: July 17, 2026

Re: Award Security Equipment and Related Services through Sourcewell Contract 121024-JHN, Facility Security Equipment, Systems, and Services Related Equipment and Supplies

RECOMMENDATION:

Award Security Equipment and Related services through Sourcewell Contract #030421 to Johnson Controls Security Solutions LLC for Facility Security Equipment, Systems, and Services Related Equipment and Supplies, for the period of July 28, 2026 through February 18, 2029 in annual amount not to exceed $75,000, for various departments.

BACKGROUND:

The City utilizes Johnson Controls for security (door locks/cameras), and fire alarm/sprinkler systems at several City-owned properties as they were purchased/installed by them. Approval of this contract will provide uninterrupted security and fire protection services and as needed equipment for these buildings.

Funding will be identified as needed.

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

MASTER AGREEMENT #121024
CATEGORY: Facility Security Systems, Equipment, and Software with Related Services
SUPPLIER: JOHNSON CONTROLS FIRE PROTECTION LP AND ITS AFFILIATES

This Master Agreement (Agreement) is between Sourcewell, a Minnesota service cooperative located at 202 12th Street Northeast, P.O. Box 219, Staples, MN 56479 (Sourcewell) and Johnson Controls Fire Protection LP, a Delaware limited partnership (JCFP) and its affiliates named herein (each also referred to as Supplier).

Sourcewell is a local government and service cooperative created under the laws of the State of Minnesota (Minnesota Statutes Section 123A.21) offering a Cooperative Purchasing Program to eligible participating government entities.

Under this Master Agreement entered with Sourcewell, Supplier will provide Included Solutions to Participating Entities through Sourcewell's Cooperative Purchasing Program.

Article 1: General Terms

The General Terms in this Article 1 control the operation of this Master Agreement between Sourcewell and Supplier and apply to all transactions entered by Supplier and Participating Entities. Subsequent Articles to this Master Agreement control the rights and obligations directly between Sourcewell and Supplier (Article 2), and between Supplier and Participating Entity (Article 3), respectively. These Article 1 General Terms control over any conflicting terms. Where this Master Agreement is silent on any subject, Participating Entity and Supplier retain the ability to negotiate mutually acceptable terms.

1) **Purpose.** Pursuant to Minnesota law, the Sourcewell Board of Directors has authorized a Cooperative Purchasing Program designed to provide Participating Entities with access to competitively awarded cooperative purchasing agreements. To facilitate the Program, Sourcewell has awarded Supplier this cooperative purchasing Master Agreement following a competitive procurement process intended to meet compliance standards in accordance with Minnesota law and the requirements contained herein.

2) **Intent.** The intent of this Master Agreement is to define the roles of Sourcewell, Supplier and its affiliates named below, and Participating Entities as it relates to Sourcewell's Cooperative Purchasing Program. Products listed in this Master Agreement will be available to Participating Entities through JCFP; Johnson Controls, Inc., a Wisconsin corporation, 5757 N. Green Bay Avenue, Milwaukee, WI 53209 (JCI); and Johnson Controls Security Solutions LLC, 5757 N. Green Bay Avenue, Milwaukee, WI 53209 (JCSS). Each of JCI, JCFP or JCSS shall be severally liable for its obligations and shall be bound by and solely responsible for performance of the obligations under this Master Agreement and any agreement entered into with a Participating Entity. Without limiting the foregoing, the Supplier entering into the agreement with a Participating Entity shall be the Supplier that shall have liability to such Participating Entity or Sourcewell for any act, omission or failure related to that particular

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

agreement. When reference is made to "Supplier" herein, such reference shall mean the Supplier executing the related agreement.

3) **Participating Entity Access.** Sourcewell's Cooperative Purchasing Program Master Agreements are available to eligible public agencies (Participating Entities). A Participating Entity's authority to access Sourcewell's Cooperative Purchasing Program is determined through the laws of its respective jurisdiction.

4) **Supplier Access.** The Included Solutions offered under this Agreement may be made available to any Participating Entity. Supplier understands that a Participating Entity's use of this Agreement is at the Participating Entity's sole convenience. Supplier will educate its sales and service forces about Sourcewell eligibility requirements and required documentation. Supplier will be responsible for ensuring sales are with Participating Entities.

5) **Term.** This Agreement is effective upon the date of the final signature below. The term of this Agreement is four (4) years from the effective date. The Agreement expires at 11:59 P.M. Central Time on February 18, 2029, unless it is cancelled or extended as defined in this Agreement.

    a) **Extensions.** Sourcewell and Supplier may agree to up to three (3) additional one-year extensions beyond the original four-year term. The total possible length of this Agreement will be seven (7) years from the effective date.

    b) **Exceptional Circumstances.** Sourcewell retains the right to consider additional extensions as required under exceptional circumstances, and subject to Supplier's agreement to such extension.

6) **Survival of Terms.** Notwithstanding the termination of this Agreement, the obligations of this Agreement will continue through the performance period of any transaction entered between Supplier and any Participating Entity before the termination date.

7) **Scope.** Supplier is awarded a Master Agreement to provide the solutions identified in (Solicitation 121024) to Participating Entities. In Scope solutions include:

    a) Alarm and signal systems;
    b) Building security automation and integration, motion-controlled lighting, occupancy detection solutions;
    c) Fire detection, sprinkler and suppression systems;
    d) Intrusion and breach prevention and detection solutions;
    e) Glass and window security, armor, and ballistic applications and solutions;
    f) Closed circuit television (CCTV), surveillance, and recording solutions;
    g) Facility and parking access control solutions;
    h) Robotic and Artificial Intelligence (AI) surveillance solutions; and
    i) Biometric scanning and screening.

Certain of the foregoing offerings may require special terms, in which case, Supplier and the Participating Entity will negotiate in good faith those terms, and if an agreement is not possible, will not constitute breach of this Agreement in any way.

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

8) **Included Solutions.** Supplier's Proposal to the above referenced RFP is incorporated into this Master Agreement. Only those Solutions included within Supplier's Proposal and within Scope (Included Solutions) are included within the Agreement and may be offered to Participating Entities.

9) **Indefinite Quantity.** This Master Agreement defines an indefinite quantity of sales to eligible Participating Entities.

10) **Pricing.** Pricing information (including Pricing and Delivery and Pricing Offered tables) for all Included Solutions within Supplier's Proposal is incorporated into this Master Agreement.

11) **Not to Exceed Pricing.** Suppliers may not exceed the prices listed in the current Pricing List on file with Sourcewell when offering Included Solutions to Participating Entities. Participating Entities may request adjustments to pricing directly from Supplier during the negotiation and execution of any transaction.

12) **Reserved.**

13) **Supplier Representations:**

i) **Compliance.** Supplier represents and warrants it will provide all Included Solutions under this Agreement in full compliance with applicable federal, state, and local laws and regulations.

ii) **Licenses.** As applicable, Supplier will maintain a valid status on all required federal, state, and local licenses, bonds, and permits required for the operation of Supplier's business with Participating Entities. Participating Entities may request all relevant documentation directly from Supplier.

iii) **Supplier Warrants.** Supplier warrants that all Included Solutions furnished under this Agreement are free from liens and encumbrances, and are free from defects in design, materials, and workmanship for the warranty period specified in any additional terms and conditions entered into between Supplier and the Participating Entity. In addition, Supplier warrants the Solutions are suitable for and will perform in accordance with the ordinary use for which they are intended.

14) **Bankruptcy Notices.** Supplier certifies and warrants it is not currently in a bankruptcy proceeding. Supplier has disclosed all current and completed bankruptcy proceedings within the past seven years within its Proposal. Supplier must provide notice in writing to Sourcewell if it enters a bankruptcy proceeding at any time during the term of this Agreement.

15) **Debarment and Suspension.** Supplier certifies and warrants that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from programs operated by the State of Minnesota, the United States federal government, or any Participating Entity. Supplier certifies and warrants that neither it nor its principals have been convicted of a criminal offense related to the subject matter of this Agreement. Supplier further warrants that it will provide immediate written notice to Sourcewell if this certification changes at any time during the term of this Agreement.

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

16) **Provisions for non-United States federal entity procurements under United States federal awards or other awards (Appendix II to 2 C.F.R § 200).** Participating Entities that use United States federal grant or other federal funding to purchase solutions from this Agreement may be subject to additional requirements including the procurement standards of the Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards, 2 C.F.R. § 200. Participating Entities may have additional requirements based on specific funding source terms or conditions. Within this Section, all references to "federal" should be interpreted to mean the United States federal government. The following list applies when a Participating Entity accesses Supplier's Included Solutions with United States federal funds.

i) **EQUAL EMPLOYMENT OPPORTUNITY.** Except as otherwise provided under 41 C.F.R. § 60, all agreements that meet the definition of "federally assisted construction contract" in 41 C.F.R. § 60-1.3 must include the equal opportunity clause provided under 41 C.F.R. § 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 C.F.R. §, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 C.F.R. § 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." The equal opportunity clause is incorporated herein by reference.

ii) **DAVIS-BACON ACT, AS AMENDED (40 U.S.C. § 3141-3148).** When required by federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. § 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 C.F.R. § 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-federal entity must report all suspected or reported violations to the federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations (29 C.F.R. § 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-federal entity must report all suspected or reported violations to the federal awarding agency. Supplier must comply with all applicable Davis-Bacon Act provisions.

iii) **CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (40 U.S.C. § 3701-3708).** Where applicable, all contracts awarded by the non-federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations (29 C.F.R. § 5). Under 40 U.S.C. § 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies, materials, or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence. This provision is hereby incorporated by reference into this Agreement. Supplier certifies that during the term of an award for all Agreements by Sourcewell resulting from this procurement process, Supplier must comply with applicable requirements as referenced above.

iv) **RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.** If the federal award meets the definition of "funding agreement" under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 C.F.R. § 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency. Supplier certifies that during the term of an award for all Agreements by Sourcewell resulting from this procurement process, Supplier must comply with applicable requirements as referenced above.

v) **CLEAN AIR ACT (42 U.S.C. § 7401-7671Q.) AND THE FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. § 1251-1387).** Contracts and subgrants of amounts in excess of $150,000 require the non-federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. § 7401- 7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). Supplier certifies that during the term of this Agreement it will comply with applicable requirements as referenced above.

vi) **DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 AND 12689).** A contract award (see 2 C.F.R. § 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. § 180 that implement Executive Orders 12549 (3 C.F.R. § 1986 Comp., p. 189) and 12689 (3 C.F.R. § 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. Supplier certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

vii) **BYRD ANTI-LOBBYING AMENDMENT, AS AMENDED (31 U.S.C. § 1352).** Suppliers must file any required certifications. Suppliers must not have used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Suppliers must disclose any lobbying with non-federal funds

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the non-federal award. Suppliers must file all certifications and disclosures required by, and otherwise comply with, the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352).

viii) **RECORD RETENTION REQUIREMENTS.** To the extent applicable, Supplier must comply with the record retention requirements detailed in 2 C.F.R. § 200.333. The Supplier further certifies that it will retain all records as required by 2 C.F.R. § 200.333 for a period of 3 years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

ix) **ENERGY POLICY AND CONSERVATION ACT COMPLIANCE.** To the extent applicable, Supplier must comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

x) **BUY AMERICAN PROVISIONS COMPLIANCE.** To the extent applicable, Supplier must comply with all applicable provisions of the Buy American Act. Purchases made in accordance with the Buy American Act must follow the applicable procurement rules calling for free and open competition.

xi) **ACCESS TO RECORDS (2 C.F.R. § 200.336).** Supplier agrees that duly authorized representatives of a federal agency must have access to any books, documents, papers and records of Supplier that are directly pertinent to Supplier's discharge of its obligations under this Agreement for the purpose of making audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to Supplier's personnel for the purpose of interview and discussion relating to such documents.

xii) **PROCUREMENT OF RECOVERED MATERIALS (2 C.F.R. § 200.322).** A non-federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. § 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

xiii) **FEDERAL SEAL(S), LOGOS, AND FLAGS.** The Supplier cannot use the seal(s), logos, crests, or reproductions of flags or likenesses of Federal agency officials without specific pre-approval.

xiv) **NO OBLIGATION BY FEDERAL GOVERNMENT.** The U.S. federal government is not a party to this Agreement or any purchase by a Participating Entity and is not subject to any obligations or liabilities to the Participating Entity, Supplier, or any other party pertaining to any matter resulting from the Agreement or any purchase by an authorized user.

xv) **PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS.** The Contractor acknowledges that 31 U.S.C. § 38 (Administrative Remedies for False Claims and

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

Statements) applies to the Supplier's actions pertaining to this Agreement or any purchase by a Participating Entity.

xvi) **FEDERAL DEBT.** The Supplier certifies that it is non-delinquent in its repayment of any federal debt. Examples of relevant debt include delinquent payroll and other taxes, audit disallowance, and benefit overpayments.

xvii) **CONFLICTS OF INTEREST.** The Supplier must notify the U.S. Office of General Services, Sourcewell, and Participating Entity as soon as possible if this Agreement or any aspect related to the anticipated work under this Agreement raises an actual or potential conflict of interest (as described in 2 C.F.R. Part 200). The Supplier must explain the actual or potential conflict in writing in sufficient detail so that the U.S. Office of General Services, Sourcewell, and Participating Entity are able to assess the actual or potential conflict; and provide any additional information as necessary or requested.

xviii) **U.S. EXECUTIVE ORDER 13224.** The Supplier, and its subcontractors, must comply with U.S. Executive Order 13224 and U.S. Laws that prohibit transactions with and provision of resources and support to individuals and organizations associated with terrorism.

xix) **PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.** To the extent applicable, Supplier certifies that during the term of this Agreement it will comply with applicable requirements of 2 C.F.R. § 200.216.

xx) **DOMESTIC PREFERENCES FOR PROCUREMENTS.** To the extent applicable, Supplier certifies that during the term of this Agreement, Supplier will comply with applicable requirements of 2 C.F.R. § 200.322.

Article 2:
Sourcewell and Supplier Obligations

The Terms in this Article 2 relate specifically to Sourcewell and its administration of this Master Agreement with Supplier and Supplier's obligations thereunder.

1) **Authorized Sellers**. Supplier must provide Sourcewell a current means to validate or authenticate Supplier's authorized dealers, distributors, or resellers which may complete transactions of Included Solutions offered under this Agreement. Sourcewell may request updated information in its discretion, and Supplier agrees to provide requested information within a reasonable time.

2) **Product and Price Changes Requirements.** Supplier may request Included Solutions changes, additions, or deletions at any time. All requests must be made in writing by submitting a Sourcewell Price and Product Change Request Form to Sourcewell. At a minimum, the request must:
   - Identify the applicable Sourcewell Agreement number;
   - Clearly specify the requested change;
   - Provide sufficient detail to justify the requested change;
   - Individually list all Included Solutions affected by the requested change, along with the requested change (e.g., addition, deletion, price change); and

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

- Include a complete restatement of Pricing List with the effective date of the modified pricing, or product addition or deletion. The new pricing restatement must include all Included Solutions offered, even for those items where pricing remains unchanged.

A fully executed Sourcewell Price and Product Change Request Form will become an amendment to this Agreement and will be incorporated by reference.

3) **Authorized Representative.** Supplier will assign an Authorized Representative to Sourcewell for this Agreement and must provide prompt notice to Sourcewell if that person is changed. The Authorized Representative will be responsible for:
   - Maintenance and management of this Agreement;
   - Timely response to all Sourcewell and Participating Entity inquiries; and
   - Participation in reviews with Sourcewell.

   Sourcewell's Authorized Representative is its Chief Procurement Officer.

4) **Performance Reviews.** Supplier will perform a minimum of one review with Sourcewell per agreement year. The review will cover transactions to Participating Entities, pricing and terms, administrative fees, sales data reports, performance issues, supply chain issues, customer issues, and any other necessary information.

5) **Sales Reporting Required.** Supplier is required as a material element to this Master Agreement to report all completed transactions with Participating Entities utilizing this Agreement. Failure to provide complete and accurate reports as defined herein will be a material breach of the Agreement and Sourcewell reserves the right to pursue all remedies available at law including cancellation of this Agreement.

6) **Reporting Requirements.** Supplier must provide Sourcewell an activity report of all transactions completed utilizing this Agreement. Reports are due at least once each calendar quarter (Reporting Period). Reports must be received no later than 45 calendar days after the end of each calendar quarter. Supplier may report on a more frequent basis in its discretion. Reports must be provided regardless of the amount of completed transactions during that quarter (i.e., if there are no sales, Supplier must submit a report indicating no sales were made).

   The Report must contain the following fields:
   - Participating Entity Name (e.g., City of Staples Highway Department);
   - Participating Entity Physical Street Address;
   - Participating Entity City;
   - Participating Entity State/Province;
   - Participating Entity Zip/Postal Code;
   - Sourcewell Participating Entity Account Number;
   - Transaction Description;
   - Transaction Purchased Price;
   - Sourcewell Administrative Fee Applied; and
   - Date Transaction was invoiced/sale was recognized as revenue by Supplier.

   If collected by Supplier, the Report may include the following fields as available:

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

- Participating Entity Contact Name;
- Participating Entity Contact Email Address;
- Participating Entity Contact Telephone Number;

7) **Administrative Fee.** In consideration for the support and services provided by Sourcewell, Supplier will pay an Administrative Fee to Sourcewell on all completed transactions to Participating Entities utilizing this Agreement. Supplier will include its Administrative Fee within its proposed pricing. Supplier may not directly charge Participating Entities to offset the Administrative Fee.

8) **Fee Calculation.** Supplier's Administrative Fee payable to Sourcewell will be calculated as a stated percentage (listed in Supplier's Proposal) of all completed transactions utilizing this Master Agreement within the preceding Reporting Period. For certain categories, a flat fee may be proposed. The Administrative Fee will be stated in Supplier's Proposal.

9) **Fee Remittance.** Supplier will remit fee to Sourcewell no later than 45 calendar days after the close of the preceding calendar quarter in conjunction with Supplier's Reporting Period obligations defined herein. Payments should note the Supplier's name and Sourcewell-assigned Agreement number in the memo; and must be either mailed to Sourcewell above "Attn: Accounts Receivable" or remitted electronically to Sourcewell's banking institution per Sourcewell's Finance department instructions.

10) **Noncompliance.** Sourcewell reserves the right to seek all remedies available at law for unpaid or underpaid Administrative Fees due under this Agreement. Failure to remit payment, delinquent payments, underpayments, or other deviations from the requirements of this Agreement may be deemed a material breach and may result in cancellation of this Agreement and disbarment from future Agreements.

11) **Audit Requirements.** Pursuant to Minn. Stat. § 16C.05, subdivision 5, the books, records, documents, and accounting procedures and practices relevant to this Agreement are subject to examination by Sourcewell and the Minnesota State Auditor for a minimum of six years from the end of this Agreement. Supplier agrees to fully cooperate with Sourcewell in auditing transactions under this Agreement to ensure compliance with pricing terms, correct calculation and remittance of Administrative Fees, and verification of transactions as may be requested by a Participating Entity or Sourcewell.

12) **Assignment, Transfer, and Administrative Changes.** Supplier may not assign or otherwise transfer its rights or obligations under this Agreement without the prior written consent of Sourcewell. Such consent will not be unreasonably withheld. Prior notice, but not consent, shall be required by Supplier for assignment to a Supplier affiliate or to address corporate restructurings, mergers, acquisitions, or other corporate changes. Sourcewell reserves the right to unilaterally assign all or portions of this Agreement within its sole discretion to address corporate restructurings, mergers, acquisitions, or other changes to the Responsible Party and named in the Agreement. Any prohibited assignment is invalid. Upon request Sourcewell may make administrative changes to agreement documentation such as name changes, address changes, and other non-material updates as determined within its sole discretion.

13) **Amendments.** Any material change to this Agreement must be executed in writing through an amendment and will not be effective until it has been duly executed by the parties.

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

14) **Waiver.** Failure by Sourcewell to enforce any right under this Agreement will not be deemed a waiver of such right in the event of the continuation or repetition of the circumstances giving rise to such right.

15) **Complete Agreement.** This Agreement represents the complete agreement between the parties for the scope as defined herein. Supplier and Sourcewell may enter into separate written agreements relating specifically to transactions outside of the scope of this Agreement.

16) **Relationship of Sourcewell and Supplier.** This Agreement does not create a partnership, joint venture, or any other relationship such as employee, independent contractor, master-servant, or principal-agent.

17) **Indemnification.** Supplier must indemnify, defend, save, and hold Sourcewell, including their agents and employees, harmless from any third party claims or causes of action, including reasonable attorneys' fees incurred by Sourcewell, for bodily injury or tangible property damage to the extent caused by the Supplier or its agents or employees in the performance of this Agreement; this indemnification includes injury or death to person(s) or property caused by some defect in design, condition, or performance of Included Solutions under this Agreement. Supplier's liability to Sourcewell arising out of this Agreement, with the exception of Supplier's indemnification obligations under this Section, shall not exceed amounts paid or payable under this Agreement or $2,000,000, whichever is greater. Sourcewell's responsibility will be governed by the State of Minnesota's Tort Liability Act (Minnesota Statutes Chapter 466) and other applicable law.

    Supplier shall not be liable for any type of indirect, special, liquidated, exemplary, collateral, incidental or consequential damages. These limitations of liability are effective even if Buyer has been advised by Supplier of the possibility of such damages.

18) **Data Practices.** Supplier and Sourcewell acknowledge Sourcewell is subject to the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13. As it applies to all data created and maintained in performance of this Agreement, Supplier may be subject to the requirements of this chapter.

19) **Grant of License.**
    a) **During the term of this Agreement:**
        i) **Supplier Promotion.** Sourcewell grants to Supplier a royalty-free, worldwide, non-exclusive right and license to use the trademark(s) provided to Supplier by Sourcewell in advertising, promotional materials, and informational sites for the purpose of marketing Sourcewell's Agreement with Supplier.

        ii) **Sourcewell Promotion.** Supplier grants to Sourcewell a royalty-free, worldwide, non-exclusive right and license to use Supplier's trademarks in advertising, promotional materials, and informational sites for the purpose of marketing Supplier's Agreement with Sourcewell.

    b) **Limited Right of Sublicense.** The right and license granted herein includes a limited right of each party to grant sublicenses to their respective subsidiaries, distributors, dealers, resellers, marketing representatives, partners, or agents (collectively "Permitted Sublicensees") in

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

advertising, promotional, or informational materials for the purpose of marketing the Parties' relationship. Any sublicense granted will be subject to the terms and conditions of this Article. Each party will be responsible for any breach of this section by any of their respective sublicensees.

c) **Use; Quality Control.**
   i) Neither party may alter the other party's trademarks from the form provided and must comply with removal requests as to specific uses of its trademarks or logos.

   ii) Each party agrees to use, and to cause its Permitted Sublicensees to use, the other party's trademarks only in good faith and in a dignified manner consistent with such party's use of the trademarks. Each party may make written notice to the other regarding misuse under this section. The offending party will have 30 days of the date of the written notice to cure the issue or the license/sublicense will be terminated.

d) **Termination.** Upon the termination of this Agreement for any reason, each party, including Permitted Sublicensees, will have 30 days to remove all trademarks from signage, websites, and the like bearing the other party's name or logo (excepting Sourcewell's pre-printed catalog of suppliers which may be used until the next printing). Supplier must return all marketing and promotional materials, including signage, provided by Sourcewell, or dispose of it according to Sourcewell's written directions.

20) **Venue and Governing law between Sourcewell and Supplier Only.** The substantive and procedural laws of the State of Minnesota will govern this Agreement between Sourcewell and Supplier. Venue for all legal proceedings arising out of this Agreement between Sourcewell and Supplier will be in court of competent jurisdiction within the State of Minnesota. This section does not apply to any dispute between Supplier and Participating Entity. This Agreement reserves the right for Supplier and Participating Entity to negotiate this term to within any transaction documents.

21) **Severability.** If any provision of this Agreement is found by a court of competent jurisdiction to be illegal, unenforceable, or void then both parties will be relieved from all obligations arising from that provision. If the remainder of this Agreement is capable of being performed, it will not be affected by such determination or finding and must be fully performed.

22) **Insurance Coverage.** At its own expense, Supplier must maintain valid insurance policy(ies) during the performance of this Agreement with insurance company(ies) licensed or authorized to do business in the State of Minnesota having an "AM BEST" rating of A- or better, with coverage and limits of insurance not less than the following:

a) **Commercial General Liability Insurance.** Supplier will maintain insurance covering its operations, with coverage on an occurrence basis, and must be subject to terms no less broad than the Insurance Services Office ("ISO") Commercial General Liability Form CG0001 (2001 or newer edition), or equivalent. At a minimum, coverage must include liability arising from premises, operations, bodily injury and property damage, independent contractors, products-completed operations including construction defect, contractual liability, blanket contractual liability, and personal injury and advertising injury. All required limits, terms and conditions of coverage must be maintained during the term of this Agreement.
   - $1,500,000 each occurrence Bodily Injury and Property Damage
   - $1,500,000 Personal and Advertising Injury

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

- $2,000,000 aggregate for products liability-completed operations
- $2,000,000 general aggregate

b) **Certificates of Insurance.** Prior to execution of this Agreement, Supplier must furnish to Sourcewell a certificate of insurance, as evidence of the insurance required under this Agreement. Prior to expiration of the policy(ies), renewal certificates must be mailed to Sourcewell, 202 12th Street Northeast, P.O. Box 219, Staples, MN 56479, provided via email, or provided to in an alternative manner as directed by Sourcewell. The certificates must be signed by a person authorized by the insurer(s) to bind coverage on their behalf. Failure of Supplier to maintain the required insurance and documentation may constitute a material breach.

c) **Additional Insured Endorsement and Primary and Non-contributory Insurance Clause.** Supplier agrees to list Sourcewell, including its officers, agents, and employees, as an additional insured under the Supplier's commercial general liability insurance policy with respect to liability arising out of activities, "operations," or "work" performed by or on behalf of Supplier, and products and completed operations of Supplier. The policy provision(s) or endorsement(s) must further provide that coverage is primary and not excess over or contributory with any other valid, applicable, and collectible insurance or self-insurance in force for the additional insureds.

d) **Waiver of Subrogation.** Supplier waives and must require (by endorsement or otherwise) all its insurers to waive subrogation rights against Sourcewell and other additional insureds for losses paid under the insurance policies required by this Agreement or other insurance applicable to the Supplier or its subcontractors. The waiver must apply to all deductibles and/or self-insured retentions applicable to the required or any other insurance maintained by the Supplier or its subcontractors. Where permitted by law, Supplier must require similar written express waivers of subrogation and insurance clauses from each of its subcontractors.

e) **Umbrella/Excess Liability/SELF-INSURED RETENTION.** The limits required by this Agreement can be met by either providing a primary policy or in combination with umbrella/excess liability policy(ies), or self-insured retention.

23) **Termination for Convenience.** Sourcewell or Supplier may terminate this Agreement upon 60 calendar days' written notice to the other Party. Termination pursuant to this section will not relieve the Supplier's obligations under this Agreement for any transactions entered with Participating Entities through the date of termination, including reporting and payment of applicable Administrative Fees.

24) **Termination for Cause.** Sourcewell may terminate this Agreement upon providing written notice of material breach to Supplier. Notice must describe the breach in reasonable detail and state the intent to terminate the Agreement. Upon receipt of Notice, the Supplier will have 30 calendar days in which it must cure the breach. Termination pursuant to this section will not relieve the Supplier's obligations under this Agreement for any transactions entered with Participating Entities through the date of termination, including reporting and payment of applicable Administrative Fees.

Article 3:

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

Supplier Obligations to Participating Entities

The Terms in this Article 3 relate specifically to Supplier and a Participating Entity when entering transactions utilizing the General Terms established in this Master Agreement. Article 1 General Terms control over any conflict with this Article 3. Where this Master Agreement is silent on any subject, Participating Entity and Supplier retain the ability to negotiate mutually acceptable terms.

1) **Quotes to Participating Entities.** Suppliers are encouraged to provide all pricing information regarding the total cost of acquisition when quoting to a Participating Entity. Suppliers and Participating Entities are encouraged to include all cost specifically associated with or included within the Suppliers proposal and Included Solutions within transaction documents.

2) **Shipping, Delivery, Acceptance, Rejection, and Warranty.** Supplier's proposal may include proposed terms relating to shipping, delivery, inspection, and acceptance/rejection and other relevant terms of tendered Solutions. Supplier and Participating Entity may negotiate final terms appropriate for the specific transaction relating to non-appropriation, shipping, delivery, inspection, acceptance/rejection of tendered Solutions, and warranty coverage for Included Solutions. Such terms may include, but are not limited to, costs, risk of loss, proper packaging, inspection rights and timelines, acceptance or rejection procedures, and remedies as mutually agreed include notice requirements, replacement, return or exchange procedures, and associated costs.

3) **Applicable Taxes.** Participating Entity is responsible for notifying supplier of its tax-exempt status and for providing Supplier with any valid tax-exemption certification(s) or related documentation.

4) **Ordering Process and Payment.** Supplier's ordering process and acceptable forms of payment are included within its Proposal. Participating Entities will be solely responsible for payment to Supplier and Sourcewell will have no liability for any unpaid invoice of any Participating Entity.

5) **Transaction Documents.** Participating Entity may require the use of its own forms to complete transactions directly with Supplier utilizing the terms established in this Agreement. Supplier's standard form agreements may be offered as part of its Proposal. Supplier and Participating Entity may complete and document transactions utilizing any type of transaction documents as mutually agreed. In any transaction document entered utilizing this Agreement, Supplier and Participating Entity must include specific reference to this Master Agreement by number and to Participating Entity's unique Sourcewell account number.

6) **Additional Terms and Conditions Permitted.** Participating Entity and Supplier may negotiate and include additional terms and conditions within transaction documentation as mutually agreed. Such terms may supplant or supersede this Master Agreement when necessary and as solely determined by Participating Entity. Supplier will deliver its standard terms and conditions for monitoring services, and its standard terms and conditions for the scope of all task orders, to be incorporated in transaction documents with the Participating Entity, and subject to acceptance by such Participating Entity. Sourcewell has expressly reserved the right for Supplier and Participating Entity to address any necessary provisions within transaction documents not expressly included within this Master Agreement, including but not limited to transaction cancellation, dispute resolution, governing law and venue, non-appropriation, insurance, defense and indemnity, force majeure, and other material terms as mutually agreed.

Docusign Envelope ID: 779DC9DA-C023-4EF0-A46A-3EA236E2B59A

7) **Subsequent Agreements and Survival.** Supplier and Participating Entity may enter into a separate agreement to facilitate long-term performance obligations utilizing the terms of this Master Agreement as mutually agreed. Such agreements may provide for a performance period extending beyond the full term of this Master Agreement as determined in the discretion of Participating Entity.

8) **Participating Addendums.** Supplier and Participating Entity may enter a Participating Addendum or similar document extending and supplementing the terms of this Master Agreement to facilitate adoption as may be required by a Participating Entity.

Sourcewell

Signed by:
By: Jeremy Schwartz
C0FD2A139D06489...

Jeremy Schwartz
Title: Chief Procurement Officer

Date: 5/5/2025 | 1:53 PM CDT

Johnson Controls Fire Protection, LP

DocuSigned by:
By: Albert Young
D551D3CC1FE041D...

Al Young
Title: Vice President, Strategic Accounts

Date: 5/11/2025 | 4:54 PM PDT

Johnson Controls, Inc.

DocuSigned by:
By: Albert Young
D551D3CC1FE041D...

Al Young
Title: Vice President, Strategic Accounts

Johnson Controls Security Solutions LLC

DocuSigned by:
By: Albert Young
D551D3CC1FE041D...

Al Young
Title: Vice President, Strategic Accounts

RFP 121024 - Facility Security Systems, Equipment, and Software with Related Services

Vendor Details

Company Name:	Johnson Controls, Inc.
Address:	5757 N. Green Bay Ave P.O. Box 591 Milwaukee, Wisconsin 53201
Contact:	Tom Staves
Email:	thomas.staves@jci.com
Phone:	443-676-8813
HST#:	39-0380010

Submission Details

Created On:	Tuesday November 05, 2024 12:36:20
Submitted On:	Tuesday December 10, 2024 11:36:08
Submitted By:	Brett Herolt
Email:	brett.a.herolt@jci.com
Transaction #:	211aabe4-8bc2-42dc-941d-320008e08261
Submitter's IP Address:	170.85.133.80

Specifications

Table 1: Proposer Identity & Authorized Representatives (Not Scored)

General Instructions (applies to all Tables) Sourcewell prefers a brief but thorough response to each question. Do not merely attach additional documents to your response without also providing a substantive response. Do not leave answers blank; respond "N/A" if the question does not apply to you (preferably with an explanation).

Table 1 Specific Instructions. Sourcewell requires identification of all parties responsible for providing Solutions under a resulting master agreement(s) (Responsible Supplier). Proposers are strongly encouraged to include all potential Responsible Suppliers including any corporate affiliates, subsidiaries, D.B.A., and any other authorized entities within a singular proposal. All information required under this RFP must be included for each Responsible Supplier as instructed. Proposers with multiple Responsible Supplier options may choose to respond individually as distinct entities, however each response will be evaluated individually and only those proposals recommended for award may result in a master agreement award. Unawarded entities will not be permitted to later be added to an existing master agreement through operation of Proposer's corporate organization affiliation.

Line Item	Question	Response *	
1	Provide the legal name of the Proposer authorized to submit this Proposal.	Johnson Controls Fire Protection, LP.	*
2	In the event of award, is this entity the Responsible Supplier that will execute the master agreement with Sourcewell? Y or N.	Yes.	*
3	Identify all subsidiaries, D.B.A., authorized affiliates, and any other entity that will be responsible for offering and performing delivery of Solutions within this Proposal (i.e. Responsible Supplier(s) that will execute a master agreement with Sourcewell).	In the event of award, Johnson Controls Fire Protection, LP will execute the master agreement with Sourcewell and be the responsible supplier in the United States. In Canada, its affiliate Tyco Integrated Fire and Security dba Johnson Controls Canada, LP will be the responsible for offering and performing delivery of the solutions and services described within this proposal. All Johnson Controls Affiliates will be quoting and performing the scope of work under this response, as such, Johnson Controls Fire Protection, LP (as well as the following affiliates Johnson Controls Security Solutions, Tyco Integrated Fire & Security, Johnson Controls Canada, LP, and Johnson Controls, Inc.), will be named as Johnson Controls collectively throughout the remainder of this document. To the extent financed solutions are offered, Johnson Controls may facilitate use of Sourcewell Awarded Supplier NCL, or JCI Financing or affiliates as desired by any participating entities.	*
4	Provide your CAGE code or Unique Entity Identifier (SAM):	CAGE code: 25244 CAGE UEI: Z2N8C3NL8FW5	*
5	Provide your NAICS code applicable to Solutions proposed.	NAICS Codes for Johnson Controls Fire Protection LP 238210 Fire sprinkler system installation 334290 Fire detection and alarm systems manufacturing (For use only by Westminster, MA) 423990 Fire extinguisher sales combined with rental and/or service 561621 Fire alarm sales combined with installation, repair, or monitoring services; Security alarm systems sales combined with installation, repair, or monitoring services NAICS Codes for Johnson Controls Security Solutions LLC 561621 Security Alarms Systems (sales, installation, monitoring, maintenance) NAICS Codes for Johnson Controls, Inc. BT&S Group 332911 Industrial Valve Manufacturing 336512 Automatic environmental control manufacturing for residential, commercial and appliance use 238210 Electrical Contractors 238220 Plumbing, Heating, HVAC	
6	Proposer Physical Address:	5757 N. Green Bay Ave. Milwaukee, WI 53209 Sourcewell members can ensure their project will produce significant energy savings and the highest return on investment by selecting Johnson Controls, a company with of extensive experience providing facility security systems, equipment, and software with related services across a variety of market verticals through a nationwide branch network that ensures expert certified local service in every market in North America. Operating from 160 branch offices in North America, we are prepared to serve all Sourcewell members participating in Sourcewell's program regardless of location. In addition, we maintain 92 distribution and warehouse facilities throughout North America to ensure on-time delivery of critical solution components.	*

7	Proposer website address (or addresses):	www.johnsoncontrols.com	*
8	Proposer's Authorized Representative (name, title, address, email address & phone) (The representative must have authority to sign the "Proposer's Assurance of Compliance" on behalf of the Proposer):	Name: Justin Newbern Title: Service Sale Enablement Leader Address: 4820 Executive Park Court, Jacksonville, FL 32216 Email: justin.m.newbern@jci.com Phone: (407) 362-8689	*
9	Proposer's primary contact for this proposal (name, title, address, email address & phone):	Name: Thomas Staves Title: Sales Manager, Cooperative Contracts Address: 705 Digital Drive, Linthicum, MD 21090 Email Address: thomas.staves@jci.com | M: (443) 676-8813	*
10	Proposer's other contacts for this proposal, if any (name, title, address, email address & phone):	Name: Melanie LeClair Title: Business Development Manager Address: 30 Thomas Dr., Westbrook, ME 04092 Email Address: melanie.leclair@jci.com | Ph: (207) 232-6501	*

Table 2A: Financial Viability and Marketplace Success (50 Points, applies to Table 2A and 2B)

Line Item	Question	Response *	
11	Provide a brief history of your company, including your company's core values, business philosophy, and industry longevity related to the requested Solutions.	Company History Johnson Controls, a publicly held corporation, was founded in 1885 and trades on the New York Stock Exchange under ticker symbol JCI. Warren Johnson started the Johnson Electric Service Company which was incorporated in the State of Wisconsin on July 31, 1900. In Canada, we have been incorporated in the Province of Ontario since 1912. We have 13 branch offices and 65 local satellite offices located throughout Canada covering every province. Johnson Controls is a global leader in delivering integrated building control systems, mechanical equipment, fire alarm and life safety products, physical security systems, and both mechanical and technical services. We also provide solutions designed to improve the comfort, safety, and energy efficiency of non-residential buildings and residential properties. Johnson Controls operated under two former names: Johnson Electric Service Company July 31,1900 to July 10, 1902, Johnson Service Company July 10, 1902, to November 11, 1974. Our company merged with Tyco International in 2016 as Johnson Controls International, PLC. Johnson Controls International plc's shares are traded on the New York Stock Exchange (NYSE: JCI). We are a Fortune Global 500 company with more than $26.7 billion of revenue in 2023. For information on its parent company, Johnson Controls International plc, refer to its Form 10-K annual report identifying the Company's significant subsidiaries. Members of the Company's executive management group may serve as a director and/or officer of any of the Company's subsidiaries. However, these individuals generally are not involved in the day-to-day operations of these companies. None of the Company's principal officers beneficially owns 1% or more of any of the Company's subsidiaries. https://investors.johnsoncontrols.com/financial-information/financial-reports?doc=* Johnson Controls sells its integrated control systems, security systems, fire-detection systems, equipment, and services primarily through the Company's extensive global network of sales and service offices, with operations in approximately 60 countries. Significant sales are also generated through global third-party channels, such as distributors of air-conditioning, security, fire-detection, and commercial HVAC systems. Trusted Buildings brands, such as YORK®, Hitachi Air Conditioning, Metasys ®, Ansul, Ruskin®, Titus®, Frick®, PENN®, Sabroe®, Tyco®, Simplex® and Grinnell® give the Company the most diverse portfolio in the building technology industry. By selecting Johnson Controls, Sourcewell members can engage an Original Equipment Manufacturer (OEM) that can provide a single point of contact and accountability for all of their Fire Safety and Security Solution needs. Factory-trained Johnson Controls employees operate out of a nationwide branch network that ensures expert local service in every market in North America. This level of local expertise will help Sourcewell members ensure that their project produces the expected results and the highest return on investment. Furthermore, Sourcewell members will engage an industry leader that can realize ensure an end-to-end offering that is designed, implemented, commissioned, and serviced by reliable experts that have successfully performed similar projects for other K-12, higher-education, state, and local government bodies. As the world leader in	

Fire Safety and Security Solutions, we are uniquely well positioned to partner with Sourcewell members on their projects because we can provide a single source of accountability for any project. Whether the member's project is a simple equipment upgrade, an overhaul of a member's systems, a planned service agreement, emergency service, or any combination of services or products, Sourcewell members will get the same reliable service, high-performance, and attention to detail without regard to the size of the member's project.

As a highly recognized systems integrator, we have unique ties to brands such as Software House access control systems, American Dynamics CCTV systems and Zettler nurse call systems. This equipment is manufactured by our sister company, Tyco Fire Protection Products (TFPP). Consequently, our team has factory direct access to TFPP's products and services.

Core Values

Johnson Controls core values (listed below) act as a guide as it pertains to our mission to create a holistic offering of facility security systems, products, and software solutions. These values are the guiding principles that drive our mission to serve customers with a shared purpose and approach grounded in performance and value.

Integrity First: We promise honesty and transparency. We uphold the highest standards of integrity and honor the commitments we make.

Purpose Led: We believe in doing well by doing good and hold ourselves accountable to make the world a better place through the solutions we provide, our engagement in society, the way we do business, and our commitment to protect people and the environment.

Customer Driven: We win when our customers win. Our long-term strategic relationships provide unique insights and the ability to deliver exceptional customer experiences and solutions.

Future Focused: Our culture of innovation and continuous improvement drives us to solve today's challenges while constantly asking 'what's next'.

One Team: We are one team, dedicated to working collaboratively together to create the purposeful solutions that propel the world forward.

Excellence: Striving for excellence in all endeavors and delivering superior performance.

Business Philosophy

Our business philosophy revolves around innovation, sustainability, and continuous improvement, with a focus on delivering exceptional customer experiences. We empower our customers to win everywhere, every day, and are committed to helping our customers achieve their goals and objectives by providing industry-leading solutions, technology, and services. We believe in creating value through sustainable practices and a dedication to excellence in all aspects of our business. All of this is in service to our mission, which is to create a more comfortable, safe, and sustainable world.

Specifically, our philosophy focuses on the following guiding principles:

Customer-Centric Approach: Johnson Controls prioritizes understanding and meeting customer needs, delivering value and exceptional service.

Technology Leadership: We strive to be at the forefront of technological advancements, developing innovative solutions that address current and future challenges.

Environmental Responsibility: We are committed to sustainability, promoting energy efficiency, reducing environmental impact, and helping customers achieve their sustainability goals.

Operational Excellence: We aim for operational excellence across their organization, driving efficiency, cost-effectiveness, and high-quality performance.

Inclusion and Diversity: Johnson Controls values and embraces diversity, fostering an inclusive work environment that encourages collaboration, creativity, and diverse perspectives.

Ethical Standards: We uphold high ethical standards, promoting integrity, transparency, and accountability in all business dealings.

Industry Longevity

Our commitment to providing high-quality fire safety, life safety, and security solutions runs as deep as our resources. Johnson Controls has delivered integrated Life Safety, Security and Fire solutions to over 50,000 customers over 45+ years.

Johnson Controls and affiliate entities offer a breadth of experience that is unmatched in the security industry. With a history dating to 1874, we trace our beginning to the roots of the North American commercial security market. Formerly known as ADT Business Solutions, Johnson Controls Fire Protection, LP became an independent company in 2012. As a business unit of Johnson Controls, the company is focused exclusively on providing security solutions for the commercial, retail, industrial and governmental markets.

With 10,000 people dedicated to supplying the most advanced business security solutions, Johnson Controls helps companies protect their employees, customers, facilities, and operations from internal and external threats, and allows businesses to

work smarter through enhanced security management solutions.

Johnson Controls helps protect all types of organizations, including K-12 school systems, institutions of higher learning, government buildings, hospitals, banks, manufacturing and distribution centers, food and beverage facilities, pharmaceutical companies, transportation and logistics, and retail stores. We secure businesses that operate out of a single location, as well as complex nationwide enterprises. Across these industries and many more, we help customers meet their regulatory and compliance requirements and provide integrated security and life safety solutions that help them run not just safer, but sharper, too. Our products and solutions help protect:

80% of the world's top 200 retailers.
Over 1,000,000 firefighters around the world.
90% of the top 50 oil and gas companies.
Our integrated solutions are in more than 300 international airports.
We protect 100+ major stadiums around the world.
We secure, monitor and service hundreds of Fortune 500 companies globally.
Our products are in 200+ hospitals around the world.

Johnson Controls' Advanced Services offers a breadth of experience that is unmatched in the physical security industry. With hundreds of years of joint experience, many team members have worked with this group and in the physical security industry for 20+ years. Formerly known as SST (Security Services & Technologies), established more than 30 years ago, this group became part of the Johnson Controls organization through acquisitions, bringing together a world-class, regional security integrator with a multi-national building solutions provider. This alliance brings the feel of a regional security partner with the strength of a global company.

Best-in-class Partnerships. We amplify our own capabilities by partnering with other technology leaders to seamlessly deliver world-class solutions for Sourcewell members. As a universally recognized systems integrator, Johnson Controls is an authorized distributor of leading security products. Our team also has unique ties to several security brands that are also subsidiaries of Johnson Controls International, such as American Dynamics, Bentel Security, CEM Systems, DSC, Cloud, Illustra, Kantech, and Software House. Our organization also has direct access to best-in-class manufacturers with the ability to support the solution that best fits Sourcewell members' security needs. Some examples include:

- Video Management Systems: Genetec Omnicast, Software House - Victor, Avigilon
- Cameras: American Dynamics, Axis, Hanwha, Bosch
- Access Control Systems: Genetec Synergis, Software House CCure, Lenel
- Intrusion Detection Systems: DMP, Magos, Southwest Microwave
- Turnstiles: Boon Edam, DSI, Orion, Automatic Systems
- Locks: Assa Abloy, Salto, Best Access
- Emergency Alert Systems: Lynx, Shooter Detection Systems

12	What are your company's expectations in the event of an award?	In the event of award, Johnson Controls would anticipate expanding this contract year over year throughout the contract's term. The award of this contract and its parameters would be communicated to all 160 offices located throughout North America and to our Government Solutions team (as described in response to question 26). Johnson Controls will provide training to the entire U.S.-based field sales force and security system, equipment, and software agents on how to incorporate this Sourcewell contract into their Sales processes with existing Johnson Controls customers. In Canada, we will connect the Canadian branch sales teams and security system, equipment, and software agents with Canoe to help support use of the contract in Canada. If an existing customer in either the U.S. or Canada is not already a Sourcewell/Canoe member, we will work with that customer to explain the benefits that come from being a member in an effort to make sure they become a member. Additionally, we will request that all branch sales team members and security system, equipment, and software agents attend Sourcewell-led training sessions so they may learn directly for Sourcewell experts as it pertains to properly and effectively position the strength of the Sourcewell contract and the extensive benefits that come from being a member. Furthermore, these efforts will involve the creation of printed collaterals, websites, Email campaigns, and a presence in local and regional trade shows in conjunction with Sourcewell. Our applied security system, equipment, and software segment made up 32% of the company's 2024 fiscal year sales and includes large commercial applied security system, equipment, software, and related systems. The growth in Johnson Controls' North America security system, equipment, and software solutions orders were driven by 22% and 5% year-over-year increases in systems and service orders, respectively, according to the company's earnings presentation. We will use this momentum and leverage the Sourcewell expertise to continue to grow our security system, equipment, software, and related systems business and support North American customers.	*

13	Demonstrate your financial strength and stability with meaningful data. This could include such items as financial statements, SEC filings, credit and bond ratings, letters of credit, and detailed reference letters. Upload supporting documents (as applicable) in the document upload section of your response. DO NOT PROVIDE ANY TAX INFORMATION OR PERSONALLY IDENTIFIABLE INFORMATION.	Johnson Controls, Inc. and our affiliate Johnson Controls Canada LP are indirect, wholly owned subsidiaries and North American operating companies of our parent company, Johnson Controls International plc. Johnson Controls International plc has a strong balance sheet with significant financial liquidity. As of September 30, 2024, our parent company has more than $42.7 billion in total reported assets. In addition, we continue to generate strong revenue and profitability. For the fiscal year 2024, our company reported net revenue of $22.95 billion and net income of $1.7 billion. Our parent company has a long-term credit rating of BBB+/Stable/A-2 from Standard & Poor's Rating Service. This financial strength empowers us to fund our project development activities. We have included our parent company's recent financial statement in the document upload section of our response. Additionally, all of our financial statements and reports are available at our website: https://investors.johnsoncontrols.com/financial-information/quarterly-and-annual-reports. Johnson Controls' financial health provides Sourcewell and its members with assurance of our ability to serve our customers. Our capacity to integrate a wide range of services into a cohesive, tailored value proposition for our customers truly differentiates us from our competitors. We have invested millions of dollars to create a robust operational, financial, and technical infrastructure, critical when managing large, widely distributed, and divergent sets of properties that constitute customer portfolios. We continue to focus on profitable growth in all our businesses, as it allows us more opportunities to leverage our volume, leading to improved quality and efficiencies. This enables us to invest in innovation and improve our services, bringing more success to our customers. Our growth goals are supported by initiatives focusing on new technology, optimizing our resources and continuous improvement of quality, reliability, and delivery. SEC Investigations As of November 2024, Johnson Controls has no pending or in progress SEC investigations. Credit Holds Johnson Controls has not had a credit hold within the past 24 months. Bonding Current bonding rating A (AM Best) Current bonding capacity $200 million single | $600 million aggregate Current bonding rate $2.50/$1,000 Banking References Bank of America 231 S. LaSalle Street, 7th Floor, Chicago, IL 60604 Michael Brunsman | (513) 929-5102 | Michael.brunsman@baml.com Sterling National Bank 500 Seventh Avenue, 3rd Floor, New York, NY 10018 John Riddle | (949) 370-2907 | jriddle@snb.com TD Equipment Finance 12000 Horizon Way, 3rd Floor, Mt. Laurel, NJ 08054 Dan McGarry | (856) 685-5256 | Daniel.McGarry@td.com	*
14	What is your US market share for the Solutions that you are proposing?	17%	*
15	What is your Canadian market share for the Solutions that you are proposing?	17%	*
16	Disclose all current and completed bankruptcy proceedings for Proposer and any included possible Responsible Party within the past seven years. Proposer must provide notice in writing to Sourcewell if it enters a bankruptcy proceeding at any time during the pendency of this RFP evaluation.	Johnson Controls, Inc. has never sought bankruptcy protection.	*

17	How is your organization best described: is it a manufacturer, a distributor/dealer/reseller, or a service provider? Answer the question that best applies to your organization, either a) or b). a) If your company is best described as a distributor/dealer/reseller (or similar entity), provide your written authorization to act as a distributor/dealer/reseller for the manufacturer of the products proposed in this RFP. If applicable, is your dealer network independent or company owned? b) If your company is best described as a manufacturer or service provider, describe your relationship with your sales and service force and with your dealer network in delivering the products and services proposed in this RFP. Are these individuals your employees, or the employees of a third party?	Johnson Controls is best described as a manufacturer and service provider with an extensive network of sales and service branches that are 100% company owned. Through our award-winning digital technologies and services, we are transforming facility security systems, equipment, equipment, software, and related solutions and offerings into safer and more secure facilities. The branch network is made up of a network of 160 offices throughout North America (including Canada) and is comprised of expert local resources that are employed directly by Johnson Controls and have experience serving customers in every market vertical. Our branch locations and staff specialize in the provision of equipment, installation, and service for project security, fire, and life safety solution offerings. Furthermore, these local branches are supported by a team of nationally based professionals dedicated to implementing facility security systems, equipment, equipment, software, and related solutions contracts for thousands of customers spanning the K-12, higher education, federal, local and state government, public housing, and healthcare markets. Johnson Controls has the knowledge, expertise and experience with similar projects to develop a successful long-term sustainability partnership with each Sourcewell member seeking a facility security systems, equipment, equipment, software, and related offering solution. This is accomplished through our branch network that mobilizes best in class local contractors and engineering firms best suited for the proper execution of customer projects.
18	If applicable, provide a detailed explanation outlining the licenses and certifications that are both required to be held, and actually held, by your organization (including third parties and subcontractors that you use) in pursuit of the business contemplated by this RFP.	Johnson Controls, Inc. is incorporated in Wisconsin and is legally qualified to do business in all states in the United States and numerous foreign countries. Johnson Controls, Inc. holds all necessary licenses and registrations to conduct its business. All projects and equipment will be designed and installed according to all relevant codes, standards and industry best practices including adopted international codes, national, state, and other local codes. All design work performed by Johnson Controls will be controlled, documented and approved using a formal document control system. Design submittals will be reviewed for completeness, thoroughness and compliance with applicable codes. Our dedicated full-time project managers bring expertise in local codes and regulations because they are based in the area and undergo regular training to bring you the latest industry practices. And because they are all in-house employees, we provide you with single source accountability and greater assurance that the project will be delivered successfully. Johnson Controls' security domain consists of over 4,000 installation personnel. As a leading security and life safety systems integrator, we boast superior installation abilities. Johnson Controls technicians receive training through our online platform, Johnson Controls Technical Training University, as well as through direct vendor training. Our technicians possess many certifications, often at the highest level attainable. Innovation is a key value and focus for our organization, which is why we invest millions each year in training our personnel in the latest technologies. Johnson Controls also holds regular refresher training courses and recertification opportunities on a frequent basis throughout the year. Johnson Controls technicians are factory-trained and mobile, carrying the most frequently used equipment. They are supported by Johnson Controls' global parts network which is prepared to provide emergency backup in critical situations. Vehicle replenishment occurs on a weekly basis. The Johnson Controls Commercial Installation Department adopts the following codes and standards, including any subsequent changes to them as minimum standards: National Electrical Code (NEC), National Fire Protective Association (NFPA), Factory Mutual (FM), and Underwriter's Laboratories (UL). Our customers are significant to us because most are leaders in very important market segments and are also in periods of aggressive growth – as are we. Furthermore, our customers believe in our ability to keep up with their growth as they contribute to our advancements. We place these relationships and partnerships into the hands of our installers and service technicians. Johnson Controls traditionally uses internal employees for all installations. As a back-up in times of high labor demand or to meet specific geographical requirements, Johnson Controls has the capacity and partnerships with providers of certified subcontractors. Subcontractors are required to sign a subcontract agreement. This includes licensing, insurance, background checks, and financial requirement verification. All subcontractors are required to submit verification that any of their employees who may perform work at a customer jobsite have undergone drug screening and background checks. When using subcontractors, Johnson Controls maintains ownership of the project at all times and interacts directly and consistently

with the subcontractor to coordinate installations. Every Installation performed by a subcontractor is evaluated and certified by a Johnson Controls field service technician to ensure quality standards are met.

Team Member Certifications
We maintain the qualifications and certifications necessary to fairly evaluate, engineer, integrate, install, and service the best fire and security systems, subsystems, and components. In addition to professional licenses in all 50 states, our team members hold licenses, certifications, and accreditations by various professional organizations. Professional certification or accreditation indicates a certain proven amount of knowledge and experience in a particular subject area.

Industry and Professional Certifications
PE – Professional Engineer
CPP – Certified Protection Professional
PSP – Physical Security Professional
NICET – Certified Engineering Technician
NICET – Certified Video System Designer
U.S. Government Security Clearance

Technical Certifications
MCITP – Microsoft Certified IT Professional
MCP – Microsoft Certified Professional
MSE- Microsoft Certified Systems Engineer
CCNA – Cisco Certified Network Associate
Cisco ATP – Cisco Authorized Technology Partner CISSP – Certified Information Systems Security Professional
COMP TIA – Network+
CNE – Certified Novell Engineer
P2000 Certification
Milestone Certification
IFC certification
IPConfigure Certification
Open Options Certification
Vesda Certification
Avigilon Certification
NC LV/FA license
EST3 Certification
FireWorks Certification

By centralizing this expertise within our Global Security Solutions team, we can export our highly trained talent, experience and product knowledge to projects being performed at any of our branch office locations throughout the U.S and Canada, ensuring a high level of capability, experience, and performance for the most challenging of projects. This approach allows us to standardize our delivery of complex projects for multi-site customers.

Our Technicians Are Factory-Trained to Maintain Complex Fire Alarm Equipment.
On-site Response: Our qualified technical representatives can be dispatched to the site (if necessary), to begin the troubleshooting and diagnostic process. Service vehicles are equipped with the necessary tools.

Dedicated Technicians Our team can provide dedicated full-time service technicians at the client's facility. Many of our customers elect these services for large facilities and campuses.

Johnson Controls Technical Representatives Capabilities
Warranty and future services will be performed by our qualified service technicians. Our technicians service Johnson Controls security and life safety system's hardware and software. Our local offices are supported by the largest and best-trained service organization in the industry. Thousands of these professionals are certified by the National Institute for Certification of Engineering Technologies
(NICET).

Prospective technical service representatives are subjected to preliminary testing in electronics, computer proficiency and analytical logic in addition to a series of personal interviews with departmental, branch and corporate levels of Johnson Controls management. Written examinations, verification of work experience, competency, knowledge and personal recommendations are used during our technical certification process. This process ensures all of our service employees have competent customer service and communication skills. Applicants who meet these strict standards receive criminal background checks and pre-employment drug screening.

They are taught Johnson Controls operational, administrative, and customer service

		processes and procedures. After they successfully pass local training programs, they travel to our Corporate facility in Westminster, Massachusetts for several weeks of technical training. They learn how to troubleshoot, program, and repair Johnson Controls equipment. Our service employees also receive continuous educational training including video training tapes and on-going technical schooling at our corporate facility. Each representative is highly trained in all aspects of fire alarm and security technology, including electrical/electronic circuit operation and troubleshooting. Our field's TRs are computer-literate, and they are thoroughly familiar with microprocessor-based control systems designed for the fire and security industry. Automatic Fire Sprinkler Certification This certification program is for engineering technicians engaged in the layout and detailing of automatic sprinkler systems, which must meet existing and proposed code and statutory requirements. Areas covered include knowledge of physical science, advanced hydraulics, applicable codes and standards, and contract administration. Water Based Systems Certification This certification program was designed for technicians in the automatic fire sprinkler industry who are engaged in the physical and mechanical aspects of inspection, testing, and maintenance of water-based systems including foam and foam-water systems. (The program does not cover systems that deal with CO2, halon, and dry chemical.) Our Technicians Attend Extensive Training, Including NICET Certification. Certification at Levels II and III does not require prior certification at Level I. Certification at Levels II and III does not require prior certification at the lower level, but it does require meeting the certification requirements of the lower levels. Special Hazards and Suppression Systems Certification This certification program is designed for engineering technicians engaged in the detailing and layout and/or installation and maintenance related to special hazards suppression systems. Technical areas covered include knowledge of physical science and mathematics, elements of electricity and electronics, available fire suppression agents, available fire protection devices, hydraulics of the flow of various agents, systems installation, servicing and maintenance, applicable codes and insurance authority standards, and contract interpretation and preparation. With over 160 branch locations throughout North America, we cannot provide a comprehensive list of all relevant licensed personnel. We are licensed to do all covered services in all 50 states, U.S. territories, and in Canada. ISO Certification 82% of our building technology manufacturing plants are ISO 9001-2015 certified. The remaining 18% will become ISO 9001 certified as part of our company's manufacturing governance system to attain world- class performance and drive operational excellence. The figures presented do not include our satellite manufacturing plants because their headcounts are too low to undertake/sustain the process. We have an Environmental Management System in place — all our manufacturing locations are expected to adopt a management system compliant with ISO14001.	
19	Disclose all current and past debarments or suspensions for Proposer and any included possible Responsible Party within the past seven years. Proposer must provide notice in writing to Sourcewell if it enters a debarment or suspension status any time during the pendency of this RFP evaluation.	Debarments and Suspensions Johnson Controls, Inc. is not aware of any instance where it has been debarred or suspended by a federal, state or local government or Quasi-Government Agency. However, given the size and breadth of Johnson Controls, Inc.'s operations, we cannot state with certainty that no such actions have occurred. Johnson Controls, Inc. can state that when it encounters execution challenges with public body customers that could imply such action, we endeavor to quickly correct or resolve such situations.	*
20	Describe any relevant industry awards or recognition that your company has received in the past five years.	Awards and Achievements Supplier Awards Sourcewell awarded Johnson Controls' Thomas Staves (Sales Manager, Cooperative Contracts), with the 2024 Legendary Leadership Award Technology AI Artificial Intelligence Excellence Award 2024, by BIG (Business Intelligence Group), recognized our accomplishments in AI technology. Our AI-powered Johnson Controls OpenBlue Worker Safety digital solution was named a winner in the Machine Learning category and the Johnson Controls OpenBlue Central Utility Plant Optimization solution was named as a finalist in the Intelligent Control category. Sensormatic Solutions, the global retail solutions portfolio of Johnson Controls, was named a winner in the Computer Vision category for Computer Vision Analytics.	

Smart Building Management Platform 2024, named the overall leader for our smart building management platform in the Smart Building Management Platforms competitive assessment, conducted by ABI Research, a global technology intelligence firm. Researchers assessed the Johnson Controls OpenBlue ecosystem of connected technologies and services, scoring it highest in implementation among nine other platform providers. The findings were reconfirmed in ABI Research's 55 Technology Leaders To Watch In 2024 report.

Leader in Energy Management Software 2023, by independent industry analyst firm Verdantix in its Green Quadrant: Energy Management Software 2023 report.

Johnson Controls' George Oliver named 2022 IoT Company CEO of the Year by IoT Breakthrough, an independent organization that recognizes the top companies, technologies, and products in the global Internet of Things (IoT) market today. This is the Fourth consecutive year receiving an IoT Breakthrough Award. In 2021, we were named IoT Partner Ecosystem of the Year (recognizing our OpenBlue digital platform). Johnson Controls was named "Overall IoT Company of the Year" and "IoT Innovator of the Year," in 2020 and 2019 respectively.

Clarivate Top 100 Global Innovator 2021 (sixth straight year), recognizing our investment in innovation, including engineering, research and development, and an increase in patent application filing over the last five years. Clarivate, a global leader in providing trusted information and insights to accelerate the pace of innovation, identifies companies at the pinnacle of the global innovation landscape by measuring the ideation culture that produces patents.

Corporate Diversity

Newsweek America's Greatest Workplaces for Diversity – 2024, 2023

Forbes World's Best Employers for Women – 2023

Forbes America's Best Employers for Diversity – 2023, 2022, 2021

Human Rights Campaign Corporate Equality Index Score of 100 – 2024, 2023, 2022

U.S. Veterans Magazine Veterans Best of the Best – 2022, 2021, 2020, 2019, 2017

DiversityInc Noteworthy Company – 2021, 2020, 2019, 2018, 2016

Women Engineer Magazine Top 50 Employers for Woman Engineers – 2019

Workforce Diversity for Engineering & IT Professionals Magazine Top 50 Employers for STEM Workforce Diversity – 2019

Sustainability & Corporate Responsibility

Newsweek Excellence 1000 Index – 2024

TIME's World's Best Companies List – 2023

Microsoft Sustainability Changemaker Partner of the Year – 2022

World's Most Ethical Companies, Ethisphere Magazine – 2024 (multi-year honoree since 2007)

Platinum Sustainability Rating by EcoVadis (top 1% of more than 100,000 companies worldwide) – 2022 (Gold Ranking 2019-2021, 2024)

100 Best Corporate Citizens, 3BL Media – 2022 (#21 in overall ranking; multi-year honoree since 2006; one of only 19 companies to make the list every year since 2009)

Global 100 Most Sustainable Corporations in the World, Corporate Knights – 2023 (#1 in our industry, ranked #12 overall; multi-year honoree since 2013)

Named to Fortune Most Admired Companies 2022

Dow Jones Sustainability Index, DJSI North America – 2021 (multi-year honoree since 2005)

CDP Climate Change Leadership List, 2024, CDP A-List (multi-year honoree)

Carbon Clean 200, ranked #31 – 2024

Global Compact 100 Index, representative group of Global Compact companies selected based on their adherence to the Global Compact's Ten Principles as well as evidence of executive leadership commitment and consistent base-line profitability, United Nations – Since 2013

MSCI Global Climate Index and other Socially Responsible Indexes – Since 2002

ENERGY STAR, ENERGY STAR Most Efficient

Euronext Vigeo Eiris World 120 and U.S. 50

FTSE4Good Index

KLD 400 Social Index

Oekom Corporate Rating Prime status

MSCI AA Status 2024 – This is Morgan Stanley's sustainability index.

S&P Global ESG Index 2022 – Even at a time when companies like Walmart, Twitter and Honeywell were dropped from the S&P Environmental, Social, and Governance Index, we maintained our spot.

ESG Industry Top Rated by Sustainalytics, 2024

ISS Prime Corporate ESG Performance, #1 in our GISC industry

Named to 2023 Financial Times European Climate Leaders list, multi-year recognition

Recipient HRH The Prince of Wales inaugural Terra Carta Seal

21	What percentage of your sales are to the governmental sector in the past three years?	In the last three years, 13% of Johnson Controls sales were in the governmental sector. 2021 – 14% 2022 – 13% 2023 – 13% 2024 YTD – 13% Grand Total: 13%	*
22	What percentage of your sales are to the education sector in the past three years?	In the last three years, 16% of Johnson Controls sales were in the education sector. K12 Schools and Higher Education 2021 – 17% 2022 – 17% 2023 – 16% 2024 YTD – 16% Total % – 16%	*
23	List all state, cooperative purchasing agreements that you hold. What is the annual sales volume for each of these agreement over the past three years?	Johnson Controls currently holds cooperative purchasing agreements with the following entities: USA: Sourcewell, Equalis Group, TIPS, NASPO, 1 GPA, OMNIA Partners Canada: Sourcewell / Canoe Procurement Group, Kinetic For each of these agreements Johnson Controls Inc., Johnson Controls Canada LP, Johnson Controls Fire Protection, and Johnson Controls Security Solutions can utilize as Prime or as an approved reseller. Our Cooperatives Sales Totals: FY2021 $177M, FY2022 $375M, FY2023 $273M, FY2024 $392M We have many State Government Agreements. Some of our larger State agreements include the State of New York, State of New Jersey, State of Texas, State of Pennsylvania and State of California. Our State Contract Totals: FY2021 $162M, FY2022 $211M, FY2023 $179M	*
24	List any GSA contracts or Standing Offers and Supply Arrangements (SOSA) that you hold. What is the annual sales volume for each of these contracts over the past three years?	GSA-07F-190CA: FY2021 $18M, FY2022 $34M, FY2023 $33M 47QSHA23D0018: FY2021 $25M, FY2022 $27M, FY2023 $39M GS-07F-225CA: FY2021 $67M, FY2022 $72M, FY2023 $78M	*

Table 2B: References/Testimonials

Line Item 25. Supply reference information from three customers who are eligible to be Sourcewell participating entities.

Entity Name *	Contact Name *	Phone Number *	
Fairfax County Public Schools	Nick Georges Technical Security Sr. Manager	(571) 423-2030	*
McLean County Unit 5 School District	Tom Rockwell Director of facilities	(309) 275-8288	*
Wake County Government	Travis Hall Administrative Mgr.-Security Project Mgr	(919) 856-5711	*

Table 3: Ability to Sell and Deliver Solutions (150 Points)

Describe your company's capability to meet the needs of Sourcewell participating entities across the US and Canada, as applicable. Your response should address in detail at least the following areas: locations of your network of sales and service providers, the number of workers (full-time equivalents) involved in each sector, whether these workers are your direct employees (or employees of a third party), and any overlap between the sales and service functions.

Line Item	Question	Response *	

26	Sales force.	Johnson Controls sales force is extremely well equipped to serve all Sourcewell/Canoe members throughout all 50 states within the U.S., all American territories (i.e., Puerto Rico, U.S. Virgin Islands, etc.), and all Canadian provinces via a broad and expansive network of Johnson Controls Facility Security Systems, Equipment, Software and Related Solutions Agents (an extension of the Johnson Controls Security Solutions sales organization), 160 branch locations with sales and service teams, and 92 distribution and warehouse facilities throughout North America. As a supplier providing a sole source of responsibility, we are a leading provider of facility security systems, equipment, software and related solutions for Sourcewell members under our current contract with total sales of $300M since 2019. We offer a broad spectrum of security and fire protection technologies and services designed to provide safe, comfortable, and efficient facilities. Our ability to install and integrate the systems that are essential to you results in lower first costs, as well as operational efficiencies. Our security and fire detection solutions encompass protection of people, assets, physical property, and intellectual property. Within North America, our company has more than 42,000 direct employees. Most of the employees are permanent full-time with less than 1% being temporary or part-time. Our extensive network of sales and service providers work in concert to ensure the satisfaction of our customers and the quality and success of our solutions. Our Customer Relationship Management (CRM) system ensures timely communication and contract compliance by programmatically enforcing contract terms. If an Account Executive does not respond to an inquiry within an allotted timeframe, the system automatically escalates the inquiry to the Sales Manager. Additionally, we have dedicated Vertical Market Directors who are responsible driving business for the K-12, Higher Education, Healthcare, Local Government, State Government, Public Housing, and Federal Government markets. They are very knowledgeable of cooperative purchasing processes and procedures and will be instrumental in ensuring our sales team maximizes the use of this agreement with our customer base. They will assist with the training of our field sales teams about the benefits of the Sourcewell contract and how to leverage this agreement to the benefit of new and existing Johnson Controls customers. Additionally, they will work to continually identify new opportunities for cooperation with Sourcewell. While we have served Government customers for decades, in June of 2024, Johnson Controls created an Industry Director role for Government vertical market. This position will bring specific focus to growing the government vertical for both federal, state, and local government markets and include building out a team of Government Business Development Managers, Engineering and Operations Professionals, compliance, and legal personnel. The existing Cooperative Team can leverage these additional resources to expand the number of sales representatives that sell using Sourcewell/Canoe. While our geographic footprint is unparalleled, Johnson Controls further stands apart from our competitors based on the sheer magnitude of skilled team members we have ready to best serve Sourcewell members. We leverage and coordinate between our sales and service functions through customer relationship management (CRM). Here are a few examples in cases where our sales and service teams and their respective disciplines provide customer value: Customer Support: Sales and service teams work together to provide support to customers. Sales reps assist customers in troubleshooting issues or answering questions about products/services they have purchased. Cross-Selling: Both sales and service teams cross-sell to existing customers. Sales team members identify opportunities during the sales process, while service teams leverage their relationships with customers to suggest additional products or services that may benefit them. Customer Feedback: Both sales and service teams collect customer feedback, such as complaints, suggestions, or compliments. This feedback is used to improve products, services, and the overall customer experience. Renewals and Retention: Sales and service teams collaborate to retain existing customers and renew contracts. Service teams play a role in customer retention by ensuring customer satisfaction and addressing any concerns or issues. Training and Onboarding: Sales teams work with service teams to provide training and onboarding support to customers. This involves educating customers on product usage, features, and best practices. Overall, the overlap between sales and service functions is essential for maintaining strong customer relationships and ensuring customer satisfaction. Effective collaboration between these teams leads to increased customer loyalty, repeat business, and referrals. *

27	Describe the network of Authorized Sellers who will deliver Solutions, including dealers, distributors, resellers, and other distribution methods.	As mentioned previously, Johnson Controls is extremely well equipped to serve all Sourcewell and Sourcewell/Canoe members under this facility security systems, equipment, software and related solutions agreement via a broad and expansive network of Johnson Controls Equipment Agents (an extension of the Johnson Controls Security Solutions sales organization), 160 branch locations with sales and service teams, and 92 distribution and warehouse facilities throughout North America. We are a leading provider of systems, equipment, solutions, and services for facility security systems, equipment, software and related solution systems for Sourcewell members under our current facility security systems, equipment, software and related solutions contract with total sales of $300M since 2019. As mentioned previously, we understand the importance of having a local presence in the communities we serve. This is why we have over 8,900 front-line service providers nationwide in over 160 branch locations. These sales and service providers are direct employees of Johnson Controls. We provide Sourcewell member agencies with an unmatched portfolio of security and fire protection technologies and services designed to provide safe, comfortable, and efficient facilities. Within North America, our company has more than 42,000 employees. Most of the employees are permanent full-time with less than 1% being temporary or part time. Our network of channel partners and authorized sellers across North America is vast. We offer them a one-stop shop for our partners to grow their businesses with faster results through our Solution Navigator world-class self-service portal. We provide them with the tools, support and expertise they need to boost productivity in building automation systems and controls, fire, security, HVAC and industrial refrigeration. Our success, is their success.	*
28	Service force.	We offer an unparalleled selection of services for every life and property protection system. We maintain the qualifications and certifications necessary to fairly evaluate, engineer, integrate, install, and service the best facility security systems, equipment, software, and related systems available. Serving a geographic area that covers all of North America, Johnson Controls is committed to being a single-source provider that delivers unequaled customer service. Our organization features a number of distinguishing competencies: 1,200 fire and security installation technicians with an average tenure of 16 years and 1,500 security service technicians with an average tenure of 19 years. Highly reliable, technologically advanced fire, life safety, integrated security, communications, and workforce management systems and services. A network of company-owned district offices that spans all of North America and enables Johnson Controls to deliver high-quality systems and services at the local level. A service organization staffed by more than 8,900 technicians, installers, and other professionals throughout North America and within close proximity to each and every Sourcewell member's location. With this combination of resources in place, Johnson Controls can protect virtually any building – from schools, universities, hospitals, malls and restaurants to airports, sports stadiums, apartment complexes, movie theaters and industrial, commercial, and government facilities. Through planned preventative maintenance as well as emergency repair regimes and new technology, such as remote monitoring, we deliver the optimum working environment, while reducing maintenance costs and complying with statutory regulations. We will match the right technician with the right job to ensure the highest level of service, safety, and expertise – every time. As the leading service provider operating in 150 countries with 16,000 technicians and 12,500 global service delivery personnel worldwide, we have more in-house knowledge than any other company in the world.	*

29	Describe the ordering process. If orders will be handled by distributors, dealers or others, explain the respective roles of the Proposer and others.	Johnson Controls' branches - will manage the facility security systems, equipment, software, and related systems, products, and materials ordering process on behalf of the Sourcewell member. Depending upon the solution being provided, there might be multiple third-parties involved, Johnson Controls will provide the member with a product and services proposal submitted on Johnson Controls letterhead with the proposal serving as the basis for the project contract. A local branch manager will be assigned to the job who will focus on verification of cost, schedule, and technical status to ensure money is spent ethically and responsibly. These values will be reported in sufficient time to prompt effective management response. It is important that any issues or variances be communicated to the team immediately for resolution. The appropriate products will be ordered following the product selection process and agreed to by both the Sourcewell member and Johnson Controls. Materials will be ordered with adequate lead time to be available on site when required for installation activities. For equipment with long lead times, our standard practice is to order the equipment as early as possible to ensure delivery does not negatively affect the project's schedule. A periodic update of the material equipment list will be generated to ensure compliance with the project schedule. *
30	Describe in detail the process and procedure of your customer service program, if applicable. Include your response-time capabilities and commitments, as well as any incentives that help your providers meet your stated service goals or promises.	Johnson Controls' service team provides emergency and/or call-as-needed service. Dispatched through our 24-hour operation center, professional tradesmen and technicians are available whenever and wherever needed. In most North American locations, we have the capability to answer emergency calls within two hours of the original call. Once issues are logged via our 24-hour emergency number, a record of the emergency is made for tracking purposes, and a service team member or members will be dispatched to the site of the issue. As it pertains to emergency service calls after project implementation, we have over 8,900 front-line service providers nationwide in over 160 branch locations which allows us to provide local decision-making authority and respond to the emergency needs of customers in a timely manner. Our offices are open daily from 8:00 am to 5:00 pm, and we offer 24/7 service to our customers. Our service phones are covered after hours, and technicians are available for dispatch 24/7 to address our customers' security system issues. Our internal policy is to respond to customer questions or outreach within a 24- hour turn-around at all times. We commit to maintaining proactive communication about project activities and we use cloud-based project management software as our hub to connect and share data. While our response times may vary depending on location, they typical are as follows: Immediate phone response time. Four-hour on-site response time. Two-hour emergency response time. Our extensive branch network is 100% company owned and operated. Full ownership of our branch network benefits our customers because we provide: Consistent processes and procedures Consistent service standards Consistent on-time delivery Consistent pricing and training Consistent long-term support We also provide next day service for routine service calls. We guarantee answering emergency calls within 24 hours of your call and have technicians available 24-hours a day, seven days a week. In addition to the service required, our technicians will suggest ways to improve conditions, as well as alternate methods of operations. If needed, they will contact other specialists to assist with the issues at hand and provide you with written documentation. Some very remote locations may be more than 2-hours away from a service branch. In those cases, we may install additional technology to enable us to detect, analyze, and possibly remedy problems remotely. Another option is establishing a connection to our Remote Operations Center who can then detect, report, and fix problems as they occur. In some cases, we have subcontracted with a local firm that can provide service within the 2-hour window. Johnson Controls team members take a proactive response to issue management. There are five key areas that keep our project team focused on resolving issues and meeting our commitments: A well-conceived master schedule inclusive of all critical milestones. Establishing the protocols and requirements for ongoing communication and collaboration/reporting throughout the life of the project. A list of action items (tied back to the master schedule) maintained by the *

		Project Manager throughout the life of the contract. A thorough project analysis that reviews any factors that may influence the project installation planning process or cost. When an unforeseen issue does occur, the Project Manager addresses the issue immediately. Our extensive branch network is 100% company owned and operated. Full ownership of our branch network benefits our customers because we are able to provide: Consistent processes and procedures Consistent service standards Consistent on-time delivery Consistent pricing and training Consistent long-term support Our offices are open daily from 8:00 am to 5:00 pm, and we offer 24/7 service to our customers. Our service phones are covered after hours, and technicians are available for dispatch 24/7 to address our customers' building issues. All offices are branch offices and owned by Johnson Controls, headquartered in Milwaukee, Wisconsin. Remote Operations Center (ROC) Today's complex facilities need experienced operators watching over the building, identifying issues, and correcting problems, before they impact occupants or operations. The Johnson Controls owns and operates a Remote Operations Center that provides a dedicated team of certified building management professionals to monitor our customers' building systems: security, fire, HVAC, building automation, lighting, refrigeration, electrical and more. The following remote services are available twenty- four hours a day, seven days a week, and 365 days a year. Our depth of knowledge assures correct prioritization and response to alarms when they occur. When an alarm is received, our system automatically assigns the customer's own unique and customizable alarm handling actions for the alarm, resulting in timely response to minimize loss and/or maximize potential for defeat of the threat, compliance with legal requirements for fire systems and insurance carrier requirements, and accurate records of alarm activity for audit needs. Johnson Controls can monitor all types of equipment and systems in your building for critical alarms or other conditions and respond with customer-specific protocols. We can enhance this service with remote troubleshooting and diagnostics to get to the root cause of your problems faster and solve them more quickly. Fire & Security Monitoring Intrusion/burglar alarm monitoring Critical point monitoring Elevator phone monitoring Supervised opening/closing UL Factory Mutual ensures operational standard are maintained by our Remote Operations Center	
31	Describe your ability and willingness to provide your products and services to Sourcewell participating entities.	Johnson Controls frequently provides facility security systems, equipment, software, and related solution services to customers throughout North America. If we are awarded this contract, we will gladly continue to support Sourcewell members across North America moving forward just as we have been doing since our first Sourcewell security systems award more than a decade ago. Our network of branch offices and expansive team of Equipment Agents will support all Sourcewell members across all geographic areas and market sectors. Our branch offices and local Equipment Agents will receive ongoing guidance, support, and expert advice directly from the Johnson Controls Security Solutions team as it pertains specifically to facility security systems, equipment, software, and related services. This level of support coming from an all-encompassing series of experts focused on developing and implementing solutions that cover a facility security systems, equipment, software, and related solution service projects as well as a wide-ranging level of supplemental project scopes will ensure that Sourcewell members will receive the most innovative and applicable products and solutions available today. These teams will work together with the branch offices and agents working specifically with each Sourcewell member throughout the life on each project's contract. We will be offering and promoting an awarded contract to all current Sourcewell members as well as new market segments and verticals through the proposed contract.	*

32	Describe your ability and willingness to provide your products and services to Sourcewell participating entities in Canada.	Johnson Controls will support all geographic areas and market sectors throughout all provinces across Canada. We have 13 branch offices and 65 local satellite offices located throughout the country covering every province as we have a long history of implementing facility security systems, equipment, software, and related solution projects for Canadian customers and existing Sourcewell members. All Canadian Sourcewell/Canoe members will have access to all products, solutions, subject matter experts and teams focused on delivering facility security systems, software, and related service products and solutions to ensure all member projects achieve the goals and levels of success required of their stakeholders, staff members, and communities. We will be offering and promoting an awarded contract to all Sourcewell/Canoe member segments and verticals through the proposed contract.	*
33	Identify any geographic areas of the United States or Canada that you will NOT be fully serving through the proposed agreement.	All North American geographic areas (found within the United States, U.S. territories, and Canada) will be fully serviced regardless of location through this proposed agreement.	*
34	Identify any account type of Participating Entity which will not have full access to your Solutions if awarded an agreement, and the reasoning for this.	Johnson Controls' team is able and will provide facility security systems, equipment, software, and related solutions as outlined in the RFP to all Sourcewell/Canoe members throughout the United States, U.S. territories, and Canada. However, if the Cooperative codes do not allow for Cooperative purchasing in that particular State, City, Municipality, Territory, Province, or within a specific vertical market to be performed, we will fully comply with those laws or regulations and the contract will not be made available or offered to those members.	*
35	Define any specific requirements or restrictions that would apply to our participating entities in Hawaii and Alaska and in US Territories.	We deliver products to all corners of North America, from downtown Manhattan to the islands of Hawaii to remote, northern Alaska. We have service branches in Alaska, Hawaii, and U.S. territories and can service these areas. Service time and or product delivery times to remote locations may differ from the typical time frames discussed in this proposal. In remote areas, there may be additional cost incurred (flights, hotels, meals) and these will be specified and agreed to with the ordering member ahead of time and will be billed Per-Diem.	*
36	Will Proposer extend terms of any awarded master agreement to nonprofit entities?	Yes. Johnson Controls will extend the terms of any awarded master agreement to all nonprofit entities taking part in the Sourcewell facility security systems, equipment, software, and related solutions contract program provided they are eligible to lawfully take part based on local, regional, or Federal regulations and guidelines.	*

Table 4: Marketing Plan (100 Points)

Line Item	Question	Response *	
37	Describe your marketing strategy for promoting this opportunity. Upload representative samples of your marketing materials (if applicable) in the document upload section of your response.	We employ a multi-faceted marketing strategy that includes direct E-mail communications to our database of over 80,000 direct customer contacts and digital marketing efforts to push messages on social media (LinkedIn) and our website. We will partner with Sourcewell to ensure Participating Agencies, and our customers are aware of the awarded contract through multiple marketing and communication campaigns. The availability of the contract will also be promoted internally and integrated into daily sales resources (CRM system, educational web-based trainings, sales communications, and a dedicated internal intranet site). Johnson Controls is not able to provide an external website to host the contract documents and other requested items. However, we do provide an internal page to promote the contract to our sales/service teams where we will announce and provide Master Agreement details and contact information. Within the first 30 days, we will publish a co-branded press release to the media. Within the first 60 days, the Cooperative Contracts team will launch this newly awarded contract to the branches, agents, and SI teams throughout our organization. Field Sales Marketing Efforts: Our primary opportunity to connect with customers regarding the benefits of the Sourcewell agreement is made through our field sales personnel. Training our sales personnel on this agreement must be a top priority. We will leverage the expertise of the Sourcewell team to help guide these efforts to ensure that our teams are comfortable with how to present the Sourcewell agreement to their public sector customers. Customer Relationship Management: We have robust customer relationship management tools, data analytics platforms, and internal sales systems. These systems provide an abundance of information to assist with the proactive identification of opportunities. This information also provides analytics to the Sourcewell cooperative program to prioritize internal branch and sales training programs as well as to identify existing Sourcewell members that we currently do business with to ensure they are aware of our new agreement. Johnson Controls has standardized on SalesForce.com (SFDC) as our Customer Relationship Management tool. SFDC unifies all of our customer data, sales contacts by job function, sales opportunity information, sales history, leads received at trade shows, and	

		account plans across our Systems and Services businesses into a single data base. SFDC is a tool that enables us to quickly and efficiently contact specific vertical market customers to communicate news releases (either using email or regular mail). With SFDC, we can create a monthly newsletter to our public sector customers to keep the benefits of using the Sourcewell agreement in front of our customers throughout the year. We would target our messaging to resonate with department managers, procurement personnel and the primary business official for our public sector customers. Marketing Campaigns: Throughout the term of the Master Agreement, we will continue to promote the contract award via marketing and collateral materials made available through direct mail campaigns, advertisements in regional or national trade publications, and announcements made on applicable social media channels. Johnson Controls communicates monthly with our existing and potential customers through our Silver Bullet Marketing campaign. We will include a reference to the Sourcewell agreement in monthly communications that align to the products and services covered by this agreement. Trade Shows and Events: We commit to attend and participate in national, regional, and supplier-specific trade shows, conferences, and meetings with Sourcewell throughout the term of the Master Agreement. We will also commit to attend, exhibit, and participate at the NIGP Annual Forum in an area reserved by Sourcewell for partner suppliers as dictated by the RFP. Marketing Tool Kit: We will create a marketing tool kit for the Sourcewell Master Agreement to distribute to our field teams to use in a direct mail campaign. Included in the tool kit will be marketing materials that highlight the following customer benefits: Simple and easy to use process Membership is free to the public sector customers Pricing structure is simple and straightforward and already includes all applicable fees (no additional add-ons to pricing) Labor pricing structure is based upon local published Johnson Controls labor rates; this approach ensures that labor rates are competitive in the local economy The tool kit will also include case studies with endorsements from Johnson Controls customers who have used the Sourcewell agreement with Johnson Controls and were very happy with the process. Professional Public Sector Organizations: In addition to our marketing plans outlined above, we will leverage our partnerships with the public sector professional organizations we support both nationally and regionally. Many of our competitors simply have a booth at annual trade shows. Johnson Controls believes that a strong relationship with the members of each organization is dependent upon our attendance at local meetings and providing training and informative seminars as the organization's security solutions subject matter expert (we have training not only on security solutions, but also on leadership skills, etc.).	*
38	Describe your use of technology and digital data (e.g., social media, metadata usage) to enhance marketing effectiveness.	We use a variety of electronic platforms to ensure contract awareness across our existing customer base. For example, we use social media (LinkedIn) and our website to educate customers on new and existing facility security systems, equipment, software, and related solutions, in addition to pushing marketing messages promoting our Sourcewell contract. We have recently begun a partnership with a digital platform to help promote our offerings to the public sector and will leverage this platform to promote our partnership with Sourcewell to all current and potential new members. Some additional ways we are enhancing our marketing effectiveness include developing a strong digital component to our advertising program that includes pay-per-click advertising, online banner advertising, e-newsletters, and links to JohnsonControls.com from key websites. We continue to make significant investments in redesigning our website and implementing marketing automation software that integrates with salesforce.com. Other digital enhancements to our marketing efforts include: Updating our existing customer database files for known Sourcewell members. Continuous refresh/updates to our internet presence (as stated, there will be a dedicated page to Sourcewell). Conduct email campaigns. Generate potential new customer leads available for inclusion into Sourcewell contracts via our lead generation partner, Bay MarketForce. Promote the contract via digital newsletters and corporate announcements.	*

39	In your view, what is Sourcewell's role in promoting agreements arising out of this RFP? How will you integrate a Sourcewell-awarded agreement into your sales process?	Johnson Controls has had tremendous success with our previous and current Sourcewell awarded contracts. We continue to have many repeat customers using the current Sourcewell agreements and have worked to expand the program by training our internal teams on how the Sourcewell contract meets the Sourcewell member's RFP requirements. We would like to continue building upon our past successes working with the Sourcewell team, while also making improvements based on our learned experiences. Our Cooperative team has had the benefit of working with Sourcewell's Principal Supplier Development Executive and the Sourcewell business development team across our current four (4) awarded contracts. As a result, we are able to attend tradeshows in conjunction with Sourcewell, which greatly helps with promotion of the contract. Additionally, we are a member of NCPP, an organization that provides significant visibility to our Sourcewell awarded contracts and provides our team with numerous speaking platforms throughout the year. We understand our sales staff will be responsible for most of the marketing responsibilities for this contract, and we are well-positioned to continue working together with Sourcewell to support your members and their projects. In our view, it is critical that Johnson Controls continue to work with Sourcewell and its legal team to interpret and change codes in the various states, territories, provinces, and vertical markets for this facility security systems, equipment, software, and related solutions contract and for the benefit of Sourcewell members. Members of the Johnson Controls, Inc. Government Relations Team have worked with Sourcewell to target legislative action in a variety of states to help better position cooperative contracts moving forward.	*
40	Are your Solutions available through an e-procurement ordering process? If so, describe your e-procurement system and how governmental and educational customers have used it.	Johnson Controls has a very limited number of products available through e-procurement platforms due to the products not being commercial-ready off the shelf. Equipment is solution-based depending upon a customer's needs. Facility security systems, equipment, software, and related products and services are purchased primarily through our local branch network or agents as, oftentimes, customized products and related services are too complex to procure from a site given the complexity and nuance associated with the needs and requirements held by each customer.	*

Table 5A: Value-Added Attributes (100 Points, applies to Table 5A and 5B)

Line Item	Question	Response *	

41	Describe any product, equipment, maintenance, or operator training programs that you offer to Sourcewell participating entities. Include details, such as whether training is standard or optional, who provides training, and any costs that apply.	By partnering with Johnson Controls, Sourcewell/Canoe members will have the ability to customize training to meet their needs. Our programs can be comprehensive to increase the self-sufficiency of staff or more focused to develop competencies where needed. We design our training programs in conjunction with our service offerings to protect customer investments while maximizing the efficiency of their operations. Through continuous support and professional development, we align our services with their mission. To create a truly focused learning experience, we carefully customize our training programs to align with the Sourcewell member's goals and objectives. To help determine what training will be required for the member's staff, we will work with each member through a series of brief interviews and simple tests with representatives from maintenance supervisors, maintenance staff, facilities engineering, and quality control Johnson Controls provides expert custom training programs; customized operational programming of the security systems; custom report development; video badge design, development and programming; database screen design; graphical map design and programming, and CCTV Control Interface programming. The security systems our company provides are software intensive products that must be customized for each customer and each application. Because each customer has specific needs, our personnel are available to customize a system design as well as the software that controls the system. It is critical that training occurs at defined intervals throughout the course of the project and after it is completed. Timing facilitates proper communication between the Johnson Controls team and your staff regarding how systems will be operated throughout the installation period and the entire contract term. Regular refresher seminars will be scheduled from year-to-year to maintain the degree of training necessary for your staff to perform at a high level of efficiency. Each training session reviews the basic practices that remain constant and examines new technology and procedures as they become available. Above all, the key factor to ensure a successful relationship is to have all the facilities' staff trained and fully knowledgeable on how a particular project fits into your overall goals. We have found that projects that have a strong commitment from the pertinent staff will always exceed the initial expectation of the initiative. We also know that when our team performs interviews with staff members prior to implementing a contract, we are better able to design, install and support the initiatives in a way to satisfy everyone involved on the facility-side of the relationship. This approach allows us to generate a skills assessment of facility staff and customize our training to best fit your needs. Johnson Controls offers a variety of training options for the convenience of every end user. We usually arrange on-going training at the client's site or "in house" training at any of our Sales & Service Offices (SSOs) around the globe. Johnson Controls also provides our largest end users with technical training from any of our regional engineering offices. We perform the majority of training with our own qualified trainers, applications managers, and systems professionals, but may sometimes enlist the support of the product manufacturer for on-site training or factory demonstrations. Johnson Controls can facilitate this off-site training with various equipment manufacturers and customize a program to satisfy individual needs. We also provide training schedules, syllabi, and other documentation upon request. Once Johnson Controls completes each installation, integration, and training project, we will provide all manuals, as builts, and/or other submittal documentation regarding all newly installed components of the system at the client's request. We also provide on-going training for existing accounts. We supply clients with 24-hour, call-in support with guaranteed on-site response times previously discussed and negotiated with clients. We work to schedule maintenance plans for every system. But the optional Quality Maintenance Plan (QMP) gives you the added comfort of knowing your system is exceptionally well maintained on a regular basis.	*

42	Describe any technological advances that your proposed Solutions offer.	Johnson Controls OpenBlue is a complete suite of connected solutions that safely and securely delivers impactful sustainability and new occupant experiences. Combining our 140+ years of building expertise with innovative technology, OpenBlue features a suite of AI-powered service solutions such as remote diagnostics, predictive maintenance, compliance monitoring, advanced risk assessments, and more. OpenBlue powers advanced security solutions whilst balancing the need for personal privacy. Combining data from inside and outside of the building, OpenBlue provides proactive threat protection, improved asset safety, and delivers active compliance management. In the workplace, OpenBlue enables social distancing monitoring and contact tracing as well as solutions for clean air, health monitoring and touchless buildings. OpenBlue provides connected experiences to increase productivity, optimize processes, and provide higher tenant satisfaction. OpenBlue customers will be able to respond to urgent situations and buildings can switch into different modes to address various critical situations. Modes can include building management access, air flow, elevator movement, door locks, lighting, open collaboration, as well as other environmental and safety settings. OpenBlue powers easy-to-use smartphone applications that empower people to personalize their building experience and respond to everyday building-related issues. OpenBlue includes a comprehensive collection of post-pandemic solutions for clean air, touchless environments, contact tracing, and improved security with thermal cameras. A critical requirement of a Smart Campus Solution is its ability to integrate with various Building OT (Operational Technology) systems and Enterprise IT (Information Technology) systems. The Johnson Controls OpenBlue solution suite leverages an innovative, scalable, and robust architecture to address this requirement. We refer to this as the OpenBlue Integrated Service Platform and Applications architecture (ISP and A).	*

43	Describe any safeguards included in your proposed solutions that protect participating entities' sensitive information.	As a business operating under a Cyber Essentials Plus certification, our IT systems are audited to ensure compliance and best practices. Johnson Controls is certified to the ISA/IEC 62443-4-1 standard, which provides assurance that Johnson Controls adheres to stringent ISASecure® development lifecycle requirements. The ISASecure® program was established to independently certify the cybersecurity of operational technology and automation control systems, such as those deployed within smart buildings. SDLA certification specifies security process requirements and practices for the secure development, maintenance, and support of these technologies. Johnson Controls received the SDLA conformance certificate from exida LLC, an ISASecure® and ISO 17065 accredited certification body, as a result of assessing product development practices used at engineering centers throughout the world. Johnson Controls is committed to protecting the confidentiality, integrity, and availability of Sourcewell member's information assets as a critical resource of their business. Our policies are established with our information security governance framework, necessary to safeguard Johnson Controls' information assets and manage risk for the enterprise, our product offerings, and customers. We have an appointed Chief Information Security Officer, responsible for Cybersecurity Risk Management. In addition, our Cybersecurity Steering Committee carries out scheduled reviews of the strategic direction and operation performance of our Information (and Product) Security Program. All Johnson Controls employees undergo annual training in Data Privacy, to ensure our employees understand how critical it is to securely and correctly use our customers data. We comply fully with GDPR regulations and have policies specifically created to dictate how we handle data and specifically for CCTV cameras. Our Disaster Recovery and Business Continuity Plans also include provision for our Information systems in the event of a failure/breach/attack. With respect to each member's data, access to Johnson Controls' information systems (which house customer data) is granted based on the principles of least privilege and need-to-know. Role-based access controls must be applied to minimize opportunities for system misuse or unauthorized access, and any change in responsibilities must result in a timely change to access. Privileged account access to Company information systems will only be granted to authorized individuals. Provisioning processes must include proper segregation of duties and provide the ability to monitor compliance with the established information security policies, applicable regulations, and compliance requirements. Operationally, our information systems undergo periodic penetration testing, ensuring we maintain best practices in keeping both Johnson Controls' and Sourcewell member data secure. Johnson Controls is subject to information security and compliance programs, including industry standards and regional privacy regulations such as laws promulgated by the People's Republic of China, European Union, Russia, the U.S. Department of Defense (DoD), Sarbanes-Oxley (SOX), Cyber-Essentials (UK), and requirements published by the Payment Card Industry (PCI). The approaches to meet all legislative statutory, regulatory, industry, and contractual information security requirements are documented, implemented, and adhered to by business process owners and operators. Johnson Controls welcomes member input for any specific requirements regarding data handling and with our experience and processes are confident we will meet (and exceed) expectations.	*

44	Explain your organization's approach to cyber security as it relates to your proposed solutions.	Our Commitment to Cybersecurity of Our Products Cybersecurity is increasingly important to the markets and customers we serve, so we've made significant investments to incorporate cybersecurity elements into our products and will consistently deliver solutions and systems that have appropriate safeguards against cyberattacks intended to cripple critical infrastructure. We also ensure that we follow secure practices across the product lifecycle to address cybersecurity concerns beyond installation. We have a cadre of more than 100 Security Champions (SCs) — engineers dedicated to driving continuous improvement in product security with a particular focus on secure software and firmware development. Through internal and external training, and attendance at national security conferences like AppSec, RSA and Black Hat, our SCs build their knowledge of key product security concepts, accepted industry security best practices, product security standards, and security industry trends. Our SCs review and guide our product security requirements and features. For more than five decades, our master systems integrators have helped customers integrate security technology into complex facilities. Our security maintenance and monitoring services can help protect your people and assets, and lower operating costs. Experienced: We serve 30% of Fortune 1,000 companies and are responsible for advanced security solutions in over one billion square feet of commercially leased property. Flexible and Scalable: Our robust security management platform is built on an open, standards-based protocol, enabling countless integrations for future expandability. Dependable: We're both global and local, so there are hundreds of local offices available to provide the level of customer service you require. Innovative: Our membership with the Industry Consortium for Advancement of Security on the Internet (ICASI) connects us with other global leaders in the cybersecurity realm. This collaboration allows us to remain on the leading edge of innovating secure networks, designing protections for software, and developing secure cloud infrastructures that keep data safe. Knowledgeable: Our network of industry cybersecurity advocacy groups, such as our membership with Open Web Application Security Project (OWASP) and Forum of Incident Response and Security Teams (FIRST), enables us to stay ahead of the latest in security threats and be a trusted advisor in our industry. How We Can Help You Trust Johnson Controls with these security maintenance and monitoring services: Maintenance for access control, video surveillance, intrusion and intercom/emergency call systems. Test and inspection for access control, video surveillance, intrusion and intercom/emergency call systems. Security consulting, risk assessment and security surveys. Remote security monitoring. Network analysis to determine vulnerability to cyberattacks.	*
45	Describe your security information management systems and their integration capabilities with technologies such as incident management, access control and monitoring, video surveillance, etc.	We help our customers plan, specify, and build their security management systems by applying our innovative and comprehensive approach to integrated security management system design. We assist our customers in all phases of this work including schematic design, design development, construction document development, project cost estimating, bidding, construction administration (observation) and (post construction) system implementation services. Our employees are experts at transforming technology into practical solutions for the full spectrum of security services delivered seamlessly – from Systems Integration (planning, engineering, design, installation, and service) to ongoing Systems Management (maintenance, video/alarm monitoring, badge administration, database management, alarm notification and patrol/response). Our employees have been shaped by decades of experience. We have helped many customers with costly legacy security systems migrate to an integrated, cost-effective security solution for each of their facilities. Johnson Controls' ability to integrate and manage various components of a comprehensive security system means that customers no longer need separate contracts with several unrelated service providers. Johnson Controls has experience working with all leading security product manufacturers. We integrate products and services into a practical solution – matched to the needs of our customers. We are willing to assume turnkey responsibility for the entire result. We also have developed a world-class services and support capability to ensure that the solution remains effective throughout its entire lifecycle. We provide seamless integration for fire management, electronic security, access control, intrusion detection, maintenance management, lighting control, SCADA, information technology (IT), and overall facility monitoring in all types and sizes of buildings, correctional institutions, campuses, military bases, and infrastructure of national and international dimensions. We integrate over 1,000 compatible products from more than 125 manufacturers, allowing industry and government to protect investments in systems and products already installed, and to preserve their infrastructure prerogatives for the future.	

		P2000 Security Management System Capabilities Our integrated network access control building technology works seamlessly with our P2000 security management system to help buildings achieve maximum security while increasing efficiencies and lowering costs. Built on open standards and compatible with virtually any third-party program, the P2000 can integrate multiple businesses, buildings, and security systems to achieve interactive, real-time security management. The P2000's built-in web browser allows users to access the platform from a central location — or remotely, through web-connected devices. The P2000 works with virtually all current security products, system technologies, and IT networks, including: • Mercury Hardware, making it easy to change security solution providers • Digital Video Recorders that manage recording, camera and storage functions from a single workstation • HR Databases that integrate your badging system with your HR database to simplify security operations and reduce human error • Intelligent IP Door Locks, streamlining installation and enabling real-time communications where it's difficult to install wired locks • IP Intercoms that combine live video, intercom requests and open-door functionality in one workstation • Intrusion Panels, enabling extended control and auditing of your facility's doors • Elevator High-Level Interfaces that enable access control integration with your elevator system Video Surveillance Johnson Controls is a world-class systems integrator. Our highly skilled team understands your need to reduce risk, comply with regulatory policies, and safeguard your most critical assets. Our ability to install, integrate, and service advanced business security camera systems will help you do just that, in addition to lowering your costs and increasing operational efficiency. We offer the following solutions: • Digital video management systems • Network and digital video recorders • Surveillance cameras • Advanced analytics Information Protection and Network Security Consulting The Global Security Solutions team has the ability to provide specific services in the areas of Information security policy and procedure review and development, network security architecture design, and database integration. As a key technology contractor, Johnson Controls serves as the Single Point of responsibility for managing the design, delivery, commissioning, and service of all technology systems. Johnson Controls also has the capability to develop a technology plan that considers the long-term needs of an organization's business and optimizes existing infrastructure, helping to leverage existing investments and lower overall project costs. Johnson Controls' approach to technology contracting helps to balance first cost and life cycle costs, converge individual systems into a technology system, provide for enterprise-level cross communication and help organizations reduce overall risk and improve operations. Taking a holistic view of the building's systems, Johnson Controls will design and deliver a converged technology solution to support your business objectives. With Technology Contracting, we act as the single point of responsibility for the design, integration, installation, and service of the building's technology, creating an optimized infrastructure, while reducing risk, minimizing change orders, and meeting budget and deadline. Our technology solutions provide: • Integrated approach to technology design and implementation reduces risk, minimizes change orders, and meets budgets and deadlines • Reducing construction costs saves on capital • An optimized infrastructure cuts installation costs as well as lifecycle costs, reducing implementation costs up to 8-12% • We manage multiple contractors, and take sole responsibility for making the technology work • Technology independent integrator works with a market-leading group of innovative partners to create the connected environment that meets objectives • Operations optimized before buildings are occupied	*
46	Describe any "green" initiatives that relate to your company or to your Solutions, and include a list of the certifying agency for each.	At Johnson Controls, we pride ourselves on building smarter, healthier and more sustainable tomorrows. We approach our own ambitious decarbonization goals as an opportunity to lead by example, while our nearly 140-year heritage of building technologies and services provides new solutions for customers around the world to accelerate their own net zero journeys. The following list several of the initiatives and solutions that Johnson Controls has contributed to	

and are actively working on.

For example, we have been named to the Fortune Magazine Change the World list numerous times:
In 2023 for our innovative and transformative heat pump technology.
In 2022 for our OpenBlue solutions and OpenBlue Net Zero Buildings as a Service offering.
In 2018 for helping the University of Hawaii Maui College move toward generating 100% renewable energy on-site.

Johnson Controls Environmental Policy sets out our commitment to protect the environment and the resources devoted to achieving our goals, both of which are supported by a detailed environmental review of all our business operations, which clearly identifies the various impacts our activities may have upon the environment. The results of this review form the cornerstone of our development of an ISO 14001 Environmental Management System for eliminating and effectively controlling environmental risks.

Where possible, the mitigation of these environmental workplace risks are integrated into the day-to-day management of the maintenance management services we provide. This integration is supported by training and regional support. This will ensure environmental practices are incorporated throughout the building lifecycle including projects and activities as an integral section within the project program.

Rewards and Recognition
Just a few recognitions Johnson Controls has received over the last few years:
CDP Climate Change A List - One of fewer than 400 companies to receive this distinction amongst more than 21,000 who disclosed to CDP
2024 World's Most Ethical Companies - One of just 11 companies worldwide to receive this honor 17 times
ISS ESG Prime Ranking - Awarded to companies with an ESG performance above the sector-specific Prime threshold, which means that they fulfil ambitious, absolute targets
MSCI AA Leadership Rating - Recognized as a leader in managing environmental, social and governance risks and opportunities
Sustainalytics ESG Industry Top Rated - Designated as an industry leader in ESG management
Time's World's Best Companies - Recognized for employee satisfaction, economic resilience and our progress towards ambitious sustainability goals
Terra Carta Seal - One of the first 45 companies globally to receive the Terra Carta Seal for creating "genuinely sustainable markets"
Clean200 - Listed at #31, up from #40 last year, recognizing the top 200 companies leading the transition to a sustainable global economy, by Corporate Knights
EcoVadis Gold - Top 4 percent of more than 100,000 companies assessed across environment, labor and human rights, ethics and supply chain sustainability

Energy and Water
Our Energy and Emissions target is linked to the rollout of a green fleet. Since October 2020 electric vehicles (EV) have been offered to employees as a choice alongside internal combustion engine (ICE) vehicles throughout our company car scheme. We have seen an EV take up rate of over 50% for renewal orders since October.

Johnson Controls will use local approved suppliers/subcontractors wherever possible to source materials and resources. To deliver environmental benefits to not just our customers but also the local communities, contributing to reduced carbon emissions due to less mileage travelled. We annually analyze our transportation supply chain to improve cost structure and reduce energy use. Local patch-based engineers who have been cleared to work on the Sourcewell member's premises will be utilized for the delivery on this contract to reduce CO2 emissions and waste of natural resources such as fuel.

Johnson Controls' goal is to reduce our water usage by up 10%.

Prevention of Pollution and Waste
Our goal is to recycle as much as possible and reduce waste to landfill. Under our ISO14001 registration, a significant focus has been put on waste management. Wherever practical, the principles of the Waste Hierarchy are applied, i.e. ELIMINATE – REDUCE – RE-USE – RECYCLE – DISPOSE. Several recycling processes have been established to minimize waste going to landfill. These include paper and cardboard, batteries, fluorescent lamps and tubes, toner and printer cartridges and metal. Where disposal of waste is the only option, then Johnson Controls will always apply its duty of care and complies fully with legislative requirements.

- Ensuring our offices remain compliant to local requirements
- Delivering equipment in bulk and utilizing Mobile Data Devices to minimize waste
- Reports provided electronically against KPIs monitored to include service docket inspections reports and service docket callout reports

Our EHS specialists will complete an Environmental Aspects and Impacts Assessment. This

enables us to understand the environmental impact and take all reasonable steps to minimize that impact throughout the contract, including assessments for potentially harmful substances. Wherever possible we will substitute hazardous materials for more sustainable alternatives e.g. the use of no-VOC paint, formaldehyde-free finish panels, etc. Once the assessments have been completed, we will provide copies of these for reference. These assessments will ascertain how our proposed delivery team manages the required works throughout the project to minimize our environmental impact as much as possible.

Travel and Transport
As a company our vehicle fleet represents nearly a third of our Green House Gas emissions, in 2020 an independent ESOS (Energy Saving Opportunity Scheme) audit was conducted on our fleet and fuel consumption which helped us to identify key improvements to our fleet operation and instigated a specific Vehicle Emissions Reduction workgroup to drive emissions reductions throughout our fleet through a CO2 roadmap.

We also optimize our logistics and our packaging to decrease weight and increase load factors and to include the use of other higher miles per gallon vans and trucks. We have implemented a policy which prohibits speeding and encourages fuel-efficient driving techniques, and all of our engineers undergo Driver Safety training. Johnson Controls' vehicles also have Telematics that monitor our staff's breaking, idle time, how they take their turns, and their rate of speed, this helps us to reinforce safer and more sustainable operations in the field. Johnson Controls is transitioning its entire sales representatives' fleet of cars to hybrid vehicles..

Over time, we are systematically upgrading our fleet vehicles, utilizing higher fuel economy and electric vehicles where appropriate. Since October 2020 electric vehicles (EV) have been offered to employees as a choice alongside internal combustion engine (ICE) vehicles throughout our company car scheme. We have seen an EV take up rate of over 50% for renewal orders since October.

Johnson Controls will use local approved suppliers/ subcontractors wherever possible to source materials and resources. To deliver environmental benefits to not just our customers but also the local communities, contributing to reduced carbon emissions due to less mileage travelled. We annually analyze our transportation supply chain to improve cost structure and reduce energy use. Local patch-based engineers who have been cleared to work on the Sourcewell member's premises will be utilized for the delivery on this contract to reduce CO2 emissions and waste of natural resources such as fuel. Johnson Controls further offsets carbon emissions through our new Dispatch Console and Engineer Mobile Solution, known as Dynamic Dispatch. Used for call allocation throughout the day, Dynamic Dispatch allocates jobs to our engineers in a more efficient way by prioritizing and assessing incoming jobs according to their priority, location, and the Sourcewell member's service level agreement. It will then select the engineer with the correct capacity, route, skills, and equipment. *

Through using this new system, this will ensure that have the right engineer, with the right equipment at the right location, at the right time. The system further makes the jobs of our engineers easier. Once a job is assigned to an engineer by the system it automatically provides the fastest routes. This greatly reduce the amount of time it takes our engineers to travel from location to location and ensures that time is not wasted through addressing jobs in an inefficient manner.

Our carbon emissions and our environmental impact are further minimized through our unique service offering known as our Remote Operations Center. Located within our Customer Support Centre, our Remote Operations Centre provides 24/7/365 support for faults and incidents. Our expertly trained technicians can connect to various fire and security systems and resolve system problems without an engineer having to visit your premises at all.

Our service offers the following benefits to Sourcewell members:

- 68% of all calls resolved over the phone without the need for an engineer
- The average time for one of our Remote Operations Centre technicians to successfully
- diagnose a fault is just 10 minutes
- More than 90% of issues are fixed first time and remotely
- Reduces ours and Care Inspectorate's carbon footprint
- Reduces impact (and cost) of facilities staff having to arrange access for our engineering teams
- Offers cost and efficiency savings to Care Inspectorate.

In short, any remedial action an engineer can do at the panel our engineers can do remotely, saving the cost of calling an engineer out, the cost of staff remaining on site awaiting the engineer's arrival, minimizing carbon emissions and most importantly keeping the site safe. Furthermore, our Remote Operations Centre technicians provide technical telephone support. Care Inspectorate's representatives can therefore contact our Remote Operations Center to discuss uncomplicated issues such as resetting systems and diagnosing faults to determine the next course of action. Our experts will assist your representatives by providing advice and guidance on your systems. Our telephone support also helps to reduce carbon emissions as it saves the need for an engineer to attend onsite.

Procurement
Wherever we can, we ensure that we are utilizing local approved suppliers used to minimize waste of natural resources such as fuel. Our Supplier on-boarding process involves a robust review of all aspects of the supplier's business including their environmental credentials. When completing this assessment, we aim to capture detailed information such as:

- Compliance with government legislation
- Environmental accreditations such as ISO 14001
- Use of recycled materials rather than virgin materials in the manufacturing process
- Use of green vehicles for delivery,
- Sustainable packaging
- % of recyclable packaging and materials
- Membership of other recognized sustainability schemes or accreditations e.g. Green Accord,
- Sustainable Certified

Our subcontract base is chosen according to their competency, capacity, and ability to meet the specific requirements of the project. All our subcontractors are vetted and approved by our Procurement team and asked to sign up to our sustainable objectives including our Code of Ethics. Suppliers should recognize, believe in, and practice the principles of a sustainable business woven into the fabric of how they will conduct themselves. Elements which our suppliers must consider includes:

- Supporting the Global Reporting Initiative, including development of a Sustainability Report in alignment with GRI reporting guidelines.
- Our commitment to sustainability includes being a leader in promoting diversity in the supplier base. Johnson Controls recognizes the benefits of purchasing goods and services from certified Minority, Woman, and Veteran Owned Business enterprises. Partnering with organizations such as these and with innovative diverse suppliers is not only good business; it's a smart approach to advancing our global competitiveness in an increasingly diverse marketplace of new ideas.
- Taking voluntary initiatives to reduce environmental impacts. These include efforts to improve energy efficiency, control greenhouse gas emissions, recycle materials, curtail or phase out use of toxic substances, minimize waste, conduct life-cycle assessments of products, and promote "greening of the supply chain."
- Supporting safe, healthful workplaces and communities, hiring and promoting employees without discrimination, paying competitive wages and benefits, and being responsible citizens in communities where the parties operate.
- Ensuring that human trafficking and forced labor are not used and that risks of worker exploitation are mitigated.

We have released an on-line supplier sustainability rating. The on-line survey allows suppliers to complete the questionnaire at their convenience. The questionnaire contains questions related to human rights, working conditions, employee safety, and energy management. The sustainability rating is a method for measuring sustainability activity and compliance with our supply base.

Development and Maintenance
At Johnson Controls, we have innovated a sustainable solution, OpenBlue. OpenBlue addresses the unique and personal challenges that our customers' face; leveraging data to drive productivity, performance and enhanced resilience through safety, respectful security, sustainability and intelligence.

OpenBlue applies data from both inside and outside of buildings so that customers can manage operations systemically, enabling the connection of every part of a building to create new possibilities for smarter, safer, more sustainable and efficient spaces.

OpenBlue is the culmination of years of research, innovation and development by Johnson Controls engineers, data scientists and subject matter experts, partnering with Fortune 100 technology partners, to develop the "blueprint for the future" to guide smart, sustainable spaces and places. This complete suite of connected solutions and tailored services, combines 135 years of building expertise as we brought together best in class capabilities, products, solutions, and services under one digital architecture to create a dynamic, connected environment.

OpenBlue provides the visibility and accessibility for customers to make unique, informed, effective and efficient decisions, across all our industry verticals. OpenBlue includes tailored, Artificial Intelligence (AI) infused service solutions such as remote diagnostics, predictive maintenance, compliance monitoring, advanced risk assessments and more. It is more than adding intelligence. Johnson Controls OpenBlue solutions create a deeper, more harmonious and more meaningful connection between people and their environment.

Conservation, Biodiversity, Communication and Community Involvement Johnson Controls believes that engagement and involvement with the local communities we work in is a fundamental part of successful customer engagement and contract delivery.

		Noise and Nuisance To minimize the impact of noise and nuisance on the environment and local community, Johnson Controls will take several measures. Any work undertaken by Johnson Controls will be completed during normal operating hours for the Sourcewell member and work will not be completed during night hours to minimize the impact of noise. Additionally, our technicians will endeavor to utilize hand tools where possible as opposed to tools such as compressors. To mitigate any inconvenience to the local community, Johnson Controls will minimize vehicle traffic and movement on site, avoiding blocking any roads with vans. All work will be arranged with the Sourcewell member to best fit with your schedule, allowing for minimal impact on operation of the member.	
47	Identify any third-party issued eco-labels, ratings or certifications that your company has received for the Solutions included in your Proposal related to energy efficiency or conservation, life-cycle design (cradle-to-cradle), or other green/sustainability factors.	While Johnson Controls' facility security systems, equipment, and software with related services haven't received any specific third-party eco-labels, ratings or certifications, it is important to note that the vast majority of our products are classified as low-voltage, and as a result, they do not release high levels of emissions. As stated within our response to the previous question, Johnson Controls Environmental Policy sets out our commitment to protect the environment and the resources devoted to achieving our goals which clearly identifies the various impacts our activities may have upon the environment. The results of this review form the cornerstone of our development of an ISO 14001 Environmental Management System for eliminating and effectively controlling environmental risks. Under our ISO14001 registration, a significant focus has been put on waste management. Wherever practical, the principles of the Waste Hierarchy are applied, i.e. ELIMINATE – REDUCE – RE-USE – RECYCLE – DISPOSE. Additionally, Our Supplier on-boarding process involves a robust review of all aspects of the supplier's business including their environmental credentials. When completing this assessment, we aim to capture detailed information such as: • Environmental accreditations such as ISO 14001 • Use of recycled materials rather than virgin materials in the manufacturing process • Sustainable packaging • Membership of other recognized sustainability schemes or accreditations e.g. Green Accord, • Sustainable Certified	*
48	Describe any sustainable attributes your products offer such as energy efficiency, use of sustainable materials, LED lighting, smart controls, etc.	Johnson Controls transforms the environments where people live, work, learn and play. As the global leader in technology that powers smart, healthy, secure, safe, energy efficient, and sustainable buildings, our mission is to reimagine buildings to serve people, places and the planet. And we've been doing it since 1885. Johnson Control's Sustainability Management (SM) practice is a partnership with our clients that develops innovative solutions to meet our customers' sustainability and decarbonization goals. Our SM practice is built on our ability to deliver outcome-based solutions in support of our customers' portfolios. Our state-of-the-art management and digital capabilities guide our customers on their proven path to decarbonization, renewable energy, energy efficiency, and resilience. By leveraging our vast knowledge in managing diverse programs and projects, our clients will have access to cutting-edge tools and solutions that meet their specific program needs. Furthermore, Johnson Controls delivers innovative infrastructure improvement solutions that directly contribute to our customers' core mission and their bottom line. Introducing energy efficient measures and improvements is a natural solution that allows us to reduce energy and operating costs, improving comfort and safety, increasing facility security, and updating building infrastructure via sustainable energy conservation measures for agencies across the nation. Our team of energy experts partner with customers to improve the performance of their energy infrastructure and buildings through various improvements, including LED lighting upgrades, low-voltage fire and security systems, smart building automation systems, water conservation measures, central utility plants, energy efficiency measures, energy storage and distribution; upgrades to building controls, facility automation, and more, making indoor environments work better for the people within them.	*

49	Describe how your products contribute to users' health and safety due to touchless, remote, or mobile access capabilities.	Johnson Controls is at the forefront of innovation with our tailored solutions designed to meet and exceed customer needs. Our products and offerings significantly enhance health and safety by leveraging new technology from Johnson Controls OpenBlue to power remote, contactless services, mobile access capabilities, and AI-infused data analytics that produce valuable insights for building operators. Innovation and system monitoring are paramount for a healthy, safe environment for your business. At the heart of our offerings is OpenBlue, a complete suite of connected solutions that combines our 140 years of building expertise with cutting-edge technology designed to ensure buildings operate safely and efficiently. The suite addresses unique customer needs including touchless environments, adaptable buildings, contact tracing, and sophisticated ventilation and sanitization systems. Moreover, our 24/7 remote monitoring capabilities are a crucial aspect of our health and safety solutions. These capabilities allow for continuous and real-time supervision of building fire and security systems, ensuring any issues are promptly detected and addressed without the need for on-site personnel. This not only enhances safety but also optimizes the performance and reliability of fire and security systems, providing peace of mind to building operators and occupants alike. Our AI-powered predictive maintenance and compliance monitoring further contribute to safety by ensuring that all systems function optimally. By predicting potential issues before they escalate, we can prevent malfunctions and failures that could compromise safety. Additionally, our compliance monitoring ensures that all safety standards are met, reducing liability and enhancing overall safety. The use of mobile access through the Companion App significantly enhances user experience by allowing control over various building functions such as lighting, temperature, and security from a single, easy-to-use interface. Companion is configured using a secure Web- based interface that correlates people to spaces and integrates systems to work seamlessly together: access control, lighting, authentication, scheduling, comfort. Building teams and owners work together to deliver the experiences and priorities they choose. Data connections are backed by Johnson Controls experts. You can provide everyone in your building with a single interface to control their comfort, find the people and places they are looking for, reserve a space, see their schedule, and learn about nearby events. When these are easy, or happen by themselves, people have time to do what they came to the building to do. The Companion App makes your building and campus smarter based on what your people actually want and need. Rest assured, safety, sustainability, and energy efficiency efforts only get better when informed by direct input from occupants and visitors.	*
50	What unique attributes does your company, your products, or your services offer to Sourcewell participating entities? What makes your proposed solutions unique in your industry as it applies to Sourcewell participating entities?	Active Shooter Technology In an analysis of 160 active shooter incidents from 2000 through 2013, the FBI found that more than two-thirds happened at businesses or schools. 2014 to 2015 had the most active shooter incidents ever recorded in a two-year period. These sobering statistics make it clear that protecting employees from this threat needs to be a security priority. Shooter Detection Systems A leader in gunshot detection, knows that a quick response by security teams and law enforcement can make a huge difference between life and death. So, they developed the Guardian Indoor Active Shooter Detection System, one of the most advanced active shooter detection and alerting technologies available. The Guardian System is widely installed and actively deployed in real-world environments nationwide. This cost-effective system is easily integrated into your existing infrastructure and is compatible with leading-edge security systems such as access control, alarm panels, video surveillance, mass notification, mobile application technologies and other notification pathways. While many shot detection systems rely solely on acoustic feedback, Guardian sensors also look for an infrared flash. This dual authentication improves accuracy and greatly reduces false alerts. With Guardian sensors installed throughout your facilities, critical information can be relayed to occupants — as well as emergency personnel outside — so that the proper steps can be taken to quickly control the situation. By quickly detecting shots, life-threatening delays in response can be avoided. Johnson Controls' integrated security solutions provide advanced active shooter risk mitigation for your organization. Our complete range of advanced security and life-safety technology—including access control management, intrusion detection, video surveillance, mass communication, and gunshot detection—helps you protect your people, your property, and your assets. We've joined with Ever bridge and Shooter Detection Systems to provide organizations with the only active shooter risk mitigation solution that quickly detects gun shots, locates, and communicates with employees, and initiates emergency response procedures. We can also help you provide preparation and plans for how to more proactively handle the threat of an	

aggressive intruder or active shooter event. Our suite of services include:

- Access Control/Visitor Management: Highly effective for control of critical access points
- Intrusion Detection: Protect employees and customers with hold-up and panic buttons
- Integrated Video Surveillance: Ability to link to alarm events and detection points
- Mass Communication: Integrated multilayered technologies allow communications with large groups of people across indoor, outdoor, and electronic environments
- Gunshot Detection: Virtually instantaneous automated indoor gunshot detection while dual factor authentication reduces potential for false alerts
- Passive Weapons Detection: Using active millimeter wave (MMW) and electromagnetic sensors that detect both weapons and bombs. Active scanners direct millimeter wave energy at the person being scanned and then interpret the reflected energy.
- Cyber Security: Enabling users to connect knowing that data is protected within a secure environment.
- Autonomous Drone: Fully autonomous drone system that conducts a variety of specialized missions on a 24/7 basis without any human intervention.

FireMaster Fire Protection Services and Equipment.
FireMaster fire protection is a range of services Johnson Controls provides that are focused on ensuring compliance with local fire safety regulations and enhancing the safety of workplaces, commercial establishments, and residential properties. This product and service line provides customers with:

Fire Extinguisher Sales and Service: Providing a variety of fire extinguishers suitable for different types of fires, as well as maintenance, inspection, and recharging services.
Fire Alarm Systems: Installation and maintenance of fire alarm systems to ensure early detection of fires.
Fire Suppression Systems: Design and installation of specialized fire suppression systems for various environments, including kitchens, industrial settings, and commercial buildings.
Fire Safety Training: Offering training programs for businesses and individuals on fire safety practices, emergency response, and the proper use of fire safety equipment.
Fire Risk Assessments: Conducting assessments to identify potential fire hazards in buildings and recommending solutions to mitigate those risks.

Security Management Consulting
We help customers evaluate, develop, implement, and maintain their overall security programs through vulnerability and risk assessments, studies and investigations, physical security surveys, security master planning, development of security policies, standards, procedures and instructions, and the development and implementation of numerous, customized security training programs.

Johnson Controls has deep experience managing the full range of security services, from overseeing guard services to performing vulnerability/risk assessments to implementing integrated, state-of-the-art security and fire systems. We have helped a multitude of clients develop an overall security management approach, utilizing a combination of physical guard services in conjunction with cost-effective electronic security solutions for their facilities. Our experience with large, dispersed client portfolios allows us to take a holistic view of a client's security requirements and develop a portfolio-wide solution.

Professional Security System Deployment Services
The Global Security Solutions team has the ability to provide highly specialized services for the deployment of complex integrated security management system projects. These services are built around the custom engineering and development required to develop, deploy, and operate projects involving Physical Security Information Management (PSIM) and Physical Access Identity Management (PAIM) solutions.

In addition to its full-time staff, the Johnson Controls' Security Engineering team coordinates and partners with many other security technical and engineering employees throughout the world at the many company, regional, and branch office locations. These adjunct staff members represent virtually every discipline within the security industry and are recognized experts in their specialized fields.

The Johnson Controls' Global Security Solutions team also has established relationships with numerous security industry professional associations and organizations and, when needed, draws expertise and adjunct staff members from these groups to support Johnson Controls projects internationally. The collective expertise and experience that the Johnson Controls' Global Security Solutions team can bring to a project, through all of its resources, is unsurpassed in the security industry.

Programming Services
Johnson Controls Programming Services unleash the true potential of the integrated security systems. ISSG Programming Services will accomplish this with our certified professionals who will help the customer define their operational goals, program applications, and make sure the system has the inherent flexibility to accommodate changing needs. For example, our ISSG can support key system programming functions allowing our customer to focus on

other vital tasks.

ISSG wants to ensure our Integrated Security Systems Solution customers operate their security systems at their true capacity. ISSG Programming Services continuously try to increase our customer's Return On Investment (ROI).

Training
The Johnson Controls Integrated Security Systems Group provides expert custom training programs; customized operational programming of the security systems; custom report development; video badge design, development and programming; database screen design; graphical map design and programming, and CCTV Control Interface programming.

The security systems our company provides are software intensive products that must be customized for each customer and each application. Because each customer has specific needs, our personnel are available to customize a system design as well as the software that controls the system.

Operational Services
Johnson Controls wants to maximize our customer's return, while minimizing their risk. Johnson Controls can accomplish this on a complete end-to-end solution that aligns with our customer's daily and long-term security goals. ISSG personnel will work with in-house security personnel developing best practices to maximize system configuration proficiency levels, application integration, and operator ease-of-use. ISSG personnel will ensure that our customers maintain optimum system performance through recurring needs assessments. ISSG also will provide sustained support to ensure proficiency levels are maintained. We can also assist our customers to streamline changes in policies or system functionality. Our recommendations will help optimize our customer's security staff performance and provide continual process improvement initiatives. *

Warranty and Service Support
The Johnson Controls service staff is factory trained to service the broad range of products. Our company owns and operates District offices throughout the United States. Each of these offices employs a service staff that supports their respective local areas. We stress ease of maintenance when we design, solutions for our end users. Our systems include both hardware and software products.

We offer a turnkey service solution that includes the inspection, maintenance, support, and repair of systems by factory trained technicians. Johnson Controls is prepared to support warranty and service needs 24 hours a day, seven days a week, 365 days each year. Our technicians will provide the following support ensuring the systems are in proper, safe and efficient operating condition.

Our factory-trained technicians will respond to emergency maintenance requirements. Johnson Controls will furnish all labor, travel, materials, supplies, parts, equipment, panels, devices, and warning signs for system warranty maintenance. The Johnson Controls service program includes the following:

- Scheduled and preventative maintenance including inspecting, testing, adjusting, repairing and parts replacement,
- Troubleshooting and equipment repair services to remedy failures and malfunctions,
- Major equipment maintenance and overhaul,
- Maintenance reports, daily logs, and record keeping,
- Maintenance manual updating, and
- Additional work as directed by customers, above and beyond the specified scope of the construction documents.

Johnson Controls Connected Buildings
OpenBlue
In our new world we must transform in every way. Johnson Controls is transforming how spaces and places are perceived and enjoyed. Applying data from both inside buildings and beyond, our customers can now manage operations systemically. Introducing the blueprint of the future: OpenBlue is a dynamic new space from Johnson Controls. This is how buildings come alive.

OpenBlue is a complete suite of connected solutions that delivers impactful sustainability, new occupant experiences, and respectful safety and security that combines our 140 years of building expertise with cutting-edge technology.

It also features a suite of tailored, AI-powered service solutions such as remote diagnostics, predictive maintenance, compliance monitoring, advanced risk assessments, and more.

Building Systems:
- Building Management System
- Access Control System
- Lighting
- HVAC

- Floor plans

Integrated Workplace Management Systems:
- Meeting rooms (size, location, amenities)
- Desk (reservable, status)
- Assets (type and location)
- Other spaces
- Frictionless Access Control
- Facial Recognition
- Skin temperature scanning solution
- Facemask detection
- Thermal imaging, UV sanitizing gates, contact tracing, touchless visitor management

Enterprise IT Systems:
- HR & IT System
- Active Directory
- Microsoft Exchange
- CMMS

Third Party Offerings:
- Sensors
- Space Scheduler
- Mobile Access
- Parking management
- Travel options (bus, train, car)
- Weather, traffic, stock prices

OpenBlue serves many different industries: workplaces, hospitals, schools, campuses, stadiums, enterprises, and more. OpenBlue creates value for our customers, from helping patients heal faster to ensuring students re-enter schools with better peace of mind, and from fans experiencing stadiums in a new personalized way to laboratories making major scientific breakthroughs.

Johnson Controls OpenBlue technology powers an innovative suite of new digital solutions with more than 20 uniquely tailored services across HVAC, Fire Protection and Security. The new service offering suite will address unique customer needs including touchless environments, adaptable buildings, contact tracing, and sophisticated ventilation and sanitization systems.

OpenBlue Secure
OpenBlue Secure is a software platform that digitizes your Security Operations Center. Keeping on top of emerging risks and an evolving threat landscape that impacts the safety and security of your employees and assets requires the right tools, processes, and a dedicated team who have security in their DNA. OpenBlue Secure solutions power respectful safety and security and advance your Security Operations Teams to better protect your enterprise.

Security needs are transforming as rapidly as the global threat landscape. From occupants to assets, our complete suite of security solutions is designed to help protect your enterprise.

Our solutions are aligned to our blueprint of the future with digital solutions for enhanced Security Operations Centers such as Active Responder and Risk Insight. Powered by AI and workflow engines to deliver response efficiencies and enhance the capabilities of the SOC team.

OpenBlue Tailored Services Suite
Highly tailored services for HVAC, fire protection, and security use data-driven insights to support better planning and decision-making, enhanced productivity, and optimized performance. OpenBlue technology powers service the way you want it, with options including predictive maintenance, remote diagnostics, and advanced monitoring.

Expansion of OpenBlue Digital Building Capabilities
In July 2023, Johnson Controls acquired FM:Systems, a leading digital workplace management and Internet of Things (IoT) solutions provider for facilities and real estate professionals.

FM:Systems' innovative software products offer a range of solutions to make workspaces smarter, like space-scenario planning, asset management and facilities maintenance, supported by security protocols, floor plan scenario modeling, bi-direction integration with AutoCAD and Revit models, and advanced workplace analytics capabilities. Improving the experience of everyone inside, from visitors to occupants to building managers, its powerful sensors and analytics can help portfolio managers optimize space, realize greater cost savings, and help manage and report on indoor air and other environmental data in facilities as diverse as K-12 educational facilities, commercial real estate, hospitals, universities, and government buildings.

		Since the acquisition, FM:Systems' capabilities have further strengthened Johnson Controls OpenBlue suite of software, which uses cutting-edge artificial intelligence and digital twin technologies to improve building performance, while making buildings smarter and healthier for the planet. Buildings collectively account for nearly 40% of global greenhouse gas emissions. The added expertise of FM:Systems has accelerated Johnson Controls' leadership in net zero building technologies globally, while strengthening long-term relationships with existing customers and creating new opportunities to meet demand in the fast-growing smart building segment.	

Table 5B: Value-Added Attributes

Line Item	Question	Certification	Offered	Comment
51	Select any Women or Minority Business Entity (WMBE), Small Business Entity (SBE), or veteran owned business certifications that your company or hub partners have obtained. Upload documentation and a listing of dealerships, HUB partners or re-sellers if available. Select all that apply.		○ Yes ◉ No	Johnson Controls does not hold any of these certifications and is classified as a publicly held corporation. However, Johnson Controls has a broad and well-supported diversity program and plans to offer this program through the Sourcewell facility security systems, equipment, software, and related solutions contract. Our commitment to incorporate diverse-owned businesses into our product and service offerings is rooted in our mission to exceed customers' increasing expectations. Johnson Controls operates under a strategic business imperative to include commercial and purchasing processes, robust outreach and training, goal setting and tracking, and internal and external reporting that keeps diversity business development front of mind. As such, we review and communicate goal attainment and progress throughout the organization monthly. We understand that diversity business development is a team effort and requires the support of each Johnson Controls office, facility, and account. Participating Agencies may use diverse partners through the Master Agreement simply by indicating to the account manager, either verbally or in writing, of the desire for diverse-owned business participation. While there are no pricing changes when using the diversity program, we receive competitive bids from multiple diverse-owned businesses, which ensures you receive a competitive price for the services or equipment. Execution/Accountability We have a diversity business initiative that is directed by senior management and is integrated into our corporate strategy. A diverse business is defined as a company that is at least 51% owned, managed, and controlled by one or more minority persons, or non-minority women, or a small business that conforms to guidelines established by the United States Small Business Administration, or a historically underutilized business based on local country definitions. Spending with Diverse Suppliers We are a leader in supplier diversity. In 2023, we had $597 million in diverse spend, and since 1993, we have spent more than $25 billion with certified women- and minority-owned suppliers. Globally, we have included more than 300 diverse and historically underutilized companies into more than 30 product and service categories to support our customer solutions. Program Implementation Our program is successful because the company has built an infrastructure of accountability, training, processes, systems, and people to make supplier diversity a competitive advantage for the firm. All the operational, commercial, and advanced diversity business activities are tied together with standardized processes used companywide: Supplier diversity training for internal departments and prime contractors Talk back orientation sessions Electronic capability matching and tracking

Diverse business mentoring modules
Decision-maker recognition programs
Equity joint ventures and strategic alliances
Performance tracking and forecasting
Diverse business involvement program for prime suppliers

Supplier Diversity Training for Internal Departments and Prime Contractors — We offer a course, Increasing Diverse Supplier Participation, for every employee who is delegated the responsibility to commit the expenditure of corporate funds directly or indirectly for the purchase of goods and services.

Talk Back Orientation Sessions — We hold orientation sessions in key cities throughout the United States and via video stream. At these meetings with potential diverse suppliers, the company's supplier diversity team and procurement personnel explain the pre-qualification process and review active purchasing plans.

Electronic Capability Matching and Tracking — We use an automated process to present diverse supplier capability to internal decision makers for consideration on current and future projects. Potential suppliers with products and services complete a supplier profile. These profiles are transmitted electronically to decision makers for consideration on current and future projects. Once selected and active in the supplier base, this system produces reports on diverse purchasing performance for internal management and customers.

Diverse Business Mentoring Modules — We use the concept of buying cohorts to mentor diverse suppliers, other corporations, and regional councils. We form groups of 16 corporations and 20 diverse suppliers called business modules to provide focused procurement opportunities and corporate training on ways to strengthen supplier diversity processes. *

Decision Maker Recognition Programs — Buyers compete for our coveted Chairman's Award and Merit Award. Candidates increase their chances of winning by structuring deals with diverse firms that offer continuous improvement in our products or services to our customers, productivity in our facilities, and time compression. Field personnel also compete in our diversity business awards program for their support of our supplier diversity strategy.

Equity Joint Ventures and Strategic Alliances — Under certain circumstances, we will structure equity joint ventures and strategic alliances with diverse-owned firms. Typically, these arrangements are formed to jointly pursue new business or to solve an internal technical challenge.

Performance Tracking and Forecasting — Our diversity business development initiative is successful and outstanding because we believe in continuous improvement. We improve its accountability processes by adding monthly supplier diversity top project reviews with our chief procurement officer. These review meetings monitor divisional diversity purchasing performance along with upcoming customer projects that require diversity business involvement. Projects are categorized by likelihood of consummation. The list of high-potential projects, the names of the project champions and their division, project dollar values and expected realize dates are presented to the senior team.

We have two levels of accountability for diversity purchasing performance:

Quarterly purchase plan reviews with buying teams in each division.
Monthly diversity project reviews with divisional procurement vice presidents and our CPO to develop actions for the project pipeline going forward.

These enhanced accountability processes ensure diverse business involvement early on during the definition stages of our projects. These processes also organize the global

				sourcing efforts so we minimize the difficulty diverse suppliers can experience while trying to sell to a large organization. At any point in time, the supplier diversity team knows what projects are active and open for diverse supplier involvement. Diverse Business Involvement Program for Prime Suppliers — We require our prime suppliers to launch supplier diversity initiatives, rather than simply buy products and services from diverse suppliers. Each prime supplier that reports second tier spend is measured on the following criteria: Completion of second tier annual plan. Designation of a supplier diversity coordinator. Becoming a regional member of the National Minority Supplier Development Council (NMSDC) or the Women's Business Enterprise National Council (WBENC). Attending an NMSDC/WBENC procurement trade show or networking event. Completion of our supplier diversity basic training course. Corporate Outreach Program The following information highlights our recent activities and achievements in support of diverse-owned firms: Integrating supplier diversity and business development as a key component of our strategic business plan. Purchases from diverse companies are targeted to grow each year. Convening trade shows and other events to encourage companies to purchase goods and services from diverse firms. Including diverse suppliers in acquisitions/divestitures, lead supplier arrangements, joint ventures, and strategic alliances. Implementing standardized internal processes throughout the company for recruiting, training, and using diverse suppliers nationwide. Expanding the successful business module program for customers and key suppliers throughout the United States. Adopting cloud-based systems to provide business opportunities for diverse suppliers, measure performance, and promote diversity-oriented business solutions to customers. Strengthening mandates for existing suppliers that require them to offer solutions supporting supplier diversity, as a condition of doing business with our company. Establishing capacity-building groups around the country to provide focused procurement opportunities and corporate training.	
52		Minority Business Enterprise (MBE)	○ Yes ◉ No	Please see our response to question 51.	*
53		Women Business Enterprise (WBE)	○ Yes ◉ No	Please see our response to question 51.	*
54		Disabled-Owned Business Enterprise (DOBE)	○ Yes ◉ No	Please see our response to question 51.	*
55		Veteran-Owned Business Enterprise (VBE)	○ Yes ◉ No	Please see our response to question 51.	*
56		Service-Disabled Veteran-Owned Business (SDVOB)	○ Yes ◉ No	Please see our response to question 51.	*
57		Small Business Enterprise (SBE)	○ Yes ◉ No	Please see our response to question 51.	*
58		Small Disadvantaged Business (SDB)	○ Yes ◉ No	Please see our response to question 51.	*
59		Women-Owned Small Business (WOSB)	○ Yes ◉ No	Please see our response to question 51.	*

Table 6A: Pricing (400 Points, applies to Table 6A and 6B)

Provide detailed pricing information in the questions that follow below.

Line Item	Question	Response *	
60	Describe your payment terms and accepted payment methods.	Pricing Terms: The price to be paid by the customer for the work shall be determined based on project scope. Payments (including payment for mobilization, engineering, and materials delivered to Johnson Controls and work performed on and off-site) shall be made to Johnson Controls based on an agreed Schedule of Values at signing. Monthly progress payments thereafter as defined below: Progress Payments: At least 15 days before the date established for each Progress Payment (first of the month), Johnson Controls shall submit to the customer an itemized application for payment for work completed on AIA Forms 7202 and 7203. Submission of the agreed upon monthly progress payment invoice will be delivered to the district 15 days after the pencil copy. Payment will be made by the customer no later than 30th day of the following month. Such applications for progress payments may include requests for payment on account of changes in the work which have been properly authorized by modifications. Progress Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the work. If approved in advance by the customer, payment may be similarly made for materials and equipment suitably stored off the site. Final Payment, constituting the entire unpaid balance for the work, shall be made to Johnson Controls within 30 days after the Substantial Completion Date. Payments may be withheld on account of any breach of the Agreement by Johnson Controls and claims by third parties (including Johnson Controls subcontractors and materials suppliers), but only to the extent that written notice has been provided to Johnson Controls and Johnson Controls has failed, within 10 days of the date of receipt of such notice, to provide adequate security to protect the customer from any loss, cost, or expense related to such claims. Payment Methods: We accept wire transfer(ACH), check, money order, and credit cards.	*
61	Describe any leasing or financing options available for use by educational or governmental entities.	We Bring a Structured Finance Team to Identify Options Our Structured Finance department, through our finance company Johnson Controls Capital LLC (JC Capital), is dedicated to identifying customized financing options for clients. We can provide general information relating to all available financing options to assist with analysis of each financing option. Johnson Controls can also provide detailed and project-specific factual information on contingent payment, leases, and grants and incentives. In providing such information, Sourcewell members should understand that we are not recommending a course of action on any of the financing options, nor are we acting as an advisor. Johnson Controls is not registered as a municipal advisor with the Securities and Exchange Commission pursuant to Section 15B of the Securities Exchange Act of 1934. If a Sourcewell member is considering financing a project using municipal securities, they should engage and rely on the advice and recommendations of independent municipal advisors, bond counsel and underwriters with respect to the aspects of such financing. Should a Sourcewell member need it, Johnson Controls can provide a list of such advisors with whom we have worked with in the past and know they have experience in providing such advice on facility improvement projects. Johnson Controls has no arrangement or understanding, formal or informal with, and receives no benefit, directly or indirectly, from such parties by providing a Sourcewell member with their names or should their services be chosen. Should a Sourcewell member decide to finance their project through the issuance of municipal securities, Johnson Controls can assist as needed with factual information the bond counsel or underwriters may need on a description of the project, project scope, cost and overall projected benefits. Our Structured Finance team wants to match the right financing structure with what is best for Sourcewell members, and most appropriate for the project.	

Financing Options
Johnson Controls has provided structured financing for thousands of clients. We recently financed more than $500 million in projects in one year alone. We work with more than 20 lenders, grant and rebate administrators, and finance experts every day, negotiating on behalf of our clients and helping to structure funding in the best way possible. Certain types of projects typically require funding in the form of a tax-exempt municipal lease or tax-exempt lease-purchase agreement. While our clients may not be familiar with this type of financing vehicle, our team of experts in the Structured Finance Team has the experience and expertise needed. The team responds to the special characteristics of each project to identify customized financing options for every project.

Most of the firms that provide facility improvement and energy infrastructure financing actually secure financing through a third-party lender. Johnson Controls has formed Johnson Controls Capital LLC (JC Capital), a wholly owned subsidiary that acts as our captive finance company, established with the sole purpose of creating global financing solutions, facilitating and streamlining financing for Sourcewell members.

We arrange financing purely to assist our clients. Our Structured Finance Team matches the right financing structure to what is best for the Sourcewell member and most appropriate for the project. There are multiple ways to finance a project with Johnson Controls. The following information summarizes finance options.

Leveraging NCL Government Capital
Aside from these financing and leasing options, we recommend that customers leverage NCL Government Capital. NCL has a Sourcewell awarded contract and provides tax exempt municipal financing. Please visit the NCL Government Capital site using the link below to learn more.

www.sourcewell-mn.gov/cooperative-purchasing/011620-ncl.

Lease Financing
The most common form of financing is a lease-purchase agreement typically secured through a Tax-Exempt Lease Purchase. In these arrangements, the Sourcewell member (as lessee) enters into a transaction with a financial intuition (the lessor). A lease-purchase is popular because:

- It is not considered statutory debt.
- It does not require voter approval.
- The documentation and closing costs are relatively light.
- The time to close can be less than 30 days.

According to the Association for Government Leasing & Finance, one of the most valuable attributes of a lease-purchase is that it enables clients to finance projects without incurring a “debt” or an “indebtedness” that is subject to voter approval and debt limitations.

The most frequently used covenant is the non-appropriation clause. The documents are drafted so that the lessee may elect to not renew its obligation at the end of the current fiscal period. The lease payment that the lessee makes for each fiscal period is consideration for use and enjoyment of the leased property during the particular fiscal period. *

If the lease payments are paid from the current fiscal period’s revenues and the lessee has no obligation beyond the current fiscal period, the lease-purchase is not considered debt under the laws of most states.

The lease-purchase will contain an original term equal to one fiscal period and option renewal terms for each subsequent fiscal period of and when the lease-purchase is appropriated. The number of renewals is limited to a maximum term.

If a lessee doesn’t appropriate rental payments in its budget for a succeeding fiscal period, the lease-purchase was not renewed, and it automatically terminates. This is not a default. The lessee has simply exercised its contractual right under the lease-purchase. The risk is

born by the lessor. It should be noted that credit rating agencies, like S&P and Moody's, negatively view an act of no-appropriation.

In most transactions, the lessee has a purchase option to pay off the lease-purchase early and acquire the equipment. To secure the payment of the lessee's obligations, the lessor retains a security interest constituting a first lien on the equipment. During the lease term, title resides with the lessee. However, if the lease-purchase is terminated early for reasons other than exercise of the purchase option, title automatically transfers back to the lessor. A lease-purchase can be structured to qualify for tax-exempt status, which carries a lower interest rate than a taxable lease-purchase of similar credit quality and term. There are a wide number of banks and leasing companies that participate in the lease-purchase market. That broad supply of capital ensures competitive pricing. It should be noted also that a lease-purchase is typically structured as a private placement.

That lack of liquidity and the non-appropriation clause frequently means that a lease-purchase has interest rates that are slightly higher than a bond issuance. However, the closing cost for a lease-purchase is relatively low, which often makes it an efficient financing vehicle for projects under $25 million. A lease-purchase is also very flexible, as amortization schedules can be "sculpted" to match any established savings guarantees for that particular project(or for those projects that are part of a broader performance contract), and there are no minimum principal payment denominations. Another positive attribute is that the time needed to close is relatively short (approximately 30 days).

Johnson Controls can work with lenders to design a payment schedule that corresponds to the construction period. The goal is to create a cash flow neutral transaction for the Sourcewell member. We can help to identify lenders that can offer lease-purchase terms that are as long as the law will allow.

Bonds
Many customers have a master indenture for bond issuance to finance their capital improvements. The same vehicle can be used to fund facility security systems, equipment and software-focused products as well as a myriad of other project types including energy savings projects. The Sourcewell member may choose to issue bonds solely for a specific Johnson Controls project, or for a larger capital improvement plan that rolls into the performance contract. For larger transactions, the capital market is an excellent funding source for credit-worthy borrowers that require a broader pool of investors or more financial flexibility. In addition, bonds typically have the lowest cost of capital, which enables clients to maximize their projects. We cannot provide recommendations on a bond issuance. However, we can provide in-depth detail on the project to enable the Sourcewell member and their advisors and underwriters to structure a bond issuance in a way that best services the needs of the member.

Investment Tax Credit
The Investment Tax Credit (ITC) provides a federal tax credit for owners of certain eligible investments. Taxpayers that are state and local governments and tax-exempt entities may receive cash in exchange for ITCs via a direct payment election. The ITC percentage could be between 6% and 50% (without considering a low-income bonus allocation) of the eligible investment(s) depending on the facts and circumstances of a project. While Johnson Controls cannot provide tax or legal advice, we do have expertise with the ITC program, its process, and key considerations. As we work with Sourcewell members to build and finalize project scopes, we will leverage our internal ITC specialist to layer in potential ITC impacts.

Ultimately, the act of computing or claiming an ITC is the responsibility of the entity that owns the eligible property. As necessary and allowable, we will share relevant project information with the Sourcewell member's tax and legal counsel in their effort to compute and claim an ITC.

62	Describe any standard transaction documents that you propose to use in connection with an awarded agreement (order forms, terms and conditions, service level agreements, etc.). Upload all template agreements or transaction documents which may be proposed to Participating Entities.	The following standard transaction documents within a file entitled Johnson Controls Transaction Documents within the Documents section. These transaction documents may be used in connection with an awarded agreement. • Standard Proposal Forms with Terms • Warranty • Alarm Monitoring rider • EAGL GunShot Detection Rider • EVOLV Weapons Detection Rider • Guardian Active Shooter Rider • BSNA Rescue Air Installation Rider • BSNA Rescue Air Services Rider	*
63	Do you accept the P-card procurement and payment process? If so, is there any additional cost to Sourcewell participating entities for using this process?	As it pertains specifically to facility security systems, equipment, software, and related services and solutions projects, Johnson Controls does accept P-card procurement and payment, and we do not pass on any fees to the customer. However, if the project is broader in nature, P-card may not be a viable procurement and payment option. In addition to accepting P-card procurement and payment for facility security systems, equipment, software, and related services and solutions -focused projects, we also accept wire transfer, check, money order as procurement and payment options.	*
64	Describe your pricing model (e.g., line-item discounts or product-category discounts). Provide detailed pricing data (including standard or list pricing and the Sourcewell discounted price) on all of the items that you want Sourcewell to consider as part of your RFP response. If applicable, provide a SKU for each item in your proposal. Upload your pricing materials (if applicable) in the document upload section of your response.	We have uploaded pricing that provides the applicable pricing / discounts for every product and or service for Johnson Controls and Affiliates. Johnson Controls utilizes different quoting tools depending upon which affiliate will be quoting the work. Discount percentages are consistent across affiliates but may vary depending upon the solution being provided. Included in our response are the following pricing models: Johnson Controls Fire Protection Products and Installation Pricing is the only pricing that is Line Item Based, Proposed pricing is based on our top 100 Strategic Account Customers, discarding the top and bottom 15, then averaging the margin for both low voltage and Sprinkler Systems. The margins remain the same from our current award 030421-JHN. All Low Voltage is 35% and Sprinkler is 26% with Labor being priced up to the NTE Rates listed in the pricing documents. L&M Parts Pricing has a 15% uplift above new installation products and that methodology is also the same as the current award. *Note: Johnson Controls Fire Protection, LP wishes to notify Sourcewell of our intent to transition to a Discount off List for products and installation once our CPQ system has that functionality. We expect at some point during Calendar Year 2025 that this will take place. • Johnson Controls Fire Protection Products and Installation - Line-Item Margin Based • Johnson Controls Fire Protection L&M Line-Item 15% uplift above Installation Parts Pricing • Sourcewell PSA Pricing Validation Tool – Discount off CPQ Pricing Tool • Sourcewell Deficiency Quote Form JCFP ACE Quote Tool • Sourcewell General Service Form JCFP ACE Quote Tool • JCSS Pricing Table USA & Canada – Compass Discount of List • Cooperative Pricing Worksheet JCSS Compass USA & Canada • Cooperative Pricing Worksheet JCSS Prevailing Wage USA Only • Johnson Controls, Inc. (Complex Security Team) Pricing Table – Discount off List	*
65	Quantify the pricing discount represented by the pricing proposal in this response. For example, if the pricing in your response represents a percentage discount from MSRP or list, state the percentage or percentage range.	Discounts vary based on equipment type and labor. We are providing discounts that exceed our standard commercial branch practices and are in line with our most preferred strategic account customers. Please refer to our pricing table for specific percentages. Discounts range 5-20%	*

66	Describe any quantity or volume discounts or rebate programs that you offer.	Volume discounts will be considered on a project-by-project basis. Most security solutions are customized for each facility and do not qualify for volume discounts. As a global facility security systems, equipment, software, and related solutions service provider, we have projects currently taking place all over the world. Our centralized procurement team provides us with national contracts whereby we can get the best delivery dates, priority warranty support and volume pricing. This all translates to the best pricing and reduction in risk for the members. While Johnson Controls may have rival products to those already installed throughout the facilities, our goal is to ensure our projects deliver maximum value to the customer…Not Johnson Controls.	*
67	Propose a method of facilitating “sourced” products or related services, which may be referred to as “open market” items or "non-contracted items". For example, you may supply such items “at cost” or “at cost plus a percentage,” or you may supply a quote for each such request.	All open market or non-contracted items are priced as Cost Plus. We have a ceiling price for all products and services.	*
68	Identify any element of the total cost of acquisition that is NOT included in the pricing submitted with your response. This includes all additional charges associated with a purchase that are not directly identified as freight or shipping charges. For example, list costs for items like pre-delivery inspection, installation, set up, mandatory training, or initial inspection. Identify any parties that impose such costs and their relationship to the Proposer.	We offer turnkey pricing that includes all costs on a project-by-project basis as outlined in our pricing table.	*
69	If freight, delivery, or shipping is an additional cost to the Sourcewell participating entity, describe in detail the complete freight, shipping, and delivery program.	Shipping costs are included, as is disposal.	*
70	Specifically describe freight, shipping, and delivery terms or programs available for Alaska, Hawaii, Canada, or any offshore delivery.	Shipping costs are included in the price.	*
71	Describe any unique distribution and/or delivery methods or options offered in your proposal.	We strive to achieve just in time delivery to avoid storage costs and costs associated with damage that can occur when equipment and parts are stored on site or in a facility for any length of time. Additionally, we do not enforce the Sourcewell member’s warranty until we reach substantial completion. This helps save Sourcewell members money by not starting the warranty period too early, when the system is not yet in use.	*
72	Specifically describe any self-audit process or program that you plan to employ to verify compliance with your proposed agreement with Sourcewell. This process includes ensuring that Sourcewell participating entities obtain the proper pricing.	Johnson Controls utilizes a multi-faceted approach to ensuring compliance and utilization of our Sourcewell awards: 1. Johnson Controls has a dedicated Cooperative Team that conducts training and works with the field branch sales and service personnel to provide awareness and the skills necessary to complete a cooperative sale from start to finish. We have developed process flows for the facility security systems, equipment, software, and related solutions representatives for how to price both projects and services. 2. Johnson Controls leverages Salesforce, and we created a required cooperative contracts field for each opportunity where the purchasing entity is an eligible member. 3. Currently we have pricing tools that provide the sales representative with list pricing, NALP, or cost plus. This makes it simple for our sales representatives to provide compliant pricing. We are working with the Johnson Controls pricing leaders along with senior management to place additional systemic controls in our project pricing tools that will enable the discounts to be automatically applied and priced in accordance with the awarded pricing table. 4. We have specific Buying Groups created for Sourcewell that field representatives select when preparing L&M and Preventative Service Agreement proposals. 5. Beginning in October 2024, our legal department is instituting a mandatory “Government” training module for every sales representative that must be competed annually. 6. We utilize Government Services Group that maintains all reporting and administrative fee functions. This team ensures that pricing was provided to eligible members and escalates any issues to the Cooperative Contracts team to research. 7. If at anytime we are made aware of an issue we are willing to correct any pricing inconsistency.	*

73	If you are awarded an agreement, provide a few examples of internal metrics that will be tracked to measure whether you are having success with the agreement.	Johnson Controls team has established key performance indicators (KPIs) for evaluating the performance of our facility security systems, equipment, software, and related solutions program. These internal metrics are comprised of data from both sales and finance. For example, key metrics we utilize include the number of sales representatives who have an active Sourcewell proposal in the Salesforce pipeline and year-over-year sales data associated with each Sourcewell contract. To further ensure program success, Johnson Controls' Cooperative team ensures that all of our team members have been trained on the nature of this contract and are strongly encouraged to attend the Sourcewell Universities training curriculum. We conduct "Relationship Surveys" annually to measure customer satisfaction and generate a Net Promoter Score. Through the surveys, we learn of additional support a customer might require and gain insight into continuous improvement areas to further meet customer expectations. "Transactional Surveys" are issued after key milestones are completed to assist with open dialogue and ensure the project runs smoothly from all points of view.	*
74	Provide a proposed Administration Fee payable to Sourcewell. The Fee is in consideration for the support and services provided by Sourcewell. The propose an Administrative Fee will be payable to Sourcewell on all completed transactions to Participating Entities utilizing this Agreement. The Administrative Fee will be calculated as a stated percentage, or flat fee as may be applicable, of all completed transactions utilizing this Master Agreement within the preceding Reporting Period defined in the agreement.	Johnson Controls proposes a 1% administrative fee. On significant opportunities, we would like to leave open our ability to further negotiate a reduction on a case-by-case basis.	*

Table 6B: Pricing Offered

Line Item	The Pricing Offered in this Proposal is: *	Comments	
75	The pricing offered is as good as or better than pricing typically offered through existing cooperative contracts, state contracts, or agencies.	Please refer to pricing table for specifics.	*

Table 7A: Depth and Breadth of Offered Solutions (200 Points, applies to Table 7A and 7B)

Line Item	Question	Response *	
76	Provide a detailed description of all the Solutions offered, including used, offered in the proposal.	Johnson Controls Fire Systems We offer fire controls systems designed to meet the needs of everything from a small stand-alone system to a large integrated network. We offer fire alarm systems designed to meet the needs of small and large facilities — and to integrate seamlessly with our other building management security system technologies. Intelligent Fire Control Panels Johnson Controls Intelligent Fire Controllers (IFC) can zero in on each device and identify its specific location and status, saving time, and confusion in an emergency. As your business needs change, the modular design of our controllers lets you network additional panels or add new devices as your facility grows. This flexibility means substantial cost savings in your investment. Intelligent Fire Integrator The IFI is a single point of control for your fire and life safety systems. The integrated facilities monitoring network links your IFC series fire alarm system to other 3rd party systems. From a single workstation, your facility manager can view and manage diverse systems from different manufacturers using an intuitive graphical user interface. Mass Notification Systems (MNS) Our MNS can simultaneously notify multiple people via text messaging, automated voice dialing, desktop alerts, and indoor and outdoor loudspeakers. Each of the following solutions can be custom-built to meet your needs. In-Building Systems Wide-Area Systems Distributed Recipient and Personal Alerting Systems JWS - 3 Web Server The JWS-3 is an optional web-based device that acts as an HTML server, which allows remote access to the IFC Network. The user can view the history of a fire alarm control panel, event status, device properties, and other information based on pre-defined access permissions. All data available is a "snap-shot" of the data on	

the IFC Network at the time the browser requested the information.

Digital Voice Command

The DVC is a multi-channel digital audio evacuation, paging and firefighter's telephone system designed for use with the IFC2-3030 fire control panel. The system can simultaneously broadcast multiple, distinct messages throughout your facility or in selected areas to ensure the right people have the right information during an emergency. The DVC delivers eight channels of quality digital audio for live paging, and up to five channels of firefighter's telephone operation for communication between emergency responders.

Johnson Controls Fire Protection Products and Services

Thousands of organizations throughout North America choose Johnson Controls to install, integrate, upgrade and service crucial facilities systems. Our factory-trained service technicians can support a wide variety of security and life safety solutions and technologies. There is no substitute for our quality, knowledge, commitment and experience and best practices.

We can assure the effective operation of all building safety systems. One phone call can safeguard security, communication, fire, and life safety systems. Trained service specialists staff our North American network of district offices, each one stocked with replacement parts. One of the largest service networks in the industry, it guarantees a fast, effective response.

We offer an unparalleled selection of test and inspection services, preventative maintenance, and around-the-clock emergency services for every life and property protection system. We will easily support multiple technologies from multiple vendors. All of our service specialists spend months in rigorous training. In fact, Johnson Controls boasts more than 1,000 NICET-certified technicians with years of hands-on experience.

FireMaster Fire Protection Services and Equipment.

FireMaster fire protection is a range of services Johnson Controls provides that are focused on ensuring compliance with local fire safety regulations and enhancing the safety of workplaces, commercial establishments, and residential properties. This product and service line provides customers with:

- Fire Extinguisher Sales and Service:
- Fire Alarm Systems:
- Fire Suppression Systems:
- Fire Safety Training:
- Fire Risk Assessments:

Fire Alarm Systems

Johnson Controls Fire Alarm Testing and Inspection exposes and resolves potential problems before property and employees are put at risk. Our specialists will keep control panels, pull stations, smoke detectors, and horns in perfect working order.

Smoke Detectors

Smoke detectors are the first line of defense if there is a fire. Keeping detectors in perfect condition is vital to any safety strategy. Johnson Controls' world-class Smoke Detector Maintenance Program offers multiple service levels, including testing, cleaning, sensitivity testing, replacement and stock supply. This comprehensive approach helps keep detectors fully operational and minimizes false alarms.

Fire Extinguishers

A portable extinguisher is the critical first line of defense in the event of fire. But the wrong equipment can be harmful or deadly. That's why we offer options for every application, including Class A, B, C, D and K fires occurring in areas with Low, Moderate and High Hazard classification, as well as FE36 clean agent and wet chemical K class types, to name a few. Our specialists are ready to help our customers choose the appropriate extinguishers for their situation.

Automatic Fire Pumps

When fire strikes, water pressure must be available to strike back. Our experts use special technology to inspect Automatic Fire Pumps, reporting deficiencies and recommending corrective action.

Johnson Controls' Fire Alarm System will monitor the following fire pump parameters per NFPA 72. They are:

- Fire pump running
- Power loss
- Phase reversal

Automatic Sprinklers

Automatic sprinklers can minimize property damage and save lives. Johnson Controls' comprehensive sprinkler system testing and inspection program is based on NFPA Codes 25 and 13, keeping a facility in compliance with insurance and fire codes.

Our products include:

- Wet pipe sprinkler systems
- Dry pipe sprinkler systems
- Standard Response Spray Sprinklers
- Quick Response Sprinklers
- Extended Coverage Sprinklers
- Recessed Sprinklers
- Special Purpose Sprinklers
- High-Pressure Sprinklers

Special-Hazard Fire Suppression Systems
Special-Hazard Fire Suppression Systems protect the key assets and resources that make a business successful. From computer rooms to fuel-pump islands, rare documents to manufacturing equipment, our experts test all elements of special-hazard fire suppression systems and recommend maintenance and improvements.
Clean-Agent Fire Suppression Systems
The top clean-agent systems on the market have ANSUL® written all over them. Choose from SUSTAINABLE technology, INERGEN® Inert Gas Systems or SAPPHIRE™ Systems with 3M™ Novec™1230 Fluid. Clean-agents protect sensitive electronics and irreplaceable assets found in facilities across various industries: data processing, communications, industrial, marine, aviation, medical, finance, and cultural/historical.
Carbon Dioxide Fire Suppression Systems
The original “clean” agent, carbon dioxide suppresses fire without leaving behind an agent to damage sensitive equipment. And because there is no agent to clean up, an operation is back in business faster. To provide the most economical system arrangement without sacrificing performance, we offer both high and low-pressure systems including the exclusive ANSUL® “Mini-Bulk” tank technology.
Detection & Control Equipment
When automatic 24/7 fire protection is required, select from our complete line of Johnson Controls Fire Alarm Control Panels and AUTOPULSE® detection, control and fire suppression system release panels. Detection options include smoke, heat and flame detection. Also, consider our VESDA® aspirating smoke detection technology.
Kitchen Fire Suppression Systems
Today’s high temperature appliances make Kitchen Fire Suppression Systems essential. Our semi-annual, 21-point assessment will keep owners up-to-date on ever-changing requirements, keep personnel safe and prevent loss and damage. A specially trained Johnson Controls professional inspects all elements of these important safety devices.
Emergency Lights
Johnson Controls will help make sure Emergency Lights work when they are needed. We will thoroughly test and inspect the entire system to ensure proper operation. All Johnson Controls tests and inspections are in accordance with NFPA 101 (Life Safety Codes). We can help ensure compliance with safety codes and reduce the probability of injury while decreasing the risk of liability to property owners and employers.
Johnson Controls Security Solutions
The Johnson Controls’ team is uniquely qualified in that it can provide consulting, engineering, and implementation services in all aspects of security and life safety. The following service categories, usually represented by separate firms, can be provided through our team:

- Security Management and Consulting
- Security Engineering and Design
- Information Protection and Network Security Consulting
- Professional Security System Deployment Services

Access Control
Access control is vital to security and productivity. If the access control system is down, no one gets in the building and work time is wasted. Hundreds of organizations use Johnson Controls services to ensure uninterrupted access to their facilities – and only by authorized personnel.
Video Surveillance
Johnson Controls is a world-class systems integrator. Our highly skilled team understands your need to reduce risk, comply with regulatory policies, and safeguard your most critical assets. Our ability to install, integrate, and service advanced business security camera systems will help you do just that, in addition to lowering your costs and increasing operational efficiency.
We offer the following solutions:

- Digital video management systems
- Network and digital video recorders
- Surveillance cameras
- Advanced analytics

P2000 Security Management System Capabilities
Our integrated network access control building technology works seamlessly with our P2000 security management system to help buildings achieve maximum security while increasing efficiencies and lowering costs. Built on open standards and compatible with virtually any third-party program, the P2000 can integrate multiple businesses, buildings, and security systems to achieve interactive, real-time security management.The P2000’s built-in web browser allows users to access the platform from a central location — or remotely, through web-connected devices. The P2000 works with virtually all current security products, system technologies, and IT networks, including:

- Mercury Hardware, making it easy to change security solution providers
- Digital Video Recorders that manage recording, camera and storage functions from a single workstation
- HR Databases that integrate your badging system with your HR database to

simplify security operations and reduce human error
- Intelligent IP Door Locks, streamlining installation and enabling real-time communications where it's difficult to install wired locks
- IP Intercoms that combine live video, intercom requests and open-door functionality in one workstation

Intrusion Panels, enabling extended control and auditing of your facility's doors
- Elevator High-Level Interfaces that enable access control integration with your elevator system

Monitoring Services
Our monitoring service gives the ultimate peace of mind, around-the-clock electronic surveillance of facilities. We are the only national UL-Listed service with a total focus on commercial facilities. First, we will integrate safety systems with our Central Monitoring Station, the industry's most advanced. Then we will monitor a building 24/7. In an emergency situation, Johnson Controls will notify authorities, guide emergency personnel to the scene and keep owners informed. We will even initiate an emergency action plan.

CCTV Systems
Closed Circuit Television cameras must be inspected regularly to ensure the highest levels of uptime and availability. Johnson Controls provides a complete range of service and maintenance options for installed video surveillance equipment and security technologies. By optimizing the performance of security equipment, people and property are protected against intruders, fraud, and vandalism.Johnson Controls security systems installed throughout the world integrate CCTV equipment from well-respected names as Sony, Philips, Nice, and Loronix. Our design approach for this project would be designed with "State of the Art" Microprocessor based video switchers, pan-tilt-zoom cameras, and digital recording technology.

Building Security Automation
Johnson Controls offers a range of security automation products and solutions designed to enhance the safety and security of buildings and facilities. Their offerings cover various aspects of security management, including access control, video surveillance, intrusion detection, and integrated security systems. Here are some key products and solutions from Johnson Controls that relate to security automation:

Access Control Systems
- Tyco Access Control Solutions:
- Software House C-CURE 9000:

Video Surveillance
- Video Management Systems (VMS):
- Intelligent Video Analytics:

Intrusion Detection Systems
- Intrusion Alarm Systems:
- Perimeter Security Solutions:

Integrated Security Solutions
- Integrated Security Platforms:
- Cybersecurity Solutions:
- Cloud Security Services:

Mobile Security Solutions
- Mobile Security Applications:

Consulting and Managed Security Services
- Security Consulting Services:
- Managed Security Services:

Motion-Controlled Lighting
Johnson Controls offers a range of solutions that incorporate motion-controlled lighting, which is an essential aspect of modern building management systems.
- Occupancy Sensors:
- Daylight Harvesting:
- Dimming Capabilities:
- Smart Control Systems:

Occupancy Detection
Johnson Controls offers advanced occupancy detection solutions that are integral to modern building management and automation systems. These solutions utilize various technologies to detect the presence of individuals in a space, enabling automated responses to optimize energy efficiency, enhance security, and improve comfort.
- Passive Infrared (PIR) Sensors:
- Ultrasonic Sensors:
- Dual Technology Sensors:
- Camera-Based Detection:

Intrusion and Breach Prevention and Detection
Johnson Controls maintains a comprehensive suite of intrusion detection and breach prevention solutions designed to protect facilities, assets, and personnel from unauthorized access and security threats. These systems incorporate advanced technologies and integrated approaches to ensure robust security for various environments, including educational institutions, healthcare facilities, government facilities, and industrial sites.
- Intrusion Detection Systems (IDS):

- Perimeter Security Solutions:
- Video Surveillance Systems:
- Access Control Systems:
- Integrated Security Management Systems:
- Cybersecurity Measures:

Glass and Window Security
As it pertains to glass and window security, Johnson Controls offers a range of solutions designed to enhance the safety and security of buildings. Here are some key aspects of our offerings:

- Window Film:
- Access Control Systems:
- Intrusion Detection:
- Physical Security Measures:
- Smart Building Solutions:
- Consultation and Assessment:

Armor and Ballistic Solutions
Johnson Controls offers a range of ballistic solutions designed to enhance security and provide protection against ballistic threats. Our offerings typically focus on integrating advanced materials and technologies.

- Ballistic-Resistant Glass
- Security Window Films
- Architectural Solutions
- Integrated Security Systems
- Customization and Consultation
- Compliance with Standards

Shooter Detection Systems
Johnson Controls regularly installs the Guardian Indoor Active Shooter Detection System, one of the most advanced active shooter detection and alerting technologies available. The Guardian System is widely installed and actively deployed in real-world environments nationwide.
We've joined with Ever bridge and Shooter Detection Systems to provide organizations with the only active shooter risk mitigation solution that quickly detects gun shots, locates, and communicates with employees, and initiates emergency response procedures. Our suite of services include:

- Access Control/Visitor Management:
- Intrusion Detection:
- Integrated Video Surveillance:
- Mass Communication:
- Gunshot Detection:
- Passive Weapons Detection:
- Cyber Security:
- Autonomous Drone:

Facility and Parking Access Controls Systems
Johnson Controls offers a variety of facility and parking access control systems designed to enhance security, streamline operations, and improve overall management of access to buildings and parking areas.

- Access Control Systems
- Video Intercom Systems
- Turnstiles and Barriers
- Parking Access Control Systems
- License Plate Recognition (LPR)
- Visitor Management Systems
- Centralized Management Software
- Integration with Building Management Systems

Robotic and Artificial Intelligence Surveillance Solutions
OpenBlue provides the visibility and accessibility for customers to make unique, informed, effective and efficient decisions, across all our industry verticals. OpenBlue includes tailored, Artificial Intelligence (AI) infused service solutions such as remote diagnostics, predictive maintenance, compliance monitoring, advanced risk assessments and more.
Artificial Intelligence:

- Video Analytics:
- Predictive Analytics:
- Integration with IoT:

Applications:

- Smart Buildings:
- Public Safety:

Biometric Scanning and Screening
Johnson Controls offers various solutions that include biometric scanning and screening technologies.
Our biometric door entry control system incorporates biometric screening and lockdown capability at exterior doors. We integrate biometric solutions (fingerprint, facial recognition) into our overall security and building management systems, allowing for a more streamlined approach to access control and safety.

Monitoring Services
Our monitoring service gives the ultimate peace of mind, around-the-clock electronic surveillance of facilities. We are the only national UL-Listed service with a total focus on commercial facilities. First, we will integrate safety systems with our Central Monitoring Station, the industry's most advanced. Then we will monitor a building 24/7. In an emergency situation, Johnson Controls will notify authorities, guide emergency personnel to the scene and keep owners informed. We will even initiate an emergency action plan. Johnson Controls can provide around the clock electronic monitoring for trouble and alarm conditions throughout each facility for hardware that supports dial-out functions. The center is staffed with rows of customer service representatives wearing headsets that carefully watch computer screens and interpret information that can mean life or death to people thousands of miles away.

Nurse Call Systems
Our Nurse Call solutions provide state-of-the-art technology and offer a high level of functionality and durability. These systems also provide ease of operation for nursing and administrative staff. Our systems provide easy to use nursing control station's that provide all required functions with just the touch of the screen.

Our proposed products and services will improve patient care/response by:

- Ensuring that the patient always feels that assistance is just a pushbutton away and that confirmation of a response is immediate.
- Providing information to a mobile work force in such a way that it is part of their normal routine and does not cause interruption due to re-directing workflow or even re-orienting attention as a result of how the information is presented.

Infant Tagging
Johnson Controls Infant Tagging solutions provide peace of mind for parents, caregivers, etc., by offering security and tracking of infants and mother-baby matching. These systems also offer simplified operation to easily integrate into the daily responsibilities of nursing and administrative staff.

We offer the TotGuard solution, a high-end security system specifically designed for use in Labor & Delivery Department. In addition to providing portal exit protection and alarming, TotGuard can detect when a transponder (tag) has been removed from a wearer. TotGuard is the only system that offers disposable umbilical cord tags.

Wandering Resident
Johnson Controls' Wandering Resident solutions provide peace of mind for patients, caregivers, etc by offering security and tracking of residents. These systems also offer simplified operation to easily integrate into the daily responsibilities of nursing and administrative staff.

Emergency Communication
Johnson Controls also offers a single integrated communication system used for telephone paging, and highly intelligible broadcast messages and emergency voice evacuation. The SAFEPATH® Supervised Audio Facility Equipment is the first UL Listed supervised system to offer this unique multi-functionality.

Buildings and complexes must be capable of broadcasting highly intelligible emergency messages in order to save lives. It is not enough to install loudspeakers that blast unclear messages to already disoriented people within a building or even in external locations. Design is the key. Appropriate speakers are strategically placed such that communication is not only heard within the structures, but also understood in the identified outside areas as well, for a comprehensive and seamless solution.

Visual Communication
Johnson Controls' Text Messaging Appliances offer the latest capabilities in providing the clear visual display of messages tailored to specific emergency or non-emergency conditions. This highly visible, multi-color (red/yellow/green) light emitting diode (LED) display can display messages readable to distances of approximately 200 feet away.
The TrueAlert Visual Display Can Provide Useful Messages Under Normal Circumstances and Life-Saving Direction in Emergencies.
Our TrueAlert Display is a UL-Listed IDNet addressable device that is controlled, monitored, and powered by one or more of our 4100U fire alarm panels. The True Alert text messaging appliance displays automated emergency messaging but allows custom end user messages to be displayed as well. Informative end user messages are overridden in the case of an emergency and a designated emergency message is displayed.
Our TrueAlert Displays provide situation-specific visual messaging that can complement the voice messaging capabilities of the 4100U. The visual text messaging display is an ideal solution for the hearing impaired or for noisy environments where auditory voice messaging is ineffective.
Personal Communication

Johnson Controls offers personal communication technology that offers many benefits including:

- Improve response time in emergencies by ensuring instant delivery of important information in a consistent manner, minimizing loss of life, property damage, and financial impact
- Free up key personnel to perform critical tasks by automating manual, time-intensive processes
- Improve effectiveness by eliminating potential failure points due to human error
- Reduce miscommunications or misinformation with accurate, consistent messages
- Increase outreach through process efficiencies that enable more frequent communications
- Comply with legal communication-related regulations through real-time and historical reporting
- Plan ahead for various emergency situations
- Manage the system easily and cost-effectively
- Feel confident with maximum data security through our Oracle/Linux platform and built-in redundancy at every level

Interior Communication

New capabilities in digital information transmission, processing, and control offer the opportunity for comprehensive auditory and visual messaging, tailored to situation and facility. A logical development, spearheaded by Johnson Controls is the incorporation of such advanced messaging capabilities directly into Fire Alarm Systems.

As Johnson Controls has spearheaded these developments, we have paid careful attention to changing government regulations as well as an abundance of codes and standards. Our systems have been developed to meet all applicable industry codes and standards, thereby ensuring widespread applicability of our technology solutions.

Campus Duress Alarms

Johnson Controls has teamed with Iwatsu Electric, Ltd. to offer the 5195 Advanced Digital Information Exchange (ADIX) PBX System. Many of the proposed system components have been designed and developed by Iwatsu engineers. Iwatsu was established in 1938 and has supplied over 60 million telephones to customers throughout the world

Our 5195 ADIX Digital PBX System offers the latest in digital microprocessor-controlled telecommunications technology. Digital solid-state components provide quiet, reliable, long-life operation. Our 5195 system provides a cost-effective package that is capable growing to meet future user and industry requirements. The system's architecture supports our standard 5195 universal trunk and station telephone cards system-wide that control all digital telephone activity. The 5195 has a distributed control multi-microprocessor architecture that uses digital speech paths for clear, noise free audio reproduction of voice and data. A host of programming and operational features are supported throughout the network from a single point of administration. System wide changes are easily made. Non-blocking telephonic links within the 5195 system ensure the user obtains intercom dial-tones every time they pick up their phone.

Security Management Consulting

We help customers evaluate, develop, implement, and maintain their overall security programs through vulnerability and risk assessments, studies and investigations, physical security surveys, security master planning, development of security policies, standards, procedures and instructions, and the development and implementation of numerous, customized security training programs. Johnson Controls has deep experience managing the full range of security services, from overseeing guard services to performing vulnerability/risk assessments to implementing integrated, state-of-the-art security and fire systems. We have helped a multitude of clients develop an overall security management approach, utilizing a combination of physical guard services in conjunction with cost-effective electronic security solutions for their facilities. Our experience with large, dispersed client portfolios allows us to take a holistic view of a client's security requirements and develop a portfolio-wide solution.

Professional Security System Deployment Services

The Global Security Solutions team has the ability to provide highly specialized services for the deployment of complex integrated security management system projects. These services are built around the custom engineering and development required to develop, deploy, and operate projects involving Physical Security Information Management (PSIM) and Physical Access Identity Management (PAIM) solutions.

In addition to its full-time staff, the Johnson Controls' Security Engineering team coordinates and partners with many other security technical and engineering employees throughout the world at the many company, regional, and branch office locations. These adjunct staff members represent virtually every discipline within the security industry and are recognized experts in their specialized fields.

The Johnson Controls' team also has established relationships with numerous security industry professional associations and organizations and, when needed, draws expertise and adjunct staff members from these groups to support Johnson Controls projects internationally. The collective expertise and experience that the Johnson Controls' Global Security Solutions team can bring to a project, through all of its

		resources, is unsurpassed in the security industry. Programming Services Johnson Controls Programming Services unleash the true potential of the integrated security systems. ISSG Programming Services will accomplish this with our certified professionals who will help the customer define their operational goals, program applications, and make sure the system has the inherent flexibility to accommodate changing needs. For example, our ISSG can support key system programming functions allowing our customer to focus on other vital tasks. ISSG wants to ensure our Integrated Security Systems Solution customers operate their security systems at their true capacity. ISSG Programming Services continuously try to increase our customer's Return On Investment (ROI). Training The Johnson Controls provides expert custom training programs; customized operational programming of the security systems; custom report development; video badge design, development and programming; database screen design; graphical map design and programming, and CCTV Control Interface programming. The security systems our company provides are software intensive products that must be customized for each customer and each application. Because each customer has specific needs, our personnel are available to customize a system design as well as the software that controls the system. Operational Services Johnson Controls wants to maximize our customer's return, while minimizing their risk. Johnson Controls can accomplish this on a complete end-to-end solution that aligns with our customer's daily and long-term security goals. ISSG personnel will work with in-house security personnel developing best practices to maximize system configuration proficiency levels, application integration, and operator ease-of-use. ISSG personnel will ensure that our customers maintain optimum system performance through recurring needs assessments. ISSG also will provide sustained support to ensure proficiency levels are maintained. We can also assist our customers to streamline changes in policies or system functionality. Our recommendations will help optimize our customer's security staff performance and provide continual process improvement initiatives. Warranty and Service Support The Johnson Controls service staff is factory trained to service the broad range of products. Our company owns and operates District offices throughout the United States. Each of these offices employs a service staff that supports their respective local areas. We stress ease of maintenance when we design, solutions for our end users. Our systems include both hardware and software products. We offer a turnkey service solution that includes the inspection, maintenance, support, and repair of systems by factory trained technicians. Johnson Controls is prepared to support warranty and service needs 24 hours a day, seven days a week, 365 days each year. Our technicians will provide the following support ensuring the systems are in proper, safe and efficient operating condition. Our factory-trained technicians will respond to emergency maintenance requirements. Johnson Controls will furnish all labor, travel, materials, supplies, parts, equipment, panels, devices, and warning signs for system warranty maintenance. The Johnson Controls service program includes the following: • Scheduled and preventative maintenance including inspecting, testing, adjusting, repairing and parts replacement, • Troubleshooting and equipment repair services to remedy failures and malfunctions, • Major equipment maintenance and overhaul, • Maintenance reports, daily logs, and record keeping, • Maintenance manual updating, and • Additional work as directed by customers, above and beyond the specified scope of the construction documents.	
77	Within this RFP category there may be subcategories of solutions. List subcategory titles that best describe your products and services.	Alarm and signal systems, Facility Monitoring, Active shooter, Active shooter, Weapon detection, Preventative Maintenance, Training, Inspections, Optimization & Retrofit Services, System Services & Parts; Operational Intelligence & Asset Protection; Integrated Security & Fire, Life-Safety & Hazard Protection, Fire Extinguisher Sales and Service, Motion Controls Systems, Fire Alarm Systems, Installation and Maintenance, Fire Detection Systems, Sprinkler Systems, Suppression Systems, System Design and installation, Fire Risk Assessments, Building Security Automation and Integration, Intrusion Prevention and Detection, Infrared Cameras, Security Cameras, Glass and Window Security Systems, Ballistic Applications and Solutions, CCTV Systems, Recording Systems, Facility and Parking Access Controls, Robotic and Artificial Surveillance, Biometric Scanning and Screening.	*

Table 78: Depth and 8readth of Offered Solutions

Indicate below if the listed types or classes of Solutions are offered within your proposal. Provide additional comments in the text box provided, as necessary.

Line Item	Category or Type	Offered *	Comments	
78	Alarm and signal systems	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	*
79	Building security automation and integration, motion-controlled lighting, occupancy detection	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	*
80	Fire detection, sprinkler and suppression systems	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	*
81	Intrusion and breach prevention and detection	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	*
82	Glass and window security, armor, and ballistic applications	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	*
83	Closed circuit television (CCTV), surveillance, and recording	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	
84	Facility and parking access control	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	
85	Robotic and Artificial Intelligence (AI) surveillance	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	
86	Biometric scanning and screening	(•) Yes ( ) No	Please refer to response to question 76 of Table 7A.	

Exceptions to Terms, Conditions, or Specifications Form

Only those Proposer Exceptions to Terms, Conditions, or Specifications that have been accepted by Sourcewell have been incorporated into the contract text.

Documents

Ensure your submission document(s) conforms to the following:

1. Documents in PDF format are preferred. Documents in Word, Excel, or compatible formats may also be provided.

2. Documents should NOT have a security password, as Sourcewell may not be able to open the file. It is your sole responsibility to ensure that the uploaded document(s) are not either defective, corrupted or blank and that the documents can be opened and viewed by Sourcewell.

3. Sourcewell may reject any response where any document(s) cannot be opened and viewed by Sourcewell.

4. If you need to upload more than one (1) document for a single item, you should combine the documents into one zipped file. If the zipped file contains more than one (1) document, ensure each document is named, in relation to the submission format item responding to. For example, if responding to the Marketing Plan category save the document as "Marketing Plan."

- Pricing - Johnson Controls Pricing.zip - Tuesday December 10, 2024 11:19:40
- Financial Strength and Stability - Johnson Controls 2024 Annual Report.pdf - Tuesday December 10, 2024 11:21:59
- Marketing Plan/Samples - Johnson Controls Marketing Files.zip - Tuesday December 10, 2024 11:23:30
- WMBE/MBE/SBE or Related Certificates (optional)
- Standard Transaction Document Samples - Johnson Controls Standard Transaction Documents.zip - Tuesday December 10, 2024 11:28:00
- Requested Exceptions - Sourcewell - RFP_121024_Facility_Security_Master_Agreement (JCI 12.3.24) Requested Exceptions.docx - Tuesday December 10, 2024 11:30:39
- Upload Additional Document - Johnson Controls Response to Sourcewell RFP 121024.pdf - Tuesday December 10, 2024 11:31:07

Addenda, Terms and Conditions

PROPOSER AFFIDAVIT OF COMPLIANCE

I certify that I am an authorized representative of Proposer and have authority to submit the foregoing Proposal:

1. The Proposer is submitting this Proposal under its full and complete legal name, and the Proposer legally exists in good standing in the jurisdiction of its residence.

2. The Proposer warrants that the information provided in this Proposal is true, correct, and reliable for purposes of evaluation for award.

3. The Proposer certifies that:

(1) The prices in this Proposal have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other Proposer or competitor relating to-

(i) Those prices;

(ii) The intention to submit an offer; or

(iii) The methods or factors used to calculate the prices offered.

(2) The prices in this Proposal have not been and will not be knowingly disclosed by the Proposer, directly or indirectly, to any other Proposer or competitor before award unless otherwise required by law; and

(3) No attempt has been made or will be made by Proposer to induce any other concern to submit or not to submit a Proposal for the purpose of restricting competition.

4. To the best of its knowledge and belief, and except as otherwise disclosed in the Proposal, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest. An organizational conflict of interest is created when a current or prospective supplier is unable to render impartial service to Sourcewell due to the supplier's: a. creation of evaluation criteria during performance of a prior agreement which potentially influences future competitive opportunities to its favor; b. access to nonpublic and material information that may provide for a competitive advantage in a later procurement competition; c. impaired objectivity in providing advice to Sourcewell.

5. Proposer will provide to Sourcewell Participating Entities Solutions in accordance with the terms, conditions, and scope of a resulting master agreement.

6. The Proposer possesses, or will possess all applicable licenses or certifications necessary to deliver Solutions under any resulting master agreement.

7. The Proposer will comply with all applicable provisions of federal, state, and local laws, regulations, rules, and orders.

8. Proposer its employees, agents, and subcontractors are not:

1. Included on the "Specially Designated Nationals and Blocked Persons" list maintained by the Office of Foreign Assets Control of the United States Department of the Treasury found at: https://www.treasury.gov/ofac/downloads/sdnlist.pdf;
2. Included on the government-wide exclusions lists in the United States System for Award Management found at: https://sam.gov/SAM/; or
3. Presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from programs operated by the State of Minnesota; the United States federal government, as applicable; or any Participating Entity. Vendor certifies and warrants that neither it nor its principals have been convicted of a criminal offense related to the subject matter of this solicitation.

☑ By checking this box I acknowledge that I am bound by the terms of the Proposer's Affidavit, have the legal authority to submit this Proposal on behalf of the Proposer, and that this electronic acknowledgment has the same legal effect, validity, and enforceability as if I had hand signed the Proposal. This signature will not be denied such legal effect, validity, or enforceability solely because an electronic signature or electronic record was used in its formation. - Justin Newbern, Service Sale Enablement Leader, Johnson Controls Fire Protection, LP.

The Proposer declares that there is an actual or potential Conflict of Interest relating to the preparation of its submission, and/or the Proposer foresees an actual or potential Conflict of Interest in performing the obligations contemplated in the solicitation proposal.

○ **Yes** ◉ **No**

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Document.

Check the box in the column "**I have reviewed this addendum"** below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
Addendum_12_Facility_Security_RFP_121024 Tue December 3 2024 09:47 AM	☑	1
Addendum_11_Facility_Security_RFP_121024 Tue November 26 2024 12:32 PM	☑	1
Addendum_10_Facility_Security_RFP_121024 Mon November 25 2024 11:16 AM	☑	2
Addendum_9_Facility_Security_RFP_121024 Thu November 21 2024 10:09 AM	☑	1
Addendum_8_Facility_Security_RFP_121024 Wed November 20 2024 12:42 PM	☑	2
Addendum_7_Facility_Security_RFP_121024 Mon November 18 2024 07:14 PM	☑	1
Addendum_6_Facility_Security_RFP_121024 Thu November 14 2024 11:04 AM	☑	1
Addendum_5_Facility_Security_RFP_121024 Fri November 8 2024 12:29 PM	☑	2
Addendum_4_Facility_Security_RFP_121024 Thu November 7 2024 03:06 PM	☑	1
Addendum_3_Facility_Security_RFP_121024 Fri November 1 2024 04:14 PM	☑	1
Addendum_2_Facility_Security_RFP_121024 Fri November 1 2024 10:38 AM	☑	2
Addendum_1_Facility_Security_RFP_121024 Fri October 25 2024 01:54 PM	☑	1

Sourcewell RFP 121024 - The following Pricing Table describes our pricing for the products, installation and for sales that take place under the Johnson Controls, Inc (USA), and Johnson Controls, Canada. This is for the Complex Security Team that resides in the HVAC domain

Product/Service	Discount Type	Discount
Non-Johnson Controls security, fire and equipment products includes subcontracts, non- Johnson Controls, controls, assessments, tools, management & engineering services and surveys	Mark up over cost	Cost + 35%
Miscellaneous parts	Mark up over cost	Cost + 35%
Fire Alarm Systems	Discount from list price	List less 15%
Johnson Controls, Inc. Security products	Discounts from North America List Price (NALP)	NALP less 45%
Johnson Controls Labor associated with installs and retrofits	Discount from Local Branch Published Street Labor Rates	Local Branch Published Street Rate less 10%
Digital Solutions - OpenBlue Subscriptions	Digital Solutions - OpenBlue Subscriptions	5% Discount of JCI List Price
Service Labor including Preventative Service Agreements (PSA)	Discount from Local Branch Published Street Labor Rates	Local Branch Published Street Rate less 5%

Pricing Notes:

1. All labor rates are based upon standard hours.
2. Overtime rates (afterhours, Saturday, Sunday): 1.5 x standard labor rates
3. Overtime rates (Holidays): 2 x standard labor rates
4. Per diem rates: Based upon location and job role to be provided
5. Minimum charge of 4 hours for all overtime work
6. Local branch published street labor rates may be updated annually at the discretion of each local branch
7. Mileage – Standard rates apply, calculated from branch to job site
8. Monitoring requires a separate monitoring agreement

Not to exceed pricing:

The above pricing is submitted as not to exceed pricing and can be adjusted lower but cannot exceed the pricing above for those projects purchased under the agreement. Customer must indicate on the purchase order their intent to use the Sourcewell Agreement.

Memorandum

Date: July 28, 2026
To: Mayor and Board of Commissioners
Through: Janina Lewis, Procurement Services Director
From: Anela Saday, Senior Procurement Analyst
Subject: Reject All Bids for File No. 260136-B-AS, Electrical Upgrades for Advanced Wastewater Treatment Facility **(Tom Kiger Public Services Director, Ray Page Utilities Superintendent, Janina Lewis Procurement Services Director)**

Recommendation

Reject all Bids for Bid No. 260136-B-AS, Electrical Upgrades for Advanced Wastewater Treatment Facility (AWWTF) for the reasons stated in the background and furthermore, approve to rebid the project for the Public Services Department – AWWTF Division.

Background

On May 20, 2026, the subject bid was publicly posted to Bonfire. On June 23, 2026, the bid was extended, and on July 7, 2026, the bid closed. Two (2) bids were received. Procurement Services received a technical question concerning a specification regarding SCADA after the allotted question period in the bid process. Based on the timing of the question received, it could not be answered via an addendum before the bid closing date. Staff met with the City's engineer of record (EOR) to discuss the scope and address the question. After the bidding period closed, the EOR determined additional information regarding the SCADA integration was pertinent to include in the bid. Procurement staff and EOR agreed the best course of action would be to reject all bids received for File No. 260136-B-AS, revise the bid documents to provide additional information for the SCADA programming, and rebid the project to ensure consistent, responsive bids.

Funding

FY 26-27 budgets, account no. 402-4603-536.6300 project #WS2601 – Water-Sewer Combination Services – Improvements other than Buildings. This project will also be partially funded by a grant from Florida Department of Environmental Protection Agency (FDEP).

Strategic Plan Objective

N/A

Public Services Department

Memorandum

Date: July 20, 2026

To: Janina Lewis, Procurement Services Director

Through: Thomas Kiger, Public Services Director

From: Raymond Page, Utilities Superintendent

Subject: Reject All Bids Received for ITB 260136-B-AS and Rebid Electrical Upgrades Project for AWWTF

Recommendation

Approve to reject all bids received for File No. 260136-B-AS and rebid the Electrical Upgrades for the Advanced Wastewater Treatment Facility (AWWTF).

Background

The subject bid was posted publicly on May 20, 2026. It was extended on June 23, 2026, and closed on July 7, 2026. Two (2) bids were received. Procurement received a technical question concerning a specification regarding SCADA after the allotted question period in the bid process. Based on the timing of the request for information, the request could not be answered via an addendum before the bid closing date. Staff met with the City's engineer of record to discuss the scope and address the question. After bid opening, procurement staff with the engineer determined that the best course of action would be to update the bid documents to provide additional information and rebid the project to ensure consistent bids.

Funding

Funds are available in the Wastewater Treatment Facility FY-26-27 budget utilizing account number 402-4603-536-63.00 WS2601. This project will also be partially funded via grant from FDEP.

CITY OF TARPON SPRINGS, FL

Procurement Services Department

324 East Pine Street
P.O. Box 5004
Tarpon Springs, Florida 34688-5004
(727) 942-5615

INVITATION TO BID

ELECTRICAL UPGRADES FOR ADVANCED WASTEWATER TREATMENT FACILITY
GRANT FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL (FDEP) AGENCY

FOR THE CITY OF TARPON SPRINGS

Date: May 20,2026
Bid No.: 260136-B-AS

Sealed bids will be received ***electronically*** by the City of Tarpon Springs, Procurement Services Department, 324 East Pine Street, Tarpon Springs, FL 34689, until:

3:00 p.m., Tuesday, June 23, 2026

at which time bids will be publicly opened and read aloud for:

Project: Electrical Upgrades for Advanced Wastewater Treatment Facility
Bid No.: 260136-B-AS
Bid Bond: 5%
Performance & Payment Bonds: 100%

Bids and all addenda shall be available only through Euna Procurement (Bonfire): (https://ctsfl.bonfirehub.com/portal/?tab=openOpportunities)

Submission and Receipt of Bids

Submitting electronically through the online services of Bonfire, all documents and attachments must be uploaded by the date and time indicated. Respondents who are E-Bidding for the first time are strongly encouraged to contact: https://ctsfl.bonfirehub.com/portal/support

Solicitation responses uploaded to https://ctsfl.bonfirehub.com/portal/?tab=openOpportunities (i.e., ctsfl.bonfirehub.com) after the Solicitation Response Due Date and time shall not be considered. It is the sole responsibility of the Respondent to ensure that its solicitation response is uploaded before such date and time. Tarpon Springs Procurement Services shall not be responsible for delays caused by any power outages or internet failures. No exceptions will be made.

Note: It is strongly recommended to upload your response in adequate time to assure that it will post on the day prior to the closing date.

Explanations to Bidders

All questions or requests for additional information are required to be in writing e-mailed to jlewis@ctsfl.us.

Questions must be submitted, in writing, not later than June 2, 2026

Any verbal responses to questions or changes or additions to the Scope of Services or any part of this Invitation to Bid shall not be binding on the City or its representatives. Only changes or additions made by Addenda issued by the City of Tarpon Springs through Bonfire should be considered for your bid submittal.

Compliance

Failure to comply with the ITB in full may be cause for rejection of bid. Bids must conform to the scope of services and terms and conditions. Bids must be returned on the forms provided. Nonconformance with these instructions is grounds for rejection of bid.

Rejection of Bids

The City reserves the right to accept or reject any and all bids or parts of bids, waive minor informalities, and request rebids on the material or services described in the ITB. The City reserves the right to waive minor informalities.

Ex Parte Communication. In order to ensure fair evaluation of bids, ex parte communication initiated by bidders is prohibited from the time the responses are opened until a final decision has been made. No bidder may initiate communication with any City Commissioner or any City official, staff, or employee who is participating in the evaluation process. Any and all communication initiated by a bidder after the responses are opened must be in writing to:

Janina Lewis, CPPO, NIGP-CPP
Procurement Services Director
City of Tarpon Springs
PO Box 5004
Tarpon Springs, FL 34688-5004
727-937-1766 Fax
jlewis@ctsfl.us.

The City may, however, initiate communication with any bidder in order to obtain additional information or clarification necessary for fair evaluation of their bid. Ex parte communication initiated by a bidder may disqualify that bidder from consideration for this or future Invitations to Bid.

Janina Lewis, CPPO, NIGP-CPP
Procurement Services Director

JL:as
Attachments

TABLE OF CONTENTS

PART A – TECHNICAL SPECIFICATIONS

Under Separate Cover

PART B - CONSTRUCTION GENERAL CONDITIONS

Definitions GC-2
Covenants against Contingent Fees GC-3
Site Investigation GC-3
Bid Documents/Cost GC-4
Equal Opportunity GC-4
Insurance Requirements GC-4
Patents GC-4
Assignments GC-5
Permits GC-5
Sign: City of Tarpon Springs Tax Dollars at Work GC-5
Submission of Formal Bid GC-5
Liquidated Damages GC-5
Five Percent (5%) Retainage GC-5
Contingency Statement GC-6
Plans and Specifications Furnished to Contractors GC-6
Qualifications of Contractors and Subcontractors GC-6
Engineer's Status GC-6
Inspection of Work GC-7
Schedule GC-7
Shop Drawings GC-8
Lines and Grade GC-8
Use of Completed Portions GC-8
Water GC-9
Subcontractors GC-9
Cooperation with Others GC-9
Supervision by Contractor GC-9
Area for Work and Access Thereto GC-10
Storage of Materials GC-10
Material Safety Data Sheets Requirements GC-10
Convict Labor GC-10
Monuments and Landmarks GC-10
Sanitary Facilities GC-10
Use of Explosives GC-11
Protection of Existing Structures, Utilities, Work and Vegetation GC-11
Work on Saturdays, Sundays, and Holidays GC-11
Delays GC-12
Clean Up GC-12
Defective Work or Materials GC-12
Change Orders and Time Extensions GC-13
Operation and Maintenance Instructions GC-14
Guaranty GC-14

Payment to Contractor GC-14
Acceptances and Final Payment GC-15
Testing GC-16
Brick Pavers GC-16
Trash Receptacles GC-16

PART C – INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION

General Information I-1
Completeness of Bid Package I-1
Bidder's Responsibility to the Project I-1
Conflicts in the Documents I-1
Agreement Completion Time I-1
Bid Guarantee I-2
Performance & Payment Bonds I-2
Delivery of Bids I-2
Bid Forms I-2
Signatures on Bids I-3
Basis of Bid Prices I-3
Bid Preparation I-3
Addenda I-3
Bid for Alternates I-4
Period Bid Remains in Effect I-4
Familiarity with Site Conditions I-4
Extent and Locations of Subsurface Conditions I-4
Bid Opening I-4
Correction of Mathematical Errors I-5
Acceptance or Rejection of Bids I-5
Qualifications of Bidders I-5
Disqualification of Bidders I-5
Right to Waive Informalities I-6
Factors Influencing Award I-6
Recommendation of Award I-6
Award of Agreement I-6
Prior Approval of Subcontractors I-6
Subletting of Agreement I-7
Public Records Requirements I-7
Default of Contract I-7
Attorney's Fees I-7
Governing Law and Venue I-8
Conflict of Interest I-8
Order of Precedence I-8
Public Entity Crimes I-8
Hold Harmless I-9
Drug Free Workplace I-9
Vendor Registration I-9
Disputes and Complaints I-9
Public Records I-9
Compliance with Immigration Laws I-10
Prohibition Against Considering Social, Political Or Ideological Interests In Government Contracting I-11

PART D – BID FORMS

Submittal Checklist
Bid Form
Bid Schedule
Bid Bond
Vendor Reference Form
Drug Free Workplace Form
No-Collusion Affidavit
Lobbying Certification
Conflict of Interest Form

PART E–INSURANCE REQUIREMENTS AND PERFORMANCE & PAYMENT BONDS

Insurance Requirements
Required Use of American Iron, Steel, Manufactured Products and Construction Materials
Performance & Payment Bonds

Attachments

2.0 Sealed Contract Documents and Technical Specifications
3.0 Standard Specifications
4.0 Sealed Drawings
5.0 Map
6.0 Summary of Work
7.0 Measurement and Payment

PART A

TECHNICAL SPECIFICATIONS

UNDER SEPARATE COVER

PART B

GENERAL CONDITIONS FOR CONSTRUCTION

1. **Definitions**

"Owner"	The City of Tarpon Springs, Florida.
"Contractor"	The person, firm, or corporation with whom this Contract is executed by the Owner.
"City Manager"	The duly appointed City Manager of the City of Tarpon Springs, Florida.
"Contract Documents"	This Agreement and attached Exhibits, the General Conditions, the Supplementary Conditions (if any),the Special Conditions (if any), the Drawings (the titles of which are attached hereto as Exhibit A), the Specifications (the titles of which are attached hereto as Exhibit B), any Addenda issued prior to execution of this Agreement, the Invitation for Bid (including any Instructions to Bidders, Scope of Work, Bid Summary, Supplements, and Technical Specifications), any interpretations issued pursuant to the Invitation for Bid, the Contractor's Bid, the permits, the notice of intent to award, the Notice to Proceed, the purchase order(s) (if any), any other documents listed in this Agreement, and Modifications [to include written Amendment(s), Change Order(s), Work Directive Change(s) and Field Directive(s)] issued after execution of this Agreement.
"Engineer":	The City Engineer of Tarpon Springs or a duly appointed representative.
"Bidder"	Any person, firm, or corporation submitting a bid for the contemplated work.
"Subcontractor"	Any person, firm, or corporation having a direct contract with the Contractor for the performance of a part of the work at the site.
"Work"	All labor, material, tools, and equipment necessary to produce the construction required by the contract documents.
"Inspector"	An authorized representative of the Engineer assigned to make any and all inspections of the work performed and materials furnished by the Contractor.
"Board of Commissioners"	The governing body of the City of Tarpon Springs, Florida hereinafter referred to as the "Board".

“Plans”	The drawings prepared by the Engineer that show the location, character, dimension, and details of the work to be done.
“Specifications”	The detailed written directions, provisions, and requirements relating to the quantities and qualities of the work to be performed under the contract.
“Addendum”	A modification of the plans, specifications, or other contract documents issued by the Engineer and distributed to the bidders before the opening of bids.
“Change Order”	A written order authorized by the Board to the Contractor directing certain changes, additions, or reductions in the Work.
“Substantial Completion”	The stage in the process of the work or designated portion is sufficiently complete in accordance with the contract documents so that the owner can occupy or utilize the work for its intended use.
“Surety”	The entity engaged by the Contractor to be responsible for the Contractor’s acceptable performance of the Contract and the Contractor’s payment of all debts pertaining thereto.
“Bid Security”	The surety bond or certified check furnished by the bidder with his bid proposal.
“Payment Bond”	A bond, which assures payments, as required by law, to all persons supplying labor or material for the completion of work under the contract.
“Performance Bond”	A bond, executed subsequent to award by the Contractor from loss due to the Contractors inability to complete the contract as agreed; secures the fulfillment of all contract requirements.

2. **Covenants Against Contingent Fees**

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Owner shall have the right to annul this Contract without liability or, in its discretion, to deduct from the Contract price or consideration, or otherwise recover the full amount of such commission, percentage brokerage or contingent fee.

3. **Site Investigation**

The Contractor acknowledges that the Contractor has satisfied itself as to the nature and location of the work; the general and local conditions, including but not restricted to those bearing upon transportation, disposal, handling, and storage of prosecution materials; availability of labor, water, electric power, roads; uncertainties of weather, river stages, tides, or similar physical conditions at the site; the conformation and conditions of the ground; and the character of equipment and facilities needed preliminary to and during the work.

The Contractor further acknowledges that Contractor has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered, insofar as this information is reasonably ascertainable from inspection of the site, including all exploratory work done by the Owner, as well as from information presented by the Contract Documents made a part of this contract.

Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

Owner does not guarantee that any site or soil conditions will be as described and are available only upon waiver of all responsibility of the Owner. It is the Contractor's sole risk and responsibility to verify such information in order that he may complete the project as specified and shown in the contract documents. Under no condition will a variation in the information obtained by the Owner on site or soil conditions, including subsurface soil conditions at the job site, be accepted as a basis in any claim for extra compensation.

Submittal of a bid by the Contractor shall be taken as prima facie evidence of compliance with this section.

The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner. The Owner also assumes no responsibility for any understanding or representations made by its officers or agents during or prior to the execution of this Contract, unless:

1) such understanding or interpretations are made in writing by the Engineer or are expressly stated in the Contract; and
2) the Contract expressly provides that the responsibility therefore is assumed by the Owner.

The Contractor shall assume all risks resulting from any changes in the conditions which may occur during the progress of the work resulting from Acts of God.

4. **Bid Documents/Cost**

Bid Documents with Instructions and Contract Documents may be obtained **only** from Bonfire (https://ctsfl.bonfirehub.com/portal/?tab=openOpportunities).

5. **Equal Opportunity**

Attention of Contractor is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their race, color, religion, sex, or national origin.

6. **Insurance Requirements**

The successful bidder must provide a Certificate of Insurance in accordance with Insurance Requirements, Construction Agreement, prior to issuance of a Purchase Order and Notice To Proceed.

7. **Patents**

The Contractor shall obtain all necessary consents and shall pay all royalties, licenses, and fees for the use of any patented invention, articles, composition, or process in the work done or the materials furnished, or any part thereof embraced in this Contract. The Contractor shall be responsible for any claims made against the Owner, its agents, and employees for any actual or alleged infringement of patents by the use of any patented articles, appliances, etc., in the construction and completion of the work and shall save harmless and indemnify the Owner, its agents, and employees from all costs, expenses, and damages, including attorney's fees which the Owner may be obliged to pay by reason of any actual or alleged infringements of patents used in the construction and completion of work herein specified.

8. **Assignments**

Neither the Contractor nor the Owner shall sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof or of the right, title, or interest of his obligations hereunder, without the written consent of the other party.

9. **Permits**

A construction permit, tree removal permit (if applicable), and a building permit issued by the City of Tarpon Springs to the Contractor will be required prior to start of the Contract. Fees for these permits will be waived if the Contractor obtains these permits prior to construction. Fees will be charged to the Contractor if he neglects to obtain permits prior to construction. Any penalty fees collectable by the City of Tarpon Springs shall NOT be waived. In addition, the Contractor shall be responsible for obtaining all permits/licenses necessary to complete the work.

10. **Sign: City Of Tarpon Springs Tax Dollars At Work**

The successful contractor shall display a project sign at the project site at all times during construction. The City shall provide a sign template document/file to the contractor. The contractor shall furnish and install the sign in accordance with the template provided by the City. The sign size shall be a minimum of 4-feet tall by 8-feet wide and shall be mounted in an approved location on approved

mounting supports (i.e. nearby fencing, 4 x 4 beams, or other mounting options as approved by the City Project Manager).

11. **Submission Of Formal Bid**

A TOTAL BID shall be submitted electronically on Bonfire, including Bid the Proposal Form, all applicable Warranties & Guarantees of Workmanship, Bid Guaranty, Vendor References, (if not currently on file), listing of Manufacturers and Suppliers, and all ADDENDA, if issued.

12. **Liquidated Damages**

The amount of liquidated damages for the project is hereby established as **$310.00** per calendar day.

13. **Five Percent (5%) Retainer**

A five percent (5%) retainer or partial payment will be withheld until the final acceptance of the work and the satisfaction of any liquidated damages.

14. **Contingency Statement**

In the event sufficient funds have not been currently made or are not available for a new fiscal period, the City shall notify the Contractor of such occurrence; and contract shall terminate on the last day of current fiscal period without penalty or expense to the City.

15. **Plans And Specifications Furnished To Contractors**

The successful Contractor shall be entitled to receive from the Engineer four (4) sets of contract plans and specifications at no cost to the contractor. Additional plans and specifications may be purchased from the Engineer at the cost of reproduction.

16. **Qualifications Of Contractors And Subcontractors**

The Contractor shall assure that all superintendents, foremen, crafts, and workers are competent, careful, and reliable. All crafts and workers must have sufficient skill and experience to properly perform the work assigned them. All crafts and workers engaged in any trade shall have had sufficient experience in such work to perform it properly and satisfactorily and to operate the equipment involved and shall make due and proper effort to execute the work in the manner prescribed in the Contract Documents, or the Engineer may take action as follows:

Whenever the Engineer shall determine that any person is incompetent, unfaithful, intemperate, disorderly, or insubordinate; such person shall upon notice be discharged from the work and shall not again be employed on it except with the written consent of the Engineer. Should the Contractor fail to remove such person or persons, the Engineer may withhold all estimates which are or may become due or may suspend the work until the Contractor complies with such orders.

17. **Engineer's Status**

The Engineer cannot direct day-to-day work or Contractor's employees. The day-to-day responsibility of furnishing competent supervision and superintending shall be that of the Contractor in accordance with the article hereof regarding supervision. The Engineer has authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the contract. The Engineer shall also have authority to reject all work and materials which do not conform to the contract and to decide questions and disputes which arise in the execution of the work.

The Engineer in all cases shall have the authority to determine the amount, quality, acceptability, and fitness of the several kinds of works, materials, and equipment which are to be paid for under this contract. Any such determination, however, in no way guarantees the Contractor's workmanship, materials, or equipment used. The Engineer shall also determine all questions or conflicts which may arise in relation to the work and the performance of the contract.

The Engineer does not underwrite, guarantee, or ensure the work done by the Contractor. It is the Contractor's responsibility to perform the work in all details in accordance with the contract documents, and the Engineer shall never be responsible or liable to the Contractor or any other party by reason of the Contractor's failure to do so.

18. **Inspection Of Work**

The purpose of inspection is to ensure compliance with the technical specifications and contract documents. The Engineer and the Engineer's representatives shall at all times have access to the work; and the Contractor shall provide proper facilities for such access and for inspection including scaffolds, lighting, etc. If the specifications, the Engineer's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved; the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by another authority other than the Engineer, of the date fixed for such inspection. Inspection by the Engineer shall be made within a reasonable time after notification and, where practicable, at the source of supply. If any work should be covered up without approval or consent of the Engineer, it shall, if required by the Engineer, be uncovered for examination at the Contractor's expense.

Re-examination of questioned work may be ordered by the Engineer; and, if so ordered, the work shall be uncovered by the Contractor. If such work is found to be in accordance with the Contract documents, the Owner shall pay the cost of re-examination and replacement. If such work is found not to be in accordance with the Contract documents, the Contractor shall pay such cost.

The Engineer may appoint such persons as the Engineer may deem necessary to inspect, at any time, the materials and equipment furnished and the work done under this contract. Said inspections are to be made at the shop or plant or at the site of the work at the discretion of the Engineer.

No inspection or direction, no failure to inspect or direct, no approval of payments, nor the presence or absence of any employees of the Owner or Engineer during the execution of the work shall relieve the Contractor of any of its obligations to fulfill the contract; nor shall prevent the rejection of the said work, materials, and equipment, in whole or in part, at any time, should said work, materials or equipment be found by the Owner or Engineer to be defective or not in accordance with the requirements of the contract documents.

19. **Schedule**

Within ten days after the execution of the Contract, the Contractor shall deliver to the Engineer a schedule of delivery of materials and a construction progress schedule in a form satisfactory to the Engineer and showing the proposed dates of commencement and completion of each of the various subdivisions of work.

In conjunction with the construction schedule, the Contractor shall furnish the Engineer a schedule of anticipated monthly payments that will become due and at the same time furnish the Engineer with a detailed estimate giving a complete breakdown of the value of items of work to be paid for in lump sums for the purpose of making partial payments thereon. The values employed in making up any of these schedules are subject to acceptance by the Engineer and will be used only for determining the basis of partial payment and will not be considered as fixing a basis for additions to or deductions from the contract price.

20. **Shop Drawings**

The Contractor shall provide shop drawings as may be necessary for the prosecution of the Work as required by the Contract documents. The Engineer shall promptly review all Shop Drawings. The Engineer's approval of any Shop Drawing shall not release the Contractor from responsibility for deviations from the Contract documents. The approval of any Shop Drawing which substantially deviates from the requirement of the Contract documents shall be evidenced by a Change Order.

When submitted for the Engineer's review, Shop Drawings shall bear the Contractor's certification that he has reviewed, checked, and approved the Shop Drawings and that they are in conformance with the requirements of the Contract documents.

Portions of the Work requiring a Shop Drawing or sample submission shall not begin until the Shop Drawing or submission has been approved by the Engineer. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

21. **Line And Grade**

The Contractor shall employ a competent surveyor satisfactory to the Owner and the Engineer to lay out the work from the bench marks, grades, dimensions, points, and lines noted on the working drawings, established at the site, or supplied by the Engineer. All work of every description shall be laid out and checked by the Contractor, who will be held solely responsible for its correctness. All expenses in connection with this work shall be paid for by the Contractor. The

maximum allowable interval for construction batter boards on sewers and pipe lines will be twenty-five (25) feet for grades under 1.00 per cent and fifty (50) feet for grades of 1.00 per cent and over. The work may be checked by the Engineer; and, in the event of discrepancy, the Engineer's decision shall be final.

No special compensation will be made to the Contractor to defray costs of any of the work or delays occasioned by making surveys and measurements, tests, or inspections. Such costs shall be considered as having been included in the price stipulated for the several items of the work to be done under this contract.

22. **Use Of Completed Portions**

The Owner shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired. Such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract documents. If such prior use increases the cost of or delays the work, the Contractor shall be entitled to such extra compensation or extension of time or both as the Engineer may determine.

23. **Water**

The cost of all water for construction and testing purposes, as well as the expense of having the water conveyed to and about the work, must be borne by the Contractor. The cost of this work shall be considered as having been included in the unit or lump sum prices stipulated for the several items or work to be done under this contract.

Unless otherwise specifically permitted by the Engineer, all water used for construction purposes shall be obtained from the public water supply main. Contractor shall use temporary or permanent water meters to measure all of the water it uses. Meters shall be provided as outlined in the Tarpon Springs Municipal Code. Water shall be purchased at prevailing City rates.

24. **Subcontractors**

Within ten (10) days after the award of each and every Subcontract, the Contractor shall deliver to the Engineer a statement setting forth the name and address of the Subcontractor and a summary description of the work contracted.

The Contractor shall be as fully responsible to the Owner for the acts and omissions of Subcontractors and of persons either directly or indirectly employed by them as it is for the acts and omissions of persons directly employed by the Contractor.

The Contractor shall not award more than thirty (30) percent of the Contract price to any Subcontractor or group of Subcontractors without the prior written approval of the Engineer.

Nothing contained in this Contract shall create any contractual relationship between any Subcontractor and the Owner.

25. **Cooperation With Others**

The Contractor will cooperate with City crews or others who may be engaged in authorized work prior to final completion of the project.

26. **Supervision By Contractor**

The Contractor will supervise and direct the Work and be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain on the Work a qualified Supervisor or Superintendent, who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Supervisor shall have full authority to act on behalf of the Contractor, and all communications given to the Supervisor shall be as binding as if given to the Contractor.

27. **Area For Work And Access Thereto**

The Owner will furnish and define the limits of adequate land for access to the construction site and for the site proper. All information shown on the plans constitutes the extent of land provided by the Owner. Any and all other lands required by the Contractor shall be procured by the Contractor at the Contractor's expense.

As the work progresses, the Contractor shall keep the site clear of rubbish, trash, waste, and other disposable materials. If the Contractor allows the site to become littered and unsightly, any payments otherwise due may be withheld until the Contractor cleans up the site to the satisfaction of the Owner.

Temporary buildings (storage sheds, shops, offices, etc.) may be erected by the Contractor only with the approval of the Engineer and shall be built with labor and materials furnished by the Contractor without expense to the Owner. Such temporary buildings and utilities shall remain the property of the Contractor and will be removed by Contractor at Contractor's expense upon the completion of the work. With the written consent of the Engineer, such buildings and utilities may be abandoned and need not be removed.

28. **Storage Of Material**

Materials shall be so placed as to permit easy access for proper inspection and identification of each shipment. Any material which has deteriorated, become damaged, or is otherwise unfit for use shall not be used in the work and shall be removed from the site.

29. **Material Safety Data Sheets Requirement**

If any chemicals or materials or products containing toxic substances, as defined by Chapter 442, Florida Statutes, are to be used at any time during this Contract pursuant to completion of this Contract; the Contractor shall furnish Material Safety Data Sheets to the Engineer prior to commencing such use.

30. **Convict Labor**

In connection with the performance of work under this Contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment.

31. **Monuments And Landmarks**

Monuments or landmarks shall not be molested or removed by the Contractor or any of its employees without the written consent of the Engineer. Any monument or landmark so removed will be replaced by the Engineer at the expense of the Contractor.

32. **Sanitary Facilities**

The Contractor shall provide and maintain adequate sanitary conveniences for the use of persons employed on the work. These conveniences shall be maintained at all times without nuisance, and their use shall be strictly enforced.

33. **Use Of Explosives**

No blasting shall be done except upon written approval by the Owner and any other governmental agency or political subdivision having jurisdiction.

34. **Protection Of Existing Structures, Utilities, Work, And Vegetation**

Location of existing structures and utilities shown on the plans are approximate only. Any damage to existing structures or work of any kind or the interruption of a utility service resulting from failure to comply with the requirements of this contract caused by carelessness shall be repaired or restored promptly by or at the expense of the Contractor.

The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site which do not unreasonably interfere with the construction as may be determined by the Engineer. The Contractor will be responsible for all unauthorized cutting or damaging of trees and shrubs, including damage due to careless operation of equipment, stockpiling of materials, or tracking of grass areas by equipment.

Care will be taken by Contractor in felling trees authorized for removal to avoid unnecessary damage to vegetation that is to remain in place. Any limbs or branches of trees broken during such operations shall be trimmed with a clean cut and painted with an approved tree pruning compound if required by the Engineer. The Contractor will be liable for or may be required to replace or restore at its own expense all vegetation not protected and preserved as required herein that may be destroyed damaged.

35. **Work On Saturdays, Sundays, And Holidays**

No work will be permitted on a Saturday, Sunday, or Holiday unless permission to work has been requested in writing by Contractor, and written approval has been granted by the Engineer. Holiday is defined as any Holiday listed in the City of Tarpon Springs Personnel Department Rules and Regulations.

Should the Contractor engage in the prosecution of the work on a Saturday, Sunday, or Holiday, having first been duly authorized to do so in accordance with the provisions stated above, the Contractor shall pay to the Owner as a reimbursement of additional costs incurred by the Owner in providing engineering, inspection, or survey services on such days the sum of THREE HUNDRED AND NO/100 DOLLARS ($300.00) per day per Inspector for each Saturday, Sunday, or Holiday on which the Contractor engages in the prosecution of the work.

Payment to the Owner of such sums as may become payable under the provisions of this Article shall be made by identifying the said sums as a credit item on the Contractor's pay estimate for the period during which the liability for the sums shall have been incurred. The credit item shall show the total number of man-days applicable above, times the corresponding sum.

36. **Delays**

The Owner may grant an extension of time for the completion of the work provided:
(1) the delay of the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor; including, but not restricted to, Acts of God, acts of the public enemy, acts of the Owner or other governmental entity acting in its official or contractual capacity, fires, floods, epidemics, quarantine, restrictions, strikes, trade embargoes, unusually severe weather, or delays of Subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both Contractor and such Subcontractors or suppliers; and
(2) the Contractor within forty-eight (48) hours from the beginning of any such delay notifies the Engineer in writing of the cause of the delay. The Engineer shall ascertain the facts and the extent of the delay and recommend to the Board the extension of time needed for completing the work when, in the Engineer's judgment, the findings of fact justify such an extension. The Engineer's findings shall be final and conclusive.

Extensions of time will not be granted for delays caused by inadequate construction force or for the failure of the Contractor to timely order equipment or materials. No claim shall be made for acceleration caused by delays, notwithstanding the fact that the job may be completed within the contract period.

37. **Clean-Up**

As the work progresses and as the Engineer may direct, the Contractor shall remove from the site and dispose of debris and waste material. Particular attention shall be given to minimizing any fire hazard from combustibles as may be used in connection with the work.

Upon failure of the Contractor to keep the sites of its operations clean to the satisfaction of the Engineer, the Owner may upon twenty-four (24) hours' notice to the Contractor remove any rubbish, materials, earth, etc., which the Engineer may deem necessary. The cost thereof will be charged to the Contractor, and the amount may be deducted from any money that may be due the Contractor.

On or before the date of the final estimate for the work, the Contractor shall tear down and remove all temporary structures that it built; shall remove all construction plant that it used; shall repair and replace all parts of existing embankments, fences, sidewalks, shrubbery, or structures which were removed or injured by the Contractor's operations or by Contractor's employees; shall thoroughly clean out all sewer, drains, pipes, manholes, and miscellaneous structures; and shall remove all rubbish and leave the grounds, thoroughfares, and rights-of-way in a neat condition satisfactory to the Engineer.

38. **Defective Work Or Materials**

If at any time any materials or workmanship should be discovered which do not comply with the plans, specifications, and contract drawings; such defective work and material shall immediately be removed or corrected by the Contractor when notified to do so by the Engineer. Such defects shall be replaced or corrected at the Contractor's expense. Any work or materials condemned by the Engineer as unsuitable or improperly done shall be removed and repaired or otherwise remedied as the Engineer may require.

If the Contractor shall neglect or refuse to remove or replace defective work or materials within seven (7) days from the date of the notice from the Engineer to do so, then the Owner may remove or cause the same to be removed and satisfactorily replaced by contract or otherwise, as Owner may deem expedient. Owner may and is empowered to charge the expense thereof to the Contractor. If moneys due to the Contractor are not sufficient to deduct the expenses that become due under this agreement, then the additional moneys shall be furnished by the Contractor. If the Contractor refuses or neglects to provide the necessary moneys, they shall be provided by his Surety.

39. **Change Orders And Time Extensions**

Without invalidating the contract, the Owner may at any time, by written order and without preliminary notice to the surety, order extra work within the general scope or alter the work by addition or deduction; and the contract price will be adjusted accordingly.

The value of such extra work or change shall be determined by contract unit prices, if applicable unit prices are set forth in the Contract. The amount of the change shall be computed from such prices and added to or deducted from the Contract price.

If applicable unit prices are not in the contract, the value of such extra work or change shall be determined by negotiation. The Owner and Contractor may negotiate a change order to the contract at mutually satisfactory unit prices or lump sum for the extra work, addition, or deletion ordered. If no mutual agreement occurs between the Owner and the Contractor, the change in the Contract Price, if any, shall be derived by determining the reasonable actual costs incurred or savings achieved, resulting from revisions in the work. Such reasonable actual costs or savings shall include a component for direct jobsite overhead and profit but shall not include home-office overhead or other indirect

costs or components. Any such costs or savings shall be documented in the format and with such content and detail as the Owner or the Engineer requires.

Except for emergencies described below, in no case shall any extra work be paid which has not been previously authorized by a change order approved by Owner's Board of Commissioners. Payment by such change order shall represent full and complete compensation to the Contractor for labor, materials, incidental expenses, overhead, profit, impact costs, and time associated with the work authorized by such change order. However, in cases of emergency likely to cause personal injury or property damage, Contractor may rely upon written authorization from the Owner's City Manager or City Engineer.

If Contractor experiences unforeseen conditions which, in Contractor's opinion, require additional work, Contractor shall have fifteen (15) days from date thereof to notify Owner's City Manager in writing of that condition. Furthermore, Contractor shall have thirty (30) days from the date of such notification to the City Manager to submit a change order to Engineer. That request shall detail such conditions and the costs of all labor and materials incidental thereto. Failure to comply with such notification shall be cause to waive Contractor's right to compensation for such delinquent change order. However, in cases of emergency likely to cause personal injury or property damage, Contractor may rely upon written authorization from the Owner's City Manager or City Engineer.

40. **Operation And Maintenance Instructions**

The Contractor shall furnish to the Owner two (2) sets of brochures containing spare parts data and operating and maintenance instructions on all equipment incorporated into the work. Copies of all manufacturers' guarantees and warranties shall also be furnished by the Contractor to the Owner. Final payment will not be made until this material is received by the City.

41. **Guaranty**

The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one year from the date of acceptance of the completed work. The Contractor warrants and guarantees for a period of one (1) year from said date that the completed work is free from all defects due to faulty materials or workmanship, and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. Contractor agrees that in the event Owner shall make such repairs adjustments, or other work; Contractor shall be responsible to Owner for all costs incurred; and no claim shall be made by Contractor that such repairs, adjustments, or other work could have been done at a lesser cost. It is the intent of the parties that the damages which may be collected from Contractor be the actual cost incurred by Owner. The Performance Payment shall remain in full force and effect through the guarantee period. In addition, Contractor warrants and guarantees that the completed work

is free from all latent defects due to either faulty materials or workmanship, which are not discovered within one (1) year from the date of Substantial Completion.

42. **Payment To Contractor**

At least fifteen (15) calendar days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data satisfactory to the Owner as will establish the Owner's title to the material and equipment and protect the Owner's interest therein, including applicable insurance. Within fifteen (15) calendar days after receipt of each partial payment estimate, the Engineer will either approve payment in writing and present the partial payment estimate to the Owner or return the partial payment estimate to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. Within thirty (30) days of presentation to the Owner of an approved partial payment estimate, the Owner will pay the Contractor a progress payment on the basis of the approved partial payment estimate. The Owner shall retain five percent (5%) of the amount of each payment until final completion and acceptance of all work covered by the Contract documents.

The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site, upon receipt of Contractor's proof of ownership.

Prior to Substantial Completion, with the approval of the Engineer and the concurrence of the Contractor, the Owner may use any completed or substantially completed portions of the work. Such use shall not constitute an acceptance of such portions of the work.

The Owner shall have the right to enter the premises for the purpose of doing work or having work done by other contractors not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work or the restoration of any damaged work, except such as may be caused by employees of the Owner.

Upon completion of the work, the Engineer shall attach a certificate to the final payment request certifying that the work has been accepted by the Engineer under the conditions of the Contract Documents. The entire balance found to be due the Contractor, including the retained percentages but except such sums as may be lawfully retained by the Owner, shall be paid to the Contractor within thirty (30) days of completion and acceptance of the work.

43. **Acceptance And Final Payments**

Semi-final Inspection - The Engineer will make a semi-final inspection after notice from the Contractor of presumptive completion of the entire project. At the semi-

final inspection, if all construction provided for and contemplated by the contract is found completed to the Engineer's satisfaction, such inspection shall constitute the final inspection, as prescribed below. If, however, at any semi-final inspection, any work is found unsatisfactory, in whole or in part, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work necessary and prerequisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of material and performance or re-performance of such work, another inspection shall be made.

Final Inspection- Whenever all materials have been furnished, all work has been performed, and the construction contemplated by the contract has been satisfactorily completed, the Engineer will make the final inspection.

Maintenance of Work - The Contractor shall maintain all work in first-class condition until it has been completed as a whole and has been accepted by the Board of Commissioners.

Final Acceptance - When, upon completion of the final construction inspection, the work is found to be completed satisfactorily; the Engineer shall prepare a final estimate. Whenever the work provided for under the Contract has been completely performed by the Contractor, and the final inspection has been made by the Engineer, a final estimate showing the value of the work will be prepared by the Engineer as soon as the necessary measurements and computations can be made. All prior estimates and payments shall be subject to correction in the final estimate and payment. The amount of this estimate, less any sums that may have been deducted or retained under the provisions of the contract, will be paid to the Contractor as soon as practicable after the Contractor has furnished a sworn Affidavit to the effect that all bills are paid and no suits are pending, and after the Contractor has agreed in writing to accept the balance due, as determined by the Owner, as full settlement of the Contractor's account under contract and of all claims in connection therewith.

By completion of its portion of the affidavit and surety release subsequent to the Contractor's completion of the Contractor's portion, the surety on the contract bond consents to final payment to the Contractor and agrees that the making of such payment shall not relieve the surety of any of its obligations under the bond.

Termination of Contractor's Responsibility - The Contract will be considered complete when all work has been completed and has been accepted by the Board of Commissioners. The Contractor will then be released from further obligation except as set forth in the Contractor's bond and elsewhere in this article.

Recovery Rights, Subsequent to Final Payment - The Owner reserves the right, should an error be discovered in the partial or final estimates, or should proof of defective work or materials used by or on the part of the Contractor be discovered after the final payment has been made, to claim and recover from the Contractor or its surety, or both, by process of law, such sums as may be sufficient to correct the error or make good the defects in the work and materials.

44. **Testing**

The Contractor shall retain a certified testing and soils laboratory and Florida Registered Professional Engineer qualified and competent to perform and supervise all tests as outlined elsewhere in the Contract Documents. All testing shall be paid for by the Contractor and the costs associated with testing will be a part of the various items bid which require such testing in this contract. Copies of all test results and explanations when necessary will be furnished directly to the Engineer by the Florida Registered Professional Engineer in charge of the testing. In addition to or in the absence of any specific testing requirements, the Minimum Testing Frequency Requirements as prepared by the Pinellas County Department of Public Works and Utilities (Approved December 20, 1983) shall be adhered to.

45. **Brick Pavers**

The Owner has reserved the right to ownership to any paving brick unearthed on City property, regardless of who has unearthed the bricks.

Upon discovery of any brick the Contractor shall notify the Owner's representative immediately, who shall then make a determination on a case by case basis on whether the bricks will be re-used on that or any other project based upon the brick condition. If the bricks are not to be re-used on the project, they will be disposed of according to City Policy or, at the direction of the Engineer, delivered to the City storage yard.

Under no circumstances shall the Contractor re-use, reject, or make any other arrangements to dispose of the bricks without the consent of the Engineer.

46. **Trash Receptacles**

Contractors are required to supply dumpsters or roll-offs through the solid waste disposal company that is currently under contract with the City of Tarpon Springs. Please check with the City Public Works Sanitation Department (727.943.4837) for details. Construction debris intended to be recycled (i.e. concrete rubble) is not included in this requirement.

PART C

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION SERVICES

1. **General Information**

The construction work called for within this bid package involves work for the City of Tarpon Springs as Owner. This project will be partially funded through a grant from the Florida Department of Environmental Protection (FDEP) Agency. Firms submitting bids on this project ("Bidders") are cautioned to carefully follow the instructions of this section so as to help ensure that their bids are responsive to the requirements as presented herein.

2. **Completeness of Bid Package**

The physical makeup and content of the Bid Documents are designed to be complete for the preparation and submittal of Bids. However, the Bidder shall verify to its own satisfaction that all material issued him including Addenda, is complete. Should the Bidder discover that a page, sheet, or other item is missing, he shall so notify the City and the missing item(s) will be posted on Bonfire. After bids have been submitted, no claims of ignorance of the requirements of bidding or of construction, due to such missing material, including Addenda, will be recognized.

3. **Bidder's Responsibility to the Project**

The **submission of a Bid will constitute an incontrovertible representation** by the Bidder that he has or will comply with all provisions of the Bid Documents, and that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for the performance of the Work, and that the **Bidder has thoroughly reviewed the Plans and Specifications and has included all required labor and material in his bid.**

4. **Conflicts in the Documents**

Should any particular requirement in the Plans and/or Specifications for the Project appear to a Bidder to be in disagreement with other requirements in the Bid Documents, or if a Bidder is unsure of the intent or meaning of any particular requirement of the Bid Documents, the Bidder shall immediately notify the City. If such notifications are received by the City seven (7) days prior to the Bid Opening, the City will, if deemed by the City to be warranted, issue a written clarification or an Addendum through Bonfire.

5. **Agreement Completion Time**

The City of Tarpon Springs will require that work under this Agreement be completed within the time limit stipulated in the Agreement, and Bidders must give consideration to this requirement when submitting Bids. If a Bidder is of the opinion that more time should be allowed for accomplishing the Work, a **request for such extra time may be made in writing to the City's Procurement Services Department**. For consideration, said request must be in possession of the City's Procurement

Services Department **not later than seven (7) days prior** to the date of Bid opening. If the Procurement Services Director deems it to be in the best interest of the City to revise the time requirement, an Addendum will be issued through Bonfire.

6. **Bid Guarantee**

A bid guarantee in the amount of five percent (5%) of the bid amount shall be submitted with each bid. The Bidder may submit a bid guarantee in a form satisfactory to the City, with a surety company qualified to do business in the State of Florida and conditioned upon faithful performance by the principals of the agreements contained in the bid. In lieu of a bid bond, the Bidder may submit an irrevocable letter of credit, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company payable to the City of Tarpon Springs (personal or company checks will not be accepted).

The bid deposit shall be paid into the funds of the City of Tarpon Springs, Florida, as liquidated damages if the Bidder fails to execute the written Agreement and furnish the required Agreement security bond within 10 consecutive calendar days following written notice of the award of the Agreement.

The certified check, treasurer or cashier check of the Unsuccessful Bidders will be returned to the parties submitting same after the execution of an Agreement, or in the event that all the bids are rejected.

7. **Performance & Payment Bonds**

The Successful Bidder and/or equipment supplier shall furnish a Performance Bond and a Payment Bond executed by a surety company duly authorized to do business in the State of Florida, which shall be counter-signed by an agent for the company, resident in the State of Florida. The amount of the bonds shall be equal to one hundred percent (100%) of the estimated Agreement price, as security for the faithful performance of this Agreement and as security for the payment of all persons performing labor and furnishing materials in connection with this Agreement. The surety shall have a rating classification of "A-" and a financial category of Class IV as evaluated in the current Best's Key Rating Guide, Property Liability. In lieu of a Performance and Payment Bond, the Bidder may submit an irrevocable letter of credit, certified check, treasurer's or cashier's check issued by a responsible bank or trust company payable to the City of Tarpon Springs (personal or company checks will not be accepted).

8. **Delivery of Bids**

Each Bid shall be submitted electronically through https://ctsfl.bonfirehub.com/portal/?tab=openOpportunities and clearly identified with the bid number, bid description and bid opening date and time. Bids received after the time and date specified will not be considered.

9. **Bid Forms**

Bids shall be made upon the forms supplied by the Procurement Services Department, City of Tarpon Springs, Florida. Each Bidder must state in their Bid the

price for which they will perform the Work as required by the Plans and Specifications.

10. **Signatures on Bids**

Each Bidder shall sign their Bid with a full name and address at all locations as indicated. In cases where a firm or corporation submits a Bid, the Bid shall be signed with the full name of one member of the firm, or by the name of the officer or officers authorized by its by-laws. The Bid documents may be executed with an electronic signature technology and such electronic signature shall act as the Parties' legal signatures on this bid and shall be treated in all respects as an original handwritten signature.

11. **Basis of Bid Prices**

The Plans and these Specifications, together with any modifications of either or both, which are furnished to prospective Bidders during the advertising period, shall become the basis of the Agreement.

Unless otherwise provided in the Bid Documents, the Successful Bidder shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work including the costs incurred by the Bidder in complying with all the provisions and requirements of these Bid Documents.

Each unit price will be deemed to include an amount considered by the Bidder to be adequate to cover the Bidder's overhead and profit for each separately identified item.

12. **Bid Preparation**

Bids shall be legibly written in ink or typed. All applicable pages of the Bid shall be completed.

All prices for lump sum or unit price work shall be given in numerals. For unit price items, Bidders shall fill in the unit price bid for each item and shall also make an extension based on the estimated quantities. Bid prices shall be entered on the Bid for all items, unless directed otherwise on the Bid.

Failure to complete the bid price of the Bid will render the Bid non-responsive.

13. **Addenda**

If, in the judgment of the Procurement Services Director, an Addendum is required to modify, add to, or delete from the contents of the Plans and/or Specifications, a copy of such will be issued through Bonfire. All Addenda shall become part of the Bid Documents. No other interpretations or clarifications issued prior to the Bid Opening shall have legal effect.

Acknowledgment of receipt of all Addenda shall be noted on the Contractor's Bid Form.

The sole obligation of the Procurement Services Director with respect to distribution of Bidder shall bear the responsibility to satisfy themselves prior to submitting the Bid, and Addenda is to ensure that the Addenda is issued through Bonfire. Each that the Bid is responsive to all Addenda issued. Failure to receive or acknowledge any Addenda shall not release the Bidder from all obligations contained in such Addendum.

14. **Bid for Alternates**

To be responsive, all Bids shall include Bids for all Alternates. Unless otherwise specified, any Bid which does not include the Base Bid plus each and every Alternate may be rejected as being non-responsive.

Alternate Bids provide for additional work (under Additive Alternates) or less work (under Deductive Alternates) than included in the Base Bid. Bidders shall complete and submit costs for every item of each Alternate unless otherwise specified. The City may select any combination or reject any or all Alternate Bids as best serves the interest of the City.

15. **Period Bid Remains in Effect**

Bids for the Work covered by this Agreement may be held by the City for a period of ninety (90) days after Bid Submittal Deadline. The Bids shall continue in full effect and not be subject to withdrawal during that period until an Agreement has been executed with the Successful Bidder. If no Agreement has been executed within the ninety (90) day period, any Bid may be withdrawn or nullified by the Bidder. Bids may be deemed to be confirmed and extended in time for as long as permitted by the Bidder thereof.

16. **Familiarity with Site Conditions**

It shall be the responsibility of the Bidder to examine the site of the proposed work. Before submitting a Bid, Bidders shall inform themselves fully of the conditions relating to the cost of construction materials and labor under which the Work will be prosecuted, and shall make whatever site investigations or site tests they deem necessary. Should this Bid be accepted, Bidder will be responsible for any and all errors in its Bid resulting from its failure to do so.

17. **Extent and Locations of Subsurface Conditions**

The Plans show the existing surface and other underground structures likely to affect the prosecution of the Work insofar as they have been determined, but the information shown is not guaranteed as being correct and/or complete. Bidders are expected to examine the Plans, and the location of the Work upon the ground, and consult various utility companies if deemed necessary, in order to judge for themselves the potential circumstances affecting the cost of the Work or the time required for its completion.

18. **Bid Opening**

Bids received prior to the Submittal Deadline will be securely kept unopened until the specified time, at which time all Bids will be publicly opened and read aloud. The City cannot be held responsible for the premature opening of any Bid not properly marked as required in the Invitation for Bids.

19. **Correction of Mathematical Errors**

Where there is conflict between the unit bid price and the extension thereof made by the Bidder, the Procurement Services Director is authorized to use his discretion in determining whether the unit prices or the extended amounts were intended and to make the corrections in the Bid as necessary and to use such corrections in comparing Bids. Any such determination of the Procurement Services Director is final.

20. **Acceptance or Rejection of the Bids**

The City of Tarpon Springs reserves the right to accept or reject any or all Bids. Any Bid which is incomplete, conditional, obscure, or contains irregularities of any kind, may, at the City's discretion be considered irregular and may be cause for rejection of the Bid. Acceptance of the Bid will not constitute acceptance or approval of equipment and/or materials, and their acceptance for use in the Project will be based upon Shop Drawings and other submittals. Failure to meet these requirements will render the Bid non-responsive.

21. **Qualification of Bidders**

A Bidder may be required, before the award of any Agreement, to show to the complete satisfaction of the City that they have the necessary facilities, equipment, ability, experience, financial resources and special qualifications to perform the Work in a satisfactory manner within the time specified. No Agreement will be awarded except to qualified responsible Bidders capable of performing the class of work contemplated. Bidders shall possess a City, County or State approved certification to perform the Work required by these documents. The Bidder and its Subcontractors may be requested to submit evidence of certification prior to bid award or during the period of the Agreement.

22. **Disqualification of Bidders**

Each Bidder, by submitting its Bid, states that neither it nor its agents, nor any other party for him, has paid or agreed to pay, directly or indirectly, to any person, firm, corporation, or employee of the City any money or valuable consideration for assistance in procuring or attempting to procure the Agreement herein referred to, and further agrees that no such money or reward will be hereafter paid.

A Bid will be rejected if: the Bidder's references do not confirm that the Bidder can perform the Work required; the Bidder does not have adequate resources; or the Bidder does not possess the required experience.

Any or all Bids will be rejected if there is any reason for believing that collusion exists among the Bidders, and participants in such collusion will not be considered in future Bids for the City.

23. **Right to Waive Informalities**

The City reserves the right to waive any and all informalities or irregularities, or to clarify Agreement terms with the lowest responsible Bidder, and to disregard all nonconforming, non-responsive, or conditional Bids, if such a waiver is in the best interest of the City.

24. **Factors Influencing Award**

If an Agreement is awarded, it will be awarded to the lowest responsible and responsive Bidder whose evaluation by the City indicates that the award will be in the best interests of the Project.

In the determination of the lowest responsive and responsible Bidder, the City reserves the right to take into account and give reasonable weight to: (a) the Bidder's past performance in the completion of other City or other governmental Agreements; (b) the probability of the Agreement being carried to successful completion, within the time specified, by the methods and with the equipment the Bidder proposes to use; (c) default under previous Agreements.

25. **Recommendation of Award**

Upon review and consideration of the above factors by the Procurement Services Director, the funding agency, and the Design Professional, a recommendation for Board of Commissioners award will be made by the Procurement Services Director.

26. **Award of Agreement**

Agreements will be awarded to the lowest **responsible, responsive and qualified** Bidder. The criteria to determine the lowest responsible, responsive and qualified Bidder shall include:

a. Price,
b. Compliance with specifications,
c. Financial ability to perform the Agreement,
d. Integrity, trustworthiness and honesty,
e. Skill, judgment and experience,
f. Promptness - whether the Agreement can be performed within the required time, or without delay.
g. Performance of previous satisfactory work, including the fulfillment of warranties,
h. Availability of the necessary facilities and equipment to perform the work,
i. Special factors, such as compliance with laws and ordinances relating to the Agreement.

In awarding any Agreement, the Board of Commissioners may reject any bid determined by the Board of Commissioners not to be the City's best bid.

27. **Prior Approval of Subcontractors**

No part of the Agreement shall be sublet without the approval of the City. If the Successful Bidder should subcontract any part of this Agreement, the Bidder shall be as fully responsible to the City for acts and omissions of its Subcontractor and of the persons either directly or indirectly employed by its Subcontractor, as Bidder is for the acts and omissions of persons directly employed by it.

28. **Assignment of Agreement**

It is a requirement of this Agreement that the Successful Bidder must perform at least 30 percent (30%) of the Work called for under this Agreement with the Bidder's own forces. It is also required that Subcontractors utilized under this Agreement must perform at least 20 percent (20%) of the Work subcontracted to them with their own forces. Prior to final payment for the Work, the Bidder will be required to furnish an affidavit substantiating the above.

The term "own work force" shall be construed to include only workmen employed and paid directly by the Bidder and equipment owned or rented by the Bidder with or without operators. Such term does not include employees or equipment of a Subcontractor, assignee, or agent of the Bidder. An assignment of Agreement work is considered synonymous with a subcontract to perform work.

All Subcontractors shall be responsible for performing in accordance with the Bid and shall be licensed or certified by the City or County to perform the Work assigned.

29. **Public Records Requirements**

All bids submitted to the City are subject to become public records and public disclosure pursuant to Chapter 119, Florida Statutes. Bids may not be returned to the bidder.

30. **Default of Contract**

In case of default by the bidder or contractor, the City may procure the services from other sources and hold the bidder or contractor responsible for any excess costs incurred thereby.

31. **Attorney’s Fee**

In any civil, administrative, bankruptcy, or other proceeding concerning the interpretation, performance or enforcement of this Agreement, each Party shall pay all of their own costs, attorneys’ fees and expenses, including all costs, fees, and expenses incurred in any administrative hearing, trial, appeal, and mediation. Each Party hereby waives any award of attorney fees it might otherwise recover as the prevailing Party in such proceedings.

32. **Governing Law and Venue**

The laws of the State of Florida shall govern the rights, obligations, duties and liabilities of the Parties to this Agreement and shall govern the interpretation of this Agreement. Any and all legal or equitable actions necessary to enforce this Agreement shall be held and maintained solely in the state and federal courts in and for Pinellas County, Florida. Venue shall lie exclusively in Pinellas County.

33. **Conflict of Interest**

Bidders, by acceptance of this order, certify that to the best of their knowledge or belief, no elected or appointed official or employee of the City of Tarpon Springs is financially interested directly or indirectly, in the purchase of services specified in this ITB.

34. **Order of Precedence**

For purposes of this paragraph, the Contract Documents consist of: 1) this Agreement (including the general terms and conditions, special terms and conditions (if any), engineered plans and drawings, and any other attachments and exhibits thereto), 2) the City's Invitation to Bid (including any attachments or addenda thereto), 3) any addenda issued pursuant to the Invitation to Bid, 4) the Contractor's Bid. In the event there is an irreconcilable conflict between any of the Contract Documents, the earlier referenced document shall take precedence over the later-referenced document.

35. **Public Entity Crimes**

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a Agreement to provide any goods or services to a public entity, may not submit a bid on a Agreement with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Bidder, supplier, subcontractor, or consultant under an Agreement with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

36. **Hold Harmless**

Parties recognize that the Contractor is an independent contractor. The Contractor agrees to indemnify, hold harmless, and defend City of, from, and against all liability and expense, including reasonable attorney's fees, in connection with any and all claims whatsoever for personal injuries or property damage caused by the negligent or deliberate act or omission of the Contractors, its agents, officers, subcontractors, employees, sub-contractors, material-men and independent contractors. This includes claims made by the employees of the Contractor against the procuring Agency and Contractor hereby waives its entitlement, if any, to immunity under section 440.11, Florida Statues. This shall not be construed as a waiver of any

immunity City may have under the Doctrine of Sovereign Immunity or of 768.28, Florida Statues

37. **Drug-Free Workplace**

Preference shall be given to businesses with drug-free workplace programs in accordance with Section 287.087, Florida Statutes. Whenever two or more proposals which are equal with respect to price, quality, and service are received by the City for the procurement of commodities or contractual services; a proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie proposals will be followed if none of the tied bidders have a drug-free workplace program.

38. **Vendor Registration**

Prior to award of an agreement resulting from this solicitation, successful bidder shall be registered with the Florida Division of Corporations (www.dos.state.fl.us/startbus/register.html) to do business in the state of Florida and as a vendor with the City of Tarpon Springs.

39. **Disputes and Complaints**

All complaints or grievances shall be in accordance with the City of Tarpon Springs Ordinance No. 2008-15.

40. **Public Records**

The Contractor shall comply with all applicable requirements contained in the Florida Public Records Law, including but not limited to any applicable provisions in Florida Statutes § 119.0701 , and shall include this section in its contracts with qualifying subcontractors performing services under this contract. Pursuant to that statute, the Contractor shall:

(a) Keep and maintain public records required by the Town to perform the services provided hereunder.

(b) Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.

(c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed, except as authorized by law for the duration of the term of this Agreement and following completion of this Agreement if the Contractor does not transfer the records to the City.

(d) Upon completion of the Agreement, transfer, at no cost, to the City all public records in the possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the Agreement, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Agreement, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Town, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

If the Contractor fails to comply with the requirements in this Section, the City may enforce these provisions in accordance with the terms of this Agreement. If the Contractor fails to provide the public records to the City within a reasonable time, it may be subject to penalties under Section 119.10, Florida Statutes.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

CITY CLERK
410 NORTH RING AVENUE
TARPON SPRINGS, FL 34689
727-942-5614
CITYCLERK1@CTSFL.US

41. **Compliance with Labor and Immigration Laws**

The Contractor shall comply with all Applicable Laws concerning the protection and rights of employees, including but not limited to equal employment opportunity laws, minimum wage laws, immigration laws, the Americans with Disabilities Act, and the Fair Labor Standards Act.

Immigration Compliance; E-Verify. Contractor acknowledges that it is responsible for complying with the provisions of the Immigration Reform and Control Act of 1986, U.S.C. § 1324, et seq., and regulations relating thereto. Failure to comply with the above statutory provisions shall be considered a material breach and shall be grounds for immediate termination of this Agreement. The Contractor's employment of unauthorized aliens is a violation of § 274(e) of the Federal Immigration and Employment Act. The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system to

verify the employment eligibility of all new employees hired during the term of this Agreement, and shall require the same verification procedure of any Subcontractors authorized by the City. Pursuant to Florida Statutes § 448.095(2), beginning January 1st, 2021, Contractor shall register with and use the E-Verify system to verify the work authorization status of all newly hired employees. Contractor's contract with the City cannot be renewed unless, at the time of renewal, Contractor certifies in writing to the City that it has registered with and uses the E-Verify system. If Contractor enters into a contract with a subcontractor, the subcontractor must provide the contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien and Contractor shall maintain a copy of such affidavit for the duration of the contract. If Contractor develops a good faith belief that any subcontractor with which it is contracting has knowingly violated Florida Statutes § 448.09(1) (making it unlawful for any person knowingly to employ, hire, recruit, or refer, either for herself or himself or on behalf of another, for private or public employment within the state, an alien who is not duly authorized to work by the immigration laws or the Attorney General of the United States) Contractor shall terminate the contract with the subcontractor. If the City develops a good faith belief that Contractor has knowingly violated Florida Statutes § 448.09(1) (making it unlawful for any person knowingly to employ, hire, recruit, or refer, either for herself or himself or on behalf of another, for private or public employment within the state, an alien who is not duly authorized to work by the immigration laws or the Attorney General of the United States) City shall terminate this contract. Pursuant to Florida Statutes § 448.095(2)(c)(3), termination under the above-circumstances is not a breach of contract and may not be considered as such.

42. **Prohibition Against Considering Social, Political Or Ideological Interests In Government Contracting** -- F.S. 287.05701: Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

43. **Section 287.135 (Current Edition), Florida Statutes**, prohibits agencies from contracting with companies for goods or services of $1,000,000.00 or more that are on either the Scrutinized Companies with Activities in Sudan list, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector lists which are created pursuant to s. 25.473 Florida Statute (Current Edition), or the Scrutinized Companies that Boycott Israel List, created pursuant to s. 215.4725 Florida Statute (Current Edition), or companies that are engaged in a boycott of Israel or companies engaged in business operations in Cuba or Syria.

ANY AND ALL SPECIAL CONDITIONS AND SERVICES ATTACHED

HERETO WHICH VARY FROM THESE GENERAL CONDITIONS SHALL HAVE PRECEDENCE.

PART D

BID FORMS

Submittal Checklist

IMPORTANT
BID DOCUMENTS TO BE RETURNED

The **following forms must be completed and submitted** with your bid:

_____ **Bid Form**
_____ **Bid Schedule**
_____ **Bid Bond**
_____ **Reference Form**
_____ **Drug Free Workplace Form**
_____ **No-Collusion Affidavit**
_____ **Lobbying Certification**
_____ **Conflict of Interest Form**
_____ **Certified Resolution**
_____ **E-Verify Certification**
_____ **Scrutinized Companies Certification**

BID FORM

BID No. 260136-B-AS

Electrical Upgrades for Advanced Wastewater Treatment Facility

BIDDER_____

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with City of Tarpon Springs to perform and furnish all Work as specified and in accordance with the other terms and conditions of the Contract Documents.

The bidder warrants that prices, terms and conditions quoted in their bid will be firm and irrevocable for acceptance for a period of not less than ninety (90) days from the bid opening date unless otherwise specified in the ITB. Such prices will remain firm for the period of performance of resulting purchase orders or contracts which are to be performed over a period of time.

1. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

   a. Bidder has examined and carefully studied the Bidding Documents and the following Addenda (receipt of all which is hereby acknowledged):

Date	Number	Date	Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

   b. Bidder has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;

   c. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

   d. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site.

   e. Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted.

   f. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or

induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

g. **The Contractor agrees to maintain the below bid prices for the entire contract period** and **no escalation of bid prices will be allowed throughout the entire contract period**.

2. Bidder will complete the Work in accordance with the Contract Documents for the unit prices shown on the Bid Schedule (completed by contractor, signed and attached) and for the total base bid shown below:

(1) TOTAL BID, 2 Court Configuration CONTRACT PRICE:

_____

(Words)/($_____) (Numbers)

3. Bidder acknowledges the estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid Items will be based on actual quantities provided, determined as provided in the Contract Documents.

4. Bidder agrees that the Work will be substantially complete within **five hundred fifty (550) calendar days** after the date when the Contract Times commence to run.

5. Bidder acknowledges that included in the various items of the Bid and in the Total Bid Price are costs for complying with Florida Trench Safety Act (90-96, laws of Florida) effective October 1, 1990.

Bidder: _____

Address: _____

City_____State_____Zip_____

Phone No.: _____Fax No :_____Email:_____

_____
Printed Name and Title

_____
Authorized Signature

_____
Date

Bid Bond

STATE OF FLORIDA
COUNTY OF PINELLAS

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
(Name and Address of Company)

(hereinafter called "Principal") and _____(hereinafter called "Surety") are held and firmly bound unto the City of Tarpon Springs, Florida (hereinafter called "City") in the sum of:

_____ Dollars ($_____)

lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents:

WHEREAS, the "Principal": contemplates submitting or has submitted a Bid to the City of Tarpon Springs, Florida, for

Electrical Upgrades for Advanced Wastewater Treatment Facility
Bid No. 260136-B-AS

WHEREAS, it was a condition precedent to the submission of said Bid that a certified check, cashier's check or Bid Bond in the amount of five percent (5%) of the bid be submitted with said Bid as a guarantee that the Bidder would, if awarded the contract, enter into a written contract with the City of Tarpon Springs, Florida, and furnish a Performance & Payment Bond in an amount equal to one hundred percent (100%) of the bid for the performance of said contract, within ten (10) consecutive calendar days after written Notice of Award of the contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that if the bid and the "Principal" herein be accepted and said "Principal" within ten (10) consecutive calendar days after written Notice of Award, enter into a written contract with the City of Tarpon Springs, Florida, and furnish a Performance & Payment Bond in an amount equal to one hundred percent (100%) of the Bid, satisfactory to the City of Tarpon Springs, Florida, then this obligation shall be void; otherwise, the sum herein stated shall be due and payable to the City of Tarpon Springs, Florida, and the "Surety" herein agrees to pay said sum immediately upon demand of said City of Tarpon Springs, Florida, in good and lawful money of the United States of America, as liquidated damages for failure thereof of said "Principal."

IN WITNESS THEREOF, the said

_____
(Name of Company)

as "Principal" herein, has caused these presents to be signed in its name by its _____ under its corporate seal, and the said _____ as "Surety" herein, has caused these presents to be signed in its name by its _____under its corporate seal, the _____ day of _____ , 202__.

NAME OF COMPANY: _____

By: _____
(Signature)

_____
(Please Print or Type Name)

_____
(Title)

SEAL

ATTEST: _____
(Signature)

_____
Surety Name

_____
Attorney-in-Fact

VENDOR REFERENCES

The following information is required in order that your bid may be reviewed and properly evaluated.

Company Name:_____

Length Of Time Company Has Been In Business:_____-_____

Business Address:_____

How Long In Present Location:_____

Telephone Number: _____Fax Number: _____ Email: _____

LOCAL COMMERCIAL AND/OR GOVERNMENTAL REFERENCES WHICH ARE SIMILAR IN SCOPE TO THIS PROJECT:

1.Project/Contract Name:	
Dollar Value:	
Contact Name:	
Email/Phone Number:	
Agency/Company Name:	
Address:	
Date completed/or if in Progress:	
2. Project/Contract Name:	
Dollar Value:	
Contact Name:	
Email/Phone Number:	
Agency/Company Name:	
Address:	
Date completed/or if in Progress:	
3. Project/Contract Name:	
Dollar Value:	
Contact Name:	
Email/Phone Number:	
Agency/Company Name:	

Address:	
Date completed/or if in Progress:	
4. Project/Contract Name:	
Dollar Value:	
Contact Name:	
Email/Phone Number:	
Agency/Company Name:	
Address:	
Date completed/or if in Progress:	
5. Project/Contract Name:	
Dollar Value:	
Contact Name:	
Email/Phone Number:	
Agency/Company Name:	
Address:	
Date completed/or if in Progress:	

DRUG FREE WORKPLACE FORM

PREFERENCES TO BUSINESSES WITH DRUG-FREE WORKPLACE PROGRAMS UNDER SECTION 287.087, FLORIDA STATUTES.

1. This statement is submitted with the attached Bid.
2. Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the City for the procurement of commodities or contractual services, a bid received from a business that certifies that is has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:
    a. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for specifying the actions that will be taken against employees for violations of such prohibition.
    b. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
    c. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (A).
    d. In the statement specified in subsection (A), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, violation of Chapter 893 or of any controlled substance law of the United States or any state for a violation occurring in the workplace no later than five (5) days after such conviction.
    e. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program, if such is available in the employee's community, by any employee who is so convicted.
    f. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

AS THE PERSON AUTHORIZED TO SIGN THE STATEMENT, I CERTIFY THAT THIS FIRM COMPLIES FULLY WITH THE ABOVE REQUIREMENTS.

Printed Name and Title:_____

Authorized Signature:_____

NO-COLLUSION AFFIDAVIT

STATE OF _____

COUNTY OF_____

_____ being first duly sworn deposes and says that:

BIDDER is the

(Owner, Partner, Officer, Representative or Agent)

BIDDER is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

Such Bid is genuine and is not a collusive or sham Bid;

Neither the said BIDDER nor any of its officers, partners, owners, agents, representative, employees or parties in interest, including this affidavit, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communications, or conference with any BIDDER, firm, or person to fix the price or prices in the attached Bid or any other BIDDER, or to fix any overhead, profit, or cost element of the Bid Price or the Bid Price of any other BIDDER, or to secure through any collusion conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Contract;

The price of items quoted in the attached Bid are fair and proper and are not tainted by collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

By _____

Subscribed and sworn to before me this _____ day of _____, 20____.

Personally known _____ OR Produced identification _____ Type of identification produced _____

Notary Public (Signature)
My Commission Expires: _____

LOBBYING CERTIFICATION

“The undersigned hereby certifies, to the best of his or her knowledge and belief, that:

(a) No City appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence either directly or indirectly an officer or employee of the City, City Council, Member of Congress in connection with the awarding of any City Contract.

(b) If any funds other than City appropriated funds have been paid or will be paid to any person for influencing or attempting to influence a member of City Council or an officer or employee of the City in connection with this contract, the undersigned shall complete and submit Standard Form-L “Disclosure Form to Report Lobbying”, in accordance with its instructions.

By: _____
Signature

_____
Witness

_____
(Printed Name)

_____
(Title)

CONFLICT OF INTEREST FORM

F.S. §112.313 places limitations on public officers (including advisory board members) and employees' ability to contract with the City either directly or indirectly. Therefore, please indicate if the following applies:

PART I.

☐ I am an employee, public officer or advisory board member of the City _____**(List Position Or Board)**

☐ I am the spouse or child of an employee, public officer or advisory board member of the City
Name: _____

☐ An employee, public officer or advisory board member of the City, or their spouse or child, is an officer, partner, director, or proprietor of Respondent or has a material interest in Respondent. "Material interest" means direct or indirect ownership of more than 5 percent of the total assets or capital stock of any business entity. For the purposes of [§112.313], indirect ownership does not include ownership by a spouse or minor child.
Name: _____

☐ Respondent employs or contracts with an employee, public officer or advisory board member of the City
Name: _____

☐ None of The Above

PART II:

Are you going to request an advisory board member waiver?
☐ I will request an advisory board member waiver under §112.313(12)

☐ I will NOT request an advisory board member waiver under §112.313(12)

☐ N/A

The City shall review any relationships which may be prohibited under the Florida Ethics Code and will disqualify any vendors whose conflicts are not waived or exempt.

BUSINESS NAME: _____

NAME (PER AUTHORIZED TO BIND THE COMPANY): _____

SIGNATURE: _____ **DATE:** _____

CERTIFIED RESOLUTION

I, _____ (Name), the duly elected Secretary of _____(Corporate Title), a corporation organized and existing under the laws of the State of _____, do hereby certify that the following Resolution was unanimously adopted and passed by a quorum of the Board of Directors of the said corporation at a meeting held in accordance with law and the by-laws of the said corporation.

"IT IS HEREBY RESOLVED THAT _____ (Name)", the duly elected _____ (Title of Officer) of _____(Corporate Title) be and is hereby authorized to execute and submit a Bid and/or Bid Bond, if such bond is required, to the City of Tarpon Springs and **such other instruments in writing as may be necessary on behalf of the said corporation**; and that the Bid, Bid Bond, and other such instruments signed by him/her shall be binding upon the said corporation as its own acts and deeds. The secretary shall certify the names and signatures of those authorized to act by the foregoing resolution.

The City of Tarpon Springs shall be fully protected in relying upon such certification of the secretary and shall be indemnified and saved harmless from any and all claims, demands, expenses, loss or damage resulting from or growing out of honoring, the signature of any person so certified or for refusing to honor any signature not so certified.

I further certify that the above resolution is in force and effect and has not been revised, revoked or rescinded.

I further certify that the following are the name, titles and official signatures of those persons authorized to act by the foregoing resolution.

NAME	TITLE	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____

Given under my hand and the Seal of the said corporation this ____ day of _____ _____, 20__.

(SEAL) By:_____
Secretary

_____
Corporate Title

NOTE:

The above is a suggested form of the type of Corporate Resolution desired. Such form need not be followed explicitly, but the Certified Resolution submitted must clearly show to the satisfaction of the City of Tarpon Springs that the person signing the Bid and Bid Bond for the corporation has been properly empowered by the corporation to do so in its behalf.

PART E

INSURANCE REQUIREMENTS

REQUIRED USE OF AMERICAN IRON, STEEL, MANUFACTURED PRODUCTS, AND CONSTRUCTION MATERIALS

PERFORMANCE & PAYMENT BONDS

MINIMUM INSURANCE REQUIREMENTS

Contractor shall carry the following minimum types and amounts of insurance at its own expense, for the contract period:

A. Prior to the time Contractor is entitled to commence any part of the project, work, or services under this contract, Contractor shall procure, pay for, and maintain at least the following insurance coverages and limits. Said insurance shall be evidenced by delivery to Procurement Services for the City of Tarpon Springs of a Certificate of Insurance executed on a standard ACORD form, listing all coverage and limits, expiration dates and terms of policies, and all endorsements whether or not required by the City. The insurance requirements shall remain in effect throughout the term of this Contract, or any Contract extension.

1) Workers' Compensation limits as required by law; Employers' Liability Insurance of not less than $1,000,000 for each accident.
2) Comprehensive General Liability Insurance including, but not limited to, Independent Contractor, Contractual, Premises/Operations, Products/Completed Operations and Personal Injury covering the liability assumed under indemnification provisions, with limits of liability for personal injury and/or bodily injury, including death, of not less than $1,000,000, each occurrence; and property damage of not less than $100,000, each occurrence. (Combined Single Limits of not less than $2,000,000, each occurrence, will be acceptable unless otherwise stated). Coverage shall be on an occurrence basis, and the policy shall include Broad Form Property Damage coverage, and Fire Legal Liability of not less than $50,000 per occurrence, unless otherwise stated by exception herein.
3) Comprehensive Automobile and Truck liability covering owned, hired, and non-owned vehicles with minimum limits of $1,000,000 each occurrence, and property damage of not less than $100,000 each occurrence. (Combined Single Limits of not less than $500,000, each occurrence, will be acceptable unless otherwise stated). Coverage shall be on an "occurrence basis, such insurance to include coverage for loading and unloading hazards.
4) $500,000 combined single limits, personal injury and/or bodily injury, including death, and property damage liability bodily injury, including death, and property damage liability insurance as an excess of the primary coverage required above.

B. Each Insurance Policy shall include the following conditions by endorsement to the policy:

1) Each policy shall require that thirty (30) days prior to expiration, cancellation, non-renewal, or any material change in coverages or limits, a notice thereof shall be given to the City by certified mail to: City of Tarpon Springs, Procurement Services, P.O. Box 5004, Tarpon Springs, Florida, 34688-5004. Contractor shall also notify City, in a like manner, within twenty-four (24) hours after receipt, of any notices of expiration, cancellation, non-renewal, or material change in coverage received by said Contractor from its insurer; and nothing contained herein shall absolve Contractor of this requirement to provide notice.
2) Companies issuing the insurance policy, or policies, shall have no recourse against City for payment of premiums or assessments for any deductibles which all are at the sole assessments for any deductibles which all are at the sole responsibility and risk of Contractor.
3) The term "CITY" shall include all Authorities, Boards, Commissions, Divisions, Departments, and offices of City and individual members, employees thereof in their official capacities, and/or while acting on behalf of the City.
4) **City of Tarpon Springs shall be endorsed to the required policy or policies as an additional insured or additional named Insured.**
5) The policy clause "Other Insurance" shall not apply to any insurance coverage currently held by City to any such future coverage, or to City's Self-Insured Retentions of whatever nature.

REQUIRED USE OF AMERICAN IRON, STEEL, MANUFACTURED PRODUCTS, AND CONSTRUCTION MATERIALS

Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

(1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

(3) all construction materials44 are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

Contractor shall include Manufacturer’s Certification for BABAA requirements with all applicable submittals. If a specific manufacture is used in the bidding, a statement that Manufacturer will comply with BABAA must be included with the bid submission. Contractor shall comply with BABAA requirements, including coordination with manufacturers, distributors, and suppliers to correct deficiencies in any BABAA documentation.

Engineer/Architect approval of shop drawings or samples shall include review of BABAA documentation.

Contractor shall certify upon completion that all work and materials have complied with BABAA requirements.

For any change orders, Contractor shall provide BABAA documentation for any new products or materials required by the change.

Installation of materials or products that are not compliant with BABAA requirements shall be considered defective work. Contractor should ensure that Engineer/Architect has an approved Manufacturer’s Certification or waiver prior to items being delivered to the project site.

By submitting an application for payment, based in whole or in part on furnishing equipment or materials, Contractor certifies that such equipment and materials, to contractor’s knowledge, are compliant with BABAA requirements.

Waivers

When necessary, recipients may apply for, and the agency may grant, a waiver from these requirements. The agency should notify the recipient for information on the process for requesting a waiver from these requirements.

(a) When the Federal agency has made a determination that one of the following exceptions applies, the awarding official may waive the application of the domestic content procurement preference in any case in which the agency determines that:

(1) applying the domestic content procurement preference would be inconsistent with the public interest;

(2) the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or

(3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent.

A request to waive the application of the domestic content procurement preference must be in writing. The agency will provide instructions on the format, contents, and supporting materials required for any waiver request. Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office.

There may be instances where an award qualifies, in whole or in part, for an existing waiver described at [link to awarding agency web site with information on currently applicable general applicability waivers].

Definitions

"Construction materials" includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives46—that is or consists primarily of:
• non-ferrous metals;
• plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
• glass (including optic glass);
• lumber; or
• drywall.

"Domestic content procurement preference'' means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

"Infrastructure" includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

‘‘Project’’ means the construction, alteration, maintenance, or repair of infrastructure in the United States.

Contractor's Payment and Performance Bond

PERFORMANCE AND PAYMENT BOND
PUBLIC CONSTRUCTION BOND

Bond No._____

By this bond, we _____, as Principal, whose principal address and phone number are _____, and _____, as Surety, whose principal address and phone number are _____, are bound to _____, herein called Owner, whose principal address and phone number are _____, in the sum of $_____, for payment of which we ourselves, our heirs, personal representatives, successors, and assigns jointly and severally.

THE CONDITION OF THIS BOND is that is Principal:

1. Performs the contract ITB# 260136-B-AS – Electrical Upgrades for Advanced Wastewater Treatment Facility dated, _____, 20__, between Principal and Owner, which contract was awarded pursuant to ITB #260136-B-AS, for electrical upgrades for Advanced Wastewater Treatment Facility, the contract being made a part of this bond by reference, at the times and in the manner prescribed in the contract; and

2. Promptly makes payments to all claimants, as defined in Florida Statutes § 255.05(1), supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and

3. Pays Owner all loss, damages, expenses, costs, and attorney's fees, including appellate proceedings that Owner sustains because of a default by Principal under this contact; and

4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

The project to be performed under the contract is for electrical upgrades for the Advanced Wastewater Treatment Facility, located at 201 Pine Street, Tarpon Springs FL, 34689.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Florida Statutes § 255.05(2).

Any changes in or under the contract documents and compliance or non-compliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED ON ____, ____.

(Name of Principal)

(Name of Surety)

By: _____
as Attorney in Fact for Surety

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____ by _____ (name and title of corporate officer) of _____ (name of corporation), a _____ (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

Notary signature _____

Print or stamp name of Notary _____

Notary number:

My Commission Expires:

Pursuant to Florida Statutes § 255.05(1)(b), the Principal/contractor shall provide to the Owner/ public entity a certified copy of the recorded bond, and the Owner/public entity may not make a payment to the contractor until the contractor has complied with this paragraph.

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

WWTF ELECTRICAL MCC PROJECT

Prepared for

CITY OF TARPON SPRINGS

ISSUED FOR BID

April - 2026

Prepared by

McKIM&CREED
1365 Hamlet Ave
Clearwater, Florida 33756
Ph: 727/442-7196
Fax: 727/461-3827

TABLE OF CONTENTS
CITY OF TARPON
WWTF ELECTRICAL MCC PROJECT
ISSUED FOR BID
CITY PROJECT NO: 230139-P-AS

DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS

00001 Certification Pages ..... 00001-1 – 12

DIVISION 1 - GENERAL REQUIREMENTS

01005 General Requirements ..... 01005-1 – 12
01010 Summary of Work ..... 01010-1 – 3
01015 Control of Work ..... 01015-1 - 5
01030 Special Project Procedures ..... 01030-1 – 8
01045 Cutting and Patching ..... 01045-1 – 2
01050 Field Engineering and Surveying ..... 01050-1 – 2
01090 Reference Standards ..... 01090-1 - 3
01150 Measurement and Payment ..... 01150-1 - 9
01152 Requests for Payment ..... 01152-1 – 1
01153 Change Order Procedures ..... 01153-1 – 4
01200 Project Meetings ..... 01200-1 – 2
01310 Construction Schedule & Project Restraints ..... 01310-1 - 5
01340 Shop Drawings, Project Data and Samples ..... 01340-1 – 7
01370 Schedule of Values ..... 01370-1 – 1
01380 Construction Photographs ..... 01380-1 – 2
01410 Testing & Testing Laboratory Services ..... 01410-1 – 2
01510 Temporary & Permanent Utilities ..... 01510-1 – 2
01570 Traffic Regulation ..... 01570-1 – 2
01580 Project Identification & Signs ..... 01580-1 – 3
01600 Material and Equipment ..... 01600-1 – 2
01620 Storage and Protection ..... 01620-1 – 2
01700 Contract Closeout ..... 01700-1 – 3
01710 Cleaning ..... 01710-1 – 2
01720 Project Record Documents ..... 01720-1 - 4
01730 Operating and Maintenance Data ..... 01730-1 – 4
01740 Warranties and Bonds ..... 01740-1 – 2
01900 Permits ..... 01900-1 - 1

DIVISION 2 – SITE WORKS

02050 Demolition ..... 02050-1 - 3
02064 Modifications to Existing Structures, Piping and Equipment ... 02064-1 – 5

DIVISION 3 - CONCRETE

03300 Cast-In-Place Concrete ..... 03300-1 – 6

03350 Concrete Finishes ..... 03350-1 - 3
03600 Grouting ..... 03600-1 - 4

DIVISION 4

04220 Masonry ..... 04220-1 - 6

DIVISION 5 – Section to be provided at 90 Percent Submittal

05500 Metal Fabrication..... 05500-1 - 13
05520 Handrails and Guardrails..... 05520-1 - 4

DIVISION 6 (NOT USED)

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07920 Sealants and Caulking ..... 07920-1 - 4

DIVISION 8 – (NOT USED)

DIVISION 9 – PAINTING

09900 Painting ..... 09900-1 – 26

DIVISION 10 THRU 15 (NOT USED)

DIVISION 16 - ELECTRICAL

16010 Electrical Power Studies ..... 16010-1 - 9
16050 Electrical – General Provisions ..... 16050-1 – 5
16075 Identification for Electrical Systems..... 16075-1 - 12
16080 Electrical Testing..... 16080-1 - 5
16110 Conduits and Fittings ..... 16110-1 – 5
16120 Wires and Cables..... 16120-1 – 4
16134 Expansion Deflection Fittings..... 16134-1 - 3
16135 Pull, Junction and Terminal Boxes ..... 16135-1 – 4
16136 Outlet Boxes..... 16136-1 - 3
16137 Underground Ductbanks for Electrical Systems ..... 16137-1 – 5
16139 Cable Trays for Electrical Systems..... 16139-1 - 3
16141 Low Voltage Receptacles..... 16141-1 - 6
16142 Snap Switches ..... 16142-1 - 3
16143 Disconnect Switches..... 16143-1 - 3
16160 Panelboards..... 16160-1 – 6
16230 Generator Sets..... 16230-1 – 16

16260 Variable Frequency Controllers ..... 16260-1 - 20
16271 Dry-Type Low Voltage Distribution Transformers ..... 16271-1 - 4
16289 Surge Protective Devices ..... 16289-1 – 6
16423 Motor Control Centers ..... 16423-1 -16
16430 Switchboards ..... 16430-1 - 14
16450 Grounding and Bonding for Electrical Systems ..... 16450-1 – 5
16501 Lighting ..... 16501-1 - 9
16505 Hangers and Supports for Electrical Systems ..... 16505-1 - 6

END OF TOC

PROFESSIONAL ENGINEER'S CERTIFICATION FOR AUBREY HAUDRICOURT, PE

PROJECT NAME: WWTF ELECTRICAL MCC PROJECT

The following sections of the Technical Specifications in the Issued for Bid submittal for the above referenced project were prepared under my direction and supervision.

DIVISION 1 - GENERAL REQUIREMENTS

01005 General Requirements
01010 Summary of Work
01015 Control of Work
01030 Special Project Procedures
01045 Cutting and Patching
01050 Field Engineering and Surveying
01090 Reference Standards
01150 Measurement and Payment
01152 Requests for Payment
01153 Change Order Procedures
01200 Project Meetings
01310 Construction Schedule & Project Restraints
01340 Shop Drawings, Project Data and Samples
01370 Schedule of Values
01380 Construction Photographs
01410 Testing & Testing Laboratory Services
01510 Temporary & Permanent Utilities
01570 Traffic Regulation
01580 Project Identification & Signs
01600 Material and Equipment
01620 Storage and Protection
01700 Contract Closeout
01710 Cleaning
01720 Project Record Documents
01730 Operating and Maintenance Data
01740 Warranties and Bonds
01900 Permits

DIVISION 16 - ELECTRICAL

16010 Electrical Power Studies
16050 Electrical – General Provisions
16075 Identification for Electrical Systems
16080 Electrical Testing
16110 Conduits and Fittings
16120 Cables

16134 Expansion Deflection Fittings
16135 Pull, Junction and Terminal Boxes
16136 Outlet Boxes
16137 Underground Ductbanks for Electrical Systems
16139 Cable Trays for Electrical Systems
16141 Low Voltage Receptacles
16142 Snap Switches
16143 Disconnect Switches
16160 Panelboards
16230 Generator Sets
16260 Variable Frequency Controllers
16271 Dry-Type Low Voltage Distribution Transformers
16289 Surge Protective Devices
16423 Motor Control Centers
16430 Switchboards
16450 Grounding and Bonding for Electrical Systems
16501 Lighting
16505 Hangers and Supports for Electrical Systems

Digitally signed by Aubrey Haudricourt
Date: 2026.04.10 13:50:38-04'00'

Aubrey Haudricourt, PE
Florida Professional Engineer No. 66861
McKim & Creed, Inc.
1365 Hamlet Avenue
Clearwater, FL 33756

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY HAUDRICOURT, PE ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS ITEM ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SECTION 00005 – CERTIFICATION PAGES

PROFESSIONAL ENGINEER'S CERTIFICATION FOR ISAAC DOWLESS, PE

PROJECT NAME: WWTF ELECTRICAL MCC PROJECT

The following sections of the Technical Specifications in the Issued for Bid submittal for the above referenced project were prepared under my direction and supervision.

DIVISION 2 – SITE WORKS

02050 Demolition ..... 02050-1 - 3
02064 Modifications to Existing Structures, Piping and Equipment... 02064-1 – 5

DIVISION 3 - CONCRETE

03300 Cast-In-Place Concrete ..... 03300-1 – 6
03350 Concrete Finishes ..... 03350-1 – 3
03600 Grouting ..... 03600-1 - 4

DIVISION 4

04220 Masonry ..... 04220-1 - 6

DIVISION 5 – Section to be provided at 90 Percent Submittal

05500 Metal Fabrication..... 05500-1 – 14
05520 Handrails and Guardrails..... 05520-1 - 4

DIVISION 6 (NOT USED)

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07920 Sealants and Caulking ..... 07920-1 - 4

DIVISION 8 – (NOT USED)

DIVISION 9 – PAINTING

09900 Painting ..... 09900-1 – 26

Digitally signed by Isaac Dowless, PE
Location: Raleigh, NC
Reason: I am approving this document
Date: 2026.04.10 13:30:12-04'00'

Isaac Dowless, PE
Florida Professional Engineer No. 97098
McKim & Creed, Inc.
4300 Edwards Mill Road
Suite 200
Raleigh, NC 27612

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC DOWLESS, PE ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS ITEM ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01005 GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE AND INTENT

A. Description

The work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all work included in this Contract.

B. Work Included

The Contractor shall furnish all labor, superintendence, materials, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies, shop drawings, working drawings and other means of construction necessary or proper for performing and completing the work. He shall obtain and pay for all required permits necessary for the work, other than those permits such as the DEP permit and railroad permit, which may have already been obtained. He shall perform and complete the work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the City, and in strict accordance with the Contract Documents. The Contractor shall clean up the work and maintain it during and after construction, until accepted, and shall do all work and pay all incidental costs. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the work.

The cost of incidental work described in these General Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the work and shall be included in the prices for the various Contract Items. No additional payment will be made.

The Contractor shall be solely responsible for the adequacy of his workmanship, materials and equipment.

C. Public Utility Installations and Structures

Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto.

The Contractor shall protect all installations and structures from damage during the work. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the City. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor, which are shown on the Plans or have been located in the field by the utility, shall be repaired by the Contractor, at his expense, as approved by the City. No separate payment shall be made for such protection or repairs to public utility installations or structures.

Public utility installations or structures owned or controlled by the City or other governmental body, which are required by this contract to be removed, relocated, replaced or rebuilt by the Contractor not identified in any separate bid item shall be considered as a part of the general cost of doing the work and shall be included in the prices bid for the various contract items. No separate payment shall be made.

Where public utility installations or structures owned or controlled by the City or other governmental body are encountered during the course of the work, and are not indicated on the Plans or in the Specifications, and when, in the opinion of the City, removal, relocation, replacement or rebuilding is necessary to complete the work under this Contract, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the City, for the contractor to accomplish. If such work is accomplished by the utility having jurisdiction, it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If such work is accomplished by the Contractor, it will be in accordance with the General and Supplemental General Conditions.

The Contractor shall give written notice to City and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least forty-eight hours in advance of breaking ground in any area or on any unit of the work. This can be accomplished by making the appropriate contact with the "Sunshine State One-Call of Florida, Inc. Call Center ("Call Sunshine") and per all requirements provided for in the Florida Underground Facilities Damage Prevention and Safety Act (Florida Statutes, Title XXXIII, Chapter 556).

The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the City.

1.02 PLANS AND SPECIFICATIONS

A. Plans

When obtaining data and information from the Plans, figures shall be used in preference to scaled dimensions, and large-scale drawings in preference to small-scale drawings.

B. Copies Furnished to Contractor

The Contractor shall furnish each of the subcontractors, manufacturers, and material men such copies of the Contract Documents as may be required for their work. Additional copies of the Plans and Specifications, when requested, may be furnished to the Contractor at cost of reproduction.

C. Supplementary Drawings

When, in the opinion of the City, it becomes necessary to explain more fully the work to be done or to illustrate the work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications

pertaining thereto, will be prepared by the City and five paper prints thereof will be given to the Contractor.

D. Contractor to Check Plans and Data

The Contractor shall verify all dimensions, quantities and details shown on the Plans, Supplementary Drawings, Schedules, Specifications or other data received from the City, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory work, faulty construction or improper operation resulting therefrom nor from rectifying such conditions at his own expense. He will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the City, should such errors or omissions be discovered. All schedules are given for the convenience of the City and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quality of materials and equipment included in work to be done under the Contract.

E. Specifications

The Technical Specifications consist of three parts: General, Products and Execution. The General Section contains General Requirements which govern the work. Products and Execution modify and supplement these by detailed requirements for the work and shall always govern whenever there appears to be a conflict.

F. Intent

All work called for in the Specifications applicable to this Contract, but not shown on the Plans in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

The inclusion of the Related Requirements (or work specified elsewhere) in the General part of the specifications is only for the convenience of the Contractor and shall not be interpreted as a complete list of related Specification Sections.

1.03 MATERIALS AND EQUIPMENT

A. Manufacturer

All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the City, that the manufacturer or subcontractor deal directly with the City. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

Any two or more pieces or material or equipment of the same kind, type or classification, and being used for identical types of services, shall be made by the same manufacturer.

B. Delivery

The Contractor shall deliver materials in ample quantities to insure the most speedy and uninterrupted progress of the work so as to complete the work within the allotted time. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any related Contractor.

C. Tools and Accessories

The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment. Such tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

Spare parts shall be furnished as specified.

Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight and principal rating data.

D. Installation of Equipment.

The Contractor shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character.

Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Plans, unless directed otherwise by the City during installation. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

The Contractor shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as approved by the City and made of ample size and strength for the purpose intended. Substantial templates and working drawings for installation shall be furnished.

The Contractor shall furnish all materials and labor for, and shall properly bed in non-shrink grout, each piece of equipment on its supporting base that rests on masonry foundations.

Grout shall completely fill the space between the equipment base and the foundation. All metal surfaces coming in contact with concrete or grout shall receive a coat of coal tar epoxy equal to Koppers 300M or provide a 1/32-inch neoprene gasket between the metal surface and the concrete or grout.

E. Service of Manufacturer's Engineer

The Contract prices for equipment shall include the cost of furnishing (as required by equipment specifications sections) a competent and experienced engineer or superintendent who shall represent the manufacturer and shall assist the Contractor, when required, to install, adjust, test and place in operation the equipment in conformity with the Contract Documents. After the equipment is placed in permanent operation by the City, such engineer or superintendent shall make all adjustments and tests required by the City to prove that such equipment is in proper and satisfactory operating condition and shall instruct such personnel as may be designated by the City in the proper operation and maintenance of such equipment.

1.04 INSPECTION AND TESTING

A. General

Inspection and testing of materials will be performed by the City unless otherwise specified.

For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Three (3) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the City as a prerequisite for the acceptance of any material or equipment.

If, in the making of any test of any material or equipment, it is ascertained by the City that the material or equipment does not comply with the Contract, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the City.

Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the City formally takes over the operation thereof.

B. Costs

All inspection and testing of materials furnished under this Contract will be performed by the City or duly authorized inspection engineers or inspections bureaus without cost to the Contractor, unless otherwise expressly specified.

The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor and such costs shall be deemed to be included in the Contract price.

Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the City for compliance. The Contractor shall reimburse the City for the expenditures incurred in making such tests on materials and equipment which are rejected for non-compliance.

C. Inspections of Materials

The Contractor shall give notice in writing to the City, at least two weeks in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture of preparation of materials. Upon receipt of such notice, the City will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials or he will notify the Contractor that the inspection will be made at a point other than the point of manufacture, or he will notify the Contractor that inspection will be waived. The Contractor must comply with these provisions before shipping any material. Such inspection shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

D. Certificate of Manufacture

When inspection is waived or when the City so requires, the Contractor shall furnish to him authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

E. Shop Tests of Operating Equipment

Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function or special requirements are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the work until the City notifies the Contractor, in writing, that the results of such tests are acceptable.

The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor.

F. Preliminary Field Tests

As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and shall make preliminary field tests of equipment. If the preliminary field tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to the acceptance tests, make all changes, adjustments and replacements required. The furnishing Contractor shall assist in the preliminary field tests as applicable.

G. Final Field Tests

Upon completion of the work and prior to final payment, all equipment and piping installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, water and all other materials, equipment and instruments necessary for all acceptance tests, at no additional cost to the City. The Supplier shall assist in the final field tests as applicable.

H. Failure of Tests

Any defects in the materials and equipment or their failure to meet the tests, guarantees or requirements of the Contract Documents shall be promptly corrected by the Contractor. The decision of the City as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails to make these corrections or if the improved materials and equipment, when tested, shall again fail to meet the guarantees of specified requirements, the City, notwithstanding its partial payment for work, and materials and equipment, may reject the materials and equipment and may order the Contractor to remove them from the site at his own expense.

In case the City rejects any materials and equipment, then the Contractor shall replace the rejected materials and equipment within a reasonable time. If he fails to do so, the City may, after the expiration of a period of thirty (30) calendar days after giving him notice in writing, proceed to replace such rejected materials and equipment, and the cost thereof shall be deducted from any compensation due or which may become due the Contractor under his Contract.

I. Final Inspection

During such final inspections, the work shall be clean and free from water. In no case will the final pay application be prepared until the Contractor has complied with all requirements set forth and the City has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Document.

1.05 TEMPORARY STRUCTURES

A. Temporary Fences

If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall, at his own expense, if so ordered by the City, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced. The City shall be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

1.06 TEMPORARY SERVICES

A. First Aid

The Contractor shall keep upon the site, at each location where work is in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when people are employed on the work.

1.07 LINES AND GRADES

A. Grade

All work under this Contract shall be constructed in accordance with the lines and grades shown on the Plans, or as given by the City. The full responsibility for keeping alignment and grade shall rest upon the Contractor.

B. Safeguarding Marks

The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or removing without authorization such established points, stakes and marks.

The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

C. Datum Plane

All elevations indicated or specified refer to the Mean Sea Level Datum of the NAVD 1988 and/or NGVD 1929.

1.08 ADJACENT STRUCTURES AND LANDSCAPING

A. Responsibility

The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the work. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Plans, and the removal, relocation and reconstruction of such items called for on the Plans or specified shall be included in the various Contract Items and no separate

payments will be made therefore. Where such public and private property, structures of any kind and appurtenances thereto are not shown on the Plans and when, in the opinion of the City, additional work is deemed necessary to avoid interference with the work, payment therefore will be made as provided for in the General Conditions.

Contractor is expressly advised that the protection of buildings, structures, tunnels, tanks, pipelines, etc. and related work adjacent and in the vicinity of his operations, wherever they may be, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor.

Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the City. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the City.

Prior to the beginning of any excavations, the Contractor shall advise the City of all buildings or structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees

1. All trees and shrubs shall be adequately protected by the Contractor with boxes and otherwise and in accordance with ordinances governing the protection of trees. No excavated materials shall be placed so as to injure such trees or shrubs. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by him with new stock of similar size and age, at the proper season and at the sole expense of the Contractor.
2. Beneath trees or other surface structures, where possible, pipelines may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.
3. The City may order the Contractor, for the convenience of the City, to remove trees along the line or trench excavation. If so ordered, the City will obtain any permits required for removal of trees. Such tree removal ordered shall be paid for under the appropriate Contract Items.

C. Lawn Areas

Lawn areas shall be left in as good condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed, and later replaced, or the area where sod has been removed shall be restored with new sod.

D. Restoration of Fences

Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the City. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific Item is provided therefore, as part of the overhead cost of the work, and no additional payment will be made therefore.

1.09 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights

During the prosecution of the work, the Contractor shall put up and maintain at all times such barriers and lights as will effectually prevent accidents. The Contractor shall provide suitable barricades, red lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the work causes obstructions to the normal traffic or constitutes in any way a hazard to the public, in accordance with state and local requirements.

B. Smoke Prevention

A strict compliance with ordinances regulating the production and emission of smoke will be required. No open fires will be permitted.

C. Noise

The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all engines or other power equipment shall be provided with mufflers. In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

D. Access to Public Services

Neither the materials excavated nor the materials or plant used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

E. Dust prevention

The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas sprinkled with water at all times.

1.10 CUTTING AND PATCHING

A. The Contractor shall do all cutting, fitting or patching of his portion of the work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the City and in accordance with the Plans and Specifications. The

work must be done by competent workmen skilled in the trade required by the restoration.

1.11 CLEANING

A. During Construction

During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the City, such material, debris, or rubbish constitutes a nuisance or is objectionable. The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops.

B. Final Cleaning

At the conclusion of the work, all equipment, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

1.12 MISCELLANEOUS

A. Protection Against Siltation and Bank Erosion

1. The Contractor shall arrange his operations to minimize siltation and bank erosion on construction sites and on existing or proposed water courses and drainage ditches.
2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as directed by the City which results from his construction operations.

B. Protection of Wetland Areas

The Contractor shall properly dispose of all surplus material, including soil, in accordance with Local, State and Federal regulations. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection or Southwest Florida Water Management District.

C. Existing Facilities

The work shall be so conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in the Special Provisions.

D. Use of Chemicals

All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01010 SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS INCLUDE;

A. (Refer to Drawings and specifications) The following major items that are a part of project but are not limited to:

- Demolition
  - Existing Chlorine Building interior
  - Existing Maintenance shed (Confirm with City on whether to move or demolish.
  - Existing generator and day tank (Confirm with City if to move to location of their choice or scrap)
- Site Work
  - Provide for all excavations and level for equipment and platforms
  - All excavation and backfilling
- Utility Service Connection
  - Coordinate with Duke Energy for removal of existing transformer(s) and to providing new service transformer at new location.
  - Contractor to provide all elevated platforms and elevated transformer pad.
- Electrical Building Modifications:
  - Modify the chlorine building to change into electrical room.
  - Remove solar panels from roof.
  - Replace existing roof.
- MCC's:
  - Provide MCC's with "Smart" technology for connection to SCADA. (Smart MCC's have motor monitoring devices on motor controllers with E-Net network connections and data concentrator with all appurtenances.)
- VFD's:
  - All VFDs are to be manufactured by Yaskawa USA Inc. Yaskawa drives to be installed in Smart MCC. Refer to specifications. Coordination between manufacturers by Contractor.
- Generator:
  - Provide new generator with belly tank per drawings and specifications.
  - Provide sound attenuated aluminum walk-in enclosure for generator,
  - Utilize existing 5000-gallon diesel fuel tank and integrate with generator belly tank
  - Provide fuel transfer system
  - Provide all aluminum platforms
- SCADA and Network design.
  - Relocate existing SCADA servers to new electrical building - Provide new Rack for equipment per specificaions.

- Provide new PLC and HMI per specifications for Remote SCADA node.
- Provide a computer desk with a client computer to be installed in new electrical building.

B. The Contractor shall furnish all shop drawings, working drawings, labor, materials, equipment, tools, services and incidentals necessary to complete all work required by these Specifications and as shown on the Contract Drawings.

C. The Contractor shall perform the work complete, in place and ready for continuous service and shall include any repairs, replacements, and/or restoration required as a result of damages caused prior to acceptance by the City.

D. The Contractor shall furnish and install all materials, equipment and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

1.02 CONTRACTS

A. Construct all the Work under a single contract.

1.03 WORK SEQUENCE

A. All work done under this Contract shall be done with a minimum of inconvenience to the users of the system or facility. The Contractor shall coordinate his work with private property owners such that existing utility services are maintained to all users to the maximum extent possible.

B. The Contractor shall, if necessary and feasible, construct the work in stages to accommodate the City's use of the premises during the construction period; coordinate the construction schedule and operations with the City's Representative.

C. The Contractor shall, where feasible, construct the Work in stages to provide for public convenience and not close off public use of any facility until completion of construction to provide alternative usage.

1.04 CONSTRUCTION AREAS

A. The Contractor shall: Limit his use of the construction areas for work and for storage, to allow for:

1. Work by other Contractors.
2. City's Use.
3. Public Use.

B. Coordinate use of work site under direction of City's Representative.

C. Assume full responsibility for the protection and safekeeping of products under this Contract, stored on the site.

D. Move any stored products under the Contractor's control, which interfere with

operations of the City or separate contractor.

E. Obtain and pay for the use of additional storage of work areas needed for Contractor operations.

1.05 CITY OCCUPANCY

A. It is assumed that portions of the Work will be completed prior to completion of the entire Work. Upon completion of construction of each individual facility, including testing, if the City, at its sole discretion, desires to accept the individual facility, the Contractor will be issued a dated certificate of completion and acceptance for each individual facility. The City will assume ownership and begin operation of the individual facility on that date and the three-year guaranty period shall commence on that date. The City has the option of not accepting the entire work as a whole until it is completed, tested and approved by the City.

1.06 PARTIAL CITY OCCUPANCY

A. The Contractor shall schedule his operations for completion of portions of the Work, as designated, for the City's occupancy prior to substantial completion of the entire work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01015 CONTROL OF WORK

PART 1 GENERAL

1.01 WORK PROGRESS

A. The Contractor shall furnish personnel and equipment which will be efficient, appropriate and adequately sized to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract. If at any time such personnel appears to the City to be inefficient, inappropriate, or insufficient for securing the quality of work required for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase the personnel and equipment and the Contractor shall conform to such order. Failure of the City to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.02 PRIVATE LAND

A. The Contractor shall not enter or occupy private land outside of easements, except by permission of the affected property owner.

1.03 WORK LOCATIONS

A. Work shall be located substantially as indicated on the drawings, but the City reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons.

1.04 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the City may require special construction procedures such as limiting the length of open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be barricaded and well lighted at all times when construction is not in progress.

1.05 DISTRIBUTION SYSTEMS AND SERVICES

A. The Contractor shall avoid interruptions to water, telephone, cable TV, sewer, gas, or other related utility services. He shall notify the City and the appropriate agency well in advance of any requirement for dewatering, isolating, or relocating a section

of a utility, so that necessary arrangements may be made.

B. If it appears that utility service will be interrupted for an extended period, the City may order the Contractor to provide temporary service lines at the Contractor's expense. Inconvenience of the users shall be kept to the minimum, consistent with existing conditions. The safety and integrity of the systems are of prime importance in scheduling work.

1.06 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures and utilities, public or private, including poles, signs, services to building utilities, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables and other similar facilities, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operation shall be repaired by the Contractor at his expense.

B. The Contractor shall bear full responsibility for obtaining locations of all underground structures and utilities (including existing water services, drain lines and sewers). Services to buildings shall be maintained and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit prices established in the Bid.

D. If, in the opinion of the City, permanent relocation of a utility owned by the City is required, the City may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work as classified in the General Conditions. If relocation of a privately owned utility is required, the City will notify the utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the City and utility and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies in writing at least 48 hours (excluding Saturdays, Sundays and legal holidays) before excavating near their utilities.

1.07 TEST PITS

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor immediately after the utility location and the surface shall be restored in a manner equal or better than the original condition. No separate payment will be made.

1.08 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the

part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition equal or better to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the City.

B. All sidewalks which are disturbed by the Contractor's operations shall be restored to their original or better condition by the use of similar or comparable materials. All curbing shall be restored in a condition equal to the original construction and in accordance with the best modern practice.

C. Along the location of this work, all fences, walks, bushes, trees, shrubbery and other physical features shall be protected and restored in a thoroughly workmanlike manner unless otherwise shown on the drawings. Fences and other features removed by the Contractor shall be replaced in the location indicated by the City as soon as conditions permit. All grass areas beyond the limits of construction which have been damaged by the Contractor shall be regraded and sodded to equal or exceed original conditions.

D. Trees close to the work which drawings do not specify to be removed, shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are liable to damage because of his operations, but in no case shall any tree be cut or removed without prior notification to the City. All injuries to bark, trunk, limbs and roots of trees shall be repaired by dressing, cutting and painting according to approved methods, using only approved tools and materials.

E. The protection, removal and replacement of existing physical features along the line of work shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Bid.

1.09 MAINTENANCE OF TRAFFIC

A. Open pits, trenches, unpaved streets, debris, or other obstructions due to construction that will prevent the normal flow of traffic during an extended construction stoppage, for any reason, shall be minimized. In the event an extended construction stoppage is found to be necessary, Contractor shall, at his own expense, provide normal traffic flow during extended construction stoppage. Extended stoppage will be defined by the City.

B. All excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he shall repair the road surface, provide temporary roadways, erect wheel guards or fences, or take other safety measures which are satisfactory to the City.

C. Any changes to the traffic pattern require a Traffic Control Plan as detailed in section 01570 of this specification.

1.10 WATER FOR CONSTRUCTION PURPOSES

A. In locations where public water supply is available, the Contractor may purchase water for all construction purposes.

B. The Contractor shall be responsible for paying for all water tap fees incurred for

the purpose of obtaining a potable water service or temporary use meter.

1.11 MAINTENANCE OF FLOW

A. The Contractor shall at his own cost, provide for the flow of sewers, drains and water courses interrupted during the progress of the work and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the City well in advance of the interruption of any flow.

1.12 CLEANUP

A. During the course of the work, the Contractor shall keep the site of his operations in as clean and neat a condition as is possible. He shall dispose of all residue resulting from the construction work and at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and shall leave the entire site of the work in a neat and orderly condition.

1.13 COOPERATION WITHIN THIS CONTRACT

A. All firms or person authorized to perform any work under this Contract shall cooperate with the General Contractor and his subcontractors or trades and shall assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the City.

1.14 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions injured shall be reconstructed by the Contractor at his own expense.

B. All structures shall be protected in a manner approved by the City. Should any of the floors or other parts of the structures become heaved, cracked, or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by the Contractor, at his own expense and to the satisfaction of the City. If, in the final inspection of the work, any defects, faults, or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein, for at least the warranty period described in the Contract.

C. Further, the Contractor shall take all necessary precautions to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted and taken over by the City.

1.15 CONSTRUCTION WITHIN RIGHT-OF-WAY

A. Where pipe lines are installed within FDOT right-of-way, all excavation backfill and compaction for the purpose of reconstructing roadways and/or adjacent slopes contiguous thereto shall be in accordance with FDOT or Manatee City Standards and Specifications, whichever is applicable. Contractor shall satisfy the authorized representative of the FDOT with respect to proper safety procedures, construction methods, required permitting, etc., within the FDOT right-of-way.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01030 SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.01 PERMITS.

A. Upon notice of award, the Contractor shall immediately apply for all applicable permits not previously obtained by the City to do the work from the appropriate governmental agency or agencies. No work shall commence until all applicable permits have been obtained and copies delivered to the City. The costs for obtaining all permits shall be borne by the Contractor.

1.02 CONNECTIONS TO EXISTING SYSTEM

A. The Contractor shall perform all work necessary to locate, excavate and prepare for connections to the existing systems all as shown on the Drawings or where directed by the City. The cost for this work and for the actual connection shall be included in the price bid for the project and shall not result in any additional cost to the City. The termination point for each contract shall be as shown on the Contract Drawings.

1.03 RELOCATIONS

A. The Contractor shall be responsible for the coordination of the relocation of structures, including but not limited to light poles, power poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out on the Drawings. No relocation of the items under this Contract shall be done without approval from the City.

1.04 EXISTING UNDERGROUND PIPING, STRUCTURES AND UTILITIES

A. The attention of the Contractor is drawn to the fact that during excavation, the possibility exists of the Contractor encountering various utility lines not shown on the Drawings. The Contractor shall exercise extreme care before and during excavation to locate and flag these lines as to avoid damage to the existing lines.

B. It is the responsibility of the Contractor to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily stayed in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice.

C. The existing utility locations are shown without express or implied representation, assurance, or guarantee that they are complete or correct or that they represent a true picture of underground piping to be encountered. The Contractor shall be responsible for notifying the various utility companies to locate their respective utilities in advance of construction in conformance with all requirements provided for in the Florida Underground Facilities Damage Prevention and Safety Act (Florida Statutes, Title XXXIII, Chapter 556).

D. The existing piping and utilities that interfere with new construction shall be rerouted as shown, specified, or required. Before any piping and utilities not shown

on the Drawings are disturbed, the Contractor shall notify the City and shall provide suggestions on how best to resolve the issue.

E. The Contractor shall exercise care in any excavation to locate all existing piping and utilities. All utilities which do not interfere with complete work shall be carefully protected against damage. Any existing utilities damaged in any way by the Contractor shall be restored or replaced by the Contractor at his expense as directed by the City.

F. It is intended that wherever existing utilities such as water, sewer, gas, telephone, electrical, or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated in the Drawings. However, when in the opinion of the City this procedure is not feasible, he may direct the use of fittings for a utilities crossing as detailed on the Drawings. No deflections will be allowed in gravity sanitary sewer lines or in existing storm sewer lines.

1.08 MAINTENANCE OF OPERATIONS FOR EXISTING FACILITIES

A. Prior to beginning construction, the Contractor shall submit a Construction Sequencing and Phasing Plan for review and approval. The Plan shall include sufficient detail to indicate key activities, durations of key activities, and sequencing/phasing to illustrate the following (at a minimum):

1. How operations of the existing facilities will be maintained during construction;
2. How existing WWTP sewer service will be maintained including collection, transmission and disposal during demolition and construction;
3. Planned shutdowns of existing treatment facility and durations of shutdowns

Other than mobilization, no work will be allowed on the site until the Construction Sequencing and Phasing Plan is approved by the Owner and the Owner's Representative.

B. Any power outage or any work, which requires interruption of the plant flow, shall be scheduled during those times of the day and/or night when potable water demands are low. In such cases, the Contractor shall submit a written request at least 14-calendar days prior to the scheduled work or outage and obtain the written permission from the Owner. The Contractor shall coordinate with the electric utility, as required, regarding the scheduling of the power outages.

C. The Owner's personnel shall be responsible for the day-to-day operations of the existing Lifts Stations, including meter reading, process monitoring, and establishing control system modifications to ensure compliance standards.

D. The Contractor shall consider the following scheduling criteria and constraints to assist with the development of the construction and phasing schedule.

1. Throughout construction, the use of all existing sinks, drains, and toilets shall remain at a level of service existing prior to construction.

2. Prior to the complete LIFT STATION system startup, all equipment required for the operation of the LIFT STATION system shall be started, tested, and be made ready for operation.
3. Testing for the various LIFT STATION system components cannot be performed until the LIFT STATION startup testing plan is approved by the Owner or the Owner's representative.
4. The LIFT STATION system cannot be placed into operation until all components and processes are started, tested, disinfected, and certified to be placed into operation

E. As part of the construction sequence, the Contractor shall provide temporary pumping facilities, temporary piping and temporary power, which could include generation required to completely bypass the flow for MLS Tidevue, MLS 5 and MLS 1D during the times for the assigned work. These pumping facilities or other means that the Contractor elects for bypass pumping shall be subject to the review and approval of the Owner or Owner's Representative and shall be provided by the Contractor. These pumping facilities shall be part of the Contractor's bid; no additional payment shall be made for temporary pumping or piping needed for Construction.

F. Contractor shall make whatever provisions are necessary to protect existing facilities. Such provisions shall include, but may not be limited to the following.

1. Existing Generator, outdoor manual transfer switch, odor control, exterior above ground piping.

G. All existing electrical underground services and underground piping in the vicinity of the Project shall be located and identified prior to starting any new construction.

H. Other work, including new construction and demolition not mentioned in the above schedule may be performed concurrently with the work as long as the performance of such work will in no way jeopardize the continuity and quality of treatment operations at the existing facility, and as submitted and approved by the Owner and Owner's Representative. Nothing contained herein shall preclude the Contractor from suggesting improved sequences of work. The Contractor shall coordinate his work closely with the ongoing functions of the existing pumping facility, chemical and other deliveries and with the work of all subcontractors.

1.09 OPERATIONS DURING CONSTRUCTION

A. Maintenance of operations of the existing Lift Station is critical. All means, methods and costs to maintain the operations (as specified herein) of said facility shall be included in the Contractor's Base Bid. The following is a general list of some of the construction activities which the Contractor will need to account for in maintaining operations of the facility:

1. Temporary generator and automatic transfer switch.
2. Temporary piping, valves.
3. Temporary flow meter, power wire, signal wire, conduit, etc.
4. New pre-manufactured electrical building.
5. New electrical transformers, drives, MCCs, etc.
6. Connections to existing yard piping.

7. Instrumentation system modifications and integration of new components into the existing facility.
8. Removal and replacement of existing piping and wetwell liner, electrical ductbank, electrical wire and conduit, signal wiring and conduit.

This list does not purport to be all inclusive; the Contractor is responsible for coordinating with plant staff to perform all required construction, while maintaining operations of the existing Lift Stations as Specified herein.

City

C. In addition to the previous requirements, Table 01030-1 provides information for some of the anticipated electrical shutdowns.

TABLE 01030-1
ELECTRICAL SHUT-DOWN INFORMATION

Shut-down No.	Area	Equipment	Constraints	Maximum Duration
1	Installation of feeder to New Electrical Building	Utility Transformer	Temporary loss of power	2hrs
2	Transfer of individual power to equipment	All equipment connected to existing pump station	Loss of individual pieces of equipment	1-4hrs

1.05 SUSPENSION OF WORK DUE TO WEATHER

Refer to FDOT Standards and Specifications Book, Section 8.

1.06 HURRICANE PREPAREDNESS PLAN

A. Within 30 days of the date of Notice to Proceed, the Contractor shall submit to the City a Hurricane Preparedness Plan. The plan should outline the necessary measures which the Contractor proposes to perform at no additional cost to the City in case of a hurricane warning.

B. In the event of inclement weather, or whenever City shall direct, Contractor shall insure that he and his Subcontractors shall carefully protect work and materials against damage or injury from the weather. If, in the opinion of the City, any portion of work or materials is damaged due to the failure on the part of the Contractor or Subcontractors to protect the work, such work and materials shall be removed and replaced at the expense of the Contractor.

1.07 POWER SUPPLY

A. Electricity as may be required for construction and permanent power supply shall be secured and purchased by the Contractor.

1.08 SALVAGE

A. Any existing equipment or material, including, but not limited to, valves, pipes, fittings, couplings, etc., which is removed or replaced as a result of construction under this project may be designated as salvage by the City and if so shall be protected for a reasonable time until picked up by the City. Any equipment or material not worthy of salvaging, as directed by the City, shall be disposed of by the Contractor at no additional cost.

1.09 DEWATERING

A. The Contractor shall do all groundwater pumping necessary to prevent flotation of any part of the work during construction operations with his own equipment.

B. The Contractor shall pump out water and wastewater which may seep or leak into the excavations for the duration of the Contract and with his own equipment. He shall dispose of this water in an appropriate manner.

1.10 ADDITIONAL PROVISIONS

A. Before commencing work on any of the existing pipelines, structures or equipment, the Contractor shall notify the City, in writing, at least 10 calendar days in advance of the date he proposes to commence such work.

B. The Contractor shall provide, at his own expense, all necessary temporary facilities for access to and for protection of, all existing facilities. The City's personnel must have ready access at all times to the existing facilities. The Contractor is responsible for all damage to existing structures, equipment and facilities caused by his construction operations and must repair all such damage when and as ordered by the City.

A. The Contractor shall submit a proposed work sequence plan at the pre-construction meeting showing all critical items of work and anticipated shut down times.

B. Submit a detailed schedule and process description for proposed testing.

1.11 MAINTENANCE OF FLOW PLAN

1. The Contractor shall prepare a Maintenance of Flow Plan that describes in detail the work that will be performed by the Contractor to maintain continuous operation of the City’s existing utility services. Maintenance of Flow Plan shall address the temporary and permanent relocation of gravity sewers and service laterals as shown on the Drawings.
2. Temporary diversion of the gravity sewer flows shall be done using bypass pumps (one duty, one standby) to pump from the upstream manhole to the downstream manhole. Bypass pumps shall have hospital grade sound attenuation. The Contractor shall obtain peak wet weather flow in the gravity sewer from the City and shall demonstrate in the Maintenance of Flow Plan that adequate pumping capacity is provided to accommodate peak wet weather flow. The Contractor and City personnel that are

experienced in the collection system shall determine the float levels in the field; pump on, standby or lag pump on, and high-level alarm. The high-level alarm shall be connected to an auto dialer to notify the Contractor of an alarm condition. The bypass pump suction manhole shall use the collection system for a temporary wet well storage; however, surcharging in the existing sewer system shall be limited. Once the high-level float alarm is triggered, it shall allow enough time for emergency Contractor personnel to arrive on scene and resolve the problem prior to any sanitary sewer overflows. The bypass suction and discharge pipes may require the removal of the manhole tops which will result in excess odor escaping from the manholes. The contractor shall provide a means to seal odors within the bypass manholes to minimize odors during the temporary diversion

3. The Maintenance of Flow Plan shall include a sequence of construction with projected time, in days for each step in the sequence.
4. If the work required to maintain utility operation must occur during evening, night or weekend hours, the Contractor shall notify residents in advance of the projected work. The Contractor shall reimburse the City for overtime work, including inspector overtime, in excess of regular working hours.
5. Identify the person(s) responsible for executing the Maintenance of Flow Plan and the systems to be put in place for monitoring the existing utility system's ability to maintain flow.

1.12 CONSTRUCTION CONDITIONS

The Contractor shall strictly adhere to the specific requirements of the governmental unit(s) and/or agency(ies) having jurisdiction over the work. Wherever there is a difference in the requirements of a jurisdictional body and these Specifications, the more stringent shall apply.

1.13 PUBLIC NUISANCE

A. The Contractor shall not create a public nuisance including but not limited to encroachment on adjacent lands, flooding of adjacent lands, excessive noise or dust.

B. Sound levels must meet City of Tarpon Springs and Pinellas County ordinances. Sound levels in excess of such ordinance are sufficient cause to have the work halted until equipment can be quieted to these levels. Work stoppage by the City for excessive noise shall not relieve the Contractor of the other portions of this specification.

C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.14 WARRANTIES

A. All material supplied under these Specifications shall be warranted by the Contractor and the manufacturers for a period of three (3) years. Warranty period shall commence on the date of City acceptance.

B. The material shall be warranted to be free from defects in workmanship, design and materials. If any part of the system should fail during the warranty period, it shall be replaced at no expense to the City. All material and installation costs shall be 100% borne by the Contractor.

C. The manufacturer's warranty period shall run concurrently with the Contractor's warranty or guarantee period. No exception to this provision shall be allowed. The Contractor shall be responsible for obtaining warranties from each of the respective suppliers or manufacturers for all the material specified under these contract specifications,

D. In the event that the manufacturer is unwilling to provide a three-year warranty commencing at the time of City acceptance, the Contractor shall obtain from the manufacturer a four (4) year warranty starting at the time of equipment delivery to the job site. This four-year warranty shall not relieve the Contractor of the three-year warranty starting at the time of City acceptance of the equipment.

1.15 FUEL STORAGE & FILLING

A. If the contractor is storing fuel on site or doing his own fuel filling of portable equipment (other than hand-held equipment), he is responsible for any required response, clean-up or reporting required, at no additional cost to the City.

B. The Contractor shall prepare and submit a fuel storage / spill abatement plan prior to start of construction if required.

1.16 CONTRACTOR'S RESPONSIBILITY FOR AUTOCAD RECORD DRAWINGS

A. Along with the expressed requirements in Section 01720 – Project Record Documents, the Contractor (or other professional hired by the Contractor) shall be entirely responsible and shall be required to perform all work associated with providing complete, updated electronic AutoCAD Drawings that incorporate all modifications from Construction activities associated with this Contract. These modifications include Civil, Mechanical, Electrical, HVAC, Instrumentation, Structural, Details, etc. Contractor shall adhere to the layering used in AutoCAD files provided to the Contractor by the Engineer of Record.

B. AutoCAD Drawings shall be submitted to the Engineer along with documentation specified in Section 01720 – Project Record Documents, for review by the Engineer of Record and Owner.

C. Engineer will review and provide comments to the Contractor. The Contractor shall then address all comments and update AutoCAD Drawings to the satisfaction of the Owner and Engineer prior to issuance of Certificate of Substantial Completion. The Contractor shall note that the layering, line weights, etc. used by the Engineer of Record in preparation of the Contractor Drawings shall be used to develop the Contractor provided and updated, AutoCAD Record Drawings.

D. In addition to the requirements set forth in Section 01720 – Project Record Documents, the Contractor shall provide seven (7) final, complete and approved AutoCAD Drawings, in CD-R format, to the Engineer of Record.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01045 CUTTING AND PATCHING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall be responsible for all cutting, fitting and patching, including excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.
2. Uncover portions of the work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirements of Contract Documents.
5. Provide penetrations of non-structural surfaces for installation of piping and electrical conduit.

PART 2 PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of work.

C. Report unsatisfactory or questionable conditions to City. Do not proceed with work until City has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value to integrity of affected portion of work.

B. Provide devices and methods to protect other portions of project from damage.

C. Provide protection from elements for that portion of the project which may be exposed by cutting and patching work and maintain excavations free from water.

3.03 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Fit and adjust products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

D. Restore work which has been cut or removed; install new products to provide completed work in accordance with the requirements of the Contract Documents.

E. Replace surfaces airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

F. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

END OF SECTION

SECTION 01050 FIELD ENGINEERING AND SURVEYING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall provide and pay for field surveying service required for the project.

B. The Contractor shall furnish and set all necessary stakes to establish the lines and grades as shown on the Contract Drawings and layout each portion of the Work of the Contract.

1.02 QUALIFICATION OF SURVEYOR AND ENGINEER

A. All construction staking shall be conducted by or under the supervision of a Florida Registered Professional Surveyor and Mapper. The Contractor shall be responsible for the layout of all such lines and grades, which will be subject to verification by the City.

1.03 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are designated on the Contract Drawings.

B. Locate and protect all survey monumentation, property corners and project control points prior to starting work and preserve all permanent reference points during construction. All costs associated with the replacement of all survey monumentation, property corners and project control points shall be borne by the Contractor.

C. Make no changes or relocations without prior written notice to City.

D. Report to City when any reference point is lost, destroyed or requires relocation because of necessary changes in grades or locations.

E. Require surveyor to replace project control points which may be lost or destroyed.

F. Establish replacements based on original survey control.

1.04 PROJECT SURVEY REQUIREMENTS

A. The Contractor shall establish temporary bench marks as needed, referenced to data established by survey control points.

1.05 RECORDS

A. The Contractor shall employ a Professional Engineer or Surveyor registered in the State of Florida to verify survey data and properly prepare record drawings per Section 01720.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01090 REFERENCE STANDARDS

PART 1 GENERAL

1.01 REQUIREMENTS

Abbreviations and acronyms used in Contract Documents to identify reference standards.

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes established stricter standards.

B. Publication Date: The most recent publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.03 ABBREVIATIONS, NAMES AND ADDRESSES OR ORGANIZATIONS

Obtain copies of reference standards direct from publication source, when needed for proper performance of work, or when required for submittal by Contract Documents.

AA Aluminum Association
818 Connecticut Avenue, N.W.
Washington, DC 20006

AASHTO American Association of State Highway and Transportation Officials
444 North Capital Street, N.W.
Washington, DC 20001

ACI American Concrete Institute
Box 19150
Reford Station
Detroit, MI 48219

AI Asphalt Institute
Asphalt Institute Building
College Park, MD 20740

AISC American Institute of Steel Construction
1221 Avenue of the Americas
New York, NY 10020

AISI American Iron and Steel Institute
1000 16th Street NW
Washington, DC 20036

ANSI American National Standards Institute
1430 Broadway

New York, NY 10018

ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
179l Tullie Circle, N.E.
Atlanta, GA 30329

ASME American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017

ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

AWS American Welding Society
2501 N.W. 7th Street
Miami, FL 33125

CRSI Concrete Reinforcing Steel Institute
180 North LaSalle Street, Suite 2110
Chicago, IL 60601

FDEP Florida Department of Environmental Protection
3900 Commonwealth Blvd.
Tallahassee, Florida 32399

FDOT Florida Department of Transportation Standards Specifications for Road and Bridge Construction
Maps & Publication Sales - Mail Station 12
605 Suwannee St.
Tallahassee, FL 32399-0450

FS Federal Specification
General Services Administration Specifications and Consumer Information Distribution Section (WFSIS)
Washington Navy Yard, Bldg. 197
Washington, DC 20407

MLSFA Metal Lath/Steel Framing Association
221 North LaSalle Street
Chicago, IL 60601

MMA Monorail Manufacturer's Association
1326 Freeport Road
Pittsburgh, PA 15238

NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NEMA	National Electrical Manufacturer's Assoc. 2101 L Street N.W. Washington, DC 20037
OHSA	Occupational Safety and Health Assoc. 5807 Breckenridge Pkwy., Suite A Tampa, FL 33610-4249
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 20076
PCI	Prestressed Concrete Institute 20 North Wacker Drive Chicago, IL 60606
SDI	Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association 8224 Old Court House Road Vienna, VA 22180
SSPC	Steel Structures Painting Council 402 24th Street, Suite 600 Pittsburgh, PA 15213
SWFWMD	Southwest Florida Water Management District 2379 Broad Street Brooksville, FL 34604-6899
UL	Underwriter's Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01150 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

A. The scope of this section of the Contract Documents is to further define the items included in each Bid Item in the Bid Form section of the Contract Documents. Payment will be made based on the specified items included in the description in this section for each bid item.

B. All contract prices included in the Bid Form section will be full compensation for all shop drawings, working drawings, labor, materials, tools, equipment, and incidentals necessary to complete the construction as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Actual quantities of each item bid on a unit price basis will be determined upon completion of the construction in the manner set up for each item in this section of the Specifications. Payment for all items listed in the Bid Form will constitute full compensation for all work shown and/or specified to be performed under this Contract.

1.02 ESTIMATED QUANTITIES

A. The quantities shown are approximate and are given only as a basis of calculation upon which the award of the Contract is to be made. The City does not assume any responsibility for the final quantities, nor shall the Contractor claim misunderstanding because of such estimate of quantities. Final payment will be made only for satisfactorily completed quantity of each item.

1.03 WORK OUTSIDE AUTHORIZED LIMITS

A. No payment will be made for work constructed outside the authorized limits of work.

1.04 MEASUREMENT STANDARDS

A. Unless otherwise specified for the items involved, all measurements of distance shall be taken horizontally or vertically.

1.05 AREA MEASUREMENTS

A. In the measurement of items to be paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the final dimensions measured along the surface of the completed work within the neat lines shown or designated.

1.06 LUMP SUM ITEMS

A. Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum items. Lump sum contracts shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum

totals.

1.07 UNIT PRICE ITEM

A. Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed but required for satisfactory completion of the work shall be considered to be included in the scope of the appropriate listed work items.

No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work. Final payments shall not be requested by the Contractor or made by the City until as-built (record) drawings have been submitted and approved by the City.

1. Project signs and photographs.
2. Removal, repair, replacement or relocation of all signs, walls, private irrigation systems and related items.
3. Rubbish and spoil removal.
4. Shop Drawings, Working Drawings.
5. Clearing, grubbing, and grading except as hereinafter specified.
6. Trench excavation, including necessary pavement removal and rock removal, except as otherwise specified.
7. Dewatering and disposal of surplus water.
8. Structural fill, backfill, and grading.
9. Replacement of unpaved roadways, and shrubbery plots.
10. Cleanup & miscellaneous work.
11. Foundation and borrow materials, except as hereinafter specified.
12. Testing and placing system in operation.
13. Any material and equipment required to be installed and utilized for the tests.
14. Pipe, structures, pavement replacement, asphalt, and shell driveways and/or appurtenances included within the limits of lump sum work, unless otherwise shown.
15. Maintaining the existing quality of service during construction.
16. Appurtenant work as required for a complete and operable system.
17. Seeding and hydro mulching.

(THE BID ITEM SECTION IS TO BE COMPLETED FOR EACH ITEM TO BE BID. EXAMPLES AS FOLLOWS)

BID ITEM NO. 1 – MOBILIZATION AND DEBMOBILIZATOIN

Measurement and payment for this Bid Item shall include full compensation for the required 100 percent (100%) Performance Bond, 100 Percent (100%) Payment Bond, all required insurance for the project and the Contractor's mobilization and demobilization costs as shown in the Bid Form. Mobilization includes, but it not limited to preparation and movement of personnel, equipment, supplies and incidentals such as safety and sanitary supplies/ facilities

Payment for mobilization shall not exceed 10 percent (10%) of the total Contract cost unless the Contractor can prove to the City that his actual mobilization cost exceeds 10 percent (10%).

Partial payments for this Bid Item will be made in accordance with the following schedule:

Percent of Original Contract Amount:	Percent Allowable Payment of Mobilization/Demobilization Bid Item Price:
5	25
10	35
25	45
50	50
75	75
100	100

These payments will be subject to the standard retainage provided in the Contract. Payment of the retainage will be made after completion of the work and demobilization.

BID ITEM NO. 2 – SITE WORK

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all labor, materials, and equipment necessary to excavation, grading and fill soils to return site to existing grade elevations or modify for new elevations. Refer to drawings and specification.

2-1 **Erosion and Sediment Control** shall include all labor, materials and equipment including other ancillary items necessary for installation and maintenance of the erosion and sedimentation controls as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Erosion and Sediment Control shall be Lump Sum.

2-2 **Site Demolition** shall include all labor, materials and equipment including other ancillary items necessary for the removal and disposal of equipment, concrete, bollards, asphalt, excavation, as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Site Demolition shall be Lump Sum.

2-3 SITE IMPROVEMENTS

2-3-A **Bollards** shall include all labor, materials and equipment including other ancillary items necessary for the for the installation of bollards as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for Bollards shall be per Each.

2-3-B **Asphalt Restoration** shall include all labor, materials and equipment including other ancillary items necessary for installation of the asphalt restoration as

called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Asphalt Restoration shall be Square Foot.

2-3-C **Landscape Stone 3-inches Deep** shall include all labor, materials and equipment including other ancillary items necessary for installation and maintenance of the Landscape Stone 3-inches Deep as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Landscape Stone 3-inches Deep shall be by Cubic Foot.

2-3-D **Sodding** shall include all labor, materials and equipment including other ancillary items necessary for installation and maintenance of sod as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Sodding shall be Square Foot.

2-3-E **Site Utilities** shall include all labor, materials and equipment including other ancillary items necessary for installation of a water service, backflow preventer, valve box and miscellaneous concrete pads as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for Site Utilities shall be Per Each.

BID ITEM NO. 4- STRUCTURAL AND ARCHITECTURAL

Payment of all work included under this Bid Item will be for furnishing all labor, materials, and equipment necessary to construct concrete improvements for equipment.

- Work shall include but not be limited to all labor, materials, and equipment necessary for the site preparation excavation and backfill.
- Concrete work as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.
- Metal Fabrication and Handrails and Guardrails as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.
- Masonry work as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.
- Miscellaneous (Vapor Barrier, Caulk, Waterstop, Expansion Material) shall include all labor, materials, and equipment necessary for the installation Miscellaneous (Vapor Barrier, Caulk, Waterstop, Expansion Material) and other ancillary items necessary as called out on the drawings and per the

Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Lump Sum.

All costs for disposal of all items shall be included in the Contractor's Base Bid.

BID ITEM NO. 5 – INSTRUMENTATION AND CONTROLS

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for moving of existing servers into new racks, provision of PLC and HMI in new floor mounted enclosure. All Ethernet cabling including fiber and terminations.

Refer to DRAWINGS and SPECIFICATIONS for more information.

5-1 **Field Cabinets and Instrumentation** Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the Network switches rack, and PLC cabinets, including but not limited to fiber installation and terminations, start up, testing, training spare parts and other ancillary items necessary for the complete installation as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for this item shall be Each

5-2 **Field Instrumentation** Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the field instrumentation, including but not limited to start up, testing, training spare parts and other ancillary items necessary for the complete installation as called out on the drawings and per the Contract Documents or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for this item shall be Each

BID ITEM NO. 6 – ELECTRICAL

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the replacement of the electrical distribution and pump control equipment. Existing building lighting shall remain along with receptacle circuits; however, the receptacles and switches themselves will be replaced with corrosion resistant devices

6-1 **Demolition** shall include all labor, materials, and equipment necessary for the demolition of the existing electrical and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for this item shall be Lump Sum.

6-2 **Variable Frequency Drives (VFD's)** shall include all coordination, labor, materials, and equipment necessary for the installation of the new variable frequency drives (VFD) made by Yaskawa. This includes the mounting of VFD's into new SqD MCC sections. Mounting to be done by Yaskawa at their manufacturing headquarters (Milwaukee).

In addition, work will consist of but not limited to ancillary items as indicated on the drawings specified herein or as otherwise necessary for the completion of the Work associated with this Contract or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for this item shall be Lump Sum.

6-3 **Switchboard, ATS, MCC's.** Equipment shall include all labor, materials, and equipment necessary for the installation of the 480V main distribution equipment, and Automatic Transfer Switch (**ATS)**. Work will consist of but not limited to placement of the electrical equipment in new electrical building and ancillary items as indicated on the drawings specified herein or as otherwise necessary for the completion of the Work associated with this Contract or as otherwise necessary for the completion of the Work associated with this Contract.

.

Payment for this item shall be by item: **Switchboard, ATS, MCC's**

6-4 **Pull, Junction and Terminal Boxes** shall include all labor, materials, and equipment necessary for the installation of the pull, junction and terminal boxes. Work will consist of but not limited to placing the pull, junction and/or terminal boxes as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Lump Sum.

6-5 **Rigid Conduit** shall include all labor, materials, and equipment necessary for the installation of the PVC and rigid conduit as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Linear Foot.

6-6 **Low Voltage Cables** shall include all labor, materials, and equipment necessary for the installation of the low voltage cables as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Linear Foot.

6-7 **Instrumentation Cable** shall include all labor, materials, and equipment necessary for the installation of the instrumentation cable as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Linear Foot.

6-8 **Grounding and Bonding** shall include all labor, materials, and equipment necessary for the installation of the ground and bonding as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6-9 **Cable Trays** shall include all labor, materials, and equipment necessary for the installation of cable trays as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Linear Foot.

6-10 **Underground Ductbanks – Concrete** shall include all labor, materials, and equipment necessary for the installation of underground ductbanks, platforms and building slabs as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Cubic Yard.

6-11 **Underground Ductbanks – Excavation and Backfill** shall include all labor, materials, and equipment necessary for the excavation and backfill for the underground ductbanks as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Cubic Yard.

6-12 **Low Voltage Receptacles** shall include all labor, materials, and equipment necessary for the installation of the low voltage receptacles. Work will consist of but not limited to placing the low voltage receptacles in the existing building or as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6-13 **Snap Switches** shall include all labor, materials, and equipment necessary for the installation of the snap switches. Work will consist of but not limited to placing the snap switches in the existing building or as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified

herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6-14 **Disconnect Switches** shall include all labor, materials, and equipment necessary for the installation of the disconnect switches. Work will consist of but not limited to providing and installing the disconnect switches as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6-15 **Dry Transformers** shall include all labor, materials, and equipment necessary for the 208/120V transformers, and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6-16 **Panelboards** shall include all labor, materials, and equipment necessary for site work, demolition, temporary power, terminal lugs, wire markers, panelboards, and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Each.

6.17 **Electrical Generator and Fuel Storage System** – Description: This bid item describes measurement and payment for furnishing and installing the generator, enclosure, and fuel tank system including fuel transfer. The unit bid price includes purchasing the equipment, installation, labor, materials, equipment, testing, and training to provide a complete and workable power system, including the generator set and generator set controls, transfer switch controls, fuel tank system, and installation as shown in the Contract Documents and Specifications herein.

Payment for this item shall be by Items: Generator, belly tank, enclosure, fuel transfer system and all piping.

6-18 **Duke Energy**: Coordination and installation of Duke Energy transformer and ductbanks as shown on drawings including providing hand holes or manholes as required.
Payment for this item shall be Lump Sum

6-19 **Miscellaneous Electric** shall include all labor, materials, and equipment necessary for site work, temporary power, and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be Lump Sum

All costs for disposal of all items shall be included in the Contractor's Base Bid.

BID ITEM NO. 8- PERMIT ALLOWANCE

Fees for submitting applications for permits required to complete construction in accordance with the plans and specifications, such as Building Permit, NPDES, etc. The quantity measured for payment shall be the actual receipt-supported permit fees. Payment will be made at the actual cost to the Contractor for the permits required and acquired. Upon completion of the permitting process, the Contractor will submit receipts for permit fees to the City and Engineer.

Payment for this item shall be lump sum.

BID ITEM 9- RECORD DRAWINGS

Payment for all work included under this Bid Item shall be made at the Contract lump sum price bid listed in the Bid Form and shall represent full compensation for all labor, materials and equipment required to generate and provide record drawings approved and accepted by the City. Record drawings shall be in strict accordance with Section 01720 – Project Record Documents

Payment for this item shall be lump sum.

BID ITEM 10 - CONTRACT CONTINGENCY

Payment for all work under this Bid Item shall be made only at the City's discretion. This Bid Item shall not exceed 5% of the Bidders Total Base Bid. The Bidder shall calculate and enter a dollar amount for this Bid Item.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01152 REQUESTS FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the Project Manager or as directed at the preconstruction meeting, in accordance with the schedule established by Conditions of the Contract and Agreement between City and Contractor.

1.02 FORMAT AND DATA REQUIRED

A. Submit payment requests in the form provided by the City with itemized data typed in accordance with the Bid Form.

B. Provide construction photographs in accordance with Contract Documents.

1.03 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the County requires substantiating data, Contractor shall submit suitable information with a cover letter.

B. Submit one copy of data and cover letter for each copy of application.

1.04 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

1.05 SUBMITTAL PROCEDURE

A. Submit applications for payment at the times stipulated in the Agreement.

B. Number: Three (3) copies of each application; all signed and certified by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01153 CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.01 DEFINITION

A. Change Order: A written order signed by the Owner, the Architect/Engineer and the Contractor authorizing a change in the Project Plans and/or Specifications and, if necessary, a corresponding adjustment in the Contract Sum and/or Contract Time, pursuant to Article V of the General Conditions of the Construction Agreement.

B. Administrative Change Adjustment: Minor change order under 10% of project cost or 20% time, does not have to be Board approved.

C. Field Directive: A written order issued by Owner which orders minor changes in the Work not involving a change in Contract Time, to be paid from the Owner's contingency funds.

D. Field Order: Minor change to contract work that does not require adjustment of contract sum or expected date of completion.

1.02 REQUIREMENTS INCLUDED

A. The Contractor shall promptly implement change order procedures:

1. Provide full written data required to evaluate changes.
2. Maintain detailed records of work done on a time-and-material/force account basis.
3. Provide full documentation to City on request.

B. The Contractor shall designate a member of the Contractor's organization who:

1. Is authorized to accept changes to the Work.
2. Is responsible for informing others in the Contractor's employ of the authorized changes into the Work.

1.03 PRELIMINARY PROCEDURES

A. Project Manager may initiate changes by submitting a Request to Contractor. Request will include:

1. Detailed description of the change, products, costs and location of the change in the Project.
2. Supplementary or revised Drawings and Specifications.
3. The projected time extension for making the change.
4. A specified period of time during which the requested price will be considered valid.
5. Such request is for information only and is not an instruction to execute the changes, nor to stop work in progress.

B. Contractor may initiate changes by submitting a written notice to the Project Manager, containing:

1. Description of the proposed changes.
2. Statement of the reason for making the changes.
3. Statement of the effect on the Contract Sum and the Contract Time.
4. Statement of the effect on the work of separate contractors.
5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.04 FIELD ORDER CHANGE

A. In lieu of a Change Order, the Project Manager may issue a Field Order for the Contractor to proceed with additional work within the original intent of the Project.

B. Field Order will describe changes in the work, with attachments of backup information to define details of the change.

C. Contractor must sign and date the Field Order to indicate agreement with the terms therein.

1.05 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump sum proposal and for each unit price which has not previously been established, with sufficient substantiating data to allow the City to evaluate the quotation.

B. On request, provide additional data to support time and cost computations:

1. Labor required.
2. Equipment required.
3. Products required.

    a. Recommended source of purchase and unit cost.
    b. Quantities required.

4. Taxes, insurance and bonds.
5. Credit for work deleted from Contract, similarly documented.
6. Overhead and profit.
7. Justification for any change in Contract Time.

C. Support each claim for additional costs and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal.

1. Name of the City's authorized agent who ordered the work and date of the order.
2. Date and time work was performed and by whom.
3. Time record, summary of hours work and hourly rates paid.
4. Receipts and invoices for:

    a. Equipment used, listing dates and time of use.

b. Products used, listing of quantities.
c. Subcontracts.

1.06 PREPARATION OF CHANGE ORDERS

A. Project Manager will prepare each Change Order.

B. Change Order will describe changes in the Work, both additions and deletions, with attachments as necessary to define details of the change.

C. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.07 LUMP SUM/FIXED PRICE CHANGE ORDER

A. Project Manager initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by the Contractor, or requests from the City, or both.

B. Once the form has been completed, all copies should be sent to Contractor for approval. After approval by Contractor, all copies should be sent to City for approval. The City will distribute executed copies after approval.

1.08 UNIT PRICE CHANGE ORDER

A. Contents of Change Orders will be based on, either:

1. City's definition of the scope of the required changes.
2. Contractor's Proposal for a change, as approved by the City.
3. Survey of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.
2. Those mutually agreed upon between City and Contractor.

1.09 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/CONSTRUCTION CHANGE AUTHORIZATION

A. Refer to Article V.5.6 of the General Conditions of the Construction Agreement.

1.10 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise Schedule of Values and Application for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.

B. Periodically revise the Construction Schedule to reflect each change in Contract Time. Revise sub schedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01200 PROJECT MEETINGS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The City shall schedule the pre-construction meeting, periodic progress meetings and special meetings, if required, throughout progress of work.

B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. The Contractor shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.02 PRE-CONSTRUCTION MEETING

A. Attendance:

1. City's Engineer.
2. City's Project Manager
3. Contractor.
4. Resident Project Representative.
5. Related Labor Contractor's Superintendent.
6. Major Subcontractors.
7. Major Suppliers.
8. Others as appropriate.

B. Suggested Agenda:

1. Distribution and discussion of:

    a. List of major subcontractors.
    b. Projected Construction Schedules.
    c. Coordination of Utilities

2. Critical work sequencing.
3. Project Coordination.

    a. Designation of responsible personnel.
    b. Emergency contact persons with phone numbers.

4. Procedures and processing of:

    a. Field decisions.
    b. Submittals.
    c. Change Orders.
    d. Applications for Payment.

5. Procedures for maintaining Record Documents.

6. Use of premises:

    a. Office, work and storage areas.
    b. City's REQUIREMENTS.

7. Temporary utilities.
8. Housekeeping procedures.
9. Liquidated damages.
10. Equal Opportunity Requirements.
11. Laboratory testing.
12. Project / Job meetings: Progress meeting, other special topics as needed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01310 CONSTRUCTION SCHEDULE & PROJECT RESTRAINTS

PART 1 GENERAL

1.01 GENERAL

A. Construction under this contract must be coordinated with the City and accomplished in a logical order to maintain utilization and flow through existing facilities and public properties and rights-of-way and to allow construction to be completed within the time allowed by Contract Documents and in the manner set forth in the Contract.

1.02 CONSTRUCTION SCHEDULING GENERAL PROVISIONS

A. No work shall be done between 7:00 p.m. and 7:00 a.m. nor on weekends or legal holidays without written permission of the City. However, emergency work may be done without prior permission.

B. Night work may be established by the Contractor as regular procedure with the written permission of the City. Such permission, however, may be revoked at any time by the City if the Contractor fails to maintain adequate equipment and supervision for the proper execution and control of the work at night.

C. Due to potential health hazards and requirements of the State of Florida and the U.S. Environmental Protection Agency, existing facilities must be maintained in operation.

D. The Contractor shall be fully responsible for providing all temporary piping, plumbing, electrical hook-ups, lighting, temporary structure, or other materials, equipment and systems required to maintain the existing facility's operations. All details of temporary piping and temporary construction are not necessarily shown on the Drawings or covered in the Specifications. However, this does not relieve the Contractor of the responsibility to insure that construction will not interrupt proper facility operations.

E. The Contractor shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the Contractor shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the commitments of the Contractor's schedule.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The Contractor shall submit a critical path schedule as described herein.

B. The planning, scheduling, management and execution of the work is the sole responsibility of the Contractor. The progress schedule requirement is established to allow City to review Contractor's planning, scheduling, management and execution of the work; to assist City in evaluating work progress and make progress

payments and to allow other contractors to cooperate and coordinate their activities with those of the Contractor.

2.02 FORM OF SCHEDULES

A. Prepare schedules using the latest version of Microsoft Project, or other City approved software, in the form of a horizontal bar chart diagram. The diagram shall be time-scaled and sequenced by work areas. Horizontal time scale shall identify the first work day of each week.

B. Activities shall be at least as detailed as the Schedule of Values. Activity durations shall be in whole working days. In addition, man-days shall be shown for each activity or tabulated in an accompanying report.

C. Diagrams shall be neat and legible and submitted on sheets at least 8-1/2 inches by 11 inches suitable for reproduction. Scale and spacing shall allow space for notations and future revisions.

2.03 CONTENT OF SCHEDULES

A. Each monthly schedule shall be based on data as of the last day of the current pay period.

B. Description for each activity shall be brief, but convey the scope of work described.

C. Activities shall identify all items of work that must be accomplished to achieve substantial completion, such as items pertaining to Contractor's installation and testing activities; items pertaining to the approval of regulatory agencies; contractor's time required for submittals, fabrication and deliveries; the time required by City to review all submittals as set forth in the Contract Documents; items of work required of City to support pre-operational, startup and final testing; time required for the relocation of utilities. Activities shall also identify interface milestones with the work of other contractors performing work under separate contracts with City.

D. Schedules shall show the complete sequence of construction by activities. Dates for beginning and completion of each activity shall be indicated as well as projected percentage of completion for each activity as of the first day of each month.

E. Submittal schedule for shop drawing review, product data, and samples shall show the date of Contractor submittal and the date approved submittals will be required by the City, consistent with the time frames established in the Specifications.

F. For Contract change orders granting time extensions, the impact on the Contract date(s) shall equal the calendar-day total time extension specified for the applicable work in the Contract change orders.

G. For actual delays, add activities prior to each delayed activity on the appropriate critical path(s). Data on the added activities of this type shall portray all steps leading to the delay and shall further include the following: separate activity identification, activity description indicating cause of the delay, activity duration consistent with whichever set of dates below applies, the actual start and finish

dates of the delay or, if the delay is not finished, the actual start date and estimated completion date.

H. For potential delays, add an activity prior to each potentially delayed activity on the appropriate critical path(s). Data for added activities of this type shall include alternatives available to mitigate the delay including acceleration alternatives and further show the following: separate activity identification, activity description indicating cause of the potential delay and activity duration equal to zero work days.

2.04 SUPPORTING NARRATIVE

A. Status and scheduling reports identified below shall contain a narrative to document the project status, to explain the basis of Contractor's determination of durations, describe the Contract conditions and restraints incorporated into the schedule and provide an analysis pertaining to potential problems and practical steps to mitigate them.

B. The narrative shall specifically include:

1. Actual completion dates for activities completed during the monthly report period and actual start
   dates for activities commenced during the monthly report period.
2. Anticipated start dates for activities scheduled to commence during the following monthly report period.
3. Changes in the duration of any activity and minor logic changes.
4. The progress along the critical path in terms of days ahead or behind the Contract date.
5. If the Monthly Status Report indicates an avoidable delay to the Contract completion date or interim completion dates as specified in the Agreement, Contractor shall identify the problem, cause and the activities affected and provide an explanation of the proposed corrective action to meet the milestone dates involved or to mitigate further delays.
6. If the delay is thought to be unavoidable, the Contractor shall identify the problem, cause, duration, specific activities affected and restraints of each activity.
7. The narrative shall also discuss all change order activities whether included or not in the revised/current schedule of legal status. Newly introduced change order work activities and the CPM path(s) that they affect, must be specifically identified. All change order work activities added to the schedule shall conform with the sequencing and Contract Time requirements of the applicable Change Order.
8. Original Contract date(s) shall not be changed except by Contract change order. A revision need not be submitted when the foregoing situations arise unless required by City. Review of a report containing added activities will not be construed to be concurrence with the duration or restraints for such added activities; instead the corresponding data as ultimately incorporated into the applicable Contract change order shall govern.
9. Should City require additional data, this information shall be supplied by Contractor within 10 calendar days.

2.05 SUBMITTALS

A. Contractor shall submit estimated and preliminary progress schedules (as identified in the Terms and Conditions of the Contract and the General Conditions), monthly status reports, a start-up schedule and an as-built schedule report all as specified herein.

B. All schedules, including estimated and preliminary schedules, shall be in conformance with the Contract Documents.

C. The finalized progress schedule discussed in the Contract Documents shall be the first monthly status report and as such shall be in conformance with all applicable specifications contained herein.

D. Monthly Status Report submittals shall include a time-scaled (days after notice to proceed) diagram showing all contract activities and supporting narrative. The initial detailed schedule shall use the notice to proceed as the start date. The finalized schedule, if concurred with by City, shall be the work plan to be used by the contractor for planning, scheduling, managing and executing the work.

E. The schedule diagram shall be formatted as above. The diagram shall include (1) all detailed activities included in the preliminary and estimated schedule submittals, (2) calendar days prior to substantial completion, (3) summary activities for the remaining days. The critical path activities shall be identified, including critical paths for interim dates, if possible.

F. The Contractor shall submit progress schedules with each application for payment.

2.06 MONTHLY STATUS REPORTS

A. Contractor shall submit detailed schedule status reports on a monthly basis with the Application for Payment. The first such status report shall be submitted with the first Application for Payment and include data as of the last day of the pay period. The Monthly Report shall include a "marked-up" copy of the latest detailed schedule of legal status and a supporting narrative including updated information as described above. The Monthly Report will be reviewed by City and Contractor at a monthly schedule meeting and Contractor will address City's comments on the subsequent monthly report. Monthly status reports shall be the basis for evaluating Contractor's progress.

B. The "marked-up" diagram shall show, for the latest detailed schedule of legal status, percentages of completion for all activities, actual start and finish dates and remaining durations, as appropriate. Activities not previously included in the latest detailed schedule of legal status shall be added, except that contractual dates will not be changed except by change order. Review of a marked-up diagram by City will not be construed to constitute concurrence with the time frames, duration, or sequencing for such added activities; instead the corresponding data as ultimately incorporated into an appropriate change order shall govern.

2.07 STARTUP SCHEDULE

A. At least 60 calendar days prior to the date of substantial completion, Contractor

shall submit a time-scaled (days after notice to proceed) diagram detailing the work to take place in the period between 60 days prior to substantial completion, together with a supporting narrative. City shall have 10 calendar days after receipt of the submittal to respond. Upon receipt of City's comments, Contractor shall make the necessary revisions and submit the revised schedule within 10 calendar days. The resubmittal, if concurred with by City, shall be the Work Plan to be used by Contractor for planning, managing, scheduling and executing the remaining work leading to substantial completion.

B. The time-scaled diagram shall use the latest schedule of legal status for those activities completed ahead of the last 60 calendar days prior to substantial completion and detailed activities for the remaining 60-day period within the time frames outlined in the latest schedule of legal status.

C. Contractor will be required to continue the requirement for monthly reports, as outlined above. In preparing this report, Contractor must assure that the schedule is consistent with the progress noted in the startup schedule.

2.08 REVISIONS

A. All revised Schedule Submittals shall be made in the same form and detail as the initial submittal and shall be accompanied by an explanation of the reasons for such revisions, all of which shall be subject to review and concurrence by City. The revision shall incorporate all previously made changes to reflect current as-built conditions. Minor changes to the approved submittal may be approved at monthly meetings; a minor change is not considered a revision in the context of this paragraph.

B. A revised schedule submittal shall be submitted for review when required by City.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01340 SHOP DRAWINGS, PROJECT DATA AND SAMPLES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall submit to the City for review and approval: working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this section called data) that have been produced within the last three (3) years, and material samples (hereinafter in this section called samples) as are required for the proper control of work, including, but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings. Submittals may be done electronically via PDF documents.

B. The Contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the City. The City will provide the initial submittal log in electronic format. The electronic log (excel file) shall be passed back and forth between the Contractor and the City for each submittal package. This log shall include the following items:

1. Submittal description and number assigned.
2. Date to City.
3. Date returned to Contractor (from City).
4. Status of Submittal (No exceptions taken, returned for confirmation or resubmittal, rejected).
5. Date of Resubmittal and Return (as applicable).
6. Date material released (for fabrication).
7. Projected date of fabrication.
8. Projected date of delivery to site.
9. Projected date and required lead time so that product installation does not delay contact.
10. Status of O&M manuals submitted.

1.03 CONTRACTOR'S RESPONSIBILITY

A. It is the duty of the Contractor to check all drawings, data and samples prepared by or for him before submitting them to the City for review. Each and every copy of the Drawings and data shall bear Contractor's stamp showing that they have been so checked. Shop drawings submitted to the City without the Contractor's stamp will be returned to the Contractor for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the contract Documents.

B. The Contractor shall ensure that all submitted cut sheets, product sheets, product documentation, etc. are current versions of the product information and are not older than three (3) years. Product certification(s) shall be no older than three (3) years. Any submitted documents found to be beyond the acceptable date ranges shall be rejected.

C. Determine and verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with Specifications and indicate all variances from the Specifications.

D. The Contractor shall furnish the City a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.

E. The Contractor shall not begin any of the work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned to him, by the City, with No Exceptions Taken or Approved As Noted.

F. The Contractor shall submit to the City all drawings and schedules sufficiently in advance of construction requirements to provide no less than twenty-one (21) calendar days for checking and appropriate action from the time the City receives them. Submittals are to be scheduled, submitted, reviewed, and approved prior to the acquisition of the material or equipment. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow time for potential resubmittal.

G. No delay costs or time extensions will be allowed for time lost in late submittals or resubmittals.

H. All material & product submittals, other than samples, may be transmitted electronically as a pdf file. All returns to the contractor will be as a pdf file only unless specifically requested otherwise.

I. The Contractor shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by City of the necessary Shop Drawings.

1.04 CITY'S REVIEW OF SHOP DRAWINGS AND WORKING DRAWINGS

A. The City's review of drawings, data and samples submitted by the Contractor shall cover only general conformity to the Specifications, external connections and dimensions which affect the installation.

B. The review of drawings and schedules shall be general and shall not be construed:

1. As permitting any departure from the Contract requirements.
2. As relieving the Contractor of responsibility for any errors, including details, dimensions and materials.
3. As approving departures from details furnished by the City, except as otherwise provided herein.

C. If the drawings or schedules as submitted describe variations and show a departure from the Contract requirements which the City finds to be in the interest of the City and to be so minor as not to involve a change in Contract Price or time for performance, the City may return the reviewed drawings without noting any exception.

D. When reviewed by the City, each of the Shop and Working Drawings shall be identified as having received such review being so stamped and dated. Shop Drawings stamped "REJECTED" and with required corrections shown shall be returned to the Contractor for correction and resubmittal.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals, the Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than the corrections requested by the City on previous submissions. The Contractor shall make any corrections required by the City.

F. If the Contractor considers any correction indicated on the drawings to constitute a change to the Contract Drawings or Specifications, the Contractor shall give written notice thereof to the City.

G. The City shall review a submittal/resubmittal a maximum of three (3) times after which cost of review shall be borne by the Contractor. The cost of engineering shall be equal to the City's actual payroll cost.

H. When the Shop and Working Drawings have been completed to the satisfaction of the City, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the City.

I. No partial submittals shall be reviewed. Incomplete submittals shall be returned to the Contractor and shall be considered not approved until resubmitted.

1.05 SHOP DRAWINGS

A. When used in the Contract Documents, the term "Shop Drawings" shall be considered to mean Contractor's plans for material and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop Drawings shall consist of fabrication, drawings, setting drawings, schedule drawings, manufacturer's scale drawings and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature and performance and test data, shall be considered only as supportive to required Shop Drawings as defined above.

B. Drawings and schedules shall be checked and coordinated with the work of all trades involved, before they are submitted for review by the City and shall bear the Contractor's stamp of approval and original signature as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval and original signature shall be returned to the Contractor for resubmission.

C. Each Shop Drawing shall have a blank area 3-1/2 inches by 3-1/2 inches, located adjacent to the title block. The title block shall display the following:

1. Number and title of the drawing.
2. Date of Drawing or revision.
3. Name of project building or facility.
4. Name of contractor and subcontractor submitting drawing.
5. Clear identification of contents and location of the work.
6. Specification title and number.

D. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility of executing the work in accordance with the Contract, even though such drawings have been reviewed.

E. Data on materials and equipment shall include, without limitation, materials and equipment lists, catalog sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.

F. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name and address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained.

G. All manufacturers or equipment suppliers who proposed to furnish equipment or products shall submit an installation list to the City along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and have been in operation for a period of at least one (1) year.

H. Only the City will utilize the color "red" in marking shop drawing submittals.

1.06 SUBMITTAL PREPARATION

A. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

B. Collect required data for each specific material, product, unit of work, or system into a single submittal. Prominently mark choices, options, and portions applicable to the submittal. Partial submittals will not be accepted for expedition of construction effort. Submittal will be returned without review if incomplete.

C. If available product data is incomplete, provide Contractor-prepared documentation to supplement product data and satisfy submittal requirements.

D. All irrelevant or unnecessary data shall be removed from the submittal to facilitate accuracy and timely processing. Submittals that contain the excessive amount of irrelevant or unnecessary data will be returned with review.

E. Provide a transmittal form for each submittal with the following information:

1. Project title, location and number.
2. Construction contract number.
3. Date of the drawings and revisions.
4. Name, address, and telephone number of subcontractor, supplier, manufacturer, and any other subcontractor associated with the submittal.
5. List paragraph number of the specification section and page number; and sheet number of the contract drawings by which the submittal is required.
6. When a resubmission, the resubmittal document name shall remain the same, but shall add an alphabetic suffix on submittal description. For example, submittal 18 would become 18A, to indicate resubmission.
7. Product identification and location in project.

F. The Contractor is responsible for reviewing and certifying that all submittals are in compliance with contract requirements before submitting to the City for review.

G. Stamp, sign, and date each submittal transmittal form indicating action taken.

H. Stamp used by the Contractor on the submittal transmittal form to certify that the submittal meets contract requirements is to be similar to the following:

CONTRACTOR
(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheet(s).

I certify that the following document and information has been verified to be is not more than three (3) years old.

SIGNATURE:_____

TITLE:_____

DATE:_____

1.07 WORKING DRAWINGS

A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's fabrication and erection drawings for structures such as roof trusses, steelwork, precast concrete elements, bulkheads, support of open cut excavation, support of utilities, groundwater control systems, forming and false work; underpinning; and for such other work as may be required for construction of the project.

B. Copies of working drawings as noted above, shall be submitted to the City where required by the Contract Documents or requested by the City and shall be submitted at least thirty (30) days (unless otherwise specified by the City) in advance of their being required for work.

C. Working drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Florida and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the City, which review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the Contractor; the City and Engineer shall not have responsibility therefor.

1.08 SAMPLES

A. The Contractor shall furnish, for the review of the City, samples required by the Contract Documents or requested by the City. Samples shall be delivered to the City as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until reviewed by the City.

B. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern.
3. A minimum of two samples of each item shall be submitted.

C. Each sample shall have a label indicating:

1. Name of product.
2. Name of Contractor and Subcontractor.
3. Material or equipment represented.
4. Place of origin.
5. Name of Producer and Brand (if any).
6. Location in project.
   (Samples of finished materials shall have additional markings that will identify them under the finished schedules.)
7. Reference specification paragraph.

D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the City. Review of a sample shall be only for the characteristics or use named in such and shall not be construed to change or modify any Contract requirements.

E. Reviewed samples not destroyed in testing shall be sent to the City or stored at the site of the work. Reviewed samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the reviewed samples. If requested at the time of submission, samples which failed testing or were rejected shall be returned to the Contractor at his expense.

1.09 APPROVED SUBMITTALS

A. City approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.

B. City approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.

C. After submittals have been approved, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

D. Retain a copy of all approved submittals at project site, including approved samples.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01370 SCHEDULE OF VALUES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall submit to the City a Schedule of Values allocated to the various portions of the work, within 10 days after date of Notice to Proceed.

B. Upon request of the City, the Contractor shall support the values with data which will substantiate their correctness.

C. The Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Schedule of Values will be considered for approval by City upon Contractor's request. Identify schedule with:

1. Title of Project and location.
2. Project number.
3. Name and address of Contractor.
4. Contract designation.
5. Date of submission.

B. Schedule of Values shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Follow the table of contents for the Contract Document as the format for listing component items for structures:

1. Identify each line item with the number and title of the respective major section of the specification.
2. For each line item, list sub values of major products or operations under item.

D. Follow the bid sheets included in this Contract Documents as the format for listing component items for pipe lines.

E. The sum of all values listed in the schedule shall equal the total Contract sum.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01380 CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall employ a competent photographer to take construction record photographs or perform video, recording including furnishing all labor, materials, equipment and incidentals necessary to obtain photographs and/or video recordings of all construction areas.

B. Preconstruction record information shall consist of video recordings on digital video disks (DVD).

C. Construction progress information shall consist of photographs and digital photographs on a recordable compact disc (CD-R).

1.02 QUALIFICATIONS

A. All photography shall be done by a competent camera operator who is fully experienced and qualified with the specified equipment.

B. For the video recording, the audio portion should be done by a person qualified and knowledgeable in the specifics of the Contract, who shall speak with clarity and diction so as to be easily understood.

1.03 PROJECT PHOTOGRAPHS

A. Provide one print of each photograph with each pay application.

B. Provide one recordable compact disc with digital photographs with each pay application.

C. Negatives:

1. All negatives shall remain the property of photographer.
2. The Contractor shall require that photographer maintain negatives or protected digital files for a period of two years from date of substantial completion of the project.
3. Photographer shall agree to furnish additional prints to City at commercial rates applicable at time of purchase. Photographer shall also agree to participate as required in any litigation requiring the photographer as an expert witness.

D. The Contractor shall pay all costs associated with the required photography and prints. Any parties requiring additional photography or prints shall pay the photographer directly.

E. All project photographs shall be a single weight, color image. All finishes shall be smooth surface and glossy and all prints shall be 8 inches x 10 inches.

F. Each print shall have clearly marked on the back, the name of the project, the orientation of view, the date and time of exposure, name and address of the photographer and the photographers numbered identification of exposure.

G. All project photographs shall be taken from locations to adequately illustrate conditions prior to construction, or conditions of construction and state of progress. The Contractor shall consult with the City at each period of photography for instructions concerning views required.

1.04 VIDEO RECORDINGS

A. Video, recording shall be done along all routes that are scheduled for construction. Video, recording shall include full, recording of both sides of all streets and the entire width of easements plus 10 feet on each side on which construction is to be performed. All video recording shall be in full color.

B. A complete view, in sufficient detail with audio description of the exact location shall be provided.

C. The engineering plans shall be used as a reference for stationing in the audio portion of the recordings for easy location identification.

D. Two complete sets of video recordings shall be delivered to the City on digital video disks (DVD) for the permanent and exclusive use of the City prior to the start of any construction on the project.

E. All video recordings shall contain the name of the project, the date and time of the video, recording, the name and address of the photographer and any other identifying information required.

F. Construction shall not start until preconstruction video recordings are completed, submitted and accepted by the City. In addition, no progress payments shall be made until the preconstruction video recordings are accepted by the City.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01410 TESTING AND TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. City shall employ and pay for the services of an independent testing laboratory to perform testing specifically indicated on the Contract Documents or called out in the Specifications. City may elect to have materials and equipment tested for conformity with the Contract Documents at any time.

1. Contractor shall cooperate fully with the laboratory to facilitate the execution of its required services.
2. Employment of the laboratory shall in no way relieve the Contractor's obligations to perform the work of the Contract.

1.02 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of the Work.
3. Perform any duties of the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to Work and/or to Manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The City may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor and no extra charge to the City shall be allowed on account of such testing and certification.

E. Furnish incidental labor and facilities:

1. To provide access to work to be tested.
2. To obtain and handle samples at the project site or at the source of the product to be tested.

3. To facilitate inspections and tests.
4. For storage and curing of test samples.

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

1. When tests or inspections cannot be performed due to insufficient notice, Contractor shall reimburse City for laboratory personnel and travel expenses incurred due to Contractor's negligence.

G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience and as approved by the City.

H. If the test results indicate the material or equipment complies with the Contract Documents, the City shall pay for the cost of the testing laboratory. If the tests and any subsequent retests indicate the materials and equipment fail to meet the requirements of the Contract Documents, the contractor shall pay for the laboratory costs directly to the testing firm or the total of such costs shall be deducted from any payments due the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01510 TEMPORARY AND PERMANENT UTILITIES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall be responsible for furnishing all requisite temporary utilities, i.e., power, water, sanitation, etc. The Contractor shall obtain and pay for all permits required as well as pay for all temporary usages. The Contractor shall remove all temporary facilities upon completion of work.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code.

B. Comply with Federal, State and Local codes and regulations and with utility company requirements.

C. Comply with City Health Department regulations.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials for temporary utilities may be "used". Materials for electrical utilities shall be adequate in capacity for the required usage, shall not create unsafe conditions and shall not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with the applicable utility company for temporary power supply. Provide service required for temporary power and lighting and pay all costs for permits, service and for power used.

2.03 TEMPORARY WATER

A. The Contractor shall arrange with City of Tarpon Springs Utilities Customer Service office to provide water for construction purposes, i.e., meter, pay all costs for installation, maintenance and removal, and service charges for water used.

B. The Contractor shall protect piping and fitting against freezing.

2.04 TEMPORARY SANITARY FACILITIES

A. The Contractor shall provide sanitary facilities in compliance with all laws and regulations.

B. The Contractor shall service, clean and maintain facilities and enclosures.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall maintain and operate systems to assure continuous service.

B. The Contractor shall modify and extend systems as work progress requires.

3.02 REMOVAL

A. The Contractor shall completely remove temporary materials and equipment when their use is no longer required.

B. The Contractor shall clean and repair damage caused by temporary installations or use of temporary facilities.

END OF SECTION

SECTION 01570 TRAFFIC REGULATION

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall be responsible for providing safe and expeditious movement of traffic through construction zones. A construction zone is defined as the immediate areas of actual construction and all abutting areas which are used by the Contractor and which interfere with the driving or walking public.

B. The Contractor shall remove temporary equipment and facilities when no longer required, restore grounds to original or to specified conditions.

1.02 TRAFFIC CONTROL

A. The necessary traffic control shall include, but not be limited to, such items as proper construction warning signs, signals, lighting devices, markings, barricades, channelization and hand signaling devices. The Contractor shall be responsible for installation and maintenance of all devices and detour routes and signage for the duration of the construction period. The Contractor shall utilize the appropriate traffic plan from the FDOT Maintenance of Traffic Standards, Series 600 of the FDOT Roadway & Traffic Design Standards, Latest Edition.

B. Should there be the necessity to close any portion of a roadway carrying vehicles or pedestrians the Contractor shall submit a Traffic Control Plan (TCP) at least 5 days before a partial or full day closure, and at least 8 days before a multi-day closure. TCP shall be submitted, along with a copy of their accreditation, by a certified IMSA or ATSA Traffic Control Specialist.

1. At no time will more than one (1) lane of a roadway be closed to vehicles and pedestrians without an approved road closure from the City Transportation Department. With any such closings, adequate provision shall be made for the safe expeditious movement of each.
2. All traffic control signs must be in place and inspected at least 1 day in advance of the closure. Multi-day closures notification signs shall be in place al least 3 days in advance of the closure. All signs must be covered when no in effect, and checked twice a day by the Worksite Traffic Supervisor when they are in effect.

C. The Contractor shall be responsible for removal, relocation, or replacement of any traffic control device in the construction area which exists as part of the normal preconstruction traffic control scheme. Any such actions shall be performed by the Contractor under the supervision and in accordance with the instructions of the applicable highway department unless otherwise specified.

D. The Contractor will consult with the City immediately on any vehicular or pedestrian safety or efficiency problem incurred as a result of construction of the project.

E. The Contractor shall provide ready access to businesses and homes in the project area during construction. The Contractor shall be responsible for coordinating this

work with affected homeowners.

F. When conditions require the temporary installation of signs, pavement markings and traffic barriers for the protection or workers and traffic, the entire array of such devices shall be depicted on working drawings for each separate stage of work. These drawings shall be submitted to the City for review and approval prior to commencement of work on the site.

G. Precast concrete traffic barriers shall be placed adjacent to trenches and other excavations deeper than six inches below the adjacent pavement surface.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01580 PROJECT IDENTIFICATION AND SIGNS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain City project identification signs.

B. Remove signs on completion of construction.

C. Allow no other signs to be displayed except for traffic control and safety.

1.02 PROJECT IDENTIFICATION SIGN (CITY)

A. Two painted sign, of not less than 32 square feet (3 square meters) area, with painted graphic content to include:

1. Title of Project.
2. Name of City.
3. Names and titles of authorities as directed by City.
4. Prime Contractor.

B. Graphic design, style of lettering and colors: As approved by the City.

C. Erect on the site at a lighted location of high public visibility, adjacent to main entrance to site, as approved by the City

1.03 INFORMATIONAL SIGNS

A. Painted signs with painted lettering, or standard products.

1. Size of signs and lettering: as required by regulatory agencies, or as appropriate to usage.
2. Colors: as required by regulatory agencies, otherwise of uniform colors throughout project.

B. Erect at appropriate locations to provide required information.

1.04 QUALITY ASSURANCE

A. Sign Painter: Professional experience in type of work required.

B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

1.05 PUBLIC NOTIFICATION

A. Door Hangers: The Contractor shall generate and distribute door hangers to all residents who will be impacted by project construction.

1. Residents impacted include anyone who resides inside, or within 500 feet of project limits of construction.

B. Door Hangers shall be distributed prior to start of construction of the project. Hangers shall be affixed to doors of residents via elastic bands or tape.

EXAMPLE:

PLEASE PARDON THE INCONVENIENCE WHILE THE ROADWAY IS BEING RECONSTRUCTED IN YOUR NEIGHBORHOOD

This project consists of utility improvements and the reconstruction of ??? Boulevard from U.S. ??? to ??? Street West. The project is expected to begin in August, 200X and be completed in July 200X.

Location Map

WE HOPE TO KEEP ANY INCONVENIENCE TO A MINIMUM. HOWEVER, IF YOU HAVE ANY PROBLEMS, PLEASE CONTACT THE FOLLOWING:

A. Contractor
Contractor Address
Contractor Phone (Site Phone)

Project Manager
PM Address
PM Phone No. & Ext.

B. Project Inspector
Inspector Phone Number

AFTER HOURS EMERGENCY NUMBER – XXX-XXX-XXXX
THANK YOU FOR YOUR UNDERSTANDING AND PATIENCE
CITY OF TARPON SPRINGS – PROJECT MANAGEMENT DEPT.

PART 2 PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: May be new or used, wood or metal, in sound condition structurally adequate to work and suitable for specified finish.

B. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.

1. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.

C. Rough Hardware: Galvanized.

D. Paint: Exterior quality, as specified in the Contract Documents.

PART 3 EXECUTION

3.01 PROJECT IDENTIFICATION SIGN

A. Paint exposed surface or supports, framing and surface material; one coat of primer and one coat of exterior paint.

B. Paint graphics in styles, size and colors selected.

3.02 MAINTENANCE

A. The Contractor shall maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

3.03 REMOVAL

A. The Contractor shall remove signs, framing, supports and foundations at completion of project.

END OF SECTION

SECTION 01600 MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by the City.
3. Manufactured and Fabricated Products:

    a. Design, fabricate and assemble in accordance with the best engineering and shop practices.
    b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
    c. Two or more items of the same kind shall be identical and manufactured by the same manufacturer.
    d. Products shall be suitable for service conditions.
    e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

4. Do not use material or equipment for any purpose other than that for which it is specified.
5. All material and equipment incorporated into the project shall be new.

1.02 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to City. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with City prior to proceeding. Do not proceed with work without clear instructions.

1.03 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals and that

products are properly protected and undamaged.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.04 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Contractor's Options:

1. For products specified only by reference standard, select any product meeting that standard.
2. For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request for substitutions of any product or manufacturer not specifically named in a timely manner so as not to adversely affect the construction schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01620 STORAGE AND PROTECTION

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. The west side of Dewatering Building, parking lot (east half of north Chlorine building) and green areas where crane access is not required is available for storage/laydown.

B. Secure and protect the products to be incorporated into the work and maintenance and protection for products after installation and until completion of Work.

1.02 STORAGE

A. Store products immediately on delivery and protect until installed in the Work, in accord with manufacturer's instructions, with seals and labels intact and legible.

B. Exterior Storage

1. Provide substantial platform, blocking or skids to support fabricated products above ground to prevent soiling or staining.

    a. Cover products, subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
    b. Prevent mixing of refuse or chemically injurious materials or liquids.

A. Arrange storage in manner to provide easy access for inspection.

1.03 MAINTENANCE OF STORAGE

A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.
2. Required environmental conditions are maintained on continuing basis.
3. Surfaces of products exposed to elements are not adversely affected. Any weathering of products, coatings and finishes is not acceptable under requirements of these Contract Documents.

B. Mechanical and electrical equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package.

1. Equipment shall not be shipped until approved by the City. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the City.

2. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by the City until such time as the equipment is to be installed.
3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
4. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
5. Lubricants shall be changed upon completion of installation and as frequently as required, thereafter during the period between installation and acceptance.
6. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

1.04 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of work.

B. Control traffic to prevent damage to equipment and surfaces.

C. Provide coverings to protect finished surfaces from damage.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01700 CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the work.

1.02 SUBSTANTIAL COMPLETION

A. The Contractor shall submit the following items when the Contractor considers the work to be substantially complete:

1. A written notice that the work, or designated portion thereof, is substantially complete.
2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, the City shall make an inspection to determine the status of completion.

C. Project record documents and operations and maintenance manuals must be submitted before the project shall be considered substantially complete.

D. If the City determines that the work is not substantially complete:

1. The City shall notify the Contractor in writing, stating the reasons.
2. The Contractor shall remedy the deficiencies in the work and send a second written notice of substantial completion to the City.
3. The City shall reinspect the work.

E. When the City finds that the work is substantially complete:

1. The Engineer shall prepare and deliver to the City a tentative Certificate of Substantial Completion (Manatee City Project Management Form PMD-8) with a tentative list of the items to be completed or corrected before final payment.
2. The Engineer shall consider any objections made by the City as provided in Conditions of the Contract. When the Engineer considers the work substantially complete, he will execute and deliver to the City a definite Certificate of Substantial Completion (Manatee City Project Management Form PMD-8) with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

A. When the Contractor considered the work to be complete, he shall submit written certification stating that:

1. The Contract Documents have been reviewed.
2. The work has been inspected for compliance with Contract Documents.

3. The work has been completed in accordance with Contract Documents.
4. The equipment and systems have been tested in the presence of the City's representative and are operational.
5. The work is completed and ready for final inspection.

B. The City shall make an inspection to verify the status of completion after receipt of such certification.

C. If the City determines that the work is incomplete or defective:

1. The City shall promptly notify the Contractor in writing, listing the incomplete or defective work.
2. The Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to City that the work is complete.
3. The City shall reinspect the work.

D. Upon finding the work to be acceptable under the Contract Documents, the City shall request the Contractor to make closeout submittals.

E. For each additional inspection beyond a total of three (3) inspections for substantial and final completion due to the incompleteness of the work, the Contractor shall reimburse the City's fees.

1.04 CONTRACTOR'S CLOSEOUT SUBMITTALS TO CITY

A. Project Record Documents (prior to substantial completion).

B. Operation and maintenance manuals (prior to substantial completion).

C. Warranties and Bonds.

D. Evidence of Payment and Release of Liens: In accordance with requirements of General and Supplementary Conditions.

E. Certification letter from Florida Department of Transportation and Manatee City Department of Transportation, as applicable.

F. Certificate of Insurance for Products and Completed Operations.

G. Final Reconciliation, Warranty Period Declaration, and Contractor's Affidavit (Manatee City Project Management Form PMD-9).

1.05 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the City.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.
2. Additions and deductions resulting from:

a. Previous Change Orders
b. Unit Prices
c. Penalties and Bonuses
d. Deductions for Liquidated Damages
e. Other Adjustments

3. Total Contract Sum, as adjusted.
4. Previous payments.
5. Sum remaining due.

C. Project Management shall prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.06 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01710 CLEANING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Execute cleaning during progress of the work and at completion of the work, as required by the General Conditions.

1.02 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with all Federal, State and Local codes, ordinances, regulations and anti-pollution laws.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulation of waste materials, rubbish and wind-blown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING

A. Employ skilled workmen for final cleaning.

B. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

C. Prior to final completion or City occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas to verify that the entire work is clean.

END OF SECTION

SECTION 01720 PROJECT RECORD DOCUMENTS

PART 1 STANDARDS

1.01 MINIMUM RECORD DRAWING STANDARDS FOR ALL RECORD DRAWINGS SUBMITTED TO CITY OF TARPON SPRINGS

A. Record drawings shall be submitted to at least the level of detail in the contract documents. It is anticipated that the original contract documents shall serve as at least a background for all record information. Original drawings in CAD format may be requested of the City.

B. Drawings shall meet the criteria of paragraph 2.04 D above

PART 2 STANDARDS

2.01 REQUIREMENTS INCLUDED

A. Contractor shall maintain at the site for the City one record copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. City's field orders or written instructions.
6. Approved shop drawings, working drawings and samples.
7. Field test records.
8. Construction photographs.

2.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by the City.

2.03 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the color code designated by the City.

2.04 RECORDING DRAWINGS PREPARATION

A. Record information concurrently with construction progress.

B. Do not conceal any work until required information is recorded.

C. Drawings; Legibly mark to record actual construction:

1. All underground piping with elevations and dimensions. Changes to piping location. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Actual installed pipe material, class, etc. Locations of drainage ditches, swales, water lines and force mains shall be shown every 200 feet (measured along the centerline) or alternate lot lines, whichever is closer. Dimensions at these locations shall indicate distance from centerline of right-of-way to the facility.
2. Field changes of dimension and detail.
3. Changes made by Field Order or by Change Order.
4. Details not on original contract drawings.
5. Equipment and piping relocations.
6. Locations of all valves, fire hydrants, manholes, water and sewer services, water and force main fittings, underdrain cleanouts, catch basins, junction boxes and any other structures located in the right-of-way or easement, shall be located by elevation and by station and offset based on intersection P.I.'s and centerline of right-of-way. For facilities located on private roads, the dimensioning shall be from centerline of paving or another readily visible baseline.
7. Elevations shall be provided for all manhole rim and inverts; junction box rim and inverts; catch basin rim and inverts; and baffle, weir and invert elevations in control structures. Elevations shall also be provided at the PVI's and at every other lot line or 200 feet, whichever is less, of drainage swales and ditches. Bench marks and elevation datum shall be indicated.
8. Slopes for pipes and ditches shall be recalculated, based on actual field measured distances, elevations, pipe sizes, and type shown. Cross section of drainage ditches and swales shall be verified.
9. Centerline of roads shall be tied to right-of-way lines. Elevation of roadway centerline shall be given at PVI's and at all intersections.
10. Record drawings shall show bearings and distances for all right-of-way and easement lines, and property corners.
11. Sidewalks, fences and walls, if installed at the time of initial record drawing submittal, shall be located every 200 feet or alternate lot lines, whichever is closer. Dimensions shall include distance from the right-of-way line and the back of curb and lot line or easement line.
12. Sanitary sewer mainline wyes shall be located from the downstream manhole. These dimensions shall be provided by on-site inspections or televiewing of the sewer following installation.
13. Elevations shall be provided on the top of operating nuts for all water and force main valves.
14. Allowable tolerance shall be ± 6.0 inches for horizontal dimensions. Vertical dimensions such as the difference in elevations between manhole inverts shall have an allowable tolerance of ± 1/8 inch per 50 feet (or part thereof) of horizontal distance up to a maximum tolerance of ± 2 inch.
15. Properly prepared record drawings on mylar, together with two copies, shall be certified by a design professional (Engineer and/or Surveyor registered

in the State of Florida), employed by the Contractor, and submitted to the City.

D. Specifications and Addenda; Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
2. Changes made by field order or by change order.

E. Shop Drawings (after final review and approval):

1. Five sets of record drawings for each process equipment, piping, electrical system and instrumentation system.

2.05 SUBMITTAL

A. Prior to substantial completion and prior to starting the bacteria testing of water lines, deliver signed and sealed Record Documents and Record Drawings to the City. These will be reviewed and verified by the inspector. If there are any required changes or additions, these shall be completed and the entire signed and sealed set resubmitted prior to final pay application.

B. The Contractor shall employ a Professional Engineer or Surveyor registered in the State of Florida to verify survey data and properly prepare record drawings. Record drawings shall be certified by the professional(s) (Engineer or Surveyor licensed in Florida), as stipulated by the Land Development Ordinance and submitted on signed and sealed paper drawings, signed and dated mylar drawings together with an AutoCAD version on a recordable compact disk (CD).

C. The CD shall contain media in AutoCad Version 2004 or later, or in any other CAD program compatible with AutoCad in DWG or DXF form. All fonts, line types, shape files, external references, or other pertinent information used in the drawing and not normally included in AutoCad shall be included on the media with a text file or attached noted as to its relevance and use.

D. Accompany submittal with transmittal letter, containing:

1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each Record Document.
5. Signature of Contractor or his authorized representative.

Note: The data required to properly prepare these record drawings shall be obtained at the site, at no cost to the City by the responsible design professional or his/her duly appointed representative. The appointed representative shall be a qualified employee of the responsible design professional or a qualified inspector retained by the responsible design professional on a project-by-project basis.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01730 OPERATING AND MAINTENANCE DATA

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Compile product data and related information appropriate for City's maintenance and operation of products furnished under Contract.

Prepare operating and maintenance data as specified in this and as referenced in other pertinent sections of Specifications.

B. Instruct City's personnel in maintenance of products and equipment and systems.

C. Provide three (3) sets of operating and maintenance manuals for each piece of equipment provided within this Contract.

1.02 FORM OF SUBMITTALS

A. Prepare data in form of an instructional manual for use by City's personnel.

B. Format:

1. Size: 8-1/2 inch x 11 inch
2. Paper: 20 pound minimum, white, for typed pages
3. Text: Manufacturer's printed data or neatly typewritten
4. Drawings:

    a. Provide reinforced punched binder tab, bind in with text.
    b. Fold larger drawings to size of text pages.

5. Provide fly-leaf for each separate product or each piece of operating equipment.

    a. Provide typed description of product and major component parts of equipment.
    b. Provide indexed tabs.

6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:

    a. Title of Project.
    b. Identity of separate structures as applicable.
    c. Identity of general subject matter covered in the manual.

C. Binders:

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Maximum ring size: 1 inch.
3. When multiple binders are used, correlate the data into related consistent

groupings.

1.03 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit three copies of complete manual in final form.

B. Content for each unit of equipment and system, as appropriate:

1. Description of unit and component parts.
    a. Function, normal operating characteristics and limiting conditions.
    b. Performance curves, engineering data and tests.
    c. Complete nomenclature and commercial number of replaceable parts.
2. Operating Procedures:
    a. Start-up, break-in, routine and normal operating instructions.
    b. Regulation, control, stopping, shut-down and emergency instructions.
    c. Summer and winter operating instructions.
    d. Special operating instructions.
3. Maintenance Procedures:
    a. Routine operations.
    b. Guide to "trouble-shooting".
    c. Disassembly, repair and reassembly.
    d. Alignment, adjusting and checking.
4. Servicing and lubricating schedule.
    a. List of lubricants required.
5. Manufacturer's printed operating and maintenance instructions.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
    a. List of predicted parts subject to wear.
    b. Items recommended to be stocked as spare parts.
8. As installed control diagrams by controls manufacturer.
9. Each contractor's coordination drawings.
    a. As installed color coded piping diagrams.
10. Charts of valve tag numbers, with location and function of each valve.
11. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
12. Other data as required under pertinent sections of specifications.

C. Content, for each electric and electronic system, as appropriate:

1. Description of system and component parts.

    a. Function, normal operating characteristics and limiting conditions.
    b. Performance curves, engineering data and tests.
    c. Complete nomenclature and commercial number of replaceable parts.

2. Circuit directories of panelboards.

    a. Electrical service.
    b. Controls.
    c. Communications.

3. As-installed color coded wiring diagrams.
4. Operating procedures:

    a. Routine and normal operating instructions.
    b. Sequences required.
    c. Special operating instructions.

5. Maintenance procedures:

    a. Routine operations.
    b. Guide to "trouble-shooting".
    c. Disassembly, repair and reassembly.
    d. Adjustment and checking.

6. Manufacturer's printed operating and maintenance instructions.
7. List of original manufacture's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
8. Prepare and include additional data when the need for such data becomes apparent during instruction of City's personnel.

D. Prepare and include additional data when the need for such data becomes apparent during instruction on City's personnel.

E. Additional requirements for operating and maintenance data: Respective sections of Specifications.

1.04 SUBMITTAL SCHEDULE

A. Submit one copy of completed data in final form fifteen days prior to substantial completion.

1. Copy will be returned after substantial completion, with comments (if any).

B. Submit two copies of approved data in final form. Final acceptance will not be provided until the completed manual is received and approved.

1.05 INSTRUCTION OF CITY'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct City's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

B. Operating and maintenance manual shall constitute the basis of instruction.

1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01740 WARRANTIES AND BONDS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Compile specified warranties and bonds.

B. Compile specified service and maintenance contracts.

C. Co-execute submittals when so specified.

D. Review submittals to verify compliance with Contract Documents.

E. Submit to City for review and transmittal.

1.02 SUBMITTAL REQUIREMENTS

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors.

B. Number of original signed copies required: Two each.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product or work item.
2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning of warranty, bond or service and maintenance contract.
5. Duration of warranty, bond or service maintenance contract.
6. Provide information for County's personnel:

    a. Proper procedure in case of failure.
    b. Instances which might affect the validity of warranty or bond.

7. Contractor, name of responsible principal, address and telephone number.

1.03 FORM OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8-1/2 inch x 11 inch punched sheets for standard 3-ring binder. Fold larger sheets to fit into binders.
2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:

    a. Title of Project.
    b. Name of Contractor.

C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.

1.04 TIME OF SUBMITTALS

A. Make submittals within ten days after date of substantial completion and prior to final request for payment.

B. For items of work, where acceptance is delayed materially beyond date of substantial completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.05 SUBMITTALS REQUIRED

A. Submit warranties, bonds, service and maintenance contracts as specified in respective sections of Specifications.

B. Approval by the City of all documents required under this section is a pre-requisite to requesting a final inspection and final payment

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01900 PERMITS

PART 1 GENERAL

1.01 GENERAL

A. The Contractor shall obtain all permits necessary to complete Work under this Contract.

B. Where permits require that certain work is to be performed only in the presence of a representative of the permitting entity, the Contractor shall provide all coordination and notification required to assure the permit conditions are not violated.

1.02 PERMITS

A. The Owner has obtained / will obtain permits from the following agencies where required for the construction of the work included in the project.

1. Building Permit (Signed and Sealed Drawings will be provided to Contractor by McKim & Creed).

B. All other permits and licenses required to perform the work included in the contract are the complete and total responsibility of the CONTRACTOR including but not limited to the following:

1. FDEP – NOI including preparation of SWPPP
2. FDEP - Generic Permit for the Discharge of Produced Groundwater

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 2050 DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes demolition, abandonment, debris removal and items to be salvaged as indicated on the Drawings and as specified herein.

B. Demolition items consist of, but are not limited to the following:

1. Removal of materials, equipment and appurtenances as shown on Contract Plans.
2. Items to be salvaged will be documented at the pre-construction meeting.
3. City reserves the right to salvage parts throughout the project.

1.02 QUALITY ASSURANCE

A. Accomplish all demolition work so there is no injury to any persons and no damage to adjacent structures or property. All demolition methods shall be in full compliance with municipal, county, state, and federal ordinances. Demolition work shall comply with the requirements of the Occupational Safety and Health Administration (OSHA).

B. The CONTRACTOR shall comply with all municipal, county, state and federal ordinances regarding the disposal of rubble, scrap metal, asbestos and refuse.

C. Demolition procedures shall provide for safe conduct of the work, protection of property which is to remain undisturbed, and coordination with other work in progress.

1.03 JOB CONDITIONS

A. It shall be the responsibility of the CONTRACTOR to visit the site and inspect the nature and condition of the items to be removed and salvaged before submitting his bid.

B. Dust Control: Control the amount of dust resulting from demolition to prevent the spread of dust to occupied portions of buildings and to avoid creation of a nuisance in the surrounding area. Do not use water when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution.

C. Protection of Existing Work: Protect existing work. Work damaged by the CONTRACTOR shall be repaired to match existing work.

PART 2 PRODUCTS

2.01 REPAIR AND REPLACEMENT MATERIALS

A. Materials used in the repair or replacement of existing work to remain shall be identical or equal to the materials used in existing work when new unless otherwise provided in the contract documents.

PART 3 EXECUTION

3.01 PIPING

A. Completely remove or abandon piping as shown on the Drawings. The CONTRACTOR shall schedule underground pipe removal and new pipe installation in order to minimize disruption of the existing piping system.

3.02 DISPOSAL

A. Loaded/Unloaded Equipment, piping, and materials within a radius of 10-miles which are designated to remain the property of the CITY shall be turned over to the CITY.

B. All removed equipment, piping, and materials not specifically designated to remain the property of the CITY shall become the property of the CONTRACTOR and shall be removed from the site.

C. Do not allow debris and rubbish to accumulate on the site. Remove debris and rubbish from the site.

D. Must use waste management.

3.03 BACKFILLING

A. Backfill excavations resulting from demolition.

B. Backfill excavations which will not be beneath new structures, buildings, piping, or other new work.

C. Backfill excavations as specified in Division 02 – Site Work.

D. Place and compact backfill in other excavations to produce an adequate foundation for grassing.

3.04 REMOVAL AND ABANDONMENT OF ASBESTOS CEMENT PIPE AND APPURTENANCES

A. The Contractor or subcontractor shall contact the appropriate regulatory agencies prior to removal or abandonment of any asbestos containing material and shall obtain all required permits and licenses and issue all required notices. The

Contractor shall be responsible for all fees associated with permits, licenses and notices to the governing regulatory agencies.

All work associated with removal or abandonment of asbestos cement pipe and appurtenances shall be performed in accordance with the standards listed below and all other applicable local, State, or Federal standards.

1. Florida Administrative Code, Chapter 62-257, “Asbestos Program”.
2. National Emission Standards Hazardous Air Pollution (NESHAP), 40 CRF, Part 61, Subpart M, latest revisions.
3. Occupational Safety and Health Act, 29 CFR

B. All asbestos cement pipe sections shown on the Drawings to be removed, and all related valves, fittings and appurtenances shall be removed in their entirety and disposed of by the Contractor in accordance with this Section and applicable regulations. After removal of the facilities, all trenches shall be backfilled in accordance with the Contract Documents. The cost of disposing of the removed materials shall be borne by the Contractor.

C. The Contractor shall make necessary provisions for the Engineer to monitor all removal operations.

3.05 CLEAN-UP

A. Clean-up in areas where other work is to be done following demolition shall be as specified in the applicable Sections.

B. Clean-up the job site in areas where no other work is to be done under this Contract following demolition. Remove all debris and rubbish, temporary facilities, and equipment. Level surface irregularities to eliminate depressions. Leave the work in a neat and presentable condition.

END OF SECTION

SECTION 02064 MODIFICATIONS TO EXISTING STRUCTURES, PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to modify, alter and/or convert existing structures as shown or specified and as required for the installation of piping, mechanical equipment and appurtenances. Existing piping and equipment shall be removed and dismantled as necessary for the performance of facility alterations in accordance with the requirements herein specified.

PART 2 PRODUCTS

A. Epoxy mortar shall be fiberglass fiber mixed with an epoxy filler.

B. Non-shrink grout shall be a sand-cement, non-metallic formulation, having a 28-day strength of 4,000 psi and 0.0 percent shrinkage per ASTM C1090.

C. Liners to be installed in existing manholes and wetwells shall be spray-applied, monolithic, reinforced urethane resin. Urethane resin-based manhole liner material shall be resistant to hydrogen sulfide gas, and other common contents found in a sanitary sewer environment.

D. Approved manhole and wet well liner products are Raven 405, SprayWall, Green Monster, or SpectraShield.

PART 3 EXECUTION

3.01 GENERAL

A. Cut, repair, reuse, excavate, demolish or otherwise remove parts of the existing structures or appurtenances, as indicated on the construction drawings, or as necessary to complete the work as required. Dispose of surplus materials resulting from the above work in an approved manner. The work shall include all necessary cutting and bending of reinforcing steel, structural steel, or miscellaneous metal work found embedded in the existing structures.

B. Dismantle and remove all existing equipment, piping, and other appurtenances required for the completion of the work. Where called for or required, cut existing pipelines for the purpose of making connections thereto.

C. Anchor bolts for equipment and structural steel to be removed shall be cut off one inch below the concrete surface. Surfaces shall then be refinished using non-shrink grout or epoxy mortar or as indicated on the construction drawings. Repairs to the interior surfaces of existing concrete structures in sanitary sewers shall be made with epoxy mortar. Repairs to be made on other existing concrete surfaces using non-shrink grout shall be made using a bonding agent such as Acrylbond by Concrete Producers Solutions or an equal approved by the County. Remove all dirt, curing compounds, sealers, paint, rust or other foreign material, and etch with

muriatic acid solution. Flush with clean water and while still damp, apply a coating of the bonding agent. Place the new grout patch onto the treated area immediately.

D. At the time that a new connection is made to an existing pipeline, additional new piping, extending to and including a new valve, shall be installed. Pipe restraint devices, if required, shall also be installed as required. At the time when a new potable or reclaimed water service is installed, a pipe locator tracer wire shall be installed and connected to the tracer wire at the main.

E. No existing structure, equipment, or appurtenance shall be shifted, cut, removed, or otherwise altered except with the express approval of and only to the extent approved by the County. All existing valve boxes, fire hydrants, air release valve cabinets, and manholes shall be relocated to meet the new finished grade elevations after construction.

F. When removing materials or portions of existing utility pipelines or structures or when making openings in walls and partitions, take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, and not to damage the structures or contents by falling or flying debris. Unless otherwise approved by the County, saw-cutting, rotary core-boring, or line drilling will be required in removing material from existing concrete structures or pipes.

G. Materials and equipment removed in the course of making alterations and additions shall remain the property of the County, except that items not salvageable, as determined by the County, shall be disposed of off the work site.

H. All alterations to existing utility pipes and structures shall be done at such time and in such a manner as to comply with the approved time schedule. Before any part of the work is started, all tools, equipment, and materials shall be assembled and made ready so that the work can be completed without delays.

I. All cutting of existing concrete or other material to provide suitable bonding to new work shall be done in a manner to meet the requirements of the respective section of these Standards covering the new work. When not covered, the work shall be carried on in the manner and to the extent directed by the County or per the construction drawings.

J. Surfaces of seals visible in the completed work shall be made to match as nearly as possible the adjacent surfaces.

K. Non-shrink cementitious grout shall be used for setting wall castings, sleeves, leveling pump bases, doweling anchors into existing concrete and elsewhere as shown on the construction drawings. The surface to which grout is to be applied shall be wetted to facilitate good bonding.

L. Where necessary or required for the purpose of making connections; cut existing pipelines in a manner to provide an approved joint. Where required, use flanges, couplings, or adapters, all as required.

M. Provide flumes, hoses, piping, pumps and well points, and other related items to divert or provide suitable plugs, bulkheads, or other means to hold back the flow of water or other liquids, all as required in the performance of the work.

N. Care shall be taken not to damage any part of existing buildings or foundations or outside structures.

O. Prior to entering confined spaces in sanitary sewer structures, conduct an evaluation of the atmosphere within, in accordance with local, state, and federal regulations. Provide ventilation equipment and other equipment as required to assure safe working conditions.

3.02 CONNECTING TO EXISTING PIPING AND EQUIPMENT

A. The Contractor shall verify exact location, material, alignment, joint, etc. of existing piping and equipment prior to making the connections called out in the Drawings. The verifications shall be performed with adequate time to correct any potential alignment or other problems prior to the actual time of connection. A County Inspector must be present for all tie-ins for a visual inspection.

3.03 REMOVAL AND ABANDONMENT OF ASBESTOS CEMENT PIPE AND APPURTENANCES

A. All work associated with the removal or abandonment of existing asbestos cement pipe and appurtenances shall be performed by a licensed asbestos removal Contractor registered in the State of Florida.

B. The asbestos Contractor shall contact the appropriate regulatory agencies prior to removal or abandonment of any asbestos material and shall obtain all required permits and licenses and issue all required notices. The cost for all fees associated with permits, licenses and notices to the governing regulatory agencies shall be borne by the asbestos Contractor.

C. All work associated with removal or abandonment of asbestos cement pipe and appurtenances shall be performed in accordance with the standards listed below and all other applicable local, State, or Federal standards.

(1) Florida Administrative Code, Chapter 62-257, ASBESTOS PROGRAM
(2) Title 40 CFR, Part 61, Subpart M, NATIONAL EMISSION STANDARD FOR ASBESTOS
(3) Occupational Safety and Health Act, Title 29 CFR
(4) Title 40 CFR, Part 763, ASBESTOS
(5) Florida Statute Title XXXII, Chapter 469, ASBESTOS ABATEMENT

D. All asbestos cement pipe sections indicated on the construction drawings to be removed, and all related tees, valves, fittings and appurtenances shall be removed in their entirety and disposed of by the asbestos Contractor in accordance with this Section. Asbestos cement nipples between tees and valves shall be replaced. After removal of the pipelines, all excavations shall be backfilled in accordance with the applicable provisions of the Trenching and Excavation Section of these Standards. The cost of disposing of the removed materials shall be borne by the asbestos Contractor.

E. The cutting of existing asbestos-cement (A/C, a.k.a. "Transite") pipe shall be by hand tools only. No powered machine cutting is allowed. Removal of all fragments of pipe shall be double bagged prior to shipment. Longer sections of pipe removed may be shipped without double bagging. An asbestos manifest form must accompany each shipment of such pipe or pipe material waste to the Manatee County Lena Road Landfill. Prior to each shipment, a minimum of 24 hours notice to the Landfill field office (telephone (941) 748-5543) is required.

3.04 IN-PLACE GROUTING OF EXISTING PIPE

A. Where water and wastewater utility pipes are to be abandoned in place, they shall be filled with a non-shrinking sand-cement grout. When such pipes are made of asbestos-cement materials, the abandonment activities shall be performed by a licensed asbestos Contractor. It is completely the Contractor's responsibility to obtain all regulatory clearances and provide documentation in cases where they have determined that an asbestos-cement pipe abandonment activity by in-place grouting does not require a licensed asbestos Contractor.

B. The ends of the pipe sections to be grout-filled shall be capped or plugged with suitable pipe fittings. The grout material shall be of suitable properties and the pumping pressure shall be such that the pipe sections are filled completely with grout. All above ground features shall be removed: hydrants, meters, valve & meter boxes, pads, vaults, etc. Existing tees, crosses, and valves left in service shall be plugged and restrained.

C. The County shall be given timely notice so that the County's representative may be present to monitor all pipe grouting operations. Provide standpipes and/or additional means of visual inspection as required to determine if adequate grout material has filled the entire pipe sections.

D. All tees, crosses, and valves left in service shall be plugged and restrained.

3.05 SPRAY-APPLIED LINERS

A. Use a high-pressure water spray to remove all foreign material from the walls and bench of the structure. Loose or protruding masonry materials shall be removed using a hammer and chisel. Fill any voids, holes or cracks using a hand trowel with epoxy mortar to form a uniform surface. Place covers over all pipe openings to prevent extraneous material from entering the pipes. Block or divert sewer flow from entering the structure. Any infiltration leaks shall be stopped by using such methods as approved by the County.

B. The liner material shall be sprayed onto the invert, bench and wall areas. The sprayed-on material shall be applied such that the entire structure is lined with a structurally enhanced monolithic liner. The thickness of the wall liner material shall be such that it will withstand the hydraulic load generated by the surrounding groundwater table, using a factor of safety of two, and using the assumption that the groundwater table is at the level of the top of the structure. The invert and bench liner material shall be the same thickness as that required for the base of the wall.

C. Special care shall be used to provide a smooth transition between the intersecting pipelines and the manhole inverts such that flow is not impaired. Remove concrete

material from the existing manhole base channel in depth to the required thickness of the new liner material.

D. No active sewer flow shall be allowed in the newly lined structure, nor shall any vacuum tests be performed, until the liner material has had adequate time to cure, as recommended by the liner material manufacturer.

E. Install the coating systems per manufacturer's recommendation and completely protect the structure from corrosion. The liner or coating systems must extend and seal onto manhole ring, onto and around pipe openings and any other protrusions, and completely cover the bench and flow invert. Provide a five (5)-year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the coating or liner system, and shall protect the structure for at least five (5) years from all leaks and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

3.06 CONNECTION TO EXSTING MANHOLE

A. Where required or as indicated on the construction drawings, make connection of new pipelines to existing manhole structures. If pipe stub-outs of the correct size and position are not available, make connections by removing a portion of the manhole wall by mechanical rotary core boring. The connection between pipe and concrete manhole shall be complete with resilient seals meeting the requirements of ASTM C923.

B. A new channel shall be formed in the manhole base by removing and reforming or by providing new concrete to convey the new flow into the existing channel in accordance with the standard requirements for new sewer manhole structures. Flow direction shall not change by more than 90 degrees within the manhole base.

C. Repair internal coating of existing manholes cored during connection of new sewers by applying approved coating material as listed above in accordance with the manufacturer's recommendations. If existing manhole has an internal coating other than that listed above, sandblast the interior of the existing manhole and apply an approved coating in accordance with the manufacturer's recommendations.

D. When connecting a force main to an existing manhole, the force main termination manhole and the next two manholes downstream shall be rehabilitated and lined with a currently approved liner. If the existing manholes are lined with a non-conforming liner according to Part 2.D above, the existing liner shall be removed and replaced, unless otherwise noted on the plans or with written approval by the County.

END OF SECTION

SECTION 03300 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 WORK INCLUDED

A. Poured-in-place concrete slabs, thrust blocks, pile caps and pipe support cradles.

1.02 QUALITY ASSURANCE

A. Perform cast-in-place concrete work in accordance with ACI 318, unless specified otherwise in this Section.

1.03 TESTING LABORATORY SERVICES

A. Inspection and testing will be performed by the testing laboratory. CONTRACTOR to hire testing firm for project and in accordance with the Contract Documents.

B. Provide free access to work and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of work.

D. Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.

E. Three concrete test cylinders will be taken for every 100 cu. yds. or part thereof of each class of concrete placed each day. Smaller pours shall have cylinders taken as directed by the County.

F. One slump test will be taken for each set of test cylinders taken.

1.04 REFERENCES

A. Florida Building Code (FBC) 2023 Edition

B. ACI 301 – Structural Concrete for Buildings

C. ACI 318 - Building Code Requirements for Reinforced Concrete

D. ACI 350 – Code Requirements for Reinforced Concrete

E. ASTM C33 – Coarse Aggregate

F. ASTM C150 - Portland Cement

G ASTM C260 - Air Entraining Admixtures for Concrete

H. ASTM C94 - Ready-Mixed Concrete

I. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete

J. ACI 305 - Recommended Practice for Hot Weather Concreting

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C150, Type I or II, gray, no substitutions are allowed. Cement replacement by weight can be up 25% of the total weight, replace with Fly Ash.

a. Fly Ash: ASTM C618, Class F.

B. Normal-Weight Aggregates: ASTM C33, Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement. Use Clean, sharp, natural silica sand free of loam, clay, lumps, and other deleterious substances. Dune sand, bank run sand, and manufactured sand are not acceptable.

2. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter. Coarse aggregate shall comply with the following:

a. Crushed stone, processed from natural rock or stone.

b. Washed gravel, either natural or crushed. Slag, pit gravel, and bank-run gravel are not allowed.

c. Coarse Aggregate Size: ASTM C33/C33M, No. 57 stone, unless otherwise approved by the Engineer.

C. Water: Clean and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

2.02 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Chemical: ASTM C494 Type A - water reducing admixture.

2.03 ACCEPTABLE MANUFACTURERS

A. Acceptable Products:

1. Pozzolith
2. WRDA
3. Approved equal

2.04 ACCESSORIES

A. Non-shrink grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2400 psi in 2 days and 7000 psi in 28 days.

2.05 CONCRETE MIXES

A. Mix concrete in accordance with ASTM C94.

B. Provide concrete of following strength:

1. Required concrete strengths as determined by 28 day cylinders shall be as shown on the Drawings, but shall not be less than 3000 psi.
2. Design Mixtures: Submit concrete mixture proportions, characteristics and location for use for each concrete mixture. Submittal shall include documentation indicating the proposed concrete proportions will produce an average compressive strength equal to or greater than the required average compressive strength and shall consist of field strength records (field test data) or trial mixtures in accordance with ACI 301, 4.2.3.4.a or 4.2.3.4.b, respectively. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
3. Indicate amounts of mixing water to be withheld for later addition at Project site.
4. All mixes shall be in accordance with FDOT Specifications.

C. Use set-retarding admixtures during hot weather only when accepted by County.

D. Add air entraining agent to concrete mix for concrete work exposed to exterior.

2.06 FORMS

A. Forms shall be used for all concrete masonry, including footings. Form shall be so constructed and placed that the resulting concrete will be of the shape, lines, dimensions, appearance and to the elevations indicated on the Drawings.

B. Forms shall be made of wood, metal, or other approved material. Wood forms shall be constructed of sound lumber or plywood of suitable dimensions, free from knotholes and loose knots; where used for expose surfaces, boards shall be dressed and matched. Plywood shall be sanded smooth and fitted with tight joints between panels. Metal forms shall be of an approved type for the class of work involved and of the thickness and design required for rigid construction.

C. Edges of all form panels in contact with concrete shall be flush within 1/32-inch and forms for plane surfaces shall be such that the concrete will be plane within 1/16-inch in four feet. Forms shall be tight to prevent the passage of mortar and water and grout.

D. Forms for walls shall have removable panels at the bottom for cleaning, inspection and scrubbing-in of bonding paste. Forms for walls of considerable height shall be arranged with tremies and hoppers for placing concrete in a manner that will prevent segregation and accumulation of hardened concrete on the forms or reinforcement above the fresh concrete.

E. Molding or bevels shall be placed to produce a 3/4-inch chamfer on all exposed projecting corners, unless otherwise shown on the Drawings. Similar chamfer strips shall be provided at horizontal and vertical extremities of all wall placements to produce "clean" separation between successive placements as called for on the Plans.

F. Forms shall be sufficiently rigid to withstand vibration, to prevent displacement or sagging between supports and constructed so the concrete will not be damaged by their removal. The Contractor shall be entirely responsible for their adequacy.

G. Forms, including new pre-oiled forms, shall be oiled before reinforcement is placed, with an approved nonstaining oil or liquid form coating having a non-paraffin base.

H. Before form material is re-used, all surfaces in contact with concrete shall be thoroughly cleaned, all damaged places repaired, all projecting nails withdrawn, all protrusions smoothed and in the case of wood forms pre-oiled.

I. Form ties encased in concrete shall be designed so that after removal of the projecting part, no metal shall be within 1-inch of the face of the concrete. That part of the tie to be removed shall be at least 1/2-inch diameter or be provided with a wood or metal cone at least 1/2-inch in diameter and 1-inch long. Form ties in concrete exposed to view shall be the cone-washer type equal to the Richmond "Tyscru". Throughbolts or common wire shall not be used for form ties.

PART 3 EXECUTION

3.01 PLACING CONCRETE

A. Place concrete in accordance with ACI 304.

B. Notify County minimum 24 hours prior to commencement of concreting operations.

C. Verify anchors, seats, plates and other items to be cast into concrete are placed, held securely and will not cause hardship in placing concrete. Rectify same and proceed with work.

D. Maintain records of poured concrete items. Record date, location of pour, quantity, air temperature and test samples taken.

E. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction

joints are not disturbed during concrete placement.

F. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's recommendations.

G. Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.

H. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solidly with non-shrink grout.

I. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify County upon discovery.

J. Conform to ACI 305 when concreting during hot weather.

3.02 SCREEDING

A. Screed surfaces level, maintaining flatness within a maximum deviation of 1/8" in 10 feet.

3.03 PATCHING

A. Allow County to inspect concrete surfaces immediately upon removal of forms. Patch imperfections as directed. All patching procedures shall be submitted to and approved by the County prior to use.

3.04 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details and elevations.

B. Repair or replace concrete not properly placed resulting in excessive honeycomb and other defects. Do not patch, fill, touch-up, repair, or replace exposed architectural concrete except upon express direction of County for each individual area.

3.05 CONCRETE FINISHING

A. Provide concrete surfaces to be left exposed, columns, beams and joists with smooth rubbed finish.

3.06 CURING AND PROTECTION

A. Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for a period of 7 days or until concrete strengths reaches 75% of the 28 day design strength.

B. Protection against moisture loss may be obtained with spray on curing compounds or plastic sheets. Protection against heat or cold may be obtained with insulated curing blankets or forms.

3.07 CONCRETE DRIVEWAY RESTORATION

A. Concrete driveways shall be restored with 6 inches of 3,000 psi concrete with W2.5 X W2.5, 6X6 wire mesh. Place ½ inch expansion joint between back of curb and new concrete. Area beneath restoration shall be mechanically tamped prior to placing concrete.

3.08 CONCRETE SIDEWALK RESTORATION

A. Concrete sidewalks across driveways shall be restored with 6 inches of 3,000 psi concrete with W2.5 X W2.5, 6X6 wire mesh. Place ½ inch expansion joint between back of curb and new concrete. Area beneath restoration shall be mechanically tamped prior to placing concrete.

B. Concrete sidewalks outside of driveways shall be restored with 4 inches of 3,000 psi concrete per FDOT Design Standards, Sections 522 & 310

END OF SECTION

SECTION 03350 CONCRETE FINISHES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to finish cast-in-place concrete surfaces as specified herein.

1.02 SUBMITTALS

A. Submit to the City as provided in the Contract Documents, the proposed chemical hardener manufacturer's surface preparation and application procedures.

1.03 SCHEDULE OF FINISHES

A. Concrete for the Project shall be finished in the various specified manners either to remain as natural concrete or to receive an additional applied finish or material under another Section.

B. The base concrete for the following conditions shall be finished as noted and as further specified herein:

1. Exterior, exposed concrete slabs and stairs - broomed finish.
2. Interior, exposed concrete slabs - steel trowel finish.
3. Concrete on which process liquids flow or in contact with sludge - steel trowel finish.
4. Concrete where not exposed in the finished work and not scheduled to receive an additional applied finish or material - off-form finish.
5. Provide concrete surfaces to be left exposed such as walls, columns, beams and joists with smooth rubbed finish.

1.04 RESPONSIBILITY FOR CHANGING FINISHES

A. The surface finishes specified for concrete to receive additional applied finishes or materials are the finishes required for the proper application of the actual products specified under other Sections. Where different products are approved for use, it shall be the Contractor's responsibility to determine if changes in finishes are required and to provide the proper finishes to receive these products.

B. Changes in finishes made to accommodate product different from those specified shall be performed at no additional cost to the County. Submit the proposed new finishes and their construction methods to the County for approval.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland cement and component materials required for finishing the concrete surfaces shall be as specified in the Contract Documents.

B. Hardener shall be Lapidolith as manufactured by Sonneborn Building Products or approved equal. Hardener shall be used on all floors, stair treads and platforms.

PART 3 EXECUTION

3.01 FORMED SURFACES

A. Forms shall not be stripped before the concrete has attained a strength of at least 50 percent of the ultimate design strength. This is equivalent to approximately five "100 day-degrees" of moist curing.

B. Care shall be exercised to prevent damaging edges or obliterating the lines of chamfers, rustications, or corners when removing the forms or doing any work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the City.

D. Off-form finish. Fins and other projections shall be removed as approved. Tie cone holes and other minor defects shall be filled with non-shrink grout specified under the Contract Documents.

3.02 FLOORS AND SLABS

A. Floors and slabs shall be screeded to the established grades and shall be level with a tolerance of 1/8-inch when checked with a 10 foot straight edge, except where drains occur, in which case floors shall be pitched to drains as indicated. Failure to meet either of above shall be cause for removal, grinding, or other correction as approved by the City.

B. Following screeding as specified above, power steel trowel as follows:

1. Immediately after final screeding, a dry cement/sand shake in the proportion of 2-sacks of portland cement to 350-pounds of coarse natural concrete sand shall be sprinkled evenly over the surface at the rate of approximately 500 pounds per 1,000 square feet of floor. Neat, dry cement shall not be sprinkled on the surface. This shake shall be thoroughly floated into the surface with an approved disc type power compacting machine weighing at least 200 pounds if a 20-inch disc is used or 300 pounds if a 24-inch disc is used (such as a "Kelly Float" as manufactured by the Weisner-Rapp Corporation of Buffalo, New York). A mechanical blade-type float or trowel is not acceptable for this work.
   NOTE: This operation (application of the cement/sand shake) may be eliminated at the discretion of the City if the base slab concrete exhibits adequate fattiness and homogeneity.
2. In lieu of power steel troweling, small areas as defined by the City shall be compacted by hand steel troweling with the dry cement/sand shake as ordered.
3. The floor or slab shall be compacted to a smooth surface and the floating operation continued until sufficient mortar is brought to the surface to fill all voids. The surfaces shall be tested with a straight edge to detect high and low spots which shall be eliminated.

4. Compaction shall be continued only until thorough densification is achieved and a small amount of mortar is brought to the surface. Excessive floating shall be avoided.

C. After Paragraph 3.02 A and B procedures are accomplished, floors and slabs for particular conditions shall be completed as scheduled in one of the following finishes:

1. Wood float finish. Hand wood float, maintaining the surface tolerance to provide a grained, nonslip finish as approved.
2. Broomed finish. Hand wood float maintaining the surface tolerance and then broom with a stiff bristle broom in the direction of drainage to provide a nonslip finish as approved.
3. Steel trowel finish. Hand steel trowel to a perfectly smooth, hard even finish free from high or low spots or other defects as approved.

D. Floors, stair treads and platforms shall be given a floor hardener. Application shall be according to manufacturer's instructions.

3.03 APPROVAL OF FINISHES

A. All concrete surfaces will be inspected during the finishing process by the City.

B. Surfaces which, in the opinion of the City, are unsatisfactory shall be refinished or reworked until approved by the City.

END OF SECTION

SECTION 03600 GROUTING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes grouting of equipment bases and such locations as shown on the Drawings and as specified.

B. The types of grouting include the following:

1. Portland Cement Grout
2. Non-shrink, Non-expanding Grout

1.02 DELIVERY AND STORAGE

A. Prevent damage to or contamination of grouting materials during delivery, handling and storage.

B. Store all grouting materials in undamaged condition with seals and labels intact as packaged by the manufacturer.

1.03 SUBMITTALS

A. All submittals shall be in accordance with Specification 01340 – Shop Drawings, Project Data and Samples.

PART 2 PRODUCTS

2.01 PREMIXED GROUTS

A. Portland Cement Grout

B. (For grouting CMU cells and similar items – f'c=3000 psi minimum)

1. Portland Cement: ASTM C150, Type II
2. Sand: ASTM C33, Fine Aggregate
3. Water: Potable
4. Pea Gravel: ASTM C33. Coarse aggregate graded so that at least 90% passes 3/8-inch sieve and 90% is retained by a number 4 sieve.

C. (Grout Mortar for use as fillets and leveling)

1. Portland Cement: ASTM C150, Type II
2. Sand: ASTM C33, Fine Aggregate (Marson's sand)
3. Water: Potable
4. Mix 1-part Portland cement to 3-parts sand.

D. Pre-Mixed non-shrink, Non-expanding Grout (Nonmetallic). Non-shrink grout as shown on the Drawings shall be a mixture of selected silica sands, Portland cement, water reducing agents, plasticizing and shrinkage compensating agents.

Grout shall be nonmetallic non-corrosive, non-staining and comply with CRD-C-588, Type D.

E. The grout shall be non-shrink in accordance with ASTM C827, ASTM C191, and ASTM C109. The water-grout ratio shall be approximately 8 to 10 quarts of water per cubic foot of grout adjustable for varying job conditions.

F. Grout shall not contain calcium chloride or other salt; aluminum or other metals; chemical additives, gypsum or expansive cements. Grout shall not expand after set.

G. Grout shall be used and applied in accordance with the manufacturer's written instructions.

H. Subject to compliance with requirements provide from the following:

1. L&M Construction Chemicals, Inc. – Crystex
2. Grout Corp. - Five Star Non-shrink Grout or equivalent
3. Approved Equal

2.02 NONSHRINK GROUT

A. Non-shrink grout shall conform to the following requirements:

1. Manufactured under rigid quality control specifically for grout used in transferring heavy loads.
2. Contain nonmetallic aggregates specially graded to minimize bleeding.
3. Have an initial setting time of approximately one hour at 70°F.
4. Produce no settlement or drying shrinkage at 3 days or later.
5. Have higher strength at all ages than plain cement grout of the same flowability.
6. Resist attack by oil and water and have lower absorption than plain cement grout of the same flowability.
7. Minimum compressive strength, in accordance with ASTM C-109, shall be 2500 psi after 1 day and 7000 psi after 28 days.

2.03 MIXES

A. For less than 2-inch clearance, or where size or shape of space makes grouting difficult, grout mix shall consist of Portland cement, fine aggregate and water.

B. For greater than 2-inch clearances where coarse aggregate will not obstruct free passage of the grout, extend grout by adding 50 pounds of pea gravel per 100 pounds grout material.

C. Use minimum amount of water necessary to produce a flowable grout without causing either segregation or bleeding.

D. Portland cement mortar for raked-out edges of non-shrink grout: one part Portland cement, two parts sand and 0.50-part water by weight.

2.04 MIXING

A. Mix grout in accordance with manufacturer's printed specifications.

B. Mix grouting materials and water in a mechanical mixer for no less than 3-minutes.

C. Mix grout as close to the work area as possible and transport the mixture quickly and in a manner that does not permit segregation of materials.

D. After the grout has been mixed, do not add more water for any reason.

PART 3 EXECUTION

3.01 PROCEDURES

A. Installation methods and procedures shall be approved by Engineer and shall be in accordance with manufacturer's printed specifications before work is begun.

3.02 SURFACE PREPARATION

A. Surface preparation shall be in accordance with manufacturer's printed specifications.

B. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces by bush-hammering, chipping, or other similar means, until a sound, clean concrete surface is achieved.

C. Lightly roughen the concrete, but not enough to interfere with the proper placement of grout. Cover concrete areas with waterproof membrane until ready to grout. Immediately before grouting remove waterproof membranes and clean any contaminated surfaces.

D. Remove foreign materials from metal surfaces in contact with grout. Align, level and maintain final positioning of all components to be grouted.

E. Saturate concrete surfaces with clean water; remove excess water and leave none standing.

3.03 PLACING

A. Placing shall be in accordance with manufacturer's printed specifications.

B. Place non-shrink grouting material quickly and continuously by the most practical means permissible; pouring, pumping or under gravity pressure.

C. Do not use either pneumatic-pressure or dry packing methods without written permission of the Engineer.

D. Apply grout from one side only to avoid entrapping air.

E. Final installation shall be thoroughly compacted and free from air pockets.

F. Do not vibrate the placed grout mixture or allow it to be placed if the area is being vibrated by nearby equipment.

G. Do not remove leveling shims for at least 48 hours after grout has been placed. After shims have been removed, fill voids with plain cement-sand grout.

H. After non-shrink grout has reached initial set, rake out exposed edges approximately 1-inch into the grouted area and paint with Portland cement mortar.

3.04 CURING

A. Cure grout for 3-days after placing by keeping wet and covering with curing paper or by another approved method.

END OF SECTION

DIVISION 4 MASONRY

SECTION 04220 MASONRY

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to construct all masonry work as shown on the Drawings and specified herein.

B. The work under this Section includes, but is not necessarily limited to the following:

1. Concrete masonry units (CMU), including decorative masonry block.
2. Reinforced CMU lintels.
3. Masonry reinforcing, ties and anchors.
4. Grouting required throughout the project.

1.02 SAMPLES

A. Submit two samples each of concrete masonry units.

B. Submit two samples of decorative, masonry block.

C. Before commencing with the laying of any architectural masonry, construct on the site, where directed by the County, a sample 6 x 4 foot wall panel showing type and tooling of mortar and bond, for the County's approval. This sample wall shall remain in place for the duration of the masonry work. Remove sample panel at the completion of the work as directed by the County.

1.03 PROTECTION OF MATERIALS

A. All perishable materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials, such as cement and lime, shall be delivered and stored in their original container, plainly marked with identification of material and maker. Materials in broken containers or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.

B. All masonry shall be shipped stacked with hap or straw protection or other suitable protective device, and shall be similarly stacked off the ground no the site. In addition, all masonry stored on the site shall be protected from the weather and staining with the use of tarpaulins or other covering approved by the County.

1.04 COLD WEATHER CONSTRUCTION

A. Masonry construction in cold weather shall conform to the applicable requirements of "Construction and Protection Recommendations for Cold Weather Masonry Construction" of the Technical Notes on Brick and Tile Construction by the Brick Institute of America.

PART 2 PRODUCTS

2.01 MATERIALS – MASONRY

A. Concrete Masonry Units:

1. Standard and light weight concrete masonry units (CMU) shall conform to ASTM C-90, Grade N, Type I, two cell hollow, load bearing units of 8" x 16" nominal face size and bed dimension as shown on the Drawings. Masonry prism strength f'm shall be as shown on the drawings, but not less than 1250 psi.
2. CMU shall be free from substances that will cause staining for at least 18 hours and then air cured in covered storage for not less than 28 days before delivery. Units shall have a maximum linear drying shrinkage of 0.25 percent (ASTM C-426) and have a moisture content at time of delivery not exceeding 30 percent of total absorption.
3. CMU noted as fire-rated on the Drawings shall conform to Underwriters Laboratories, Inc., Standard for Concrete Masonry Units UL618, and shall have two (2) hour fire resistant rating.
4. All split rib CMU shall have 7-1/2 equally spaced 3/4-inch deep x 3/4-inch wide bevels. The projected face shall have a rough texture. Units shall be laid in horizontal stack bond.
5. Units shall be obtained from one manufacturer to ensure even color and texture.
6. Provide special units required by the Drawings, including solid, corner, pilaster, lintels, and jamb units.
7. Decorative masonry block units shall be similar in quality to Number 1210, DeMaco Concrete Products, Sarasota, FL, or equal. Design pattern to be as shown on the Drawings.

B. Acoustic concrete masonry units shall be Soundblox, Type R by the Proudfoot Company or equal. Units shall be fabricated on standard block machines using manufacturer's special molds; shall have a closed top and ends and slotted exposed face; shall have a noise reduction coefficient range (NRC) of 0.50 – 0.60 for Type R; and shall comply with ASTM-C90 for load bearing masonry units. Color of the Soundblox and mortar shall match interior color which will be submitted to the County. The Soundblox installation shall be laid in horizontal stackbond with flush joints.

2.02 REINFORCING, TIES, ANCHORS AND MISCELLANEOUS

A. Reinforcing shall be welded wire units prefabricated in straight lengths of not less than 10 feet with matching corner and tee units fabricated from cold-drawn steel wire complying with ASTM-A82, with deformed continuous side rods and plain cross-rods, crimped for cavity wall construction, if required, and a unit width of 1-1/2 inches to 2 inches less than thickness of wall or partition. Reinforcement for decorative masonry block shall be 2 inches wide. Reinforcement shall be placed at every third course (24" o.c.).

B. Single width reinforcement shall be truss type, fabricated with single pair of galvanized 9 gauge side rods and continuous 9 gauge cross-rods spaced not more than 16 inches on center.

C. Galvanized dove-tailed anchor slots with anchors at 24 inches on center shall be furnished for anchorage to concrete framework or walls.

D. Approved 16-gauge corrugated non-ferrous metal ties manufactured for use with the anchor slots provided shall be spaced at a maximum of 8 inches o.c. vertically and 30 inches o.c. horizontally.

E. The Contractor shall provide and install miscellaneous anchors and attachment members, required both for the anchorage of his own work and that of other trades requiring attachment to masonry, which are not specifically provided under separate sections.

F. Control joints shall be factory extruded preformed rubber gaskets conforming to ASTM D-2000 2AA-205 and shall be as manufactured by Dur-O-Wal, Hohmann and Bernard, Inc., AA Wire Products or equal. Control joints shall be installed as shown on the Drawings.

G. Weep holes shall be 1/4-inch O.D. by 4 inches long, clear plastic tubing that will not stain brickwork, by Hohmann and Barnard, Inc. or equal.

H. Cleaning compound shall be mild, non-caustic detergent solution such as 801 Super Real Clean by Superior Manufacturing Co., or 600 Sureclean by Process Solvent Co., Inc., or equal.

2.03 MORTAR MATERIALS

A. Portland cement shall conform to ASTM C150 Type II. Masonry cements to be used when specifically approved for colored mortar.

B. Lime for masonry mortar shall be hydrated, conforming to ASTM C207, Type S.

C. Sand shall be clean, durable particles, free from injurious amounts of organic matter. The sand shall conform to the limits of ASTM C144. Sand for grout shall conform to ASTM C144 or C33 as required.

D. Water shall be free from injurious amounts of oils, acids, alkalis or organic matter, and shall be clean and fresh.

E. Mortar proportions shall conform to ASTM C270, Type M, or as otherwise approved by the County. Ingredients shall be accurately measured by volume in boxes especially constructed for the purpose by the Contractor. Measurement by shovel will not be allowed.

F. Grout for setting bearing plates, machinery, or any other equipment shall be mixed as recommended by the manufacturer to give the necessary consistency for placing and to give a minimum compressive strength (ASTM C-109) of 5000 psi at 7 days.

G. All other grout shall be 1 part Portland cement and 1 part sand with a maximum aggregate size of 3/8 inch pea rock and a minimum comprehensive strength of 3000 psi in 28 days.

H. Non-shrink non-metallic grout shall be 5 star grout as manufactured by the U.S. Grout Corp., or equal and be used in strict accordance with the manufacturer's instructions for the use intended.

2.04 FACE BRICK

A. Non-load bearing burned clay or shale. Size, color and texture to match existing and as approved by the County.

PART 3 EXECUTION

3.01 MORTAR

A. Mortar shall be machine mixed in an approved type of mixer in which the quantity of water can be accurately and uniformly controlled. The mixing time shall not be less than five minutes, approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after the water has been added. Where hydrated lime is used for mortar requiring a lime content, the Contractor will have the options of using the dry-mix method or first converting the hydrated lime into a putty.

B. All CMU shall be laid in a full bed or mortar, applied to shells only. Butter the vertical joint of unit already set in the wall and all contact faces of the unit to be set. Each unit shall be placed and shoved against the unit previously laid so as to produce a well-compacted vertical mortar joint for the full shell thickness. Units shall set with all cells in a vertical position. The moisture content of the units when laid shall not exceed 35 percent of the total absorption as determined by laboratory test. Decorative masonry units shall be laid in a full bed of mortar on all four sides.

C. All masonry units shall be laid in stretcher (running) bond unless otherwise shown. Tool dense and neat.

D. Sizes shall be specified and called for on the Drawings, and where "Soaps" and "Splits" are used, the space between these members and the backup material shall be slushed full of mortar.

E. Joints of all masonry shall be tooled in accordance with the following:

1. Wait until unit mortar is thumbprint hard before tooling joint. This may require as much as three hours in the shade and one hour in the sun in the summertime.
2. The required personnel of the Contractor shall be kept on the job after hours, if necessary, to properly tool joints.
3. Both vertical and horizontal joints shall be maintained uniform in spacing.
4. Joints for CMU shall be 3/8 inch.
5. Joints for structural block shall be 1/4 inch.

F. Install all frames required to be set in masonry, set masonry tightly against frames, build in all frame anchors, and fill frames solid with mortar.

G. Control joints shall be installed at the intersection of masonry walls with structural concrete and elsewhere as detailed on the Drawings. Joints shall be raked out to

a depth of 3/4 inch for the full height of the wall suitable for caulking. The maximum length, horizontally, between vertical control joints shall be 40 ft., but joints shall be located only as directed or shown. Joints shall be equal in width to the standard mortar joint.

H. All masonry slots, chases, or openings required for the proper installations of the work of other Section shall be constructed as indicated on the Drawings or in accordance with information furnished before the work is started at the point affected. No chase shall cut into any wall constructed of hollow units after it is built, except as directed and approved by the County.

I. Surfaces shall be brushed as work progresses and maintained as clean as it is practicable. Unfinished work shall be raked back where possible and toothed only where absolutely necessary. Before leaving fresh or unfinished work, walls shall be fully covered and protected against rain and wind and before continuing work previously laid shall be swept clean. To tops of walls or other unfinished work shall be protected against all damage by frost or the elements by means or waterproof paper, tarpaulins, boards or other means approved by the County.

J. The Contractor shall build-in all miscellaneous items to be set in masonry for which placement is not specifically provided under separate Divisions, including reglets, lintels, ties, electrical panel boxes, sleeves, vents, grilles, anchors, grounds, and exterior electric conduits and fixtures, and shall cooperate with other trades whose work is to be coordinated with the work under this Section.

K. All anchorage, attachment, and bonding devices shall be set so as to prevent slippage and shall be completely covered with mortar or grout.

L. All ties and reinforcing for masonry shall be furnished and installed by the Contractor.

M. Loose steel lintels shall be as shown on drawings and installed under this Section.

N. Loose lintels shall be set in full bed or mortar and supported by solid or mortar filled hollow concrete blocks as detailed on the Drawings.

O. Bed and grout all steel, for equipment and machinery, and items coming in contact with masonry where grouting is required, including door bucks and frames set in masonry. The Contractor shall install all anchor bolts, base plates, and seats in masonry walls, and build-in all items required for the completion of the building as they apply to masonry.

3.03 REINFORCED MASONRY

A. Provide vertical reinforcing in filled cores of masonry units of size, spacing and locations as indicated on the Drawings and specified herein. Unless otherwise shown on the Drawings, vertical reinforcing at all exterior infill walls shall be No. 4 bars as specified in the Contract Documents and shall be placed 8'-0" on center, and vertical reinforcing at all exterior free-standing walls shall be No. 5 bars placed at each corner, each opening and not greater than 8'-0" centers along straight runs.

B. All cores containing reinforcing shall be filled, full height, with 3/8" pump mix

concrete f'c = 2,500 psi with a slump of not less than 6 inches nor more than 8 inches.

3.04 CLEANING

A. All holes in exposed masonry shall be pointed, and defective joints shall be cut out and repointed with mortar of same color as that of the original and adjoining work.

B. Exposed masonry shall be protected against staining by wall coverings, and excess mortar shall be wiped off the surface as the work progressed.

C. All masonry shall be cleaned with approved detergent solution in accordance with manufacturer's printed directions. No acid or metal scrapers shall be used on masonry.

D. Before applying any cleaning agent to the entire wall, it shall be applied to a sample wall area of approximately 20 square feet in a location approved by the County. No further cleaning work may proceed until the sample area has been approved by the County, after which time the same cleaning materials and method shall be used on the remaining wall area.

3.05 WALL FLASHING

A. Fabric wall flashing shall be installed above and below all openings in exterior masonry, at intersection of floors with exterior walls, and elsewhere as shown or noted on the Drawings. It shall be furnished and installed as shown on the Drawings.

END OF SECTION

SECTION 05500 – METAL FABRICATIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Steel framing and non-ferrous supports for mechanical and electrical equipment.
2. Steel framing and non-ferrous supports for applications where framing and supports are not specified in other Sections.
3. Miscellaneous steel trim including steel angle corner guards and steel edgings.
4. Metal bollards.
5. Abrasive metal nosings, treads, and thresholds.
6. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:

1. Section 03300 – Cast-In-Place Concrete for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
2. Section 07920 – Sealants and Caulking.
3. Section 09900 – Painting.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.04 ACTION SUBMITTALS

A. Product Data: For the following:

1. Metal nosings and treads.
2. Paint products.
3. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and non-ferrous supports for mechanical and electrical equipment.
2. Steel framing and non-ferrous supports for applications where framing and supports are not specified in other Sections.
3. Miscellaneous steel trim including steel angle corner guards and steel edgings.
4. Metal bollards.
5. Abrasive metal nosings, treads and thresholds.
6. Loose steel bearing plates.
7. Loose steel lintels.

1.05 INFORMATIONAL SUBMITTALS

A. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.06 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
4. All field welding shall be inspected by a Certified Welding Inspector (CWI), hired and paid for by the Contractor.

1.07 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 MATERIALS

2.01 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.02 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A36 (Fy = 36 KSI). Wide Flange Sections: ASTM A992 (Fy = 50 KSI).

D. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 316L.

E. Stainless-Steel Bars and Shapes: ASTM A 276, Type 316L.

F. Hollow steel sections: ASTM A500, Grade B (Fy = 46 KSI).

G. Steel Pipe: ASTM A53, Grade B (Fy = 35 KSI).

H. Aluminum Plate & Sheet: ASTM B209; 6061-T6, 6061-T651 Alloy.

I. Aluminum Extruded Shapes: ASTM B221, and Standard Structural Shapes – ASTM B308, 6061-T6 Alloy.

J. Aluminum Pipe Sections for Columns, Post & Guardrail: ASTM B241; 6063-T6 Alloy

K. Aluminum Shapes, Plate and Sheet: ASTM B 209 (ASTM B 209M), Alloy 6061-T6.

L. Bolts for Aluminum Fabrications: ASTM A193, Grade B8; or ASTM A276, Type 316 Stainless Steel.

M. Nuts for Aluminum Fabrications: ASTM A194, Grade M; or ASTM A276, Type 316 Stainless Steel.

2.03 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.
2. Provide stainless-steel fasteners for fastening stainless steel.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with hex nuts, ASTM A563 (ASTM A563M); and flat washers.

C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A325, Type 3 (ASTM A325M, Type 3); with hex nuts, ASTM A563, Grade C3 (ASTM A563M, Class 8S3); and flat washers.

D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593 (ASTM F738M); with hex nuts, ASTM F594 (ASTM F836M); and flat washers; Alloy Group 1 (A1).

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (ASTM A563M); and flat washers.

1. Hot-dip galvanized or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329.

H. Post-Installed Anchors: Torque-controlled expansion anchors, mechanical screw anchors, or chemical anchors.

1. Material for All Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.04 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

C. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

G. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

H. Concrete: Comply with requirements in Section 03300 – Cast-In-Place Concrete for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa) or greater.

2.05 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces, smooth and blend so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with primer specified in Section 09900 - Painting where indicated.

2.07 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and 24 inches o.c., unless otherwise indicated.

1. Provide mitered and welded units at corners.
2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize and prime shelf angles located in exterior walls.

D. Prime shelf angles located in exterior walls with primer specified in Section 09900 – Painting.

E. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.08 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Prime exterior miscellaneous steel trim with primer specified in Section 09900 – Painting.

2.09 METAL BOLLARDS

A. Fabricate metal bollards from circular Schedule 80 steel pipe tubing shapes, as indicated.

1. Fill bollards with 3,000 psi (min.) 28-day compressive strength concrete and round off tops.

B. Fabricate bollards with 5/8-inch thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch anchor bolts.

1. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.

C. Prime & paint bollards with primer & paint specified in Section 09900 – Painting.

1. If painting of baseplates and anchor bolts is not required, they shall be hot-dip galvanized per ASTM F2329.

2.10 ABRASIVE METAL NOSINGS, TREADS, AND THRESHOLDS

A. Cast-Metal Units: Cast aluminum, with an integral-abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.

1. Nosings: Cross-hatched units, 4 inches wide with 1/4-inch or 1-inch lip, for casting into concrete.
2. Nosings: Cross-hatched units, 1-1/2 by 1-1/2 inches, for casting into concrete.
3. Treads: Cross-hatched units, full depth of tread with 3/4-by-3/4-inch nosing, for application over bent plate treads or existing stairs.
4. Thresholds: Fluted-saddle-type units, 5 inches wide by 1/2 inch high, with tapered edges.
5. Thresholds: Fluted-interlocking- (hook-strip-) type units, 5 inches wide by 5/8 inch high, with tapered edge.
6. Thresholds: Plain-stepped- (stop-) type units, 5 inches wide by 1/2 inch high, with 1/2-inch step.

B. Extruded Units: Aluminum or as indicated on drawings, with abrasive filler consisting of aluminum oxide, silicon carbide, or a combination of both, in an epoxy-resin binder. Fabricate units in lengths necessary to accurately fit openings or conditions.

1. Provide ribbed units, with abrasive filler strips projecting 1/16 inch above aluminum extrusion.
2. Nosings: Square-back units, 1-7/8 inches wide, for casting into concrete steps.

C. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.

D. Drill for mechanical anchors and countersink. Locate holes not more than 4 inches from ends and not more than 12 inches o.c., evenly spaced between ends, unless otherwise indicated. Provide closer spacing if recommended by manufacturer.

1. Provide two rows of holes for units more than 5 inches wide, with two holes aligned at ends and intermediate holes staggered.

E. Apply bituminous paint to concealed surfaces of cast-metal units.

F. Apply clear lacquer to concealed surfaces of extruded units.

2.11 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates.

C. Prime plates with primer specified in Section 09900 – Painting.

2.12 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.

C. Galvanize and prime loose steel lintels located in exterior walls.

D. Prime loose steel lintels located in exterior walls with primer specified in Section 09900 – Painting.

2.13 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.14 GUTTERS AND DOWNSPOUTS

A. Gutters: Form from 0.0179-inch- thick, aluminum-zinc alloy-coated steel sheet pre-painted with coil coating. Fabricate in minimum 96-inch long sections, sized according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced 24 inches o.c., fabricated from same metal as gutters. Provide bronze, copper, or aluminum wire ball strainers at outlets. Finish gutters to match roof fascia. Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eaves with gutter hangers spaced not more than 2 feet o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

B. Downspouts: Form from 0.0179-inch thick, aluminum-zinc alloy-coated steel sheet pre-painted with coil coating; in 10-foot long sections, complete with formed elbows and offsets. Finish downspouts to match walls. Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 36 inches o.c. in between. Tie downspouts to drainage system indicated. Space downspouts a maximum of 50’-0” on center.

C. Install gutters, downspouts, and other accessories according to manufacturer's written instructions, with positive anchorage to building and weather tight mounting. Coordinate installation with flashings and other components.

2.15 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.16 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Other Items: SSPC-SP 3, "Power Tool Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.17 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of

exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces, smooth and blend so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.02 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Install columns on concrete footings and slabs with grouted baseplates or as shown in in the Drawings. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.

3.03 INSTALLING METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

1. Fill bollards solidly with concrete, mounding top surface to shed water.

B. Anchor bollards to existing construction with expansion anchors, anchor bolts or through bolts. Provide four 3/4-inch bolts at each bollard unless otherwise indicated.

1. Embed anchor bolts at least 8 inches in concrete.

3.04 INSTALLING NOSINGS, TREADS, AND THRESHOLDS

A. Center nosings on tread widths unless otherwise indicated.

B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.

C. Seal thresholds exposed to exterior with elastomeric sealant to provide a watertight installation.

3.05 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with non-shrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.06 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09900 – Painting.

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

This Page Intentionally Left Blank

SECTION 05520 – HANDRAILS AND GUARDRAILS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes providing handrails and guard rails as shown on the Drawings and includes miscellaneous handrails and guard rails not included in other metal systems in other sections of these specifications.

B. Height for stair rails, handrails, and guard rails shall conform to all applicable codes and as noted on the drawings

C. Handrails and guard rails used to extend existing facilities shall match the existing as closely as possible unless noted otherwise.

D. Contractors are hereby notified that they are encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under this award.

1.02 QUALITY ASSURANCE

A. Codes and Standards:

1. Florida State Building Code, latest edition

2. ANSI A117.1

3. OSHA Part 1920.23 and 1910.24

4. Life Safety Code 101

5. AWS "Structural Welding Code"

B. Qualification for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

C. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. However, do not delay job process; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

D. Shop Assembly: Preassemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinate installation.

1.03 SUBMITTALS

A. Submit Certificates of Compliance with specified requirements. Obtain shop drawings for fabrication and erection. After verifying details and dimensions provide three sets of final drawings and installation instructions to Owner's Construction Representative for use in observing installation and for Record Drawings.

B. All submittals for this Specification shall be in accordance with Divisions 00 and 01.

1.04 WARRANTY

A. Per General Condition Article 9, the Contractor shall provide a 3 year warranty from substantial completion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum Extrusions: ASTM B221; alloy 6061-T6, T6510; except alloy 6063-T52 for seamless pipe meeting ASTM B241; unless otherwise indicated.

B. Aluminum Castings: ASTM B108; alloy 214 unless otherwise indicated.

C. Aluminum Sheet or Plate: ASTM B209; alloy 6061-T6, unless otherwise indicated.

D. Finish: Clear anodized finish AA C22A41R1X, medium matte, nondirectional, minimum 0.7 mil clear anodized, clear lacquer coating, unless otherwise indicated.

E. Nonshrink, Nonferrous Grout: CE CRD C588.

2.02 FABRICATION

A. The Contractor shall provide a "manufacturer's system."

B. Exposed work shall be formed true to line and level with accurate angles and surfaces and straight sharp edges.

C. Ease exposed edges to a radius of approximately 1/32-inch, unless otherwise shown.

D. Use bent-metal corners formed to the smallest radius possible without causing grain separation or otherwise impairing the work.

E. Welded Connections: Cope intersections of rails and posts, weld joints and grind smooth. Butt weld end-to-end joints of railings or use welding connectors, at fabricator's option.

F. Weld corners and seams continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush to match and blend with adjoining surfaces. Discoloration of finished surfaces will not be acceptable.

G. Form exposed connections with flush, smooth, hairline joints, using concealed fasteners wherever possible. Use exposed fasteners of the type shown, or if not shown, use Phillips flathead (countersunk) screws or bolts. Provide splices with lock mechanism but allow for expansion and contraction.

H. Provide anchorage of the type shown, coordinated with the supporting structure. Fabricate and space anchoring devices as shown and as required to provide adequate support.

I. Toe Boards: Fabricate toe boards with a bent/formed profile for increased plate stiffness to the dimensions and details shown. Use 1/4-inch thick x 4-inch plate secured to each post of railing.

J. Brackets, Flanges and Anchors: Provide brackets, flanges, and anchors for railing posts and for handrail supports. Furnish inserts and sleeves as required for anchorage masonry work.

K. Furnish cast metal brackets, flanges, and exposed anchors of the same material and finish as rail supports, unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which handrails and guard rails are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Furnish setting drawings, diagrams, templates, instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors which are to be embedded in concrete or masonry construction. Coordinate the delivery of such items to the project site.

3.03 INSTALLATION

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing handrails and guard rail items to in-place construction; including threaded fasteners for concrete inserts, toggle bolts, through-bolts, lag bolts and other connectors as required.

B. Use railing manufacturer's standard methods of installation when acceptable to the Engineer.

C. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

D. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surface of units which have been coated or finished after fabrication, and are intended for field connections. Adjust railings prior to securing in place to ensure proper matching at butting joints and correct alignment throughout their length. Space posts not more than 6-feet on centers, unless otherwise shown. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:

E. Anchor posts in concrete where noted on the drawings, by means of pipe sleeves set and anchored into the concrete. Provide sleeves of galvanized, steel pipe, not less than 6-inches long and having an inside diameter not less than 1/2-inch greater than the outside diameter of the inserted pipe post. Provide steel plate closure secured to the bottom of the sleeve and of width and length not less than 1-inch greater than the outside diameter of the sleeve. After the posts have been inserted into the sleeves, fill the annular space between post and sleeve solid with nonshrink, nonferrous grout. Cover anchorage joint with a round metal flange finished to match post.

F. Anchor rail ends into concrete with round flanges welded to rail ends and anchored into the wall construction with lead expansion shields and bolts.

G. Field Welding: Comply with AWS Code for the procedures of manual shielded metal-arc welding, the appearance and quality of welds made, and the methods used in correcting the work.

H. Dissimilar Materials: Where dissimilar metals contact each other or there is a condition such as aluminum against concrete, they shall be protected from each other with a pressure sensitive tape, bitumastic coating or other protective method.

I. Toe Boards: Provide toe boards where shown and as required by code.

J. Toe boards shall be provided wherever people can pass or work beneath the open sides or wherever falling material could create a hazard to moving machinery or equipment.

END OF SECTION

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07920
SEALANTS AND CAULKING

PART 1 GENERAL

1.01 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are reread to in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM) Publications: C 920-79 Elastomeric Joint Sealants

1.02 SUBMITTALS

A. Submit under provisions of Section 01340.

B. Certificates of Conformance or Compliance: Submit certificates from the manufacturers attesting that materials meet the specified requirements.

C. Manufacturer's Descriptive Data: Submit complete descriptive data for each type of material. Clearly mark data to indicate the type the Contractor intends to provide. Data shall state conformance to specified requirements. Data for sealant and calking shall include application instructions, shelf life, mixing instructions for multicomponent sealants, and recommend cleaning solvents.

1.03 DELIVERY AND STORAGE

A. Deliver materials to the job site in the manufacturers' external shipping containers, unopened, with brand names, date of manufacture, and material designation clearly marked thereon. Containers of elastomeric sealant shall be labeled as to type, class, grade, and use. Carefully handle and store all materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 degree F or less than 40 degree F.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Manufacturer: Subject to compliance with requirements provide products manufactured by single source.

2.02 MATERIALS

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Products shall conform to the reference documents listed for each use. Color of sealant and calking shall match adjacent surface color unless specified otherwise. For ASTM C 920 sealants, use a sealant that has been tested on the type(s) of substrate to which it will be applied. Interior Calking or Sealant: Provide ASTM C 920, Type M, Grade NS, Class 12.5, Use NT. Color of calking or sealant shall be selected by Owner from manufacturer's full range.

C. Exterior Sealant: For joints in vertical surfaces, provide ASTM C 920, Type M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type M, Grade P, Class 25, Use T. Color of sealant shall be selected by Owner from manufacturer's full range.

D. Latex rubber modified, acrylic emulsion polymer sealant compound; manufacturer's standard, one part, nonsag, mildew resistant, acrylic emulsion sealant complying with ASTM C834, formulated to be paintable and recommended for exposed applications on interior locations involving joint movement of not more than plus or minus 5 percent

E. Floor Joints Sealant: Provide ASTM C-920, Type S or M, Grade P, Class 25, Use T. Color of sealant shall be selected by Owner from manufacturer's standard colors.

F. Primer for Sealant: Use a non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

G. Bond Breakers: Use the type of consistency recommended by the sealant manufacturer for the particular application.

H. Silicone Joint Sealants: Use Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT

I. Backstops: Use glass fiber roping or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by the sealant manufacturer. Backstop material shall be compatible with the sealant. Do not use oakum and other types of absorptive materials as backstops.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. Surfaces shall be clean, dry to the touch, and free from frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Where adequate grooves have not been provided, clean out grooves to a depth of ½" and grind to a minimum width of ¼" without damage to the adjoining work. No grinding shall be required on metal surfaces.

B. Steel Surfaces: Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finish work, scraping and wire brushing. Remove protective coatings by sandblasting or using a solvent that leaves no residue.

C. Copper or Bronze Surfaces: Remove temporary protective coatings from surfaces that will be in contact with sealant. When masking tape is used as a protective coating, remove tape and any residual adhesive just prior to sealant application. Use non-staining solvents recommended by the item manufacturer.

3.02 SEALANT PREPARATION

A. Do not modify the sealant by addition of liquids, solvents, or powders. Mix multicomponent elastomeric sealants in accordance with manufacturer's printed instructions.

3.03 APPLICATION

A. Backstops: Where joint cavities are constructed deeper than indicated, tightly pack the back or bottom with backstop material to provide a joint of the depth indicated. Install backstops dry and free of tears or holes.

B. Primer: Just prior to application of the sealant or calking compound, clean out all loose particles from joints. Apply primer in accordance with compound manufacturer's directions. Do not apply primer to exposed finish surfaces.

C. Bond Breaker: Provide bond breakers as recommended by the sealant manufacturer for each type of joint and sealant used.

D. Sealant and Caulking Compounds: Use a compound that is compatible with the material to and against which it is applied. Do not use a compound that has exceeded its shelf life or has become too jelled to be discharged in a continuous flow from the gun. Apply the compound in accordance with the manufacturer's printed instructions. Force the compound into the joints with sufficient pressure to fill the joints solidly. Compound shall be uniformly smooth and free from wrinkles.

E. Interior Sealant and Caulking: Provide sealant or caulking at all exposed joints in the building and at all joints indicated to receive sealant or caulking.

F. Exterior Sealant: Provide sealant at all joints around the perimeter of openings and at all exposed joints on the building and at all joints indicated to receive sealant.

G. Floor Joints Sealants: Provide sealant in all control joints and in other floor joints indicated or specified.

H. Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated

3.04 PROTECTION AND CLEANING

A. Protection: Protect areas adjacent to joints from compound smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

B. Cleaning: Immediately scrape off fresh compound that has been smeared on masonry and rub clean with a solvent as recommended by the compound manufacturer. Upon completion of compound application, remove all remaining smears and stains resulting therefrom and leave the work in a clean and neat condition.

END OF SECTION

SECTION 09900 PAINTING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, tools, materials, equipment, scaffolding or other structures and incidentals necessary to complete this Contract in its entirety.

B. The work includes painting and finishing of all new interior and exterior exposed items above and below grade and submerged surfaces, such as concrete, structural steel, miscellaneous metals, ceilings, walls, floors, doors, frames, transoms, roof fans, construction signs, guardrails, posts, fittings, valves, tanks, equipment and all other work obviously required to be painted unless otherwise specified herein or on the Drawings. The omission of minor items in the Schedule of Work shall not relieve the Contractor of his obligation to include such items where they come within the general intent of the Specification as stated herein. Structures and items included:

1. Repurposed Chlorine Building interior and exterior. (New electrical building)
2. Interior of existing electrical room
3. Touch up of existing structural affected by construction
4. New Transformer structure
5. New bulk fuel transfer pump structure
6. Existing steel bulk fuel tank and all new and existing fuel piping

C. The following items shall not be painted:

1. Any code-requiring labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
2. Any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.
3. Aluminum handrails (except where in contact with concrete) walkways, windows, louvers and grating unless otherwise specified herein.
4. Signs and nameplates.
5. Finish hardware.
6. Chain link fence.
7. Piping buried in the ground or embedded in concrete.
8. Concealed surfaces of pipe or crawl space.
9. Nonferrous metals, unless specifically noted otherwise.
10. Electrical switchgear and motor control centers.
11. Stainless steel angles, tubes, pipe, etc.
12. Products with polished chrome, aluminum, nickel or stainless steel finish.
13. Plastic switch plates and receptacle plates.
14. Flexible couplings, lubricated bearing surfaces, insulation and metal and plastic pipe interior.
15. Sprinkler heads.
16. Lifting chain on cranes and hoists

17. Electrical cable, festooned conductor system, cables, collector pole brackets, etc.

D. All work shall be done in strict accordance with this Specification, the Design Drawings and the painting package, including manufacturer's printed instructions.

E. The Contractor will obtain, at its own expense, all permits, licenses and inspections and shall comply with all laws, codes, ordinances, rules and regulations promulgated by authorities having jurisdiction which may bear on the Work. This compliance will include Federal Public Law 91-596 more commonly known as the "Occupational Safety and Health Act of 1970".

1.02 DEFINITIONS

A. Field Painting is the painting of new or rebuilt items at the job site. Field painting shall be the responsibility of the Contractor.

B. Shop Painting is the painting of new or rebuilt items in the shop prior to delivery to the jobsite.

C. Abbreviations The abbreviations and definitions listed below, when used in this specification, shall have the following meanings:

1. SSPC - Steel Structures Painting Council
2. Exterior - Outside, exposed to weather
3. Interior Dry - Inside, concealed or protected from weather
4. Interior Wet - Inside, subject to immersion services
5. ASTM - American Society of Test Materials
6. NACE - National Association of Corrosion Engineers
7. NSF - National Sanitation Foundation
8. AWWA - American Water Works Association

D. Dry Film Thickness shall be in Mils.

1.03 RESOLUTION OF CONFLICTS

A. It shall be the responsibility of the Contractor to arrange a meeting prior to the start of painting, or flooring installation between the Contractor, the Paint Manufacturer, whose products are to be used, and the County. All aspects of surface preparation, application and coating systems as covered by this Specification will be reviewed at this meeting.

B. Clarification shall be requested promptly from the County when instructions are lacking, conflicts occur in the Specifications, or the procedure seems improper or inappropriate for any reason.

C. Copies of all manufacturer's instructions and recommendations shall be furnished to the County by the Painting Contractor.

D. It shall be the responsibility of the Coating Manufacturer to have their factory representative meet in person with the Contractor and County a minimum of three times during the job as a consultant on surface preparation, mil thickness of coating

and proper application of coating unless meeting is determined to be unnecessary by the County.

1.04 SUBMITTALS

A. Contractor shall submit catalog data and cut sheets for the painting system being used if not the TNEMEC materials specified.

B. Samples as detailed in 3.01 B shall be submitted regardless of system being used, showing each color to be used.

C. Hazardous Material Disposal documentation shall be submitted if applicable.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Effective oil and water separators shall be used in all compressed air lines serving spray painting and sandblasting operations to remove oil or moisture from the air before it is used. Separators shall be placed as far as practicable from the compressor.

B. All equipment for application of the paint and the completion of the work shall be furnished by the Contractor in first-class condition and shall comply with recommendations of the paint manufacturer.

C. Contractor will provide free of charge to the County a "Nordson-Mikrotest" or "Positest" dry film thickness gauge for ferrous metal and an OG232 "Tooke" gauge or equal for non-ferrous and cementitious surface, to be used to inspect coatings by the County and Contractor. The gauges may be used by the Contractor and returned each day to the County. County will return gauges to Contractor at completion of job.

2.02 MATERIALS

A. All materials specified herein are manufactured by the TNEMEC Company, Inc., North Kansas City, Missouri. These products are specified to establish standards of quality and are approved for use on this Project.

B. Equivalent materials of other manufacturers may be substituted on approval of the County. Requests for substitution shall include manufacturer's literature for each product giving the name, generic type, descriptive information and evidence of satisfactory past performance and an independent laboratory certification that their product meets the performance criteria of the specified materials.

C. Abrasion - Fed. Test Method Std. No. 141, Method 6192, CS-17 Wheel, 1,000 grams load.

D. Adhesion - Elcometer Adhesion Tester.

E. Exterior Exposure - Exposed at 45 degrees facing the ocean (South Florida Marine Exposure)

F. Hardness - ASTM D3363-74

G. Humidity - ASTM D2247-68

H. Salt Spray (Fog) - ASTM B117-73

I. Standard practice for Operating the Severe Wastewater Analysis Testing Apparatus ASTM G210-13

J. Substitutions which decrease the total film thickness, change the generic type of coating, or fail to meet the performance criteria of the specified materials shall not be approved. Prime and finish coats of all surfaces shall be furnished by the same manufacturer.

K. All coatings to be shop applied must meet the requirements for volatile organic compounds (VOC) of not more than 3.5 lbs/gallon after thinning.

L. Colors, where not specified, shall be as selected by the County or their Representative.

M. All coatings in contact with potable water need to be NSF Certified in accordance with ANSI/NSF Standard 61.

N. All above ground potable water mains and appurtenances shall be painted Scott Paints safety blue or approved equal; purple (Pantone purple 522 C) for reclaimed water; or Hunter Green (Rustoleum 7538) for pressure sewer. Contractor shall submit color chart to owner for color selection approval prior to ordering material.

PART 3 EXECUTION

3.01 INSPECTION OF SURFACES

A. Before application of the prime coat and each succeeding coat, all surfaces to be coated shall be subject to inspection by the County. Any defects or deficiencies shall be corrected by the Contractor before application of any subsequent coating.

B. Samples of surface preparation and of painting systems shall be furnished by the Contractor to be used as a standard throughout the job, unless omitted by the County.

C. When any appreciable time has elapsed between coatings, previously coated areas shall be carefully inspected by the County, and where, in his opinion, surfaces are damaged or contaminated, they shall be cleaned and recoated at the Contractor's expense. Recoating times of manufacturer's printed instructions shall be adhered to.

D. Coating thickness shall be determined by the use of a properly calibrated "Nordson-Mikrotest" "Positest" Coating Thickness Gauge (or equal) for ferrous metal or an OG232 "Tooke" Paint Inspection gauge (or equal) for non-ferrous and cementitious surfaces. Please note that use of the "Tooke" gauge is classified as a destructive test.

3.02 SURFACE PREPARATION

A. The surface shall be cleaned as specified for the paint system being used. All cleaning shall be as outlined in the Society for Protective Coatings (SSPC) Surface Preparation Specification, And the International Concrete Repair Institute (ICRI) unless otherwise noted. If surfaces are subject to contamination, other than mill scale or normal atmospheric rusting, the surfaces shall be pressure washed, and acid or caustic pH residues neutralized, in addition to the specified surface preparation.

3.03 STANDARDS FOR SURFACE PREPARATION

A. Chemical and/or Solvent Cleaning: Remove all grease, oil, salt, acid, alkali, dirt, dust, wax, fat, foreign matter and contaminates, etc. by one of the following methods: steam cleaning, alkaline cleaning, or volatile solvent cleaning.

B. Hand Tool Cleaning: Removal of loose rust, loose mill scale and loose paint to a clean sound substrate by hand chipping, scraping, sanding and wire brushing.

C. Power Tool Cleaning: Removal of loose rust, loose mill scale and loose paint to a clean sound substrate by power tool chipping, descaling, sanding, wire brushing and grinding.

D. Flame Cleaning: Dehydrating and removal of rust, loose mill scale and some light mill scale by use of flame, followed by wire brushing.

E. White Metal Blast Cleaning: Complete removal of all mill scale, rust, rust scale, previous coating, etc., leaving the surface a uniform gray-white color.

F. Commercial Grade Blast Cleaning: Complete removal of all dirt, rust scale, mill scale, foreign matter and previous coating, etc., leaving only shadows and/or streaks caused by rust stain and mill scale oxides. At least 66% of each square inch of surface area is to be free of all visible residues, except slight discoloration.

G. Brush-Off Blast Cleaning: Removal of rust scale, loose mill scale, loose rust and loose coatings, leaving tightly-bonded mill scale, rust and previous coatings. On concrete surfaces, brush-off blast cleaning shall remove all laitance, form oils and solid contaminates. Blasting should be performed sufficiently close to the surface so as to open up surface voids, bugholes, air pockets and other subsurface irregularities, but so as not to expose underlying aggregate.

H. Pickling: Complete removal of rust and mill scale by acid pickling, duplex pickling or electrolytic pickling (may reduce the resistance of the surface to corrosion, if not to be primed immediately).

I. Near-White Blast Cleaning: Removal of all rust scale, mill scale, previous coating, etc., leaving only light stains from rust, mill scale and small specks of previous coating. At least 95% of each square inch of surface area is to be free of all visible residues and the remainder shall be limited to slight discoloration.

J. Power Tool Cleaning to Bare Metal: Complete removal of rust, rust scale, mill scale, foreign matter and previous coatings, etc., to a standard as specified on a

Commercial Grade Blast Cleaning (SSPC-SP-6, NACE-3) by means of power tools that will provide the proper degree of cleaning and surface profile.

K. Surface Preparation of Concrete (SSPC-SP13)

L. Visual standards "Pictorial Surface Preparation Standards for Painting Steel Surfaces", and the National Association of Corrosion Engineer, "Blasting Cleaning Visual Standards" TM-01-70 and TM-01-75 shall be considered as standards for proper surface preparation.

M. Oil, grease, soil, dust, etc., deposited on the surface preparation that has been completed shall be removed prior to painting according to Solvent Cleaning under this Specification.

N. Weld flux, weld spatter and excessive rust scale shall be removed by Power Tool Cleaning as per these Specifications.

O. All weld seams, sharp protrusions and edges shall be ground smooth prior to surface preparation or application of any coatings.

P. All areas requiring field welding shall be masked off prior to shop coating, unless waived by the County.

Q. All areas which require field touch-up after erection, such as welds, burnbacks, and mechanically damaged areas, shall be cleaned by thorough Power Tool as specified in these Specifications.

R. Touch-up systems will be same as original specification except that approved manufacturer's organic zinc-rich shall be used in lieu of inorganic zinc where this system was originally used. Also strict adherence to manufacturer's complete touch-up recommendations shall be followed. Any questions relative to compatibility of products shall be brought to the County's attention; otherwise, Contractor assumes full responsibility.

3.04 PRETREATMENTS

A. When specified, the surface shall be pretreated in accordance with the specified pretreatment prior to application of the prime coat of paint.

3.05 STORAGE

A. Materials shall be delivered to the job site in the original packages with seals unbroken and with legible unmutilated labels attached. Packages shall not be opened until they are inspected by the County and required for use. All painting materials shall be stored in a clean, dry, well-ventilated place, protected from sparks, flame, direct rays of the sun or from excessive heat. Paint susceptible to damage from low temperatures shall be kept in a heated storage space when necessary. The Contractor shall be solely responsible for the protection of the materials stored by himself at the job site. Empty coating cans shall be required to be neatly stacked in an area designated by the County and removed from the job site on a schedule determined by the County. County may request a notarized statement from Contractor detailing all materials used on the Project.

3.06 PREPARATION OF MATERIALS

A. Mechanical mixers, capable of thoroughly mixing the pigment and vehicle together, shall mix the paint prior to use where required by manufacturer's instructions; thorough hand mixing will be allowed for small amounts up to one gallon. Pressure pots shall be equipped with mechanical mixers to keep the pigment in suspension, when required by manufacturer's instructions. Otherwise, intermittent hand mixing shall be done to assure that no separation occurs. All mixing shall be done in accordance with SSPC Vol. 1, Chapter 4, "Practical Aspects, Use and Application of Paints" and/or with manufacturer's recommendations.

B. Catalysts or thinners shall be as recommended by the manufacturer and shall be added or discarded strictly in accordance with the manufacturer's instruction.

3.07 APPLICATION

A. Paint shall be applied only on thoroughly dry surfaces and during periods of favorable weather, unless otherwise allowed by the paint manufacturer. Except as provided below, painting shall not be permitted when the atmospheric temperature is below 50 deg F, or when freshly painted surfaces may be damaged by rain, fog, dust, or condensation, and/or when it can be anticipated that these conditions will prevail during the drying period.

B. No coatings shall be applied unless surface temperature is a minimum of 5 Degrees above dew point; temperature must be maintained during curing.

C. See coating schedule for actual coating systems to be used on this project.

3.08 DEW POINT CALCULATION CHART

DEW POINT CALCULATION CHART

Ambient Air Temperature - Fahrenheit

Relative Humidity	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	76	84	95	104	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	29	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	15	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83

SURFACE TEMPERATURE AT WHICH CONDENSATION OCCURS

Dew Point

Temperature at which moisture will condense on surface. No coatings should be applied unless surface temperature is a minimum of 5deg above this point. Temperature must be maintained during curing.

Example

If air temperature is 70 deg F and relative humidity is 65%, the dew point is 57 deg F. No coating should be applied unless surface temperature is 62 deg F minimum.

A. No coating shall be applied unless the relative humidity is below 85%.

B. Suitable enclosures to permit painting during inclement weather may be used if provisions are made to control atmospheric conditions artificially inside the enclosure, within limits suitable for painting throughout the painting operations.

C. Field painting in the immediate vicinity of, or on, energized electrical and rotating equipment, and equipment and/or pipes in service shall not be performed without the approval of the County.

D. Extreme care shall be exercised in the painting of all operable equipment, such as valves, electric motors, etc., so that the proper functioning of the equipment will not be affected.

E. The Contractor's scaffolding shall be erected, maintained and dismantled without damage to structures, machinery, equipment or pipe. Drop cloths shall be used where required to protect buildings and equipment. All surfaces required to be clear for visual observation shall be cleaned immediately after paint application.

F. Painting shall not be performed on insulated pipe within three (3) feet of insulation operations or on insulation whose covering and surface coat have not had time to set and dry. Painting shall not be performed on uninsulated pipe within one (1) foot of any type of connection until the connection has been made, except as directed by the County.

G. The prime coat shall be applied immediately following surface preparation and in no case later than the same working day. All paint shall be applied by brushing, paint mitt and roller, conventional spraying, or airless spraying, using equipment approved by the paint manufacturer.

H. Each coat of paint shall be recoated as per manufacturer's instructions. Paint shall be considered recoatable when an additional coat can be applied without any detrimental film irregularities such as lifting or loss of adhesion.

I. Surfaces that will be inaccessible after assembly shall receive either the full specified paint system or three shop coats of the specified primer before assembly.

J. Finish colors shall be in accordance with the COLOR SCHEDULE and shall be factory mixed (i.e., there shall be no tinting by the Contractor, unless authorized by the County).

K. All edges and weld seams in immersion service shall receive a "stripe coat" (applied by brush) of the 2nd coat prior to application of the full 2nd coat.

L. All open seams in the roof area of tanks shall be filled after application of the topcoat with a flexible caulking such as Sika Flex 1A.

3.09 WORKMANSHIP

A. The Contractor must show proof that all employees associated with this Project shall have been employed by the Contractor for a period not less than six (6) months.

B. Painting shall be performed by experienced painters in accordance with the recommendations of the paint manufacturer. All paint shall be uniformly applied without sags, runs, spots, or other blemishes. Work which shows carelessness, lack of skill, or is defective in the opinion of the County, shall be corrected at the expense of the Contractor.

C. The Contractor shall provide the names of at least three other projects of similar size and scope that they have successfully completed under their current company name.

3.10 APPLICATION OF PAINT

A. By Brush and/or Rollers

1. Top quality, properly styled brushes and rollers shall be used. Rollers with a baked phenol core shall be utilized.
2. The brushing or rolling shall be done so that a smooth coat as nearly uniform in thickness as possible is obtained. Brush or roller strokes shall be made to smooth the film without leaving deep or detrimental marks.
3. Surfaces not accessible to brushes or rollers may be painted by spray, by dauber or sheepskins, and paint mitt.
4. It may require two coats to achieve the specified dry film thickness if application is by brush and roller.

B. Air, Airless or Hot Spray

1. The equipment used shall be suitable for the intended purpose, shall be capable of properly atomizing the paint to be applied and shall be equipped with suitable pressure regulators and gauges.
2. Paint shall be applied in a uniform layer, with a 50% overlap pattern. All runs and sags should be brushed out immediately or the paint shall be removed and the surface resprayed.
3. High build coatings should be applied by a cross-hatch method of spray application to ensure proper film thickness of the coating.
4. Areas inaccessible to spray shall be brushed; if also inaccessible to brush, daubs or sheepskins shall be used, as authorized by the manufacturer.
5. Special care shall be taken with thinners and paint temperatures so that paint of the correct formula reaches the receiving surface.
6. Nozzles, tips, etc., shall be of sizes and designs as recommended by the manufacturer of the paint being sprayed.

7. The first coat on concrete surfaces in immersion service should be sprayed and back rolled.

3.11 PROTECTION AND CLEANUP

A. It shall be the responsibility of the Contractor to protect at all times, in areas where painting is being done, floors, materials of other crafts, equipment, vehicles, fixtures, and finished surfaces adjacent to paint work. Cover all electric plates, surface hardware, nameplates, gauge glasses, etc., before start of painting work.

B. At the option of the County during the course of this project, the Contractor will contain all spent abrasives, old paint chips, paint overspray and debris by means suitable to the County, including, but not limited to, full shrouding of the area.

C. If shrouding is required, the Contractor must provide a complete design of the intended shroud or cover. Care must be taken not to modify or damage the structure during the use of the shroud. If damage should occur, the Contractor is held responsible for all repairs.

D. At completion of the work, remove all paint where spilled, splashed, spattered, sprayed or smeared on all surfaces, including glass, light fixtures, hardware, equipment, painted and unpainted surfaces.

E. After completion of all painting, the Contractor shall remove from job site all painting equipment, surplus materials and debris resulting from this work.

F. The Contractor is responsible for the removal and proper disposal of all hazardous materials from the job site in accordance with Local, State and Federal requirements as outlined by the Environmental Protection Agency.

G. A notarized statement shall be presented to the County that all hazardous materials have been disposed of properly including, but not limited to: name of disposal company, disposal site, listing of hazardous materials, weights of all materials, cost per pound and EPA registration number.

3.12 TOUCH-UP MATERIALS

A. The Contractor shall provide at the end of the Project at least one (1) gallon of each generic topcoat in each color as specified by the County for future touch-up. Two gallons may by required for (2) component materials.

3.13 ON-SITE INSPECTION

A. During the course of this Project, the County will reserve the option of incorporating the services of a NACE Level III inspection service. The inspection service will be responsible for assuring the proper execution of this Specification by the successful Contractor.

3.14 STEEL - STRUCTURAL, TANKS, PIPES AND EQUIPMENT

A. EXTERIOR EXPOSURE (NON-IMMERSION)

1. System No. 1095-1: Epoxy/High Build Urethane

This system is highly resistant to abrasion, wet conditions, corrosive fumes and chemical contact. Provides 3-4 times the color and gloss retention of conventional paints. Second coat to be close to finish color but not the same color. This system should be used for above ground exterior steel surfaces that are neither submerged, nor buried.

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

Shop Coat: 66HS-1211 Epoxoline Primer	3.0 - 4.0
2nd Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 3.0
3rd Coat: 1095-Endura-Shield III	2.0 - 3.0
Dry Film Thickness	7.0 - 10.0
Minimum	8.0 Mils

2. System No. 1095-2: High Build Urethane for Marginally Cleaned Surfaces or Topcoating Existing System

This system can be used over factory finish paint or cover non-sandblasted steel and offer the high performance of a urethane coating. Specify Series 1074U Endura-Shield for gloss finish.

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning or SSPC-SP3 Power Tool Cleaning

Shop Coat: Manufacturer Standard Primer (or existing coating)	3.0-5.0
2nd Coat: 135 Chembuild	3.0 - 5.0
3rd Coat: 1095-Color Endura-Shield	2.0 - 3.0
Dry Film Thickness	8.0 - 13.0
Minimum	9.5 Mils

4. System 90-97: Zinc/Epoxy/Urethane

This system offers the added corrosion protection of a zinc rich primer. Series 90-97 Tneme-Zinc is an organic zinc-rich primer that can be used for field touch up of a zinc primer or for touch up of galvanized surfaces that are damaged.

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

Shop Coat: 90-97 Tneme-Zinc	2.5 - 3.5
2nd Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 3.0
3rd Coat: 1095 Endurashield	2.0 - 3.0
Dry Film Thickness	6.5 - 9.5
Minimum	8.0 Mils

B. INTERIOR EXPOSURE (NON-IMMERSION)

1. System No. 66HS-1: High Build Epoxy

This system will provide chemical and corrosion resistance against abrasion, moisture, corrosion fumes, chemical contact and immersion in non-potable water. Primer coat must be touched-up before second coat is applied. Substitute Series 161HS for low temperature cure or quick recoats. Use this system for interior exposed, non submerged metals.

Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

Shop Coat: 66HS-1211 Epoxoline Primer	3.0 - 5.0
2nd Coat: 66HS-Color Hi-Build Epoxoline	4.0 - 6.0
Dry Film Thickness	7.0 - 11.0
Minimum	9.0 Mils

2. System No. 66HS-2: High Build Epoxy (Over OEM Finishes)

This system is to be used over standard manufacturer's primer to offer a high performance epoxy finish. Excellent for areas of rust not able to be completely cleaned.

Surface Preparation: Spot SSPC-SP6 Commercial Blast Cleaning or SSPC- SP11 Power Tool Cleaning to Bare Metal

Shop Coat: Manufacturer's Standard (or existing coating)	1.0 - 2.0
2nd Coat: 27WB	2.5 - 4.0
3rd Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 4.0
Dry Film Thickness	5.5 - 10.0
Minimum	7.0 Mils

C. IMMERSION

1. System No. 104-1: High Solids Epoxy (Non-Potable Water)

This system will provide chemical and corrosion resistance for protection against abrasion, moisture, corrosive fumes, chemical contact and immersion in ***mild to moderate*** Wastewater, such as clarifiers, chlorine contact basins, aeration basins, settling basins and other open top (aerobic) structures. Primer coat must be touched-up before second coat is applied. Scarify the surface before topcoating if the Series 66HS has been exterior-exposed for 60 days or longer. Substitute Series 161HS for low temperature cure or quick recoats.

Surface Preparation: SSPC-SP10 Near-White Blast Cleaning

Shop Coat: 66HS-1211 Epoxoline Primer	3.0 - 5.0
2nd Coat: 104-Color Hi-Build Epoxoline	6.0-8.0
3rd Coat: 104-Color Hi-Build Epoxoline	6.0-8.0
Dry Film Thickness	15.0 - 21.0
Minimum	11.0 Mils

2. System No. 20HS-1: Epoxy-Polyamide (Potable Water)

This system meets American Water Works Association AWWA D 102 Inside Paint System Number 1. Series 20HS meets the new requirements of approval for potable water use as established by the National Sanitation Foundation Standard 61. Substitute Series FC20HS for low temperature cure or quick recoats.

Surface Preparation: SSPC-SP10 Near-White Blast Cleaning

Shop Coat:20HS-WH02 Pota-Pox (Tank White)	3.0 - 5.0
2nd Coat: 20HS-1255 Pota-Pox (Beige)	4.0 - 6.0
3rd Coat: 20HS-WH02 Pota-Pox (Tank White)	4.0 - 6.0
Dry Film Thickness	11.0-17.0
Minimum	12.0 Mils

3.15 OVERHEAD METAL DECKING, JOIST

A. INTERIOR EXPOSURE

System No. 115-1: Uni-Bond

This system should be used on ceiling areas where a one-coat system is desired. Can be applied over steel, galvanized and aluminum decking, joist, shop primed beams, conduits and concrete.

Surface Preparation: Surfaces must be dry, clean and free of oil, grease and other contaminates. Allow concrete to cure 28 days.

Coating:	115-Color Uni-Bond
Dry Film Thickness	2.5 - 4.0

B. EXTERIOR EXPOSURE

System No. 1029-1: Enduratone

This system can be applied over a wide variety of coatings and factory finishes. It can also be applied direct to galvanized aluminum decking, joists, & conduits

Surface Preparation: Pressure clean to remove all dirt, oil, grease, chemicals and foreign contaminates. Remove loose paint and all rust by hand and power tool cleaning (SSPC-SP 2 & 3)

1st Coat:	1029-Color Endura-tone	2.0-3.0
2nd Coat:	1029-Color Enduratone	2.0-3.0
Dry Film Thickness		4.0-6.0

3.16 GALVANIZED STEEL - PIPE AND MISCELLANEOUS FABRICATIONS

A. EXTERIOR / (NON-IMMERSION)

System No. 1095-3: Epoxy/High Build Urethane
Series 66HS has excellent adhesion to galvanized steel. This system is highly resistant to abrasion, wet conditions, corrosive fumes and chemical contact.

Provides 3-4 times the color and gloss retention of conventional paints. First coat to be same color as or close to the finish color. Specify Series 1074U Endura-Shield for gloss finish.

Surface Preparation: SSPC-SP1 Solvent Cleaning, followed by Sweep Abrasive Blasting (SSPC-SP7)

1st Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 4.0
2nd Coat: 1095-Color Endura-Shield	2.0 - 4.0
Dry Film Thickness	4.0 - 8.0
Minimum	5.0 Mils

B. INTERIOR EXPOSURE (NON IMMERSION) AND ALUMINUM IN CONTACT WITH CONCRETE

System No. 66HS-3: Polyamide Epoxy

Surface Preparation: SSPC-SP1 Solvent Cleaning

1st Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 4.0
2nd Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 4.0
Dry Film Thickness	4.0 - 8.0
Minimum	5.0 Mils

3.17 CONCRETE

A. EXTERIOR - ABOVE GRADE

1. System No. 1026-1: Acrylic Emulsion Low Sheen

If semi-gloss finish is desired, use Series 1029 Tneme-Cryl SG as the second coat.

Surface Preparation: Allow new concrete to cure for 28 days. Surface must be clean and dry.

1st Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
2nd Coat:1026-Color Tneme-Cryl	2.0 - 3.0
Dry Film Thickness	4.0 - 6.0
Minimum	5.0 Mils

2. System No. 156-1: Modified Acrylic Elastomer

If texture is needed, use 157 Enviro-Crete TX (medium texture) For application over previously applied coatings, use TNEMEC Series 151 Elasto-Grip at 1.0 - 2.5 mils DFT prior to the application of Series 156 Enviro-Crete.

Surface Preparation: Surface must be clean and dry.

1st Coat: 156-Color Enviro-Crete	4.0 - 8.0
2nd Coat: 156-Color Enviro-Crete	4.0 - 8.0
Dry Film Thickness	8.0 - 16.0
Minimum	10.0 Mils

B. EXTERIOR - BELOW GRADE

1. System No. 46-31: Coal Tar-Epoxy

Surface Preparation: Surface shall be clean and dry.
One Coat: 46H-413 Hi-Build Tneme-Tar
Dry Film Thickness 14.0 - 20.0

C. EXTERIOR/INTERIOR EXPOSURE (NON-IMMERSION)

1. System No. 1026-2: Acrylic Emulsion, Low Sheen (Interior/Exterior)

This system will provide a decorative coating with good exterior durability, color retention, and a high vapor transmission rate. ***For Semi-Gloss finish, use 1029-Color Tneme-Cryl S/G.***

Surface Preparation: Surface shall be clean and dry. Allow concrete to cure for 28 days.

Block Filler (CMU only): 1254 Epoxoblock	125 SF/GL
1st Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
2nd Coat:1026-Color Tneme-Cryl	2.0 - 3.0
Dry Film Thickness	4.0 - 6.0
Minimum	5.0 Mils

*Does not include Block Filler

2. System No. 66HS-4: Epoxy-Polyamide
(Interior)

Series 66HS provides excellent protection from abrasion, moisture, corrosive fumes and chemical contact.

Surface Preparation: Surfaces shall be clean and dry. Allow concrete to cure for 28 days. All surfaces must be clean and dry.

Block Filler (CMU only): 1254 Epoxoblock	125 SF/GL
1st Coat: 66HS-Color Hi-Build Epoxoline	3.0 - 5.0
2nd Coat: 66HS-Color Hi-Build Epoxoline	4.0 - 6.0
Dry Film Thickness	7.0-11.0*
Minimum	9.0 Mils

*(Does not include Block Filler)

D. IMMERSION - POTABLE & NON-POTABLE WATER

1. System No. 104-2: High Solids Epoxy (Non-Potable Water). This system will provide chemical and corrosion resistance for protection against abrasion, moisture, corrosive fumes, chemical contact and immersion in ***mild to moderate*** Wastewater, such as clarifiers, chlorine contact basins, aeration basins, settling basins and other open top (aerobic) structures.

Surface Preparation: Existing Concrete: all existing surfaces (walls, floors, top of walls) shall be pressure washed with 3,000-4,000psi potable water

to remove all contaminants. Completely remove existing failing coating system using sweep abrasive blasting. New Concrete: Allow new concrete to cure for 28 days. Sweep abrasive blast per SSPC-SP13 to remove all laitance, fines, curing compounds, form release oils, and other contaminants, and to establish a surface profile equal to ICRI CSP 5 or greater.

Apply Tnemec Series 218 to all surfaces at a minimum of 1/16" to re-surface concrete, fill voids and bugholes, mitigate concrete outgassing, and to create a monolithic, paintable surface.

1st Coat: 104-1255 H.S. Epoxy Primer	6.0 - 8.0
2nd Coat: 104 Color H.S. Epoxy	6.0 - 8.0
3rd Coat: 104 Color H.S. Epoxy	6.0-8.0
Dry Film Thickness	18.0 - 240.0
Minimum	20.0 Mils

2. System No. 20HS-2 Epoxy-Polyamide (Potable Water)

This system meets American Water Works Association AWWA D 102 Inside System No. 1. Series 20HS meets the requirements of approval for potable water use as established by the National Sanitation Foundation Standard 61.

Surface Preparation: Allow new concrete to cure for 28 days. Sweep abrasive blast per SSPC-SP13 to remove all laitance, fines, curing compounds, form release oils, and other contaminants, and to establish a surface profile equal to ICRI CSP 5 or greater.

Apply Tnemec Series 218 to all surfaces at a minimum of 1/16" to re-surface concrete, fill voids and bugholes, and to create a monolithic, paintable surface.

1st Coat: 20HS-15BL Pota-Pox	4.0 - 6.0
2nd Coat: 20HS-1255 Pota-Pox Finish	4.0 - 6.0
3rd Coat: 20HS -15BL	4.0 - 6.0
Dry Film Thickness	12.0 - 17.0
Minimum	13.0 Mils

E. INTERIOR EXPOSURE (NON-IMMERSION)

1. System No. 66HS-5: High Solids Epoxy

This system will produce a slick, tile-like finish that has excellent chemical and water resistance. Surface will be easy to clean.

Surface Preparation: Allow new concrete to cure for at least 28 days. Surface to be clean and dry.

1st Coat: 66HS-Color H.S. Epoxy	6.0 - 8.0
2nd Coat: 66HS-Color H.S. Epoxy	6.0 - 8.0
Dry Film Thickness	12.0 - 16.0

Minimum	4.0 Mils

2. System No. 113-1: Acrylic-Epoxy Semi-Gloss

This system will provide high performance and can be applied directly over existing coatings without lifting. Can be used when low odor is required during application. Specify Series 114 Tneme-Tufcoat for Gloss Finish.

Surface Preparation: Allow new concrete to cure for at least 28 days. Surface must be clean and dry.

One or Two Coats:	113-Color Tneme-Tufcoat
Dry Film Thickness	4.0 - 6.0

3.18 CONCRETE FLOORS

A. EPOXY FLOOR COATINGS

1. System No. 290-1: Epoxy- Chemical Resistant Urethane

This system will provide a durable, long-wearing coating that bonds tightly to concrete and stands up under heavy foot traffic, frequent cleaning, spillage of water, oil, grease, or chemical, and UV Exposure.

Surface Preparation: Allow new concrete to cure for 28 days. Mechanically abrade or Sweep Abrasive Blast Cleaning

Moisture vapor transmission should not exceed three lbs per 1,000 sq ft in a 24 hour period. (Reference ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.") Relative humidity should not exceed 80%. (Reference ASTM F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes.")

Note: For moisture content up to 10 lbs per 1,000 sq ft or relative humidity up to 90%, Series 208 may be substituted for Series 201 as the primer.

1st Coat: 201- Epoxoprime	5.0-7.0
2nd Coat: 237-Color Tneme-Glaze	8.0-10.0
3rd Coat: 290 CRU	2.0-3.0
Dry Film Thickness	15.0- 20.0
Minimum	17.0 Mils

For a non-skid finish, broadcast 30-50 mesh clean, dry silica sand into the 2nd coat at a rate of 5 lbs per 150 square feet.

2. System No. 241/222: Decorative Quartz Flooring (Non-Slip)

This system provides a decorative, chemical, abrasion, impact resistant, non-slip, seamless flooring system with a moisture mitigating base coat that resists up to 20 lbs of moisture vapor pressure.

Surface Preparation: Allow new concrete to cure for 28 days. Mechanically abrade or Sweep abrasive Blast to provide a minimum surface profile equal to ICRI CSP3

1st Coat: 241 Ultra-Tread MVT	70 square feet per small kit
2nd Coat: 222 Deco-Tread	(1 ct. @ 1/16" ea.)
3rd Coat: 284 Tneme-Glaze (clear)	8.0 - 12.0
Minimum Dry Film Thickness	1/8"+

3.19 POROUS MASONRY

A. EXTERIOR/INTERIOR EXPOSURE

1. System No. 156-2: Modified Epoxy - Sand Texture

Modified Waterborne Acrylate. This system offers long term protection against wind-driven rain, mold/mildew growth, chalking & fading, and bridges hairline cracks.

Surface Preparation: Surface shall be clean and dry.

1st Coat: 157-Color Envirocrete	6.0-9.0
2nd Coat: 157 Envirocrete	6.0-9.0
Dry Film Thickness	12.0-18.0
Minimum DFT:	14.0 mils

2. System No. 104-3: High Solids Epoxy (Interior Only)

This system will produce a film thickness of 16 mils. The surface will be tile-like for easy cleaning and will provide protection against chemical attack, corrosive fumes, high humidity and wash down. Backroll first coat to fill porosity.

Surface Preparation: Surface to be clean and dry.

1st Coat: 104-Color H.S. Epoxy	8.0 - 10.0
2nd Coat: 104-Color H.S. Epoxy	8.0 - 10.0
Dry Film Thickness	16.0 - 20.0
Minimum	18.0 Mils

3. System No. 113-2: Acrylic-Epoxy Semi-Gloss (Interior Only)

Series 113 Tneme-Tufcoat has very low odor and can be used when painting in occupied areas.

Specify Series 114 Tneme-Tufcoat for a gloss finish.
Surface Preparation: Surface must be clean and dry.

1st Coat: 1254 Epoxoblock WB	125 SF/Gal
2nd Coat: 113-Color Tneme-Tufcoat*	4.0 - 6.0
	**4.0 - 6.0

** Two coats may be required if applied by roller*
*** Total Dry Film Thickness of Topcoats Only*

4. System No. 156-3: Modified Acrylic Elastomer

If texture is needed, use 157 Enviro-Crete TX For application over previously applied coatings, use TNEMEC 151 Elasto-Grip at 1.0 - 2.5 mils DFT in lieu of Series 1254.

Surface Preparation: Surfaces must be clean and dry.

1st Coat: 1254 Epoxoblock WB	125 SF/Gal
2nd Coat: 156-Color Enviro-Crete	4.0 - 8.0
3rd Coat: 156-Color Enviro-Crete	4.0 - 8.0
Dry Film Thickness	8.0 - 16.0
Minimum	10.0 Mils

3.20 GYPSUM WALLBOARD

A. INTERIOR EXPOSURE

1. System No. 113-3: Acrylic-Epoxy

Surface Preparation: Surface must be clean and dry.

1st Coat: 51PVA Sealer	1.0 - 2.0
2nd Coat: 113 H.B. Tneme-Tufcoat*	4.0 - 5.0
Dry Film Thickness	5.0 - 7.0
Minimum	6.0 Mils

*Two coats may be required if application is by brush and roller.

2. System No. 66HS-5: Hi-Build Epoxoline

Surface Preparation: Surface must be clean and dry.

1st Coat: 51PVA Sealer	1.0 - 2.0
2nd Coat: 66HS-Color Hi-Build Epoxoline*	4.0 - 6.0
Dry Film Thickness	5.0 - 8.0
Minimum	5.0 Mils

*Two coats may be required if applied by roller

3. System No. 1026--3: Acrylic Emulsion, Low Sheen (Interior/Exterior Exposure)
This system is designed for mild use areas like office walls, laboratory ceilings, stairwells, etc. For Semi-Gloss finish, use 1029-color Tneme-Cryl S/G.

Surface Preparation: Surface must be dry and clean.

1st Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
2nd Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
Dry Film Thickness	4.0 - 6.0

Minimum	5.0 Mils

3.21 WOOD

A. EXTERIOR/INTERIOR EXPOSURE

1. System No. 1029-2: Acrylic Emulsion Semi-Gloss

Specify Series 1028 Hi-Build Tneme-Gloss for High Gloss finish.

Surface Preparation: Surface shall be clean and dry.

1st Coat: 10-99W Undercoater	2.0-3.0
2nd Coat: 1029 Enduratone	1.5 - 3.5
3rd Coat: 1029 Enduratone	1.5 - 3.5
Dry Film Thickness	5.0 - 10.5
Minimum	6.0 Mils

3.22 PVC PIPE

A. EXTERIOR OR INTERIOR

System No. 1095-4: Acrylic Polyurethane

Surface Preparation: SSPC-SP1 followed by hand or power sanding to scarify / degloss surface.

Two Coats: 1095 Endurashield Dry Film Thickness 2.0-3.0 mils per coat.

3.23 INSULATED PIPE

A. INTERIOR EXPOSURE

System No. 1026-4: Acrylic Emulsion, Low Sheen

For semi-gloss finish, use 1029-Color Tneme-Cryl S/G.

Surface Preparation: Surface shall be clean and dry.

1st Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
2nd Coat: 1026-Color Tneme-Cryl	2.0 - 3.0
Dry Film Thickness	4.0 - 6.0
Minimum	5.0 Mils

3.24 HIGH HEAT COATING

A. EXTERIOR/INTERIOR EXPOSURE

1. System No. 1528-1: Inert Multipolymeric Matrix (1200 deg F Maximum)

Surface Preparation: SSPC-SP10 Near-White Blast Cleaning - 1.5 Mil Surface Profile

1st Coat: 1528-Color Endura-Heat DTM	2.0-4.0
2nd Coat: 1528-Color Endura-Head DTM	2.0-4.0
Dry Film Thickness	4.0-6.0

3.25 SURFACES EXPOSED TO H2S/H2SO4 (SEVERE EXPOSURE/IMMERSION)

A. CEMENTITIOUS SURFACES

System No. 434-1: Polyamine Epoxy Mortar system

Surface Preparation: Allow new concrete to cure for 28 days. Sweep abrasive blast per SSPC-SP13 to remove all laitance, fines, curing compounds, form release oils, and other contaminants, and to establish a surface profile equal to ICRI CSP 5 or greater.

Apply Tnemec Series 218 to all surfaces at a minimum of 1/16" to re-surface concrete, fill voids and bugholes, mitigate concrete outgassing, and to create a monolithic, paintable surface.

1st Coat: 434 Perma-Shield	125 mils
2nd Coat: 435 Perma-Glaze	18.0-20.0
Dry Film Thickness	143-145
Minimum	144.0

B. FERROUS METAL SURFACES

System No. 142-1: Flake /Aluminum Oxide Filled Polyamine Epoxy
Surface Preparation: SSPC-SP-10 Near White Metal Blast Cleaning (1.5 Mil Profile)

1st Coat: Series 1 Omnithane	2.5-3.5
2nd Coat: 142 Epoxoline	14 - 18.0
Dry Film Thickness	16.0 – 23.5.0
Minimum	20.0 Mils

3.26 EXTERIOR OF PRESTRESSED CONCRETE TANKS

A. System No. 156-4: New Tanks

Surface Preparation: Allow new concrete to cure for at least (3) days. Surface to be clean and dry.

1st Coat: 156-Color Envirocrete	4.0 - 6.0
2nd Coat: 156-Color Envirocrete	4.0 - 6.0
Dry Film Thickness	8.0 - 12.0
Minimum	10.0 Mils

B. System No. 156-5: Existing Tanks (Previously Painted)

Surface Preparation: Remove all dirt, oil, grease, chalk, and loose paint per high pressure water blast (min. 3500 psi).

1st Coat: 151 Elasto-Grip	1.0 - 2.5
Stripe Coat: Stripe all hairline cracks with a brushed coat of Series 156 Envirocrete	3.0 - 5.0
Topcoat: 156-Envirocrete	4.0 - 6.0
Dry Film Thickness (Cracks)	8.0 - 13.5
Dry Film Thickness (Other)	5.0 - 8.5

3.27 SECONDARY CONTAINMENT AREAS

A. System No. 239SC-1: Modified Novolac Epoxy

This system offers superior chemical resistance to a wide range of aggressive chemicals, including Sulfuric Acid, Hydrofluosilicic Acid, Sodium Hydroxide, Sodium Hypochlorite, Polymer Emulsion, and hydrocarbons.

Surface Preparation: Allow new concrete to cure for 28 days. Sweep abrasive blast per SSPC-SP13 to remove all laitance, fines, curing compounds, form release oils, and other contaminants, and to establish a surface profile equal to ICRI CSP 5 or greater.

Moisture vapor transmission should not exceed three lbs per 1,000 sq ft in a 24 hour period. (Reference ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.") Relative humidity should not exceed 80%. (Reference ASTM F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes.") Note: For moisture content up to 10 lbs per 1,000 sq ft or relative humidity up to 90%, Series 241 may be substituted for the primer. Refer to the Series 241 product data sheet for more information.

Apply Tnemec Series 218 to all vertical surfaces at a minimum of 1/16" to re-surface concrete, fill voids and bugholes, and to create a monolithic, paintable surface.

ApplyTnemec Series 215 or 218 as needed to fill voids in horizontal surfaces.

Primer: Tnemec Series 239SC RCK	6.0-8.0
Basecoat: Tnemec Series 239SC MCK	60.0-80.0
Fiberglass Mat: Tnemec Series 211-0215SC	NA
Saturant Coat: Tnemec Series 239SC RCK	10.0-12.0
Top Coat: Tnemec Series 282	8.0-10.0
Dry Film Thickness	84.0-110.0

Notes:

1. *See Tnemec's Fiberglass Mat Reinforced Mortar Application Guide for System details*
2. *Series 282 is not color stable. For extended color and gloss retention, apply a finish coat of Tnemec Series 290 CRU @ 2.0-3.0 mils DFT*

B. System No. 61-1: Cycloaliphatic Amine Epoxy

This system offers superior resistance to gasoline, diesel fuel, and other hydrocarbons. Use TNEMEC Series 215 between coats as a filler and surfacer

wherever it is required.

Surface Preparation: Allow new concrete to cure for 28 days. Sweep abrasive blast per SSPC-SP13 to remove all laitance, fines, curing compounds, form release oils, and other contaminants, and to establish a surface profile equal to ICRI CSP 5 or greater.

Moisture vapor transmission should not exceed three lbs per 1,000 sq ft in a 24 hour period. (Reference ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.") Relative humidity should not exceed 80%. (Reference ASTM F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes.") Note: For moisture content up to 10 lbs per 1,000 sq ft or relative humidity up to 90%, Series 241 may be applied prior to the “Primer” coat. Refer to the Series 241 product data sheet for more information.

Apply Tnemec Series 218 to all ***vertical*** surfaces at a minimum of 1/16” to re-surface concrete, fill voids and bugholes, mitigate concrete outgassing, and to create a monolithic, paintable surface.

Apply Tnemec Series 215 or 218 as needed to fill voids in ***horizontal*** surfaces.

Primer: 61-5002 Tneme-Liner (Beige)	8.0 - 12.0
Topcoat: 61-5001 Tneme-Liner (Gray)	8.0 - 12.0
Dry Film Thickness	16.0 - 24.0

3.28 CLEAR WATER REPELLENT FOR CONCRETE, MASONRY AND BRICK

A. Silane /Siloxane Sealer (Min. 42% Solids)

Surface Preparation: Allow new concrete to cure 28 days. All surfaces must be clean, dry, and free of oils, curing compounds, form release oils, and other contaminants that might interfere with the penetration of the sealer.

COATING: BRICK, CONCRETE
Tnemec Series 662 .... Two Coats @ 75-200 SF/GAL

SPLIT FACED OR POROUS MASONRY
Tnemec Series 662..... Two Coats @ 35-100 SF/GAL

3.29 CANAL PIPE (AERIAL) CROSSINGS

A. System 701-1: **NEW**. Zinc/Epoxy/Fluoropolymer for New Pipe or Existing Pipe Requiring Removal of Existing Coatings
Surface Preparation: SSPC-SP6 Commercial Blast Cleaning

Primer: 90-97 Tneme-Zinc	2.5 - 3.5
2nd Coat: 66HS-Color Hi-Build Epoxoline	2.0 - 3.0
3rd Coat: 701-Color Hydroflon	2.0 - 3.0
Dry Film Thickness	6.5 - 9.5
Minimum	8.0 Mils

B. System No. 701-2: **EXISTING**. High Build, Semi- Gloss Fluoropolymer for

Marginally Cleaned Surfaces or Topcoating Over Existing Systems

Surface Preparation: High Pressure Water Blast (min. 3500 psi) or Solvent Clean (SSPC-SP1) and Spot Hand or Power Tool Clean (SSPC-SP 2 - 3) or Brush Blast (SSPC-SP7). Existing coatings must be clean, dry and tightly adhering prior to application of coatings.

Spot Coat: 135-Color Chembuild	3.0 - 5.0
Prime Coat: 135-Color Chembuild	3.0 - 5.0
2nd Coat: 701-Color Hydroflon	2.0 - 3.0
Minimum Dry Film Thickness (NIC Spot Coat)?	6.0

3.30 PROJECT DESIGNER SYSTEMS REFERENCE GUIDE

A. STEEL

EXTERIOR (NON-IMMERSION)

A.1 System No. 1095-1-1: Epoxy/High Build Urethane
A.2 System No. 1095-2: High Build Urethane
A.4 System 90-97: Zinc/Epoxy/Urethane

INTERIOR EXPOSURE (NON-IMMERSION)

B.1 System No. 66HS-1: High Solids Epoxy
B.2 System No. 66HS-2: High Build Epoxy

IMMERSION

C.1 System No. 104-1: High Solids Epoxy (Non-Potable)
C.2 System No. 20HS-1: High Build Epoxy (Non-Potable)

B. OVERHEAD METAL DECKING, JOIST (INTERIOR EXPOSURE)

System No. 115-1: Uni-Bond

C. OVERHEAD METAL DECKING, JOINT (EXTERIOR EXPOSURE)
System No. 1029-1 Enduratone

D. GALVANIZED STEEL-PIPE AND MISCELLANEOUS FABRICATORS

System No. 1095-3: Epoxy/High Build Urethane

E. GALVANIZED STEEL-INTERIOR EXPOSURE (NON-IMMERSION) AND ALUMINUM IN CONTACT WITH CONCRETE

System No. 66HS-3: Polyamide Epoxy

F. CONCRETE

EXTERIOR-ABOVE GRADE

A.1 System No. 1026-1: Acrylic Emulsion Low Sheen
A.2 System No. 156-1: Modified Acrylic Elastomer

EXTERIOR-BELOW GRADE

B.1 System No. 46-61: Coal Tar Pitch Solution

EXTERIOR/INTERIOR EXPOSURE (NON-IMMERSION)

C.1 System No. 1026-2: Acrylic Emulsion Low Sheen
C.2 System No. 66HS-4: Epoxy-Polyamide

IMMERSION (POTABLE & NON-POTABLE)

D.1 System No. 104-2: High Solids Epoxy (Non-Potable)
D.2 System No. 20HS-2: Epoxy Polyamide (Potable)

INTERIOR EXPOSURE (NON-IMMERSION)

E.1 System No. 66HS-5: High Solids Epoxy
E.2 System No. 113-1: Acrylic Epoxy Semi-Gloss

G. CONCRETE FLOORS

A.1 System No. 290-1: Epoxy-Polyamide
A.5 System No. 241/222: Decorative / Functional Flooring (Non-Slip)

H. POROUS MASONRY - EXTERIOR/INTERIOR EXPOSURE

A.1 System No. 156-2: Modified Epoxy-Sand Texture
A.2 System No. 104-3: High Solids Epoxy (Interior Only)
A.3 System No. 113-2: Acrylic Epoxy Semi-Gloss (Interior Only)
A.4 System No. 156-3: Modified Acrylic Elastomer

I. GYPSUM WALLBOARD

A.1 System No. 113-3: Acrylic Epoxy
A.2 System No. 66HS-5: Hi-Build Epoxoline
A.3 System No. 1026-3: Acrylic Emulsion, Low Sheen

J. WOOD EXTERIOR/INTERIOR EXPOSURE.

A.1 System No. 1029-2: Acrylic Emulsion Semi-Gloss
A.2 System No. 6-5: Acrylic Latex

K. PVC PIPE EXTERIOR/INTERIOR EXPOSURE

A.1 System No. 1095-5: Acrylic Polyurethane

L. INSULATED PIPE-INTERIOR EXPOSURE

A.1 System No. 1026-4: Acrylic Emulsion, Low Sheen

M. HIGH HEAT SURFACES-FERROUS METAL

A.1 System No. 1528-1: Silicone Aluminum (1200deg F Maximum)

N. SURFACES EXPOSED TO H_2S/H_2SO_4 (SEVERE EXPOSURE/IMMERSION)

A.1 System No. 434-1: Polyamine Epoxy Mortar Systems
A.2 System No. 142-1: Flake / Aluminum Oxide Filled Polyamine Epoxy

O. EXTERIOR OF PRESTRESSED CONCRETE TANKS

A. System 156-4 New Tanks
B. System 156-5: Existing Tanks (Previously Painted)

P. SECONDARY CONTAINMENT AREAS

A. System No. 239SC-1: Modified Novolac Epoxy
B. System No. 61-1: Cycloaliphatic Amine Epoxy

Q. CLEAR WATER REPELLENT FOR CONCRETE, MASONRY AND BRICK

A. Silane /Siloxane Sealer (Min. 42% Solids)

R. CANAL PIPE (AERIAL) CROSSINGS

A. System No. 701-1: Zinc/Epoxy/Fluoropolymer
B. System No. 701-2: High Build/Fluoropolymer
C. Ductile Iron Pipe Above Grade: Series 66 High Build Epoxy

3.31 COATING SCHEDULE

LS12A AND LS13A

1. Ductile iron pipe non-submerged exposed to interior corrosive environment – System 66HS-1

END OF SECTION

SECTION 16010 – ELECTRICAL POWER STUDIES

PART 1 GENERAL

1.01 REQUIREMENT SUMMARY

A. Contractor shall furnish short-circuit and protective device coordination studies as prepared by the electrical equipment supplier or an approved engineering firm.

B. Contractor shall furnish an Arc Flash Hazard Analysis Study per the requirements set forth in NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA70E-2004, Annex D.

C. The scope of work for the studies shall include all new distribution equipment supplied by the electrical equipment supplier under this Contract as well as all the applicable existing electrical equipment at the Project site.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. In addition to the requirements specified in this Section, the requirements of Division 16 and those Project Documents referenced herein shall be applied.

1.03 REFERENCES

A. Codes and Standards

1. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

   a. IEEE 141 – Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
   b. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems
   c. IEEE 399 – Recommended Practice for Industrial and Commercial Power System Analysis
   d. IEEE 241 – Recommended Practice for Electric Power Systems in Commercial Buildings
   e. IEEE 1015 – Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
   f. IEEE 1584 - Guide for Performing Arc-Flash Hazard Calculations

2. American National Standards Institute (ANSI):

   a. ANSI C57.12.00 – Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
   b. ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
   c. ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
   d. ANSI C 37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.

3. The National Fire Protection Association (NFPA)

a. NFPA 70 - National Electrical Code, latest edition
b. NFPA 70E – Standard for Electrical Safety in the Workplace

1.04 SUBMITTALS

A. Contractor shall reference and provide all documentation for all Division 16 Sections as required per Specification Sections:

1. Division 01 – General Requirements

B. For Engineer Review

1. The short-circuit and protective device coordination studies shall be submitted to the Engineer prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment drawings for production. If formal completion of the studies may cause delay in equipment manufacturing, approval from the Engineer may be obtained for preliminary submittal of sufficient study data to ensure that the selection of device and characteristics will be satisfactory.

C. For Construction

1. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. No more than five (5) bound hard copies of the complete final report shall be submitted. Electronic copies of the resultant computer analysis software study(ies) shall be included and compatible with the latest version of ETAP® Systems software.

2. The report shall include the following sections:

a. Executive Summary
b. Descriptions, purpose, basis and scope of the study
c. Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short circuit duties
d. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip unit settings, fuse selection
e. Fault current calculations including a definition of terms and guide for interpretation of the computer printout
f. Details of the incident energy and flash protection boundary calculations
g. Recommendations for system improvements, where needed
h. One-line diagram

3. Arc flash labels shall be provided and installed by the Contractor in accordance with Specification Section:

a. 16075 – Electrical Identification

1.05 QUALIFICATIONS

A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the supervision and approval of a Registered Professional Electrical Engineer in the State of Florida skilled in performing and interpreting the power system studies.

B. The Registered Professional Electrical Engineer shall be a full-time employee of the equipment manufacturer or an approved engineering firm

C. The Registered Professional Electrical Engineer shall have a minimum of five (5) years of experience in performing power system studies.

D. The equipment manufacturer or approved engineering firm shall demonstrate experience with Arc Flash Hazard Analysis by submitting names of at least ten actual arc flash hazard analysis it has performed in the past year.

1.06 COMPUTER ANALYSIS SOFTWARE

A. The studies shall be performed using the latest version of SKM® Systems software program or approved equal.

PART 2 PRODUCTS

2.01 STUDIES

A. Contractor shall furnish short-circuit and protective device coordination studies as prepared by equipment supplier or an approved engineering firm.

B. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E - Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D.

2.02 DATA COLLECTION

A. Contractor shall furnish all data as required by the power system studies. The engineer performing the short-circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data immediately after award of the contract. Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.

B. Source combination may include present and future motors and generators.

C. Load data utilized may include existing, new and proposed loads obtained from the Contract Documents, Engineer or Owner.

D. If applicable, include fault contribution of existing motors in the study. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.03 SHORT-CIRCUIT AND PROTECTIVE DEVICE EVALUATION STUDY

A. Use actual conductor impedances if known. If unknown, use typical conductor impedances based on IEEE Standard 141-1993.

B. Transformer design impedances shall be used when test impedances are not available.

C. Provide the following:

1. Calculation methods and assumptions
2. Selected base per unit quantities
3. One-line diagram of the system being evaluated
4. Source impedance data, including electric utility system and motor fault contribution characteristics
5. Tabulations of calculated quantities
6. Results, conclusions, and recommendations.

D. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault at each:

1. Electric utility's supply termination point
2. Incoming switchgear
3. Motor control centers
4. Standby generators
5. Branch circuit panelboards
6. Other significant locations throughout the system.

E. For grounded systems, provide a bolted line-to-ground fault current study for areas as defined for the three-phase bolted fault short-circuit study.

F. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short circuit ratings
2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses
3. Notify Engineer in writing, of existing, circuit protective devices improperly rated for the calculated available fault current.

2.04 PROTECTIVE DEVICE COORDINATION STUDY

A. Proposed protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.

B. Include on each TCC graph, a complete title and one-line diagram with legend identifying the specific portion of the system covered.

C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.

D. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

E. Plot the following characteristics on the TCC graphs, where applicable:

1. Electric utility's overcurrent protective device
2. Medium voltage equipment overcurrent relays
3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
5. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
6. Conductor damage curves
7. Ground fault protective devices, as applicable
8. Pertinent motor starting characteristics and motor damage points, where applicable
9. Pertinent generator short-circuit decrement curve and generator damage point
10. The largest feeder circuit breaker in each motor control center and applicable panelboard.

F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.

2.05 ARC FLASH HAZARD ANALYSIS

A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA70E-2004, Annex D.

B. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.

C. The Arc-Flash Hazard Analysis shall include all significant locations in 240V and 208V systems fed from transformers equal to or greater than 125kVA where work could be performed on energized parts.

D. Safe working distances shall be based upon the calculated arc flash boundary considering an incident energy of 1.2 cal/cm2.

E. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations

F. The short-circuit calculations and the corresponding incident energy calculations for multiple system scenarios must be compared and the greatest incident energy must be uniquely reported for each equipment location. Calculations must be performed to represent the maximum and minimum contributions of fault current

magnitude for all normal and emergency operating conditions. The minimum calculation will assume that the utility contribution is at a minimum and will assume a minimum motor contribution (all motors off). Conversely, the maximum calculation will assume a maximum contribution from the utility and will assume the maximum amount of motors to be operating. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable.

G. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators should be decremented as follows:

1. Fault contribution from induction motors should not be considered beyond 3-5 cycles.
2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible (e.g. contributions from permanent magnet generators will typically decay from 10 per unit to 3 per unit after 10 cycles).

H. For each equipment location with a separately enclosed main device (where there is adequate separation between the line side terminals of the main protective device and the work location), calculations for incident energy and flash protection boundary shall include both the line and load side of the main breaker.

I. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.

J. Mis-Coordination should be checked amongst all devices within the branch containing the immediate protective device upstream of the calculation location and the calculation should utilize the fastest device to compute the incident energy for the corresponding location.

K. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2SEC based on IEEE 1584-2002 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2SEC during an arc flash event, a maximum clearing time based on the specific location shall be utilized.

2.06 REPORT SECTIONS

A. Input data shall include, but not be limited to the following:

1. Feeder input data including feeder type (cable or bus), size, length, number per phase, conduit type (magnetic or non-magnetic) and conductor material (copper or aluminum).

2. Transformer input data, including winding connections, secondary neutral-ground connection, primary and secondary voltage ratings, kVA rating, impedance, % taps and phase shift.
3. Reactor data, including voltage rating, and impedance.
4. Generation contribution data, (synchronous generators and Utility), including short-circuit reactance (X"d), rated MVA, rated voltage, three-phase and single line-ground contribution (for Utility sources) and X/R ratio.
5. Motor contribution data (induction motors and synchronous motors), including short-circuit reactance, rated horsepower or kVA, rated voltage, and X/R ratio.

B. Short-Circuit Output Data shall include, but not be limited to the following reports:

1. Low Voltage Fault Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:

    a. Voltage
    b. Calculated fault current magnitude and angle
    c. Fault point X/R ratio
    d. Equivalent impedance

2. Momentary Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:

    a. Voltage
    b. Calculated symmetrical fault current magnitude and angle
    c. Fault point X/R ratio
    d. Calculated asymmetrical fault currents

        1) Based on fault point X/R ratio
        2) Based on calculated symmetrical value multiplied by 1.6
        3) Based on calculated symmetrical value multiplied by 2.7

    e. Equivalent impedance
3. Interrupting Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:

    a. Voltage
    b. Calculated symmetrical fault current magnitude and angle
    c. Fault point X/R ratio
    d. No AC Decrement (NACD) Ratio
    e. Equivalent impedance
    f. Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a symmetrical basis

g. Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a total basis

C. Recommended Protective Device Settings:

1. Phase and Ground Relays:

a. Current transformer ratio
b. Current setting
c. Time setting
d. Instantaneous setting
e. Recommendations on improved relaying systems, if applicable.

2. Circuit Breakers:

a. Adjustable pickups and time delays (long time, short time, ground)
b. Adjustable time-current characteristic
c. Adjustable instantaneous pickup
d. Recommendations on improved trip systems, if applicable.

D. Incident energy and flash protection boundary calculations

1. Arcing fault magnitude
2. Protective device clearing time
3. Duration of arc
4. Arc flash boundary
5. Working distance
6. Incident energy
7. Hazard Risk Category
8. Recommendations for arc flash energy reduction

PART 3 EXECUTION

3.01 FIELD ADJUSTMENT

A. Adjust relay and protective device settings according to the recommended settings table provided by the coordination study. Field adjustments to be completed by the start-up and commissioning technician of the electrical equipment manufacturer under the Startup and Acceptance Testing contract portion.

B. Make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.

C. Notify Engineer in writing of any required major equipment modifications.

3.02 ARC FLASH WARNING LABELS

A. The Contractor shall provide and install labels in accordance Specification Section:

1. 16075 – Electrical Identification

B. All labels will be based on recommended overcurrent device settings and will be provided after the results of the analysis have been presented to the Engineer for review and after any system changes, upgrades or modifications have been incorporated in the system.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16050 ELECTRICAL - GENERAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, devices, equipment, appurtenances, and incidentals required for a complete electrical system as hereinafter specified and/or shown on the Contract Drawings. This work may necessarily include interfacing with and/or completely installing devices and/or equipment furnished under other sections of these Specifications.

B. It is the intent of these Specifications that the electrical system be suitable in every way for the service required. All materials and all work/labor which may be reasonably implied as being incidental to the requirements of this Section shall be furnished at no additional cost to the County.

C. All power interruptions to existing equipment shall be at the County's convenience. Each interruption shall have prior approval. Request(s) for power interruption(s) shall be made at least forty-eight (48) hours in advance.

D. The work shall include complete testing of all electrical components, including wiring.

E. All workmanship shall be of the highest quality. Substandard work will be rejected and it shall be replaced entirely at the CONTRACTOR's expense with no cost to the County.

F. It shall be the responsibility of each bidder or his authorized representative to physically visit the job site in order that he may be personally acquainted with the area(s), buildings and/or structures intended for use in the installation/construction under this Specification. The submittal of a proposal/bid by a bidder shall be considered evidence that he has complied with this requirement and accepts all responsibility for a complete knowledge of all factors governing his work. Therefore, failure to comply with this requirement of the Specifications will not be grounds for the successful bidder (CONTRACTOR) to request approval of change orders and/or additional monetary compensation.

1.02 TEMPORARY ELECTRICAL SERVICE

A. The CONTRACTOR shall make the requisite arrangements and acquire all necessary permits for securing temporary electrical power for his use in accordance with Section 01510 of these Specifications.

1.03 CODES, INSPECTIONS AND FEES

A. All materials and installations shall be in accordance with the National Electrical Code (latest edition) and the latest editions of all applicable national, state, county and local codes.

B. To the extent that any item is routinely tested and rated by the Underwriter's Laboratories, Inc., that item shall bear the U.L. label. Additionally, all items shall be manufactured to the applicable NEMA standards.

C. The CONTRACTOR shall make the necessary arrangements for obtaining all requisite permits and inspections and pay any applicable fees.

1.04 TESTS

A. CONTRACTOR shall employ a third-party NETA certified testing firm to test all components of cables greater than 1/0, MCC, VFD, Switchgear (MV & LV), MV Switches and Switchboards including power breakers (sec 7.6.1.1) per the latest version of **"Standard for Acceptance Testing Specification for Electrical Power Equipment and Systems" ANSI/NETA.** The CONTRACTOR shall test all items individually and as a system for proper operation. Test results for wire, breakers and grounding shall be provided to the ENGINEER for approval.

B. The CONTRACTOR shall, at his expense, make all the requisite repairs, adjustments and/or alterations to correct any shortcomings found as a result of the tests performed under Item 1.04.A above.

C. A representative of the County shall be present during all testing. The County shall be notified at least two (2) days prior to any testing.

1.05 SLEEVES AND FORMS FOR OPENINGS

A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all necessary slots for electrical work and form before concrete is poured. CONTRACTOR shall coordinate all penetrations with structural Engineer.

1.06 CUTTING AND PATCHING

A. All cutting and patching shall be done in a thoroughly workmanlike manner - i.e., care shall be taken when cutting not to damage or mar surrounding areas, and when patching to match the original finish as closely as possible while providing a watertight seal. Refer to Item 1.01.E above.

1.07 INTERPRETATION OF DRAWINGS

A. The layouts and arrangements as shown on the Contract Drawings are indicative of the physical arrangements desired; however, they are not intended to restrict the CONTRACTOR to accommodate the exact conditions as found in the field. Any deviations from the arrangements shown must be approved by the Engineer and the County prior to the final placement of the item(s) in question.

B. The Contract Drawings are not intended to show exact locations of conduit runs.

C. Circuit and conduit layouts shown are not intended to indicate the exact installation details. The CONTRACTOR shall furnish and install all requisite items, including all fittings, junction boxes, etc., to insure that the electrical system operates in conformance with the Specifications and the specific requirements of an individual piece of equipment.

D. Where circuits are shown as "home-runs", all necessary fittings and boxes shall be provided for a complete conduit installation.

E. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Contract Drawings.

F. Surface mounted items such as panelboards, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between the equipment and the mounting surface.

G. The County shall make the final decision in determining the exact location(s) and mounting height(s) of any item(s) or piece(s) of equipment in question.

H. All connections to equipment shall be made in accordance with the approved shop and manufacturer's drawings, regardless of the number of conductors shown on the Contract Bid Drawings.

I. The CONTRACTOR shall coordinate the work of the different trades in order to prevent interferences between conduit(s), piping and other non-electrical equipment. In case any interference develops, an authorized representative of the County shall decide which equipment, conduit(s) or piping must be relocated, regardless of which was installed first. Any such interferences shall be remedied solely at the CONTRACTOR's expense without any additional cost to the County.

1.08 EQUIPMENT SIZING AND HANDLING

A. The CONTRACTOR shall thoroughly check all entryways, doors, hallways, stairways, buildings and structures through which equipment must be transported to reach its final location.

B. If necessary for safe passage of the equipment, the manufacturer shall be required to ship his material in sections sized to pass through the restricted areas. This requirement holds even if such equipment sizing differs from the manufacturer's standard shipping section.

C. To the extent possible, the equipment shall be kept upright at all times. If equipment has to be tilted for ease of passage through restricted areas, the manufacturer shall provide specific handling instructions as well as any requisite bracing in order to assure both the functional integrity of the equipment and the validity of the equipment warranty.

1.09 SUBMITTALS

A. As specified under Section 01340 of these Specifications, the CONTRACTOR shall submit shop drawings and/or manufacturer's cut sheets for approval of all materials, equipment, devices, apparatus, and other items as required by the County.

1. Prior to submittal by the CONTRACTOR, all shop drawings shall be checked for accuracy and Contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to the Specifications

and Contract Drawings. This statement shall also list all discrepancies with the Specifications and Contract Drawings. Shop drawings not so checked and noted shall be returned unchecked by the County and the Engineer.

2. The County's and the Engineer's check shall be only for conformance with the design concept of the Project and compliance with the Specifications and Contract Drawings. The responsibility for, or the necessity of, furnishing materials and workmanship required by the Specifications and Contract Drawings which may not be indicated on the shop drawings is included under the work of this Section.
3. No material shall be ordered, no equipment manufacturing shall be started, nor shall any shop work/fabrication commence until the County and the Engineer have approved the shop drawings. Any deviation from this requirement of the Specifications shall be entirely at the risk and expense of the CONTRACTOR without any additional cost to the County.

B. Record Drawings: As the work progresses, the CONTRACTOR shall legibly record all field changes on a set of Contract Drawings. When the project is completed, the CONTRACTOR shall furnish the County with a complete set of reproducible "as-built" drawings.

1.10 MANUFACTURER'S SERVICES

A. The CONTRACTOR shall arrange for an authorized manufacturer's representative who shall be an experienced field service engineer to be present for the inspection, installation, testing, calibration, adjusting and start-up of any item(s) or piece(s) of equipment as deemed necessary by the County.

B. In addition to the duties of Item 1.11.A above, the manufacturer's representative shall also instruct the County's personnel in the proper operation and maintenance of the item(s) in question.

1.11 MATERIALS

A. All materials used shall be new, unused and as hereinafter specified. Where not specifically called out, all materials shall be of the very best quality of their respective kinds. Unless specifically otherwise approved in writing by the County, only material manufactured in the United States shall be used!

B. Where applicable, all materials and equipment shall conform with the requirements of Item 1.03.B above.

C. Electrical equipment shall at all times during construction be adequately protected against both mechanical injury and damage by water. Electrical equipment shall be stored indoors in dry shelters. Any damaged equipment shall be replaced by the CONTRACTOR at his own expense.

D. All items shall be manufactured from the materials specified - substitute materials will not be acceptable.

E. Only the specified manufacturer's equipment shall be used unless an "or

approved equal" is noted. The County and the Engineer shall be the determiners of what constitutes an "approved equal".

1.12 GUARANTEES AND WARRANTIES

A. All items furnished under the Electrical Specifications shall be guaranteed and/or warranted, in writing, against defects in materials, construction and workmanship as specified under Section 01740 of these Specifications.

END OF SECTION

SECTION 16075 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install identification for electrical apparatus and electrical Work. All manufactured equipment shall have nameplates in accordance with drawing naming conventions.

B. Related Sections:

1. 16120 Wires and Cables.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. NEC Article 110, Requirements for Electrical Installation.
2. NEC Article 210, Branch Circuits.
3. NEC Article 215, Feeders.
4. NEC Article 504, Intrinsically Safe Systems.
5. NEC Article 700, Emergency Systems.
6. NEC Article 701, Legally Required Standby Systems.
7. NEC Article 702, Optional Standby Systems.
8. 40 CFR 1910.145 (OSHA) – Specification for Accident Prevention Signs and Tags.
9. NFPA 70E, Electrical Safety in the Workplace.
10. NFPA 79, Electrical Standard for Industrial Machinery.

1.03 SUBMITTALS

A. Submit shop drawings and product data as described in Division 1 and following:

1. Shop Drawings: Submit the following:

a. Complete description and listing of proposed electrical identification and electrical identification devices for associated equipment or systems.
b. Conduit and wire identification numbering system and equipment signage.

2. Product Data:

a. Manufacturer’s literature, cut sheets, specifications, dimensions and technical data for all products proposed under this Section.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Engraved Identification Devices (Nameplates and Legend Plates):

1. Nameplates: (To be put on all manufactured equipment including panelboards, disconnects, control cabinets, junction and terminal boxes 12" and larger.)

a. Laminated thermoset plastic, 1/16-inch thick, engraved condensed block white lettering on black background, square corners, and beveled front edges, or match existing. Nameplate shall have glued backing with stainless screws in each corner. Provide sufficient spacing for mounting screws.
b. Size: As required.
c. Letter Size: Minimum 3/16-inch.
d. Nameplates one-inch or less in height shall have one mounting hole at each end. Nameplates greater than one-inch in height shall have mounting holes in the four corners.

2. Legend Plates:

a. Legend plates for pushbuttons, pilot lights, selector switches, and other panel-mounted devices shall be large size with dimensions of approximately 2-7/16 inches wide by 2-13/32 inches tall (similar to Allen Bradley large automotive size), plastic, custom engraved with black letters on white background.

1) Provide standard-size legend plates where devices are mounted on motor control centers and motor controllers and spacing of devices precludes using automotive-size legend plates.

b. Lettering size and line weight shall be the same for all legend plates on the same panel or enclosure. Maximum size shall be 1/4-inch and minimum size shall be 1/8-inch.

B. Safety Signs and Voltage Markers:

1. Provide high voltage signs for equipment operating over 600 volts.
2. High-Voltage Safety Signs for Outdoor Applications:

a. Products and Manufacturers: Provide one of the following:

1) B-120-45471 by Brady.
2) Or approved equal.

b. Unless otherwise shown or indicated, high voltage safety signs shall be not less than 10 inches high by 14 inches wide, of fiberglass reinforced plastic, and shall comply with 40 CFR 1910.145. Signs shall resist fading from exposure to temperature

extremes, ultraviolet light, abrasive, and corrosive environments, and shall read, “DANGER – HIGH VOLTAGE – KEEP OUT”

c. Mounting hardware shall be Type 316 stainless steel.

3. Cable Tray Safety Signs:

a. Products and Manufacturers: Provide one of the following:

1) B-302-86139 by Brady.
2) Or approved equal.

b. Cable tray safety signs shall be pressure-sensitive vinyl conforming to 40 CFR 1910.145, 5 inches by 3.5 inches in size, and shall read, “DANGER – HIGH VOLTAGE”

c. Low voltage safety signs shall be pressure-sensitive vinyl complying with 40 CFR 1910.145, five inches by 3.5 inches in size, and shall read, “DANGER – 480 VOLTS”

4. Low-Voltage Safety Signs:

a. Products and Manufacturers: Provide one of the following:

1) B-302-86060 by Brady.
2) Or approved equal.

b. Low voltage safety signs shall be pressure-sensitive vinyl complying with 40 CFR 1910.145, five inches by 3.5 inches in size, and shall read, “DANGER – 480 VOLTS”.

5. Low-Voltage Markers:

a. Products and Manufacturers: Provide one of the following:

1) CV442xx by Brady.
2) Or approved equal.

b. Low voltage markers shall be either pressure-sensitive vinyl or vinyl cloth with black lettering on orange background and shall read, “120 VOLTS”, “208 VOLTS”, “120/208 VOLTS”, or “240 VOLTS” as required.

C. Arc-flash Safety Signs:

1. Products and Manufacturers: Provide one of the following:

a. Brady.
b. Or approved equal.

2. Warning signs shall be adhesive-backed polyester.
3. Warning signs shall read, “Warning – Arc Flash and Shock Hazard”. Appropriate PPE Required. Arc flash warning signs shall indicate the

flash protection boundary, incident energy in calories per square centimeter, hazard level, description of required protective clothing, shock hazard, limited approach boundary, restricted approach boundary, prohibited approach boundary, and equipment name.

D. Voltage System Identification Directories:

1. General:
   a. Directories shall be laminated thermoset plastic, 1/16-inch thick, engraved block black letters on white background, square corners, and beveled front edges.
   b. Directories shall identify all voltage systems within building or structure.
   c. Directories shall list the colors that identify ungrounded and grounded conductors of each system.
   d. Colors shall be in accordance with Section 16120, Wires and Cables
   e. Example Directory Text:

Voltage System Identification		
System	A, B, C	Neutral
277/480	Brown, Orange, Yellow	Gray
120/208	Black, Red, Blue	White
CONTROL	COLOR	REMARKS
120V	Yellow	External Powered
24VDC	Blue	Discrete Signal
120V	Red	Powered from PLC
24VAC	Orange	Discrete Signal

2. Large directories for rooms shall have text height not less than 1/2-inch.
3. Small directories for equipment shall have text height of not less than 1/4-inch.

E. Conduit Labels:

1. Products and Manufacturers: Provide one of the following:

   a. Stainless Steel Tags and Strapping by Brady.
   b. Or approved equal.

2. Tags shall be engraved or stamped with ID designation consisting of conduit designation number indicated on drawings and as outlined in Section 3.01, F. Verify conduit numbers match numbers shown on drawings. Same number on both ends of conduit.
3. Utilize stainless steel strapping with a minimum of 32 mil thickness to securely attach conduit labels to conduits.
4. Label conduits in bottom of control panels.

F. Wire Identification:

1. Heat Shrinkable Wire and Cable Labeling System:

    a. Products and Manufacturers: Provide one of the following:

        1) ID Pro Plus WMS-xxx- by Brady.
        2) No equal.

    b. White heat-shrinkable irradiated polyolefin shrink-on sleeves. Labels shall be thermal printed. Labels shall be not less than one inch wide. Verify wire numbers match drawing numbers, same number on each end of wire.

2. Wrap-Around Wire and Cable Labeling System:

    a. Products and Manufacturers: Provide one of the following:

        1) ID Pro Plus WMS-xxx by Brady.
        2) No equal.

    b. Self-laminating white/transparent self-extinguishing vinyl strips. Length shall be sufficient to provide at least 2.5 wraps. Labels shall be thermally printed and not less than two inches wide. Verify wire numbers match drawing numbers, same number on each end of wire.

G. Detectable Underground Warning Tape:

1. Products and Manufacturers: Provide one of the following:

    a. Indentoline by Brady.
    b. Or approved equal.

2. Material: Polyethylene or polyester with detectable metal core and polyester underlaminate.
3. Width: Two inches.
4. Color and Labeling: Yellow or red with permanently imprinted black letters: “CAUTION – Buried Electric Line”, repeated continuously over full length of tape.

H. Thermal Printing System:

1. Utilize thermal transfer process to provide non-smearing labels and markers.
2. Wire and Cable Markers:

    a. Portable, Products and Manufacturers: Provide one of the following:

        1) ID Pro Plus by Brady.
        2) No equal.

b. Desktop, Products and Manufacturers: Provide one of the following:

1) BB72 by Brady.
2) Or approved equal.

3. Cable Markers:

a. Portable, Products and Manufacturers: Provide one of the following:

1) ID Pro Plus by Brady.
2) No equal.

b. Desktop, Products and Manufacturers: Provide one of the following:

1) BBP72 by Brady.
2) No equal.

2.02 FABRICATION

A. Engraved Identification Devices (Nameplates and Legend Plates):

1. Nameplate and legend plate text is preliminary and subject to change pending final review and approval of nomenclature by ENGINEER after start-up and testing. Verify device name plate matches drawing device name and/or number.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide electrical identification in accordance with manufacturer recommendations and as required for proper identification of equipment and materials.

B. Engraved Identification Devices (Nameplates and Legend Plates):

1. Unless otherwise indicated in the Contract Documents, attach permanent nameplates with permanent adhesive and with 3/16-inch diameter, round head, stainless steel machine screws into drilled and tapped holes.
2. Provide nameplate with 1.5-inch high letters to identify each console, cabinet, panel, or enclosure as shown or indicated.
3. Provide nameplates for field-mounted motor starters, disconnect switches, manual starter switches, pushbutton stations, and similar equipment operating components, which shall describe motor or equipment function and circuit number.
4. Provide nameplates with 1/2-inch high letters to identify each junction and terminal box shown or indicated.
5. On switchgear, provide nameplates for each main and feeder circuit including control fuses, and for each indicating light and instrument.

a. Provide nameplate with 1.5-inch high letters giving switchgear designation, voltage rating, ampere rating, short circuit rating, manufacturer's name, general order number, and item number.
b. Identify individual door for each compartment with nameplate giving item designation and circuit number.

6. Motor Control Centers:

a. Provide nameplate with 1.5-inch letters with motor control center designation.
b. Identify individual door for each unit compartment with nameplate identifying controlled equipment.

7. Except conduit, all electrical appurtenances including lighting panels, convenience outlets, fixtures, and lighting switches, shall be provided with nameplates indicating appropriate circuit breaker number(s).

8. Push Buttons:

a. Provide legend plates for identification of functions.
b. Provide nameplates for identification of controlled equipment.
c. Provide red buttons for stop function.
d. Provide black buttons for other functions.

9. Pilot Lights:

a. Provide legend plates for identification of functions.
b. Provide nameplates for identification of controlled equipment.
c. Shall have lens colors as shown or indicated.

Where no color is indicated, provide the following lens colors:

Color	Legend
Red	Running, Closed
Green	Stopped, Open
Amber	Alarm
Blue	Power
White	Status

10. Selector Switches:

a. Provide legend plates for identification of functions.
b. Provide nameplates for identification of controlled equipment.

11. Panel Mounted Instruments:

a. Provide nameplates for identification of function.

12. Interiors of Cabinets, Consoles, Panels, Terminal Boxes, and Other Enclosures:

a. Provide nameplates for identification.
b. Provide each item inside cabinet, console, panel, terminal box, or enclosure with laminated plastic nameplate as shown on approved Shop Drawings and CONTRACTOR's other submittals. Install nameplates with adhesive.
c. Interior items requiring nameplates include:
1) Terminal blocks and strips.
2) Bus bars.
3) Relays.
4) Rear of face-mounted items.
5) Rear of door-mounted items.
6) Interior mounted items that require identification when mounted externally.

d. Circuit Breaker Directory:

1) Provide engraved laminated plastic directory listing function and load controlled for each circuit breaker within panel used for power distribution.

13. Re-label existing equipment whose designation have changed.

C. Safety Signs and Voltage Markers:

1. Provide safety signs and voltage markers on and around electrical equipment as shown or indicated.

a. Install rigid safety signs using stainless steel fasteners.
b. Clean surfaces before applying pressure-sensitive signs and markers.

2. Provide cable tray safety signs on both sides of cable trays at maximum intervals of 20 feet. Install signs on side rails of tray as acceptable to ENGINEER.

a. Cable trays that contain conductors greater than 208 volts and less than 600 volts shall be labeled with low voltage safety signs.
b. Cable trays that contain conductors of 120/208 volts shall be labeled with low voltage markers.
c. Do not label cable trays that contain only instrument signal cables.
d. Label cable trays that contain intrinsically safe wiring or cables in accordance with NEC Article 504.

4. Install low voltage safety signs on equipment doors that provide access to uninsulated 480-volt conductors, including terminal devices.
5. Install low voltage markers on each terminal box, safety disconnect switch, and panelboard installed, modified, or relocated as part of the Work and containing 120/208 volt conductors.

D. Voltage System Identification Directories

1. Provide voltage system identification directories as required by NEC Article 210 and NEC Article 215.
2. Provide in each electrical room voltage system identification directory mounted on wall or door at each entrance to room.
3. For panelboards, switchboards, motor control centers, and other branch circuit or feeder distribution equipment that are not located in electrical rooms, provide voltage system identification directory mounted on equipment.

    a. Directories shall be affixed using epoxy glue. Screws or bolts shall not penetrate equipment enclosures.
    b. Directories shall be readily visible and not obscure labels and other markings on equipment.

E. Arc-flash Safety Signs:

1. Provide arc-flash safety signs as required by NEC Article 110.

2. Provide signs for switchboards, panelboards, motor control centers, and industrial control panels. Provide signs for control panels that contain 480 volt equipment. Provide arc flash warning signs on other equipment where the incident energy is greater than 1.2 calories per square centimeter.

F. Conduit Labels:

1. Provide conduits with conduit labels unless otherwise shown or indicated.
2. Do not label flexible conduit.
3. Do not label exposed single conduit runs of less than 25 feet between local disconnect switches and their associated equipment.
3. Conduit labels shall indicate the following information:

    a. Contract Number: Alphanumeric, three or four digits, as applicable.
    b. Conduit Number: Alphanumeric as shown on the Drawings, as assigned by CONTRACTOR for unlabeled conduits, and in accordance with approved submittals.

4. Conduits that contain intrinsically safe wiring shall have an additional pipe marker provided that has blue letters on white background and reads, “INTRINSICALLY SAFE WIRING”.

    a. Install intrinsically safe pipe markers in accordance with NEC Article 504 along entire installation. Spacing between labels shall not exceed 25 feet.

5. Provide conduit labels at the following locations:

    a. Where each conduit enters and exits walls, ceilings, floors, or slabs.
    b. Where conduit enters or exits boxes, cabinets, consoles, panels, or enclosures, except pull boxes and conduit bodies used for pull boxes.

c. At maximum intervals of 50 feet along length of conduit.

7. Orient conduit labels to be readable.

G. Wire and Cable Identification:

1. Color-coding of insulated conductors shall comply with Section 16120, Wires and Cables, Section 16123, Medium Voltage Cable.
2. Use heat-shrinkable wire labels where wire or cable is terminated. Use wrap-around labels where wire or cable is to be labeled but is not terminated.
3. Do not provide labels for the following:

   a. Bare (uninsulated) conductors, unless otherwise shown or indicated as labeled.

4. Provide wire and cable labels for the following:

   a. New, rerouted, or revised wire or cable.
   b. Insulated conductors.
   d. Wire and cable terminations:

      1) Wire labels shall be applied between 1/2-inch and one inch of completed termination
      2) Apply cable labels between 1/2-inch and one inch of cable breakout into individual conductors.

         a) Label individual conductors in a cable after breakout as specified for wires.

   e. Wire or cable exiting cabinets, consoles, panels, terminal boxes, and enclosures.

      1) Label wires or cables within two inches of entrance to conduit.

   f. Wire or cable in junction boxes and pull boxes

      1) Label wires or cables within two inches of entrance to conduit.

   g. Wire and cable installed in cable tray.

      1) Wire and cable shall have labels at maximum intervals of 20 feet.

   h. Wire and cable installed without termination in electrical manholes.

      1) Wire and cable shall have wrap-around labels applied within one foot of exiting manhole.

i. Vendor supplied equipment wire and cable

1) Wire and cable shall have wire numbers on all wires.

5. Wire and Cable Identification System:

a. Wire and cable labels shall be imprinted with an identifying designator.

1) Wire and cable extending between two devices or items and that does not undergo a change of function shall be identified by a single unique designator as specified below. Vendor O&M and panel drawings shall reflect field wire numbering.

b. Field Wiring:

1) Wire or cable designator shall consist of

a) Three left-most characters shall consist of the Contract number under which wiring or cable was installed.

b) Between designations of contract, terminal, and equipment, the group of characters shall be separated by an asterisk (*), a plus sign (+) or a hyphen (-). Do not use other punctuation symbols in a wire designator.

c) Remaining characters shall be alphanumeric.

(i.) Fifth thru Seventh characters for wires coming from control panel or PLC cabinet to the field, wire number shall match Vendor panel terminal block numbers and have instrument or equipment designation and number. EX. 870-001-FIT-001, 870-001-PUMP-1
(ii.) For field wiring at instrument or equipment, fifth thru seventh number shall have terminal block number of control enclosure or terminal box and name of control enclosure or terminal box. EX. 870-001-PLC-7, 870-001-MCC-7

d) Numbering shall reflect actual designations used in the Work and shall be documented in record documents.

c. Cabinet, Console, Panel, and Enclosure Wiring, Internal:

1) New Cabinets, Consoles, Panels, and Enclosures:

a) Wire and cable inside cabinets, consoles, panels, and enclosures shall have designators as shown on the Drawings or be assigned a ten-character designator equivalent to field wire designator, with the exception that Drawing number shall be fifth thru seventh number and terminal block number shall be ninth thru eleventh number. EX. 870-E21-013-UPS.

2) Modified Cabinets, Consoles, Panels, and Enclosures:

a) New or rerouted wire or cable in existing cabinets, consoles, panels, and enclosures shall be labeled as shown on the Drawings or be assigned a ten-character designator equivalent to field wire designator, with the exception that Drawing number shall be fifth thru seventh number and terminal block number shall be ninth thru eleventh number. EX. 870-E23-001-HVAC.

H. Terminal Strip Labeling:

1. Label panel side of terminal to match panel wire number.
2. Label field side of terminal to match field wire number. Terminal number shall not include the Contract number.

END OF SECTION

SECTION 16080 – ELECTRICAL TESTING

PART 1 GENERAL

1.01 REQUIREMENT SUMMARY

A. Contractor shall furnish all labor, materials, equipment and incidentals required to providing standard electrical inspections, testing and commissioning services and required reports required under this Contract as hereinafter specified and/or in the Contract Documents.

B. Specification Section Includes:

1. Contractor responsibilities that are a part of, or are related to the testing and commissioning process for the all the electrical systems under this scope of work and as related in the Contract Documents.
2. Engineer will review and approve, prior to use, all test procedures and forms used and will witness, at their discretion initial checks and testing performed by the Contractor. Engineer will review the completed check and test documentation of the Contractor.
3. It is not the intent of the Specifications to duplicate Contractor efforts or to require the Contractor to perform any check or test more than twice. Electrical checks and testing by the Contractor are expected to occur once in the normal sequence of installation, testing and placing equipment into service, if appropriate coordination has occurred allowing the Engineer and/or Owner to witness Contractor efforts.
4. The test requirements listed in this section do not release the Contractor from the obligation to perform all other appropriate, industry standard, manufacturer-recommended or code-required checks and tests.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. In addition to the requirements specified in this section, the requirements of Division 16 and those Project Specification Sections referenced therein shall be applied.

B. Related Specification Sections include:

1. Division 2 – Site Works

1.03 REFERENCES

A. Abbreviations and Acronyms:

1. American Society for Testing & Materials (ASTM)
2. American National Standards Institute (ANSI)
3. Institute of Electrical and Electronic Engineers (IEEE)
4. International Electrical Testing Association (NETA)
5. National Electrical Manufacturers Association (NEMA)
6. North American Electric Reliability Corporation (NERC)
7. National Fire Protection Association (NFPA)
8. Uninterruptible Power Supply (UPS)

9. Variable Speed Drive/Controller (VFD)

B. Codes and Standards:

1. ANSI/NETA ATS – Acceptance Testing Specifications for Electric Power Distribution Equipment and Systems
2. ANSI/NETA ETT – Standard for Certification of Electrical Testing Technicians
3. ANSI/NEMA AB4 – Guidelines for Inspection and Preventive Maintenance of Molded-Case Circuit Breakers Used in Commercial and Industrial Applications
4. IEEE C37.233 – Guide for Power System Protection Testing
5. IEEE C57.13.1 – Guide for Field Testing of Relaying Current Transformers
6. IEEE C57.13.3 – Guide for Grounding of Instrument Transformer Secondary Circuits and Cases
7. IEEE C57.104 – Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers
8. IEEE 43 – Recommended Practice for Testing Insulation Resistance of Rotating Machinery
9. IEEE 450 – Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications
10. IEEE 519 – Recommended Practices and Requirements for Harmonics Control in Electrical Power Systems
11. NEMA MG1 – Motors and Generators
12. NERC PRC-005-2 – Protection System Maintenance
13. NFPA 70 – National Electrical Code
14. NFPA 72 – National Fire Alarm and Signaling Code
15. NFPA 110 – Emergency and Standby Power Systems

1.04 SUBMITTALS

A. Contractor shall reference and provide all documentation for all Division 16 Sections as required per Specification Sections:

1. Division 01 – General Requirements

B. Contractor shall submit written copies of all inspection and test reports to the Engineer for review and acceptance.

C. Sixty (60) days before any testing is conducted, submit an overall testing plan and schedule for electrical systems that lists the equipment, modes to be tested, dates of testing and parties conducting the tests. Contractor shall place these tests into the master construction schedule and update as needed.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Contractor shall provide a listing of testing personnel stating their experience in testing of low-voltage (600V) equipment for Engineer approval. All personnel involved in testing major electrical equipment,

protective relays and meters shall be certified per ANSI/NETA ETT and have a minimum of five (5) years experience in testing of this type of equipment; each electrical testing crew leader shall have a current certification of Level III or higher.

2. Contractor shall provide a listing of testing equipment that will be used and provide verification of calibration as applicable within the last year, prior to use and shall have dated calibration labels visible on all test equipment. Test equipment and calibration shall be in accordance with ANSI/NETA ATS Sections 5.2 and 5.3.

B. Test Equipment:

1. Contractor shall provide all test equipment necessary to fulfill the checks and testing requirements. Test equipment shall have been calibrated within one (1) year of its use on the project.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Engineer reserves the right to inspect the Contractor's work at any time during the contract period. Contractor shall make all work available to the Owner and/or the Engineer, upon request.

B. Contractor shall request Engineer review and approval at least twenty-four (24) hours prior to covering of any concealed work; pulling of wires and cables; or placing covers over outlets, cabinets, panel boards, switchboards, or switchgear.

C. Perform additional tests required under other Specification Sections required under Division 16. Written reports of all test results shall be submitted to Engineer for review.

D. Notify Engineer of any deficiencies that are found during the tests; after deficiencies are corrected, repeat tests until the system is approved. When applicable, electrical work shall not be covered or concealed until satisfactory tests are made and approved.

E. Upon request from the Owner and/or Engineer, place the entire electrical installation or any portion thereof, in operation to demonstrate satisfactory operation.

F. Contractor shall inspect and test all materials and equipment, including all furnished major equipment under this Contract, using the latest edition of the ANSI/NETA ATS – Acceptance Testing Specifications for Electric Power Distribution Equipment and Systems as a guide. The ANSI/NETA ATS specifications apply to testing of all electrical equipment and cabling installed and/or modified under this Project prior to placing into service.

3.02 INSPECTION AND TESTING

A. Cables, Low-Voltage 600V Maximum:

1. In accordance with ANSI/NETA ATS Section 7.3.2

B. Switchboards:

1. In accordance with ANSI/NETA ATS Section 7.1
2. Verify positive mechanical interlocking between normal and alternate sources to include back-up power modifications as required under this Contract.

C. Low-Voltage Motor Control Centers:

1. In accordance with ANSI/NETA ATS Section 7.16.1.1
2. Verify positive mechanical interlocking between normal and alternate sources to include back-up power modifications as required under this Contract.

D. Generator Set:

1. In accordance with ANSI/NETA ATS Section 7.22.1

E. Test Reports: All testing results, evaluations and operational/functionality reports for all equipment and cabling installed and/or modified under this Contract shall be recorded in a formal report and submitted to the Engineer for review.

3.03 COMMISSIONING

A. The following are Contractor responsibilities applicable to all electrical systems being commissioned and/or placed into service.

1. Document all electrical testing and commissioning forms submitted to and approved by the Engineer prior to placing equipment into service.
2. Notify the Engineer immediately when commissioning activities not yet performed or not yet scheduled will delay construction.
3. Respond to deficiencies identified during the commissioning process, making required corrections or clarifications and returning prompt notification to the Engineer.
4. When completion of a task or other issue has been identified as holding up any commissioning process, particularly functional testing, the Contractor shall, within two (2) days notify the Engineer in writing providing an expected date of completion.
5. Develop check and testing procedures with start-up and/or commissioning plan for Engineer review.
6. Review design documents, shop drawings and O&M manuals along with manufacturer recommended installation and testing procedures.
7. Develop test procedures and forms and execute and document testing.
8. Tests of energized equipment shall be conducted when the equipment is operating at its normal capacity. This may require some tests to be conducted after occupancy.

3.04 TRAINING AND ORIENTATION

A. Contractor shall provide orientation and training to facility personnel as required in Division 16 and those Project Specification Sections.

3.05 PROJECT CLOSE-OUT

A. Contractor shall provide Operation and Maintenance (O&M) Manuals as required in Division 16 and those Project Specification Sections.

END OF SECTION

SECTION 16110 CONDUITS AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish and install the conduits, fittings, devices and appurtenances as hereinafter specified and/or as shown on the Contract Drawings. This specification applies to both low and medium voltage systems.

1.02 SUBMITTALS

A. The requirements of Section 01340 and Section 16050 shall be met.

1.03 APPLICATIONS

A. Except where otherwise shown on the Contract Drawings, or hereinafter specified, all wiring shall be run in rigid conduits.

B. Rigid aluminum conduits (RAC) shall be used at all locations aboveground and within structures and buildings, except where otherwise shown on the Contract Drawings.

C. Rigid aluminum conduits shall be used at all locations for shielded instrumentation/ control and communication wiring, except where otherwise shown on the Contract Drawings.

D. Schedule 40 PVC conduits shall be used for all power and 120V instrumentation/control wiring when used in concrete steel reinforced ductbanks and in-slab applications except where otherwise shown on the Contract Drawings. Provide conduit spacers by “Carlon” or approved equal, every 6 feet or less to hold separation of conduits.

E. Schedule 80 PVC shall be used for all power and instrumentation/control wiring in direct bury ductbank applications except where otherwise shown on the Contract Drawings. Provide conduit spacers by “Carlon” or approved equal, every 6 feet or less to hold separation of conduits.

F. Schedule 80 PVC conduits shall be used in highly corrosive areas such as chemical storage areas, digesters, fluoride storage and handling areas, etc.

G. All conduits of a given type shall be the product of one manufacturer.

H. Except where otherwise shown on the Contract Drawings, or hereinafter specified, all boxes shall be metal.

I. Surface and flush mounted switch, receptacle and control station boxes shall be 316 Stainless Steel.

J. Devices designated as NEMA Type 4 shall be 316 stainless steel, gasketed.

K. Devices designated as NEMA Type 4X shall be 316 stainless steel, gasketed, except as otherwise shown on the Contract Documents.

L. Combination expansion-deflection fittings shall be used where conduits cross structural expansion joints or as recommended by manufacturer for ambient conditions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Rigid Conduit

1. Rigid aluminum conduit shall be Aluminum as manufactured by Allied Tube & Conduit, Patriot Aluminum Products or approved equal.
2. PVC Sch 80 & 40 conduit as manufactured by Carlon, Heritage Plastics or approved equal.

B. Liquidtight, Flexible Conduit

1. Liquidtight, flexible metal conduits shall be Sealtite, Type UA, as manufactured by Anaconda, American Flexible Conduit Co., Inc., or approved equal.
2. Liquidtight, flexible non-metallic conduits shall be Carflex Liquidtight Flexible Non-Metallic Conduit as manufactured by Carlon, or approved equal.

C. Rigid Conduit Fittings

1. Rigid Aluminum Conduit Fittings:

   a. Aluminum elbows, bends, sweeps, nipples, couplings, etc., approved equal.

2. Rigid Non-Metallic Conduit Fittings: PVC elbows, bends, sweeps, nipples, couplings, device boxes, etc., shall be Plus 80 fittings as manufactured by Carlon, or approved equal.

D. Flexible Conduit Fittings

1. Flexible Metal Conduit Fittings: Fittings used with flexible metal conduit shall be of the screw-in type as manufactured by Thomas and Betts Company, or approved equal.
2. Flexible Non-Metallic Conduit Fittings: Fittings used with flexible non-metallic conduit shall be Carflex Liquidtight Non-metallic Fittings as manufactured by Carlon, or approved equal.

E. Flexible Couplings: Flexible couplings shall be as manufactured by Crouse-Hinds, Appleton Electric Company, or approved equal.

F. Wall Seals: Wall sleeves shall be used for all wall penetrations and conform to area classifications. Conduit wall seals shall be type "WSK" as manufactured by the O.Z. Electrical Manufacturing Company, or approved equal.

G. Expansion Fittings: Combination expansion-deflection fittings shall be type "XD" as manufactured by Crouse-Hinds, or approved equal.

H. Boxes

1. Device Boxes

a. Flush mounted wall device boxes shall be galvanized pressed steel as manufactured by the Raco Manufacturing Company, or approved equal.
b. Surfaced mounted wall device boxes shall be cast or malleable iron as manufactured by Crouse-Hinds, Appleton Electric Company, or approved equal.
c. Flush mounted in-floor device boxes shall be cast metal, shall be watertight, shall have adjustable cover frames, and shall be as manufactured by Russell & Stoll Company, Steel City Electric, or approved equal.

2. Other Boxes

a. Terminal boxes, junction boxes, pull boxes, etc., except as otherwise specified and/or shown on the Contract Drawings, shall be PVC or 316 S.S.
b. The boxes shall have continuously welded seams and shall be ground smooth.
c. The box bodies shall be flanged, shall be not less than 14-gauge metal, and shall not have holes or knockouts.
d. The box covers shall be not less than 12-gauge metal, shall be gasketed, and shall be fastened to the box bodies with stainless steel screws.

I. Conduit Mounting Devices: Hangers, rods, channel, backplates, clips, straps, beam clamps, etc., shall be 316 stainless steel as manufactured by Unistrut Corp., or approved equal.

J. Fixture Support System

1. The fixture support system shall be the channel type and shall be furnished complete with all requisite mounting hardware and appurtenances.
2. The channel, mounting hardware and related appurtenances shall be 316 stainless steel.
3. The fixture support system shall be as manufactured by the Unistrut Corp., or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. No conduit smaller than 3/4-inch electrical trade size shall be used nor shall either 1-1/4-inch conduit or 3-1/2-inch conduit be used. Minimum size underground, under slab or in-slab shall be 1-inch.

B. No wires shall be pulled until the individual conduit runs are complete in all details. Additionally, each conduit shall be cleaned and reamed and certified clear of all burrs and obstructions before any wire is pulled.

C. The ends of all conduits shall be tightly capped to exclude dust and moisture during construction.

D. Conduits shall be supported at intervals of 8-feet or less, as required to obtain a rigid installation. For flexible conduit supports shall be in accordance with NEC 2014 350.30, A.

E. Exposed conduits shall be run parallel with and/or perpendicular to the surrounding surface(s). No diagonal runs will be allowed.

F. Single conduits shall be supported by one-hole pipe clamps in combination with one-screw backplates to provide space between the conduits and the mounting surface.

G. Multiple horizontal runs of conduits shall be supported by trapeze type hangers (channel) suspended by threaded rod, 3/8-inch minimum diameter.

H. Multiple vertical runs of conduits shall be supported by structurally mounted channel in combination with conduit clamps.

I. Conduit support devices shall be attached to structural steel by welding or beam or channel clamps as indicated on the Contract Drawings.

J. Conduit support devices shall be attached to concrete surfaces by "spot type" concrete inserts.

K. Conduits terminating in steel interior boxes shall have double locknuts and insulating bushings. Exterior conduits installed in boxes shall have sealed conduit hubs when penetrating in the top or side.

L. Conduits terminating in gasketed enclosures shall be terminated with sealed conduit hubs weather interior or exterior.

M. Conduit wall seals, waterproof type, shall be used at all locations where conduits penetrate walls.

N. Liquidtight, flexible conduit - metal or non-metallic as shown on the Contract Drawings - shall be used for all motor terminations and for all connections/terminations where vibration is anticipated.

O. Flexible couplings shall be used in hazardous locations for all motor terminations and for all connections/terminations where vibration is anticipated.

P. Conduit stubouts for future construction shall be capped at both ends with threaded PVC conduit caps.

Q. The cement used for PVC conduit installations shall be as manufactured by Carlon, or approved equal.

R. Provide grounding type bushings for a conduit entering control panels.

S. Rigid aluminum conduits entering manholes and/or below grade pull boxes shall be terminated with grounding type bushings which shall be connected to a 3/4-inch by 10-foot long driven ground rod with No. 6 AWG bare copper wire.

T. Rigid aluminum conduit shall be used for all risers. The underground portion of the riser and a 6-inch section of the riser immediately above the ground or slab/floor level shall be painted with a bitumastic coating. All below grade conduit sweeps shall be metallic with bitumastic coating. No aluminum conduit is to come into direct contact with concrete or earth.

3.02 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee and warrant all materials and labor provided under this Section in accordance with Section 01740 and Section 16050 of these Specifications.

END OF SECTION

SECTION 16120 WIRES AND CABLES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish and install all wires, cables and appurtenances as described hereinafter and/or as shown on the Contract Drawings.

B. Testing of all cables per section 3.02.

1.02 SUBMITTALS

A. The requirements of Section 01340 and Section 16050 shall be met.

B. Samples of the actual wires and cables proposed for use shall be submitted for approval. There shall be a sample for each size and type of wire and cable proposed for use. The samples shall be of sufficient length to show the maximum rated voltage, insulation type and class, conductor size, the manufacturer's name, trademark or identifying logo, and the U.L. listing number.

C. The wires and cables as approved for use shall be compared with the wires and cables actually installed. If any unapproved wires and cables are installed, they shall be removed and replaced solely at the Contractor's expense with no additional cost to the County.

D. NETA Testing Form, in accordance with the ANSI/NETA Standard for Acceptance Testing Specifications.

1.03 APPLICATIONS

A. The wire for lighting and receptacle circuits shall be type THHN/THWN, stranded.

B. The wire for all power circuits and motor leads shall be type THHN/THWN, stranded.

C. Single conductor wires for control, indication and metering shall be type THHN/THWN, No. 14 AWG, stranded.

D. Multiconductor control cable shall be No. 14 AWG, stranded.

E. The wire for process instrumentation shall be No. 16 AWG, stranded.

F. Power cables to process equipment driven from Variable Frequency Drives shall be multi-conductor VFD cable with an overall metallic shield.

G. All wiring in tray cable shall be rated as such, with UV resistive outer jacket.

1.04 MINIMUM SIZES

A. Except for control and signal leads, no conductor smaller than No. 12 AWG shall be used.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wire and cables shall be made of annealed, 98% conductivity, soft drawn copper conductors.

B. All conductors shall be stranded except that the uninsulated copper grounding conductors shall be solid.

2.02 600 VOLT WIRE AND CABLE

A. Type THHN/THWN insulation shall be used for all 600 Volt wires and cables. The insulation shall be a flame-retardant, heat-resistant thermoplastic, and shall have a nylon, or equivalent, jacket.

B. The 600 Volt wires and cables including VFD, shall be as manufactured by Anixter, Rome Cable, Southwire, or approved equal.

2.03 INSTRUMENTATION AND CONTROL WIRING

A. Process instrumentation wiring shall be No. 16 AWG stranded twisted pair, 600 Volt, cross-linked polyethylene insulated, aluminum tape shielded, PVC jacketed. Multiconductor cables with individually twisted pairs shall be installed where shown on the Contract Drawings.

B. Multiconductor control cables shall be No. 14 AWG, stranded, 600 Volt, cross-linked polyethylene insulated, PVC jacketed.

C. Instrumentation and control wiring shall be as manufactured by Belden, Alpha, or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Wires and cables shall be sized as shown on the Contract Drawings and/or, where applicable, sized to match existing wiring.

B. All conductors shall be carefully handled to avoid kinks or damage to the insulation.

C. Lubricants or pulling compounds shall be used to facilitate wire pulling. Such lubricants/compounds shall be U.L. listed for use with the insulation specified.

D. Use pulling means - fish-tape, cable, rope, basket weave wire/cable grips, etc. - which will not damage the wire/cable insulation or the raceway. Cable puller must have tension gauge for monitoring stress.

E. All wire and cable shall be installed from terminal to terminal with no splicing at any intermediate point, unless approved by Engineer.

F. Shielded instrumentation wire shall be installed in rigid steel conduit and pull boxes that contain only instrumentation cables. Instrumentation cables shall be separated from control cables in manholes.

G. Shielding on instrumentation cables shall be grounded at the transmitter end only.

H. All new wires and cables shall be continuous and without splices between points of connection to equipment terminals. However, the County will permit a splice provided that the length between the connection points exceeds the greatest standard shipping length available from the submitted manufacturer and no other manufacturer acceptable to the County is able to furnish wires or cables of the required length.

I. All 600 volt wire and cable connections shall be made using compression type connectors. Insulated connectors shall be used for all terminations. The connections shall be made so that both the conductivity and the insulation resistance shall be not less than that of the uncut conductor.

J. All wires shall be numbered at both ends and at all intermediate junction points. Screw type terminations shall be made with forked tongue (spade), self-insulated, crimp terminals. All other wire terminations shall be made on appropriate terminal strips.

3.02 TESTS

A. Upon the completion of the pulling-in of and prior to the terminating/connecting of the 600 Volt wiring, all wires shall be individually checked and tested for continuity and short circuits, and each wire/cable shall be “Meggered” to check insulation resistance. The test voltage shall be not less than 1000 Volts DC for one minute, per NETA Acceptance Testing Standards. For units with solid-state components or control devices that cannot tolerate the applied voltage, follow the manufacturer’s recommendation. Three (3) copies of these test results shall be submitted to the County.

B. An authorized representative(s) of the County shall witness all testing. The County shall be notified at least two (2) days in advance of the testing.

C. Any faulty conditions and/or shortcomings found during the testing shall be corrected at no cost to the County. However, a retest to demonstrate compliance shall be conducted before any hook-ups or terminations are made. Any such requisite retesting shall be witnessed by an authorized representative(s) of the County.

3.03 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee and warrant all materials and labor provided under this Section in accordance with Section 01740 and Section 16050 of these Specifications.

END OF SECTION

SECTION 16134 EXPANSION DEFLECTION FITTINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install conduit expansion and deflection fittings.

B. Related Sections:

1. Section 16050, General Provisions for Electrical Systems.
2. Section 16110, Conduits and Fittings.
3. Section 16505, Hangers and Supports for Electrical Systems.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. UL 514B, Conduit, Tubing, and Cable Fittings.
2. UL 467, Grounding and Bonding Equipment.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. NEC Article 300, Wiring Methods.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Listing of locations where fittings are required.

2. Product Data:

a. Manufacturer's literature and technical information for expansion and deflection fittings proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Products and Manufacturers: Provide one of the following:

1. Type DX for expansion/deflection or AX for expansion only, by O-Z Gedney Company.
2. Type XD for expansion/deflection or XJ for expansion only, by Crouse Hinds Company.
3. Type DF for expansion/deflection or XJ for expansion only, by Appleton Electric Company.
4. Or equal.

B. Cast gray iron alloy or bronze end couplings, malleable iron, or hot-dipped galvanized body, stainless steel clamps and tinned copper braid bonding jumper. Fitting shall be watertight, corrosion-resistant, UL-listed, and compatible with the conduit system.

C. Features:

1. Expansion/Deflection Fittings:

a. Axial expansion or contraction up to 3/4-inch.
b. Angular misalignment up to 30 degrees.
c. Parallel misalignment up to 3/4-inch.

2. Expansion Fittings:

a. Expansion/Contraction: Eight-inch total movement.

D. Expansion/Deflection fittings shall comply with UL 514B and UL 467.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be performed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install fittings in accordance with NEC, ANSI or local Laws and Regulations.

B. Provide expansion fittings on exposed conduit runs crossing structural expansion joints and where necessary to compensate for thermal expansion and contraction. Provide expansion fittings on exposed conduit runs exceeding 200 feet.

C. Provide expansion/deflection fittings on embedded conduit runs crossing structural expansion joints. Provide fittings above waterstops.

D. Unless specifically shown or indicated otherwise, when crossing structural expansion joints larger than one inch, provide expansion fitting together with expansion/ deflection fitting. Install fittings on each conduit run in accordance with manufacturer's recommendations to accommodate additional movement necessary.

E. Provide expansion/deflection fittings for underground conduit runs at penetrations of buildings, manholes, handholes, and outdoor concrete equipment pads.

F. Where required in non-metallic conduit and duct systems, provide rigid metal conduit nipples and metal rigid-to-PVC adapters for connection to fittings. Ensure that joints exposed to water or other liquid are made watertight.

END OF SECTION

SECTION 16135 PULL, JUNCTION AND TERMINAL BOXES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install pull, junction, and terminal boxes.

B. Related Sections:

1. Section 16050, General Provisions for Electrical Systems.
2. Section 16075, Identification for Electrical Systems.
3. Section 16505, Hangers and Supports for Electrical Systems.

1.02 REFERENCES

A. Standards referenced in this Section are.

1. AASHTO, Standard Specifications for Highway Bridges.
2. UL 886, Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. NEC Article 314, Outlet, Device, Pull and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Product Data:

a. Manufacturer's technical information for pull, junction, and terminal boxes proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

1. Pull, Junction, and Terminal Boxes:

    1. General – Applicable to All Boxes:

        a. Description and Performance Criteria:

            1) Provide pull, junction, and terminal boxes rated at not less than NEMA 12. Boxes shall be appropriate for each location in accordance with NEMA requirements and as required for area classifications specified in NFPA 820 and contract drawings.
            2) For flush-mounted pullboxes in slabs or pavement potentially subject to vehicular traffic, boxes and covers shall be constructed for H-20 loading in accordance with AASHTO Standard Specifications for Highway Bridges.

        b. Manufacturers: Provide products of one of the following:

            1) Appleton Electric Company.
            2) Crouse-Hinds Company.
            3) Hoffman Engineering Company.
            4) Or equal.

        c. Materials: Pull boxes embedded in concrete slabs shall be cast iron.
        d. Terminal strips and terminal blocks in terminal boxes shall be mounted on terminal box sub-panels.
        e. Identification: Boxes shall be identified in accordance with Section 16075, Identification for Electrical Systems.

    2. Materials and Construction – Dusty Locations:

        a. Material: Welded and galvanized sheet steel of USS gage.
        b. Gasket: Oil-resistant gasket.
        c. Access: Lift-off hinges and quick-release latches.
        d. Material Thickness:

            1) Boxes with dimension two feet and smaller shall be 14-gage.
            2) Boxes with dimension between two and three feet shall be 12 gage.
            3) Boxes with dimension of three feet or more in any direction shall be 10-gage.

    3. Materials and Construction - Wet, Corrosive, or Hazardous Locations:

        a. Rating:

            1) Pull boxes in wet, corrosive, or outdoor areas shall be NEMA 4X.
            2) Boxes for areas classified as hazardous locations, where required by NEC, shall be explosion-proof and comply with

UL 886.

b. Material:

1) Cast gray iron alloy with hot-dip galvanized finish, or cast malleable iron bodies and covers.
2) Large boxes not generally available in cast iron construction shall be copper-free aluminum alloy or Type 316 stainless steel, as required by location.
3) In corrosive locations, where the conduit system is PVC-coated, boxes shall be cast metal with factory-applied 40-mil PVC coating, Type 316 stainless steel, or non-metallic thermoplastic or fiberglass reinforced plastic material.

c. Gasket:

1) Provide neoprene gaskets for wet and corrosive locations.
2) Gaskets shall be an approved type designed for the purpose. Improvised gaskets are not acceptable.

d. Access: Stainless steel cover bolts.

e. Features:

1) External mounting lugs.
2) Drilled and tapped conduit holes.
3) Boxes where conduits enter building or structure below grade shall have 1/4-inch drain hole at bottom of the box.
4) Provide threaded connections for explosion proof boxes.

4. Labeling:

a. Label/number boxes and/or identify as power, communications or controls.

5. Terminal Blocks:

1. Products and Manufacturers: Provide one of the following:

a. Allen-Bradley Company, Bulletin, Model 1492.
b. General Electric Company, Model CR151K.
c. Or Approved equal.

2. Material and Construction:

a. NEMA-rated nylon modular terminal blocks.
b. 600-volt rated.
c. Control and alarm circuit terminals shall be screwed type with permanently affixed numeric identifiers beside each connection.
d. Power terminals shall be copper and rated for the circuit ampacity.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Mount boxes so that sufficient access and working space is provided and maintain clearance of not less than 1/4-inch from walls.

B. Securely fasten boxes to walls or other structural surfaces on which boxes are mounted. Provide independent supports that comply with Section 16505, Hangers and Supports for Electrical Systems, where boxes will not be mounted on walls or other structural surface.

C. Install pull boxes where shown or indicated, and provide pull boxes where one or more of the following conditions exist:

1. Conduit runs containing more than 270-degrees of raceway bend.
2. Conduit runs exceeding 200 feet in length.

D. Provide removable, flame-retardant, insulating cable supports in boxes with any dimension exceeding three feet.

E. Field-apply PVC touch-up to scratched PVC boxes damaged during installation. Touch-up work shall be in accordance with manufacturer's recommendations and instructions.

F. Size junction, pull, and terminal boxes in accordance with NEC Article 314 and manufacturer guidelines.

G. Provide terminal blocks in boxes where shown and where cable terminations or splices are required.

END OF SECTION

SECTION 16136 OUTLET BOXES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install outlet boxes for mounting wiring devices and lighting fixtures.

B. Related Sections:

1. Section 16050, Electrical – General Provisions
2. Section 16075, Identification for Electrical Systems.
3. Section 16141, Low-Voltage Receptacles.
4. Section 16142, Snap Switches.
5. Section 16505, Hangers and Supports for Electrical Systems.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. NEC Article 314, Outlet, Device, Pull and Junction Boxes; Fittings; and Handhole Enclosures.
2. NEC Article 501, Class I locations.
3. UL 514A, Metallic Outlet Boxes.
4. UL 514B, Fittings for Conduit and Outlet Boxes.

1.03 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Product Data:

a. Manufacturer's technical information for outlet boxes proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Device Boxes:

1. Manufacturers: Provide products of one of the following:

a. Crouse-Hinds Company.
b. Appleton Electric Company.
c. Or equal.

2. Material:

a. In Wet Locations: Cast gray iron alloy or cast malleable iron with zinc electroplate finish, or aluminum bodies consistent with conduit material.
b. In Dusty Locations: Zinc-coated sheet steel or aluminum bodies consistent with conduit material.
c. Where conduit is installed concealed, boxes shall include suitable extension rings and covers, as required.
d. Where used with PVC-coated conduit system, boxes shall include factory applied 40-mil-thick PVC coating.
e. Cast boxes shall be hub-type and include external mounting lugs.
f. Metallic outlet boxes shall comply with UL 514A.
g. Fittings for outlet boxes shall comply with UL 514B.

3. NEMA rating of box shall be as required for area classifications specified in Section 16050, General Provisions for Electrical Systems.

4. Cover Plates:

a. Type 302 stainless steel alloy for indoor finished areas.
b. Plates in corrosive locations shall include factory-applied 40-mil PVC coating.
c. Stainless steel screws and hardware.
d. For receptacle and switch cover plates, comply with Section 16141, Low-Voltage Receptacles, and Section 16142, Snap Switches.

B. Flexible Fixture Hangers:

1. For Class I, Division 1 Hazardous Areas:

a. Product and Manufacturers: Provide one of the following:

1) Type EFH by Crouse-Hinds.
2) Or equal

b. Materials:

1) Iron alloy with electro-galvanizing and aluminum acrylic paint.
2) Products shall have brass bellows and stainless-steel spring.
3) Product shall be capable of 15-degree swing from perpendicular in all directions.
4) Product shall allow fixtures to be pendant-hung in accordance with NEC Article 501.130(A)

2. For Class I, Division 2 Hazardous Areas:

a. Product and Manufacturers: Provide one of the following:

1) Type AHG by Crouse-Hinds.
2) Or Approved equal

b. Materials:

1) Malleable iron top section and removable malleable iron bottom fixture support assembly with electro-galvanizing and aluminum acrylic paint.
2) Include vapor-tight cushion to support fixture stem.
3) Provide neoprene diaphragm to exclude moisture and dirt from conduit system.
4) Provide with manufacturer's neoprene gasket between fixture hanger and box.
5) Product shall be capable of eight-degree swing from perpendicular in all directions, before and after coating.
6) Product shall allow fixtures to be pendant-hung in accordance with NEC Article 501.130 (B).

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Fasten boxes rigidly and neatly to supporting structures.

B. Securely fasten equipment to walls or other surfaces on which materials or equipment is mounted. Provide independent supports complying with Section 16505 Hangers and Supports for Electrical Systems, where boxes are not mounted on walls or other surface capable of supporting the materials or equipment.

C. For units mounted on masonry or concrete walls, provide suitable 1/2-inch spacers to prevent mounting back of box directly against wall.

D. Leave no open conduit holes in boxes. Close unused openings with capped bushings.

E. Label each circuit in boxes and identify each circuit in accordance with Section 16075, Identification for Electrical Systems.

F. Install outlet boxes in accordance with NEC Article 314.

END OF SECTION

SECTION 16137 UNDERGROUND DUCTBANKS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install underground ductbanks.

B. Coordination:

1. Ductbank routing on the Drawings is diagrammatic. Coordinate installation with piping and other underground facilities and locate ductbanks clear of interferences.
2. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before underground ductbank Work.
3. Notify other contractors in advance of installing underground ductbanks to provide other contractors with sufficient time for installing items included in their contracts that will be installed with or before underground ductbank Work.

C. Related Sections:

1. Division 02
2. Section 03300, Cast-in-Place Concrete.
3. Section 16075, Identification for Electrical Systems.
4. Section 16110, Conduits and Fittings
5. Section 16134, Expansion/Deflection Fittings.
6. Section 16450, Grounding and Bonding for Electrical Systems

1.02 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Layouts showing proposed routing of ductbanks and locations of manholes, handholes, and areas of reinforcement.
b. Profiles of ductbanks showing crossings with piping and other underground facilities.
c. Typical cross sections for each ductbank.

E. Informational Submittals: Submit the following:

1. Special Procedure Submittals:

a. Installation procedures.

2. Field Quality Control Submittals:

a. Field test report.

F. Closeout Submittals: Submit the following:

1. Record Drawings:

a. Include actual routing of underground ductbank runs on record documents in accordance with Division 01 Documents.

PART 2 PRODUCTS

2.01 MATERIALS

A. Duct: Provide conduit and fittings in accordance with Section 16110, Conduits and Fittings. Conduit types shall be as follows:

1. Schedule 40 PVC conduits for steel reinforced concrete ductbanks.
2. Schedule 80 PVC conduits for direct buried ductbanks.

B. Backfill: Provide backfill, including select backfill, in accordance with Division 02.

C. Reinforcing: Provide Ductbank reinforcing in accordance with Section 03300, Cast in Place Concrete.

D. Concrete: Provide ductbank concrete in accordance with Section 03300, Cast-in-Place Concrete.

E. Grounding: Provide ground cable in accordance with Section 16450, Grounding and Bonding for Electrical Systems.

F. Conduit Spacers: Conduit spacers shall be nonmetallic, interlocking type to maintain spacing between conduits. Provide spacers suitable for all conduit types used in multiple sizes. Carlon or approved equal.

G. Duct Sealing Compound:

1. Products and Manufacturers: Provide one of the following:

a. 0-Z/Gedney, Type DUX.
b. Or approved equal.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Excavation and Backfilling:

1. Provide excavation and backfilling for ductbank installation in accordance with Division 02.
2. Do not backfill with material containing large rock, paving materials, cinders, large or sharply angular substances, corrosive material, or other materials that can damage or contribute to corrosion of ducts or cables, or prevent adequate compaction of backfill.

B. Ductbank Layout:

1. Top of ductbank concrete shall be a minimum of 2.0 feet below grade, unless shown or indicated otherwise on the Contract Drawings or Engineer approved.
2. Slope ductbank runs for drainage toward manholes and away from buildings with slope of approximately 3 inches vertical per 100 feet of run.

C. Ductbank Assembly:

1. Assemble ductbanks using non-magnetic saddles, conduit saddles by Carlon or approved equal every six feet. Saddle to provide minimum two-inch concrete separation between outer surfaces of each conduit. Provide side forms for each ductbank.
2. Make bends with sweeps of not less than 4 foot radius or 5.0 degree angle couplings.

D. Concrete Placing:

1. Provide minimum 4 inch concrete covering on each side, top, and bottom of concrete envelopes around conduits. Concrete covering shall be as shown or indicated on the Contract Drawings.
2. Provide red dye in concrete for easy identification during subsequent excavation; all concrete in entire ductbank, including top and bottom, shall be dyed.
3. Firmly fix conduits in place during concrete placing. Carefully place and vibrate concrete to fill spaces between conduits.

E. Conduit Transitions:

1. Conduit installations shall be watertight throughout entire length of ductbank.

2. Transition from non-metallic to rigid aluminum conduit where ductbanks enter structure walls and slabs.
3. Terminate conduits with insulated grounding bushings.
4. Continue conduits inside buildings in accordance with Section 16110, Conduits and Fittings, and as shown or indicated in the Contract Documents.
5. If ducts are not concrete-encased, provide expansion and deflection fittings in accordance with Section 16134, Expansion Deflection Fittings.
6. Plug and seal empty spare conduits entering structures. Conduits in use entering structures shall be sealed watertight with duct sealing compound.

F. Ductbank Reinforcing:

1. Provide reinforcing for all ductbanks:
2. Install ductbank reinforcement as shown or indicated on the Contract Drawings.
3. Provide minimum of 2 inches and maximum clearance of 4 inches from bars to edge of concrete encasement.

G. Connections to Structures:

1. Firmly anchor ductbanks to structure walls or slabs. Epoxy-grout ductbank rebar into structure concrete to eliminate sheer forces between ductbank and structure wall concrete.
2. Ductbank penetrations through structure walls shall be watertight.

H. Grounding:

1. Provide bare stranded copper ductbank ground cable in each ductbank envelope. Make ground electrically continuous throughout entire ductbank system.
2. Connect ground cable to building and station ground grid or to equipment ground buses. Also, connect ground cable to steel conduit extensions of underground ductbank system.
3. Provide ground clamp and bonding of each steel conduit extension to maintain continuity of ground system.
4. Terminate ground cable at last manhole or handhole for outlying structures.

H. Detectable Underground Warning Tape:

1. Provide detectable underground warning tapes complying with Section 16075, Identification for Electrical Systems, over the full length of each underground ductbank.
2. Install warning tapes approximately 12 inches below grade.
3. Provide multiple tapes across the width of each ductbank. Locate center of a warning tape above each edge of ductbank, and at intervals across top width of ductbank so that clear space between tapes does not exceed 6 inches.

J. Reused Existing Ducts:

1. Pull rag swab through duct to remove water and to clean conduits prior to installing new cable.
2. Repeat swabbing until all foreign material is removed.
3. Pull mandrel through duct, if necessary, to remove obstructions.

K. Conduit Spacing

1. Provide PVC or Nylon conduit spacers minimum 6 feet apart in all ductbanks.
2. Do not use metal tie raps to hold conduit in place. Use only nylon tie raps for anchoring of conduit in ductbank.

END OF SECTION

SECTION 16139 CABLE TRAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install cable trays.

B. Coordination:

1. Coordinate installation of cable trays with piping, ductwork, lighting fixtures and other systems and equipment. Locate cable trays clear of interferences.
2. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before cable tray Work.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. NEMA VE 1, Metal Cable Tray Systems.
2. ANSI / ASQC Q9001-2000 (ISO 9001 Compliant)
3. ASME NQA-1-2004
4. ANSI N45.2

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with electrical code in effect at the Site and the following:

1. NEC Article 392, Cable Trays.

1.04 SUBMITTALS

A. Action Submittals: Submit the following:

1. Product Data:

a. Manufacturer's technical information for cable tray materials and system proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturers: Provide products of one of the following:

1. B-Line Series 46 by Eaton
2. Series 7D64 Cope Cable Tray Systems

3. Or approved equal

B. Cable Tray System:

1. Type: Ventilated bottom cover, rungs welded to side rails.
2. Material: Aluminum.
3. Rung Spacing: Nine inches on centers.
4. Inside Depth: Six inches or as otherwise shown or indicated.
5. Radius: Six inches to two feet as shown, indicated, or required.
6. Width: Six inches to three feet as shown, indicated, or required.
7. Support Span: Not to exceed twenty feet, unless otherwise shown or indicated by manufacturer.
8. Loading Capacity: NEMA 20C minimum. 100lbs/ft @ 20' span,
9. Splice plates shall be the bolted type made as indicated below for each tray type. Splice plate construction shall be such that a splice may be located anywhere within the support span without diminishing rated loading capacity of the cable tray. Hardware shall be Type 316 stainless. Minimum
10. Cable tray system shall comply with NEC Article 392 and NEMA VE1.
11. Cable Tray Conduit Clamps: Furnish as required, as follows:

    a. Non-corrosive Locations: Provide B-Line Catalog Number 9ZN-1158, or equal.
    b. Corrosive Locations: Provide B-Line Catalog Number 9F Series non-metallic, or equal

12. Cable tray supports: Shall be placed so that the support spans do not exceed maximum span indicated on drawings of manufactures recommendations. Refer to drawing details for supports.
13. Barrier Strips: Provide full length dividers to separate 480V, 120V, 24V and analog cables. At horizontal tee and cross intersections, cable runs that are separated with a standard Barrier Strip should be separated vertically and with a solid barrier. The construction of the vertical separation shall include raised sides to retain the top layer(s) of cable, slots for attachment of cable ties, and smooth edges to protect cable jackets.
14. Accessories - special accessories shall be furnished as required to protect, support, and install a cable tray system. Accessories shall consist of but are not limited to; section splice plates, expansion plates, blind-end plates, specially designed ladder dropouts, barriers, etc.
15. Cable Tray Covers:
    Indoors – Vented covers with standard cover clamp. Spaced 4' max
    Outdoors – Vented with heavy duty rap around cover clamps. Spaced 2' max per cover.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Installation, General:

1. Install cable trays in accordance with Laws and Regulations, and manufacturer's instructions and recommendations. Provide complete cable tray system prior to installing cables.
2. Install cable trays exposed and in accessible locations.
3. Ground cable tray system components.
4. Where required, connect conduit to cable tray using cable tray conduit clamps.
5. Divided cable runs shall be kept separate at horizontal intersections with a solid barrier. Provide barrier strips in cable trays to isolate instrumentation and communication cables from 120VAC and greater power and control wiring.

3.03 TESTING

A. Test cable trays to ensure electrical continuity of bonding and grounding connections, and to demonstrate compliance with specified maximum grounding resistance.

END OF SECTION

SECTION 16141 LOW VOLTAGE RECEPTACLES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install low-voltage receptacles.

B. Related Sections:

1. Section 16050, Electrical – General Provisions
2. Section 16075, Identification for Electrical Systems.
3. Section 16136, Outlet Boxes.

A. Standards referenced in this Section are:

1. UL 498, Standard for Attachment Plugs and Receptacles.
2. UL 514D, Cover Plates for Flush-Mounted Wiring Devices.
3. UL 943, Standard for Ground-Fault Circuit-Interrupters.
4. UL 1010, Standard for Receptacle-Plug Combinations for Use in Hazardous (Classified) Locations.
5. UL 1449, Standard for Surge Protective Devices.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. Americans with Disabilities Act.
2. NEC Article 406, Receptacles, Cord Connectors, and Attachment Plugs (Caps).

1.03 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Product Data: Manufacturer's technical information for receptacles and cover plates proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Receptacles:

1. Grounding receptacle, 2-pole, 3-wire, NEMA 5-20R configuration, ivory color.

    a. Single:

        1) Products and Manufacturers: Provide one of the following:

            a) HBL5361I by Hubbell, Inc.
            b) 5361-I by Pass & Seymour.
            c) Or equal.

    b. Duplex:

        1) Products and Manufacturers: Provide one of the following:

            a) HBL5362I by Hubbell, Inc.
            b) PS5362-I by Pass & Seymour.
            c) Or equal.

    c. Weather-resistant Duplex:

        1) UL-listed as weather-resistant.
        2) Products and Manufacturers: Provide one of the following:

            a) HBL5362IWR by Hubbell, Inc.
            b) WR5362-I by Pass & Seymour.
            c) Or equal.

2. Corrosion-resistant grounding receptacle, 2-pole, 3-wire, yellow color.

    a. Single, 125-volt, 20 ampere, NEMA 5-20R configuration:

        1) Products and Manufacturers: Provide one of the following:

            a) HBL53CM61 by Hubbell, Inc.
            b) CR6301 by Pass & Seymour.
            c) Or equal.

    b. Duplex, 125-volt, 20 ampere, NEMA 5-20R configuration:

        1) Products and Manufacturers: Provide one of the following:
            a) HBL53CM62 by Hubbell, Inc.
            b) CR6300 by Pass & Seymour.
            c) Or equal.

    c. Single, 125-volt, 30 ampere, NEMA 5-30 configuration:

1) Products and Manufacturers: Provide one of the following:

a) HBL9308 by Hubbell, Inc.
b) 3802 by Pass & Seymour.
c) Or equal.

2. Grounding receptacle, 2-pole, 3-wire, 250-volt, 20 ampere, NEMA 6-20 configuration, brown color.

a. Single:

1) Products and Manufacturers: Provide one of the following:

a) HBL5461 by Hubbell, Inc.
b) 5871 by Pass & Seymour.
c) Or equal.

b. Duplex:

1) Products and Manufacturers: Provide one of the following:
a) HBL5462 by Hubbell, Inc.
b) 5862 by Pass & Seymour.
c) Or equal.

4. Provide Type 302 stainless steel cover-plate conforming to UL 514D. Provide weatherproof-while-in-use cover where shown on the Contract Drawings as “WP” or “WPU”, and provide where receptacles are located in wet or corrosive location.
5. Receptacles shall comply with UL 498.

E. Receptacles for Hazardous Locations:

1. Material: Factory-sealed receptacle suitable for installation in Class I, Group D hazardous locations. Copper-free aluminum receptacle and cover with cast gray iron alloy or cast malleable iron mounting box with zinc electroplate finish. Receptacle rated at 20 amperes, 125 to 250 volts AC, 2-wire, and 3-pole. Provide matching plug for each receptacle.
2. Receptacles for hazardous locations shall conform to UL 1010.
3. Products and Manufacturers: Provide one of the following:

a. Series CPS by Crouse-Hinds Company.
b. Type CPS by Appleton Electric Company.
c. Or equal.

F. Ground Fault Interrupting Receptacles:

1. Duplex grounding receptacle, 2-pole, 3-wire, NEMA 5-20R configuration, 125-volt AC, 20 amperes, gray color with ground fault circuit interrupting (GFCI) protection.

2. Ground fault interrupting receptacles shall comply with UL 943.
3. Provide Type 302 stainless steel cover-plate conforming to UL 514D. Provide weatherproof-while-in-use cover where shown on the Contract Drawings as “WP” or “WPU”, and provide where located in wet or corrosive location.

4. Products and Manufacturers: Provide one of the following:

    a. GFR5362SGY by Hubbell, Inc.
    b. 2091-GRY by Pass & Seymour.
    c. Or equal.

5. Weather-resistant Ground Fault Interrupting Receptacles

    a. Products and Manufacturers: Provide one of the following:

        1) 2095TRWRGRY by Pass & Seymour.
        2) Or equal.

C. Surge Suppression Receptacles:

1. Duplex grounding, surge suppression receptacle, two-pole, three-wire, NEMA 5-20R configuration 125-volt AC, 20 amperes, blue color, capable of absorbing transient surge of 6,000 volts minimum. Receptacle shall include power-on indicator light.
2. Surge suppression receptacles shall comply with UL 1449.
3. Provide Type 302 stainless steel cover-plate conforming to UL 514D. Provide weatherproof-while-in-use cover when shown on the Drawings as “WP” or “WPU”, and provide where located in a wet or corrosive location.
4. Products and Manufacturers: Provide one of the following:

    a. HBL5362SA by Hubbell, Inc.
    b. 5362BLSP by Pass & Seymour.
    c. 5380-GY by Leviton Manufacturing Company.
    d. Or equal.

E. Weatherproof Covers:

1. Where receptacles are installed in damp locations as defined in area classification portion of Section 16050, Electrical – General Provisions, provide receptacles as specified in Paragraphs 2.1.A through 2.1.D of this Section, as applicable, with weatherproof covers as specified below.
2. Provide covers that are UL-listed weatherproof and suitable for use in damp locations in accordance with NEC 406.
3. Material:

    a. Gasketed spring door type for wet and corrosive locations. Plates in corrosive locations shall have factory-applied 40-mil PVC coating.
    b. Stainless steel screws and hardware.

4. Products and Manufacturers: Provide one of the following:

    a. Hubbell, Inc.
    b. Crouse-Hinds Company.
    c. Appleton Electric Company.
    d. Or equal.

F. Weatherproof-While-in-Use Covers:

1. Where receptacles are shown on the Contract Drawings as “WP” or “WPU”, and where receptacles are installed in wet locations as defined in area classification portion of Section 16050, General Provisions for Electrical Systems, provide receptacles as specified in Paragraphs 2.1.A through 2.1.D of this Section, as applicable, with weatherproof-while-in-use covers as specified below.

2. Provide covers that are UL-listed, weatherproof while receptacle is in use, and are of ultraviolet-resistant construction suitable for outdoor use in accordance with NEC 406.

3. Material:

    a. Non-metallic box with hinged, non-metallic cover.
    b. Sealing gaskets between box and cover.
    c. Stainless steel screws and hardware.
    d. Color: Gray finish

4. Products and Manufacturers: Provide one of the following:

    a. TayMac Corporation.
    b. Pass and Seymour Type WIU
    c. Or equal.

G. Power Receptacles: 480-volt interlocked receptacle with enclosed safety switch service outlet. Provide service outlets, quantity as shown or indicated, for portable equipment.

1. Material: Copper-free aluminum enclosures with operating handle NEMA 4, with gasketed, hinged door.
2. Switch: Heavy duty, 3-pole, with visible blades, quick make-a-break mechanism with reinforced, positive-pressure-type blade and fuse clips. Switch shall be mechanically interlocked with receptacle. Switch cannot be closed until plug is fully inserted and plug cannot be withdrawn or inserted unless switch is open.
3. Receptacle: Single ground receptacle, 3-wire, 4-pole, 600-volt, (--1--) amp. Provide 2 matching plugs.

    a. Products and Manufacturers: Provide one of the following:

        1) Type WSR, and Type APS plugs by Crouse-Hinds Company.
        2) Or equal.

H. Power and Special Receptacles: Provide receptacles with number of poles and voltage and current rating as shown or indicated. Coordinate with equipment plugs. Provide matching plug for each receptacle.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Non-hazardous Locations: Install receptacles at locations shown, in outlet or device boxes in accordance with Section 16136, Outlet Boxes.

B. Hazardous Locations: Install receptacles in rigid metallic conduit systems.

C. Install receptacles with ground pole in the down position.

D. Mount receptacles 18 inches above finished floor in non-hazardous locations and 4.5 feet above finished floor in hazardous locations, in accordance with the Americans with Disability Act, unless otherwise shown or indicated in the Contract Documents.

E. Mount receptacles 18 inches above finished floor in non-hazardous locations and 4.5 feet above finished floor in hazardous locations, unless otherwise shown or indicated in the Contract Documents.

F. Install in conformance with NEC Laws and Regulations.

G. Identification:

1. Identify each conductor with circuit number and lighting panel number in accordance with Section 16075, Identification for Electrical Systems.
2. Identify each receptacle with permanent phenolic tag. Tags shall include circuit number and lighting panel number.

END OF SECTION

SECTION 16142 SNAP SWITCHES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install snap switches for lighting and other systems.

B. Related Sections:

1. Section 16075, Identification for Electrical Systems
2. Section 16136, Outlet Boxes.

1.02 REFERENCES

A. Standards referenced in this Section are listed below:

1. UL 20, General Use Snap Switches.
2. UL 894, Switches for Use in Hazardous (Classified) Locations.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements

1. Americans with Disabilities Act

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Product Data: Manufacturer's technical information for switches proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Switches for Non-Hazardous Locations:

1. Single pole AC toggle switch, quiet type, 120/277-volt AC, 20 amperes, Ivory, specification grade.

a. Products and Manufacturers: Provide one of the following:

1) Catalog No. 1221-I, by Harvey Hubbel, Inc.
2) Catalog No. 1991-I, by Arrow-Hart, Inc.
3) Catalog No. 20AC1-I, by Pass & Seymour
4) Or equal.

2. Single pole, three-way AC toggle switch, quiet type, 120/277-volt AC, 20 amperes, Ivory, specification grade.

a. Products and Manufacturers: Provide one of the following:

1) Catalog No. 1223-I, by Harvey Hubbell, Inc.
2) Catalog No. 1993-I, by Arrow-Hart, Inc.
3) Catalog No. 20AC3-I, by Pass & Seymour
4) Or equal.

3. Two-pole AC toggle switch, quiet type, 120/277-volt AC, 20 amperes, Ivory, specification grade.

a. Products and Manufacturers: Provide one of the following:

1) Catalog No. 1222-I, by Harvey Hubbel, Inc.
2) Catalog No. 1992-I, by Arrow-Hart, Inc.
3) Catalog No. 20AC2-I, by Pass & Seymour
4) Or equal.

4. Switches in non-hazardous areas shall be UL-listed in accordance with UL 20.

B. Switches for Hazardous Locations:

1. Material: Factory sealed tumbler switch suitable for installation in Class I, Group D hazardous locations. Cast gray iron alloy or cast malleable iron body and cover with zinc electroplate finish. Switch rated at 20 amperes, 120/277-volt AC.
2. Switches in hazardous areas shall be UL-listed in accordance with UL 894.

3. Products and Manufacturers: Provide one of the following:

a. Series EDS by Crouse-Hinds Company.
b. Type EDS by Appleton Electric Company.
c. Or equal.

C. Switch Covers:

1. Indoor covers shall be Type 304 stainless steel.
2. Outdoor, wet, or corrosive location covers shall be weatherproof and corrosion resistant.

D. Key Operated On-Off Switches:

1. Key operated switches shall be complete with legend plate and NEMA 4 enclosure and two keys for each switch.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install switches at locations as shown or indicated in the Contract Documents in outlet or device boxes, in accordance with Section 13136, Outlet Boxes.

B. Mount wall switches 4.0 feet above finished floor, and in accordance with the Americans with Disability Act, unless otherwise noted.

C. Identify each conductor with circuit number and lighting panel number. Identification shall be in accordance with Section 16075, Identification for Electrical Systems.

END OF SECTION

SECTION 16143 DISCONNECT SWITCHES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install disconnect switches.

B. Related Sections:

1. Section 16050, Electrical – General Provisions
2. Section 16075, Identification for Electrical Systems.
3. Section 16142, Snap Switches.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. UL 98, Enclosed and Dead-Front Switches.
2. NEMA KS 1, Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
3. NEMA 250, Enclosures for Electrical Equipment (1000 Volts Maximum).

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. NEC Article 404, Switches.
2. Disconnect switches shall bear the UL label.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Listing of each switch to be furnished, including location, rating, and NEMA enclosure type for each.

2. Product Data:

a. Manufacturer's technical information for disconnect switches proposed for use.

B. Maintenance Material Submittals: Submit the following:

1. Extra Stock Materials:

a. Furnish one set of spare fuses for each fused disconnect switch to be installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Provide products of one of the following:

1. Square-D Company.
2. Eaton/Cutler Hammer.
3. Siemens.
4. Or approved Equal

2.02 MATERIALS

A. Service Disconnect Switches:

1. Type: Non-Fused, heavy-duty, single throw, quick-make, quick-break mechanism, visible blades in "OFF" position and safety handle.
2. Rating: Voltage, current and short circuit ratings and number of poles as shown or indicated on the Contract Drawings. Switch shall bear UL label indicating suitability for use as service equipment and shall comply with UL 98, NEMA KS 1, and NEMA 250.

B. Single Throw, Circuit Disconnect Switches:

1. Type: Non-fused, horsepower rated, heavy-duty, single throw, quick- make, quick-break mechanism, visible blades in the "OFF" position and safety handle.
2. Rating: Voltage and current ratings and number of poles as required for motor or equipment circuits being disconnected. Switches shall bear a UL label and shall comply with the requirements of UL 98, NEMA KS 1 and NEMA 250.

C. Double Throw Safety Switches:

1. Type: Unfused, double throw with center "OFF" position, quick-make, quick-break mechanism, visible blades in the "OFF" position, and safety handle.
2. Rating: Voltage and current ratings and number of poles as required for circuits being disconnected. Switches shall bear UL label and shall comply with UL 98, NEMA KS 1, and NEMA 250.

D. Disconnect Switches for 120-volt, Single-phase Circuits:

1. Refer to Section 16142, Snap Switches.

E. Enclosures: NEMA rating shall be as required for area classifications specified in Section 16050, General Provisions for Electrical Systems or as shown on drawings.

F. Identification:

1. Identify enclosures in accordance with Section 16075, Identification for Electrical Systems.
2. Provide nameplate to identify the equipment served by disconnect switch and associated source of power.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed Install equipment so that sufficient access and working space is provided for ready and safe operation and maintenance.

B. Securely fasten equipment to walls or other structural supports on which they are mounted. Provide independent stainless steel supports where no wall or other structural surface exists. Mount disconnect enclosures at a height not exceeding six feet.

C. Provide suitable 1/4-inch spacers to prevent mounting enclosure directly against walls with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install equipment so that sufficient access and working space is provided for ready and safe operation and maintenance.

B. Securely fasten equipment to walls or other structural supports on which they are mounted. Provide independent stainless steel supports where no wall or other structural surface exists. Mount disconnect enclosures at a height not exceeding six feet.

C. Provide suitable 1/4-inch spacers to prevent mounting enclosure directly against walls.

END OF SECTION

SECTION 16160 PANELBOARDS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install panelboards. Panels to be part of an integrated system of transformer and panelboards unless otherwise shown.

B. Related Sections:

1. Section 16050, Electrical – General Provisions
2. Section 16075, Identification for Electrical Systems
3. Section 16271, Dry Type Low Voltage Distribution Transformers
4. Section 16289, Surge Protective Devices

1.02 REFERENCES

A. Standards referenced in this Section are:

1. NEMA PB 1, Panelboards.
2. UL 67, Panelboards

1.03 SUBMITTALS

A. Shop drawings and product data as described in Division 01.

B. Operation and maintenance data as described in Division 01.

C. In addition, submit the following:

1. Shop Drawings: Listing of panelboards to be furnished with identification of their proposed location, and all electrical characteristics, including number and rating of branch circuit breakers and enclosure type.

2. Product Data: Manufacturer's technical information for panelboards proposed for use, including product literature and specifications. Indicate options and features to be provided.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements; Comply with the following:

1. NEC Article 408, Switchboards and Panelboards.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling, and Unloading:

1. Packing:

a. Inspect prior to packing to assure that assemblies and components are complete and undamaged.
b. Protect mating connections.
c. Cover all openings into enclosures with-vapor inhibiting, water-repellent material.

2. Deliver materials and equipment to Site to ensure uninterrupted progress of the Work. Deliver anchorage materials to be embedded in concrete in ample time to prevent delaying the Work. Upon deliver, check materials and equipment for evidence of water that may have entered equipment during transit.
3. Comply with Division 01 Requirements.

B. Storage and Protection:

1. Store panelboards in a clean, dry location with environmental controls for uniform temperature and humidity. Protect equipment with coverings and maintain environmental controls.

PART 2 PRODUCTS

2.01 RATING

A. All panelboards shall be rated for the intended voltage, current, number of phases, number of wires and number of poles as shown or indicated on the Contract Drawings.

B. Panelboards shall be U.L. listed.

2.03 CONSTRUCTION

A. General Panelboard Requirements

1. Interiors

a. Interiors shall be completely factory assembled with main breakers, bus bars, branch circuit breakers, wire connectors, etc.
b. All wire connectors, except screw terminals, shall be of the anti-turn solderless type.
c. All wire connectors shall be suitable for use with copper wires of the size(s) indicated on the Contract Drawings.
d. Branch circuits shall be arranged using double row construction except where narrow column panels are called for on the Contract Drawings.
e. Branch circuits shall be numbered by the panelboard manufacturer.
f. Interiors shall be so designed that circuits may be changed without machining, drilling or tapping; without disturbing adjacent units; and without removing the main bus connectors.
g. Interiors shall be durably marked by the manufacturer with the voltage, current rating and number of phases for which the panelboards are designed. The markings, which shall be visible after installation without disturbing the interior parts or wiring, shall

also include the manufacturer's name or trademark.

h. All current carrying parts, including cross connectors, shall be copper.

2. Bus Bars

a. The bus bars for the mains shall be sized as shown on the Contract Drawings.
b. Both a full-capacity neutral bus and a separate ground bus shall be provided. Neutral bus bars shall have a suitable lug for each outgoing feeder requiring a neutral connection.
c. Phase bus bars shall be full height without reduction.
d. Bus bar taps for panelboards with single pole branches shall be arranged for sequence phasing of the branch circuit devices.
e. Bus bars shall be braced to conform to industry standards for short circuit stresses in panelboards.

3. Circuit Breakers

a. The panelboards shall be equipped with circuit breakers, main and branch, with trip settings as shown on the Contract Drawings.
b. The circuit breakers shall be of the molded case, bolt-on type with the number of poles as shown on the Contract Drawings.
c. Circuit breakers used in 120/240 Volt and 120/208 Volt panelboards shall have a minimum interrupting rating of 10,000 Amperes RMS symmetrical.
d. Three-pole circuit breakers used in 480 Volt panelboards shall have a minimum interrupting rating of 14,000 Amperes RMS symmetrical.

4. GFCI (Ground Fault Circuit Interrupter)

a. GFCI units shall be provided for all circuits where shown on the Contract Drawings.
b. The GFCI units shall be 1-pole, 120 Volt, molded case, bolt-on circuit breakers incorporating a solid-state ground fault interrupter circuit which shall be insulated and isolated from the breaker mechanism.
c. The GFCI units shall be U.L. listed Class A, Group I devices (5 milliamp sensitivity, 25 millisecond trip time), and shall have an interrupting capacity of 10,000 Amperes RMS symmetrical, unless otherwise noted.

5. Enclosures, Covers and Trim

1. The enclosures shall be of the NEMA Type (1, 3R, 4, 4X, 12), material (code gauge steel, stainless steel, fiberglass), and mounting configuration (flush, surface) as shown on the Contract Drawings.
2. Enclosures shall be of sufficient size to provide a minimum 4-inch gutter space on all sides. At least four (4) interior mounting studs shall be provided for each enclosure. Enclosures shall be furnished without conduit knockouts. Enclosures shall have hinged doors which cover all circuit breaker handles.

3. Stainless steel enclosures and covers shall have a natural metal finish. Enclosures and covers shall be joined together with a concealed piano type stainless steel hinge. Conduit openings in the enclosures shall be field drilled and, if applicable, tapped.
4. Fiberglass enclosures and covers shall be the manufacturer's standard color. Enclosures and covers shall be joined together with a concealed piano type stainless steel hinge. Conduit openings in the enclosures shall be field drilled and, if applicable, tapped.
5. Code gauge steel enclosures and covers shall be galvanized steel finished as per Item 2.03.E.7 below. Enclosures and covers shall be joined together with a concealed piano type hinge. Conduit openings in the enclosures shall be field punched.
6. Code gauge steel enclosures shall have panel trims of code gauge sheet steel. Trims for flush mounted enclosures shall overlap the enclosures by at least 3/4-inch all around. Surface mounted enclosures shall have trims the same height and width as the enclosures. Trims shall be fastened to the enclosures with quarter-turn clamps or screws.
7. All interior and exterior surfaces of the panelboards, enclosures and trims shall be properly cleaned, painted with a rust inhibitor (two coats), and over-coated with ANSI Z55.1, No. 61 light gray paint. The finish paint shall be of a type to which field applied paint will adhere.
8. The inside surface of each cover shall have a directory frame with a transparent cover and a directory card.
9. Covers shall have semi-flush type cylinder locks and catches, except that covers over 48-inches in height shall have vault handles and 3-point catches, complete with lock, arranged to fasten at top, bottom and center. Two (2) keys shall be furnished for each lock and all locks shall be keyed alike.

B. Power Distribution Panelboards:

1. Manufacturers: Provide Products of one of the following:

1. 120/240 Volt and 120/208 Volt panelboards shall be type NQOD with QOB bolt-on circuit breakers as manufactured by Schneider Electric/Square D Company, or approved equal.
2. 480 Volt panelboards shall be the I-Line type as manufactured by Schneider Electric/Square D Company, or approved equal.

C. Lighting Control Panelboards:

1. Manufacturers: Provide products of one of the following:

a. Panelboards designated as including lighting power and control circuitry shall be of the type PowerLink as manufactured by Schneider Electric/Square D Company, or approved equal.

2. General: Unit shall consist of a panelboard with remotely operated circuit breakers, controller, power supply, and other ancillary devices as required for a complete and operational system.

3. Provide outdoor light-level sensor suitable for remote installation in an exposed wet environment. Device shall communicate with controller to provide

D. Integrated Panelboard and Transformer:

1. Products and Manufacturers: Provide products of one of the following:

a. Mini Power Zone by Schneider Electric/Square D Company.
b. Mini Power Center by Eaton/Cutler-Hammer.
c. Panel Tran by Acme Electric Corporation.
d. Or approved alternate.

2. General: Unit shall consist of encapsulated dry type transformer, primary and secondary main circuit breakers, and secondary panelboard all in one enclosure.

3. Transformer Rating: Transformer portion shall comply with Section 16271, Dry-type Low-Voltage Distribution Transformers. KVA, primary voltage, secondary voltage, frequency and number of phases shall be as shown or indicated on the Drawings

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected

3.02 INSTALLATION

A. Surface mounted panelboards shall be installed using spacers so that there is an air space between the enclosure and the mounting surface.

B. Unless otherwise shown on the Contract Drawings, the tops of the enclosures shall be mounted at a height of 6-feet above the floor. The enclosures shall be properly aligned, true-and-square, and shall be adequately supported independently of the connecting conduits.

C. All panelboard wiring shall be neatly formed, grouped, laced, and identified to provide a neat and orderly appearance.

D. The Contractor shall type on the directory card the description/use of each active circuit. "Spare" shall be indicated in erasable pencil!

3.02 TESTS

A. Each individual circuit breaker, including the main breaker and the GFCI breaker(s), shall be tested for proper operation under the appropriate overload/ground fault conditions.

3.03 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee and warrant all materials and labor provided under this Section in accordance with Division 01 and Section 16050 of these Specifications.

END OF SECTION

SECTION 16230 GENERATOR SETS

PART 1 GENERAL

1.01 REQUIREMENT SUMMARY

A. Contractor shall furnish and install a completed and fully functional standby electrical power system sourced by an Engine Driven Generator that has been tested during design verification, production and at the Project site. All finished equipment shall be of the latest industrial design and will be complete with all of the necessary accessories for complete installation as shown in the Contract Documents and Specifications herein. Engine Driven Generator and associated equipment supplied and installed shall meet the requirements of the National Electrical Code, along with all applicable local codes and regulations. All Engine Driven Generator equipment shall be new and of current production of a national firm that manufactures generator sets and controls, switchgear, paralleling switchgear and assembles these as a complete and coordinated systems. There will be one (1) source responsibility for warranty, parts, and service through a local representative with factory-trained service personnel.

B. Section consists of providing a complete packaged electrical system and associated controls with all required accessories as specified and shown in the Contract Documents. The equipment supplier must be the authorized distributor for each component of the products specified herein. The Work includes the furnishing of all labor, materials, equipment, test, and training to provide a complete and workable power system, including the generator set and generator set controls, transfer switch controls, fuel tank system, and installation as shown in the Contract Documents and Specifications herein. It is the intent of these Specifications to have a single source responsibility for the Engine Driven Generator.

C. Any and all exceptions to the published Specifications shall be subject to the approval of the Engineer.

D. Engine Driven Generator and associated standby power system shall be finished by a single manufacturer who shall be responsible for the design, coordination, and testing of the complete system. The entire system shall be installed as shown in the Contract Documents and Specifications herein.

E. Equipment shall be produced by a manufacturer who has produced this type of equipment for a period of at least fifteen (15) years and who maintains a service organization available twenty-four (24) hours a day throughout the year.

F. Equipment shall be produced by a manufacturer who is ISO 9001 certified for the design, development, production, installation, and service of their complete product line.

G. Specifications contained herein represent minimum requirements. Actual sizing of the generator shall be coordinated with the loads of the equipment supplied.

H. Reference Contract Documents for additional requirements.

1.02 SCOPE

A. Basis of Design on which project is based: 800kW, 1000kVA, .8 power factor, 480V,3-Phase, 105°C rise Class H alternator. Enclosure to be NEMA 4X weatherproof sound attenuated and the engine generator set to be located in Tarpon Springs, FL.

1.03 RELATED WORK SPECIFIED ELSEWHERE

B. In addition to the requirements specified in this Section, the requirements of Division 16 and those Project Specification Sections referenced therein shall be applied.

C. Related Specification Sections include but not limited to:

1. 16010 – Electrical Power Studies
2. 16430 – Switchgear

1.04 REFERENCES

A. Engine Driven Generator system shall conform to the requirements of the following codes, standards and regulations.

B. Codes and Standards:

1. US Environmental Protection Agency
    a Clean Air Act (CAA)
    b National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE NESHAP)
    c New Source Performance Standards (NSPS)
2. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
3. EN 50082-2, Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.
4. EN 55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
5. IEC 8528 part 4. Control Systems for Generator Sets
6. IEC Std 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.
7. IEEE 446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
8. Mil Std 461D -1993. Military Standard, Electromagnetic Interference Characteristics.
9. Mil Std 462D - 1993. Military Standard, Measurement of Electromagnetic Interference Characteristics.
10. NFPA 70 – National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
11. NFPA 99 – Essential Electrical Systems for Health Care Facilities

12. NFPA 110 – Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit, component level type tests will not substitute for this requirement.
13. UL 2200 The generator set shall be listed to UL 2200 or submit to an independent 3rd party certification process to verify compliance as installed

1.04 SUBMITTALS

A. Contractor shall reference and provide all documentation for all Division 16 Sections as required per Specification Sections:

1. Division 01 – General Requirements.

B. Submittals shall include prototype test certification and specification sheets showing all standard and optional accessories to be supplied, schematic wiring diagrams, dimensional drawings, and interconnection diagrams identifying by terminal number, each required interconnection between the generator set, the transfer switch, and the remote monitoring/control devices if included elsewhere in these Contract Documents.

C. Engine Driven Generator submittal shall include contact information for the 24-hour parts and service organization. Submittals without this information will be rejected.

D. Submit sizing calculations for Engine Driven Generator with respect to the actual equipment loads supplied as part of this Contract.

1.05 DELIVERY, STORAGE AND HANDLING

A. Engine Driven Generator and all components shipped loose shall be handled and stored (if required) in accordance with manufacturer's instructions and recommendations as outlined in applicable Installation and Maintenance Manuals. Three (3) copies of these instructions shall be included with the equipment at time of shipment.

B. Inspect and report concealed damage to carrier within their required time period. Owner shall not be held responsible for damages incurred during shipping, handling and storage.

1.06 OPERATION AND MAINTENANCE MANUALS

A. Engine Driven Generator Operation and Maintenance manuals shall be provided and shall include additional instruction leaflets and instruction bulletins for the complete assembly and each major component.

B. Operation and Maintenance manuals, drawings etc. to be provided within the assemblies shall be water-proof and fire-resistant utilizing tear-resistant paper.

1.07 WARRANTY

A. Manufacturer shall warrant Engine Driven Generator to be free from defects in materials and workmanship for the lesser of one (1) year from date of installation or eighteen (18) months from date of purchase.

1.08 MAINTAINENCE

A. Engine Driven Generator manufacturer and its distributor shall maintain a twenty-four-hour (24hr) parts and service organization within one-hundred miles (100mile) of the Project site. This organization shall be regularly engaged in a maintenance contract program to perform preventive maintenance and service on equipment provided.

1.09 IDENTIFICATION

A. Engine Driven Generator shall be identified with the equipment tag number indicated on the Contract Documents and the accepted shop drawings. Nameplate(s) shall be securely affixed in a conspicuous place(s). Nameplates shall be furnished and installed as required Specification Section(s):

1. 16075 –Identification for Electrical Systems

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Engine Driven Generator and associated equipment shall be provided by one of the manufacturers listed:

1. Caterpillar Power Generation
2. Cummins Power Systems
3. Bluestar

B. Listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting the Specifications in their entirety.

2.02 RATINGS

A. Engine Driven Generator Assembly shall be defined for the purpose of this Project as Stationary Emergency Standby Power Diesel Driven Generator.

B. Engine Driven Generator shall have those electrical ratings as shown on the Contract Documents and rated for operation in an ambient condition of 40C at 150M above sea level (minimum).

C. Engine Driven Generator shall be rated for continuous standby duty usage.

2.03 DIESEL ENGINE

A. Turbocharged and accept No.2 diesel fuel (2-D)

B. Operate at a governed speed of 1800RPM

C. Liquid-Cooled by a unit-mounted radiator, blower fan, water pump, and thermostats. This system shall properly cool the Diesel Engine with up to 0.5IN H20 static pressure on the fan in an ambient temperature up to 50C.

D. EPA Tier-II factory certified

E. Shall be equipped with the following:

1. Electronic isochronous governor capable of +0.25% steady-state frequency regulation.
2. 24V positive engagement solenoid shift-starting motor.
3. Automatic battery charging alternator with solid-state voltage regulation.
4. Positive displacement, full pressure lubrication oil pump, cartridge oil filters, dipstick, and oil drain.
5. Dry-type replaceable air cleaner elements for heavy-duty applications.
6. Engine-Driven or electric fuel transfer pump capable of lifting fuel 300.0mm, fuel filters, and electric solenoid fuel shut-off valve.
7. Remote monitoring on SCADA.

F. Vibration isolators shall be provided between the engine-alternator and heavy-duty steel base.

2.04 ALTERNATOR

A. Permanent Magnet brushless design.

B. Salient-Pole, brushless, 12-lead reconnectable, self-ventilated of drip-proof construction with amortisseur rotor windings and skewed stator for smooth voltage waveform. The insulation shall meet the NEMA standard (MG1-33.40) for Class H and be insulated with epoxy varnish to be fungus resistant per MIL 1-24092. The excitation system shall be of brushless construction controlled by a solid- state voltage regulator capable of maintaining voltage within +/- 2% at any constant load from 0% to 100% of rating. The regulator must be isolated to prevent tracking when connected to SCR loads, and provide individual adjustments for voltage range, stability and volts-per-hertz operations; and be protected from the environment by conformal coating.

C. The generator set shall meet the transient performance requirements of ISO 8528-5, level G-3.

D. The alternator excitation shall be of a permanent magnet exciter design.

E. Engine Driven Generator shall be inherently capable of sustaining at least 250% of rated current for at least 10SEC under a three-phase symmetrical short circuit without the addition of separate current support devices.

F. Alternator having a single maintenance-free bearing, shall be directly connected to the flywheel housing with a semi-flexible coupling between the rotor and the flywheel.

2.05 CONTROLS

A. Engine Driven Generator shall be controlled and monitored by a fully solid-state, microprocessor based electronic controller and shall be designed, tested and built by the engine manufacturer. Controller shall provide all operating, monitoring, and control functions for the generator set. Controller shall provide real time digital communications to all engine and regulator controls via SAE J1939.

B. Controller and its enclosure shall be tested and certified to the following environmental conditions:

1. -40C to +70C Operating Range
2. 100% condensing humidity, 30C to 60C
3. IP22 protection for rear of controller; IP55 when installed in controller enclosure
4. 5% salt spray, 48HR, +38C, 36.8V system voltage
5. Sinusoidal Vibration: 4.3G RMS, 24-1000Hz
6. Shock Withstand: 15G
7. Electromagnetic Capability (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2)

C. Controller shall have but not limited to the following functional requirements:

1. Standard ISO labels
2. Display: 33 x 132 pixel, 24mm x 95mm, positive image, transflective LCD display with minimum three-line data display for text-based alarm/event descriptions
3. Audible horn for alarm and shutdown with horn silence switch
4. Remote start/stop control and monitoring
5. Local AUTO/OFF/RUN control integral to system microprocessor
6. Cooldown timer
7. Speed Adjustment
8. Push-To-Test Lamps
9. Emergency E-STOP mushroom push-button
10. Voltage Adjustment
11. Voltage regulator V/Hz slope - adjustable
12. Password protected system programming

D. Controller shall provide the following digital readouts for the engine and alternator. All readings shall be indicated in either SI or Imperial units

1. Engine

    a. oil pressure
    b. oil temperature
    c. coolant temperature
    d. RPM
    e. battery volts

f. run-hours
g. crank attempt counter
h. successful start counter
i. maintenance interval(s)
j. real-time clock
k. exhaust stack temperature
l. main bearing temperature

2. Alternator

a. AC voltage (line-to-line, line-to-neutral and average)
b. AC current (average and per phase)
c. AC frequency
d. kW (total and per phase)
e. kVA (total and per phase)
f. kVAR (total and per phase)
g. power factor (average and per phase)
h. total kW-Hr
i. total kVAR-Hr
j. % kW
k. % kVA
l. % kVAR
m. bearing temperature
n. stator winding temperature
o. windings heater

3. Voltage Regulator

a. excitation voltage
b. excitation current

E. Controller shall monitor and provide remote alarm indication and subsequent shutdown for the following conditions. All alarms and shutdowns are accompanied by a time, date, and engine hour stamp that are stored in memory for first and last occurrence:

1. Engine Alarm/Shutdown

a. low oil pressure alarm/shutdown
b. high coolant temperature alarm/shutdown
c. loss of coolant shutdown
d. overspeed shutdown
e. overcrank shutdown
f. emergency stop shutdown
g. low coolant temperature alarm
h. low battery voltage alarm
i. high battery voltage alarm
j. not in AUTO alarm
k. battery charger failure alarm

2. Alternator Alarm/Shutdown

a. phase sequence
b. over voltage
c. under voltage
d. over frequency
e. under frequency
f. reverse power (real and reactive)
g. overcurrent

3. Voltage Regulator Alarm/Shutdown

a. loss of excitation alarm/shutdown
b. instantaneous over excitation alarm/shutdown
c. time over excitation alarm/shutdown
d. rotating diode failure

F. Controller I/O

1. Programmable Digital Inputs: Controller shall include the ability to accept programmable digital input signals. Signals may be programmed for either high or low activation using programmable Normally Open or Normally Closed contacts.
2. Programmable Relay Outputs: Controller shall include the ability to operate programmable relay output signals, integral to the controller. Output relays shall be rated for 2A @ 30VDC and consist of six (6) Form A (Normally Open) contacts and two (2) Form C (Normally Open & Normally Closed) contacts.
3. Programmable Discrete Outputs: Controller shall include the ability to operate two (2) discrete outputs, integral to the controller, which are capable of sinking up to 300mA.

G. Maintenance

1. All engine, voltage regulator, control panel and accessory units shall be accessible through a single electronic service tool. The following maintenance functionality shall be integral to the Controller.

a. engine running hours display
b. service maintenance interval (running hours or calendar days)
c. engine crank attempt counter
d. engine successful starts counter
e. forty (40) events are stored in memory

2. Programmable cycle timer that starts and runs the Engine Driven Generator for a predetermined time. Timer shall use seven (7) user-programmable sequences that are repeated in a seven-day (7DY) cycle. Each sequence shall have the following programmable set points:

a. day of week
b. time of day to start
c. duration of cycle
d. loaded or unloaded

H. Remote Communications:

1. Provide access to all date and events on Engine Driven Generator communications network
2. Provide remote control capability for Engine Driven Generator(s)
3. Modbus TCP and DNP 3.0 TCP/UDP via Ethernet RJ45 connector shall be preferred communication protocol

I. Local Annunciator

1. Shall be provided and installed in the same enclosure with the along with Engine Driven Generator controller to meet the requirements of CSA 282, NFPA 99 and NFPA 110, Level 1.
2. Networked directly to EPCS annunciator system
3. Include a lamp test pushbutton, alarm horn and alarm acknowledge pushbutton
4. Provide but not limited to the following individual LED light indications for protection and diagnostics

    a. overcrank
    b. low coolant temperature
    c. high coolant temperature warning
    d. high coolant temperature shutdown
    e. low oil pressure warning
    f. low oil pressure shutdown
    g. overspeed
    h. low coolant level
    i. not in AUTO
    j. high battery voltage
    k. low battery voltage
    l. battery charger AC failure
    m. emergency stop

2.06 FUEL SYSTEM

A. The fuel system shall be integral with the engine. In addition to the standard fuel filters provided by the engine manufacturer, there shall also be installed a primary fuel filter/water separator in the fuel inlet line to the engine. All fuel piping shall be black iron or flexible fuel hose rated for this service. No galvanized piping will be permitted. Flexible fuel lines shall be minimally rated for 300F and 100psi.

B. Fuel Sub Base Tank: Provide a double wall sub-base tank constructed to meet all local codes and requirements to include UL 142. A fuel tank base of 3600 gallon capacity shall be provided as an integral part of the enclosure. It shall be contained in a rupture basin with 110% capacity. A locking fill cap, a mechanical reading fuel level gauge, low fuel level alarm contact, normal and emergency vent extensions to 12FT and fuel tank rupture alarm contact shall be provided.

1. Provide five-gallon (5GAL) Fuel Fill spill containment with OFPV (without exception)
2. Steps and Platforms on both sides of the weather/sound enclosure as required for re-fueling operations.

C. The sub-base tank shall have provisions to integrate with the existing 5,000-gallon bulk tank. By connecting the 3,600-gallon sub-base tank to the 5,000-gallon tank, the total capacity will be 8,600 gallons, enabling the generator to operate for approximately 5.5 days at full load (based on an 800 kW generator consuming 64.3 gallons per hour). Reference contract documents for details on the fuel transfer system that will facilitate fuel transfer between the two tanks.

2.07 STARTING SYSTEM

A. Starting Motor(s) shall be direct-current type with positive engagement and as recommended by the engine manufacturer.

B. Engine block, water jacket heater and windings shall be thermostatically controlled and sized to maintain manufacturers recommended engine coolant temperature to meet the start-up requirements of NFPA 99 and NFPA 110, Level 1 in accordance with the ambient conditions of the site.

C. Batteries shall be 12V lead-antimony capable of delivering the manufacturer's recommended minimum cold-cranking amps required at -20C, per SAE Standard J-537.

D. Battery Charging System shall be automatic float and equalize with +/- 1% constant voltage regulation from no load to full load over +/-10% AC input line variation, current limited during engine cranking and short circuit conditions, temperature compensated for ambient temperatures from -40C to +60C, 5% accurate voltmeter and ammeter, fused, reverse polarity and transient protected. Battery Charging System shall be mounted within the inside weather/sound enclosure.

2.08 COOLING SYSTEM

A. Engine Driven Generator shall be equipped with a rail-mounted, engine-driven radiator with blower fan and all accessories. Cooling system shall be sized to operate at full load conditions and 110F ambient air entering the weather/sound enclosure. Engine Driven Generator supplier is responsible for providing a properly sized cooling system based on the enclosure static pressure restriction.

2.09 EXHAUST SYSTEM

A. Muffler / Silencer shall be a super critical grade silencer, companion flanges, and flexible stainless-steel exhaust fitting properly sized shall be furnished and installed inside weather/sound enclosure. Muffler / Silencer shall be mounted so that its weight is not supported by the engine nor will exhaust system growth due to thermal expansion be imposed on the engine. Exhaust pipe size shall be sufficient to ensure that exhaust backpressure does not exceed the maximum limitations specified by the engine manufacturer. Install insulation to avoid injury.

2.10 WEATHER / SOUND ENCLOSURE

A. Weather/Sound enclosure with sub-base fuel tank shall include the following features:

1. Enclosure rating shall reduce sound to 70dBA at 21ft from enclosure.
2. Enclosure shall be constructed of aluminum (min. 2.5MM thickness), cleaned and painted inside and out with rust inhibiting primer and exterior coat of the manufacturer's standard color.
3. Enclosure shall be braced for wind loading of 160miles per hour (71.5 meters per second) in accordance with the Project Site Conditions and/or as outlined in the Contract Documents.
4. Enclosures must be equipped with sufficient side and end doors to allow access for operation, inspection, and service of the unit and all options. Minimum requirements are two doors per side. When the generator set controller faces the rear of the generator set, an additional rear facing door is required. Access to the controller and main line circuit breaker must meet the requirements of the National Electric Code. Doors must be hinged with stainless steel hinges and hardware and be removable. Doors must be equipped with lockable latches. Locks must be keyed alike.
5. Enclosure roof must be pitched to prevent accumulation of water
6. A duct between the radiator and air outlet must be provided to prevent re-circulation of hot air.
7. A radiator duct flange to provide a convenient connection to duct work for the radiator discharge air.
8. Generator heater to prevent the accumulation of moisture for dampness in the generator windings.
9. Engine exhaust silencer shall be stainless steel and be temperature and rust resistance, rated for residential application. The silencer will reduce total engine exhaust noise by 25-35 dB(A).
10. Gas-proof, seamless, stainless steel, flexible exhaust bellows with threaded NPT connection.
11. Generator rodent guards.
12. Generator skid end caps.

2.11 EMERGENCY STANDBY POWER CONTROL / MONITORING SYSTEM

A. General Requirements

1. Emergency Standby Power Control and Monitoring System (EPCS) shall consist of the hardware and software required for the control and supervisory monitoring of the Engine Driven Generator. EPCS shall include but not limited to all automation controllers, HMI (Human / Machine Interface) graphic screens, Operator Interface Terminal (OIT) touch-screens, power transducers, supervisory networks and all ancillary control equipment necessary to execute the functional sequence of operations.
2. EPCS shall be by the same manufacturer as the Engine Driven Generator and be furnished with the Engine Driven Generator Assembly as a total coordinated and integrated.

B. Features

1. EPCS shall facilitate Engine Driven Generator operations to include but not limited to automatic standby operation, monitoring and control, start/stop, alarm/fault monitoring, active synchronizing, generator loading/unloading, power factor control, and protective relaying.

2. EPCS shall utilize distributed processing technology to maximize system reliability and fault tolerance. The distributed processing system shall include a paired master level controller along with Engine Driven Generator controller such that failure of the EPCS does not loss of operation of Engine Driven Generator.
3. Web-Enabled Communications

    a A separate dedicated compartment shall be supplied in the Metal-Enclosed Draw-Out Switchgear with a front facing hinged door as a central point of connection for all internally and externally located communicating devices.
    b Communication protocol shall be Ethernet Modbus TCP either native to the metering device, relays, etc. or following interconnection to Switchgear Control and Monitoring System.

C. Operator Interface Terminal (OIT)

1. EPCS shall utilize an OIT to monitor, control and display information graphically and shall have the minimum requirements:

    a OIT shall comply with those applicable requirements in Specification Section 13300 – Instrumentation and Controls, General Requirements.
    b Color, 19IN (diagonal) industrial display capable of displaying both text and graphics.
    c OIT touch-screen shall be pure glass, with light transmission of 95% or better, furnished with a Surface Acoustic Wave touch interface.
    d OIT display shall support a widescreen format and 16-million displayable colors.
    e 1.65GHz dual core CPU with integrated Radeon HD graphics card to support high processing power and high-performance graphics.
    f Two (2) Ethernet and USD interfaces.
    g Support and external memory card for additional storage in addition to device's internal SSD memory.
    h Support intuitive multi-touch functionality permitting user to zoom, scroll and swipe.
    i Front panel-mounted, rated NEMA-12 within a dedicated Switchgear compartment and all graphics shall be replicated within the Owner's SCADA / HMI System.

2. EPCS shall communicate with all Engine Driven Generator controllers, components, devices and systems to include but not limited to:

    a Switchgear Control and Monitoring System, reference Section 16163 – Switchgear.

3. EPCS shall use shielded CAT6 cabling as physical media to communicate via an Ethernet switch.

    a Modbus TCP and DNP 3.0 TCP/UDP via Ethernet RJ45 connector shall be preferred communication protocol.

4. OIT display shall support multiple security levels such as Administrator and multiple users so that appropriate operational rights can be assigned to an operator.
5. OIT display shall have following Tabs:

    a System Overview Screen
    b Control, Metering and Settings
    c Alarm and Event Summaries
    d Reports
    e Engine Data
    f Documentation

D. Annunciation System (NOT USED)

1. EPCS shall be provided with annunciation system to monitor and display critical Engine Driven Generator system status, fault, and shutdown information and shall comply with CSA 282 and NFPA 99/110 requirements.
2. Annunciation system shall consist of a local annunciator mounted locally with the Engine Driven Generator controller and a remote annunciator integral to the EPCS that operate and function simultaneously.
3. Annunciation system shall be equipped with a fast pulse horn rated 80-95dbA at 2FT, a horn silence push-button and an acknowledge push-button. Any Engine Driven Generator pre-alarm(s), shutdown alarm, or system alarm shall cause the alarm horn to sound until the horn silence button is depressed. Any subsequent alarms shall re-sound the horn. The EPCS OIT shall operate such that any alarm point shall “flash” until acknowledged.
4. Annunciation system shall be provided with five (5) distinct types of annunciation points:

    a Status Points – status of critical Engine Driven Generator or EPCS components; these points shall not sound the annunciation system horn or require acknowledgement.
    b Engine Driven Generator Pre-Alarm Points – fault conditions that could threaten the ability of the EPCS to function properly without immediate attention. Engine Driven Generator pre-alarm annunciation points shall sound the annunciation system horn and shall require acknowledgement. Engine Driven Generator pre-alarm annunciation points shall reset automatically as the alarm condition is cleared.
    c Engine Driven Generator Shut-down Alarm Points - fault conditions that have caused the shut-down of the Engine Driven Generator and shall sound the annunciation system horn; these fault conditions shall require acknowledgement. Engine Driven Generator Shut-down Alarm Points shall cause the Engine Driven Generator to shut-down and the Generator Feeder Circuit Breaker to trip open and lock out until the cause of the shut-down is corrected.
    d Utility Alarm Points – These annunciation points will indicate utility related fault conditions. Utility annunciation points shall sound the

annunciation system horn. They shall require acknowledgement.

e EPS Alarm Points – These annunciation points will indicate system wide fault conditions. EPS annunciation points shall sound the annunciation system horn. They shall require acknowledgement.

5. Annunciator System shall provide local and remote annunciation of all points stated above and shall incorporate ring-back capability so that after silencing the initial alarm, any subsequent alarms will sound the horn.
6. Provide a NEMA 30mm E-STOP mushroom push-button adjacent to Emergency Standby Power Control and Monitoring System OIT.

E. Metering

1. Metering functions shall be 1% accuracy or better.
2. The following minimum metering parameters shall be provided for the Engine Driven Generator:

a Voltage with 4-Position Selector-Switch to select three (3) phases of voltage
b Amperage with 4-Position Selector-Switch
c Kilowatts
d KiloVars
e Frequency
f Power Factor
g Synchroscope
h kVAR-Hr energy counter with reset Push-Button
i kW-Hr energy counter with reset Push-Button

3. All parameter data available on the Engine Driven Generator shall replicated within the Owner's SCADA / HMI System.

2.12 ACCESSORIES

A. Battery rack, and battery cables, capable of holding the manufacturer's recommended batteries, shall be supplied.

B. Two flexible fuel lines rated at a minimum of 125C and 690kPA ending in pipe thread.

C. Air cleaner restriction indicator to indicate the need for maintenance of the air cleaners.

2.13 TOOLS, SUPPLIES, AND SPARE PARTS

A. Tools, supplies, and spare parts shall be provided per manufacturer requirements and as specified for each equipment item. In addition, the following items shall be provided.

1. Provide one set of tools required for preventative maintenance of the Engine Driven Generator system. Package tools in an industrial grade metal tool box with minimum of 30% spare space.
2. Two (2) of each type of fuel, oil, and air filters
3. Two (2) of each type of accessories belt(s)

4. One (1) can of touch up paint

PART 3 EXECUTION

3.01 TESTING

A. To assure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.

B. Design Prototype Tests: Components of the stand-by emergency system such as the Engine Driven Generator, transfer switch, and accessories shall not be subjected to prototype tests since the tests are potentially damaging. Rather, similar design prototypes and preproduction models shall be subject to the following tests.

1. Maximum power (kW).
2. Maximum motor starting (kVA) at 35% instantaneous voltage dip.
3. Alternator temperature rise by embedded thermocouple and/or by resistance method per NEMA MG1-32.40.
4. Governor speed regulation under steady-state and transient conditions.
5. Voltage regulation and generator transient response.
6. Harmonic Analysis, voltage waveform deviation, and telephone influence factor.
7. Three-Phase short circuit tests.
8. Alternator cooling air flow.
9. Torsional analysis to verify that the generator set is free of harmful torsional stresses.
10. Endurance testing.

C. Production Tests: Each Engine Driven Generator shall be tested under varying loads with guards and exhaust system in place. Tests shall include:

1. Single-Step loading pickup
2. Transient and steady–state governing
3. Safety shutdown device testing
4. Voltage regulation
5. Rated Power @ 0.8 PF
6. Maximum Power
7. Upon Owner or Engineer request, arrangements to either witness this test will be made, or a certified test record will be sent prior to shipment.

D. Site Tests: An installation check, start-up, and load bank test shall be performed by the manufacturer's local representative. Contractor shall notify Owner and Engineer at least 2-weeks prior of the time and date of the site test. The tests shall include but not limited to the following:

1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present and expected.

2. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery charger, alternator strip heaters, remote annunciator, etc.
3. Start-up under test mode to check for exhaust leaks, path of exhaust gases outside the building, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage and frequency, and phase rotation.
4. Automatic start-up by means of simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timing shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with Engine Driven Generator voltage, amperes, and frequency shall be monitored throughout the test. An external load bank shall be connected to the system if sufficient load is unavailable to load the generator set to the nameplate kW rating.
5. Contractor shall provide all fuel, lubricants, and engine fluids required and consumed for start-up, testing or commissioning at no additional cost to Owner.

6. Contractor shall replenish fuel to maximum filled level after successful completion of testing at no additional cost to Owner.

END OF SECTION

SECTION 16260 VARIABLE FREQUENCY CONTROLLERS

PART 1 GENERAL

1.01 REQUIREMENT SUMMARY

A. AC DRIVES shall be by YASKAWA for both stand alone and those integral (inside) MCC. No Equal. YASKAWA to coordinate with MCC manufacture to install AC DRIVES in the MCC. Refer to Specification 16423 for additional information.

B. CONTRACTOR to provide coordination with MCC Supplier and Yaskawa Manufacturing to install YASKAWA AC Drives inside MCC.

C. Adjustable Frequency Drives, Variable Frequency Drives or herein identified as AC DRIVES for use with NEMA B design AC motors in accordance with the Contract Documents and specified herein.

D. Contractor shall provide and install the AC DRIVES and all associated appurtenances for the equipment as referenced in the Contract Documents.

E. AC DRIVES shall fit in those existing locations as shown in the Contract Drawings and not exceed the base dimensions for the equipment listed:

F. All power and control wiring shall enter the bottom of the AC DRIVES except when mounted indoors in a climate-controlled location.

1. AC DRIVES shall operate with motor power conductors as shown on the Contract Documents.

G. Any exceptions/deviations to this Specification Section shall be indicated in writing to the Engineer and submitted with the quotation.

H. AC DRIVES shall operate auxiliary equipment such as seal water valves, motor space heaters, and include safety and equipment protection interlocks as shown in the Contract Documents.

I. AC DRIVES manufacturer shall be responsible for providing all equipment specified under this section, and furnishing the equipment to the Contractor for installation.

J. AC DRIVES manufacturer shall furnish, field test, adjust and certify all installed AC DRIVES for satisfactory operation.

1.02 SCOPE OF WORK

A. The CONTRACTOR shall provide all the required labor, project equipment and materials, tools, construction equipment, safety equipment, transportation, and

test equipment for furnishing, installation, adjustment, and full test loading of all the electrical work shown on the Drawings and included in these Specifications.

B. This equipment is to be installed in the existing newly renovated electrical building (previously the Chlorine Building) with exterior connections by CONTRACTOR. Coordinate conductor entry and exits with the area of the trench and metal plates that cover the proposed trench inside the electrical building.

C. Floor mounted standalone Variable Frequency Drives provided by manufacturer with all appurtenances included. Enclosure to be NEMA 1 gasketed. No third-party assemblies accepted.

1. Floor Mounted Satand alone Variable frequency drives are to be 480V, 3-phase, 60Hz, 12-pulse drives with 5% line reactor to operate the below motors.
2. (2) AERATOR, 75 HP
3. (4) INTERNAL RECYCLE PUMP, 40HP

D. Variable Frequency Drives integral to the motor control center and enclosures shall be enclosures provided by manufacturer of MCC with all appurtenances included. Enclosure to be NEMA 1 gasketed. No third-party assemblies will be accepted.

1. MCC integrated Variable frequency drives are to be 6-pulse, with LC passive harmonic filters (as further described below), 480V, 3-phase, 60Hz to operate the below motors.

a. (2) CLARIFIER, 1 HP
b. (4) INFLUENT PUMP, 50 HP
c. (3) RAS PUMP, 15 HP
d. (1) WASTE PUMP, 7.5 HP
e. (2) RE-AERATION BLOWER, 5 HP

E. MANUFACTURER to coordinate and incorporate all motor controls and motor protection. CONTRACTOR to oversee and be responsible for such coordination.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. In addition to the requirements specified in this Section, the requirements of Division 16 and those Project Specification Sections referenced therein shall be applied.

B. Related Specification Sections include but not limited to:

1. 16423 – Motor Control Centers
2. 16230 – Generator Sets

1.04 REFERENCES

A. Codes and Standards:

1. NFPA-70 National Electric Code (NEC®)
2. ANSI C84.1 Electric Power Systems and Equipment - Voltage Ratings (60Hz)
3. CSA® C22.2 No.14-95 Industrial Control Equipment
4. UL508A Standard for Safety for Industrial Control Panels
5. UL508C Standard for Safety for Power Conversion Equipment
6. NFPA 79 Electrical Equipment of Industrial Machines/Industrial Machinery
7. NEMA ICS7 Industrial Control and Systems: Adjustable Speed Drives
8. NEMA ICS7.1 Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems
9. NEMA 250 Enclosures for Electrical Equipment (1000V maximum)
10. IEC 61800-2 Adjustable speed electrical power drive systems - Part 2: General requirements - rating specifications for low voltage adjustable frequency AC power drive systems
11. IEC 61800-3 Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test methods
12. IEC 61800-5-1 Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
13. IEC 61800-6 Adjustable speed electrical power drive systems - Part 6: Guide for determination of types of load duty and corresponding current ratings.
14. EGSA 101P Engine Driven Generator Sets - Performance Standard
15. IEEE 519 Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

1.05 SUBMITTALS

A. Contractor shall reference and provide all documentation for all Division 16 Sections as required per Specification Sections:

1. Division 01 General Requirements

B. Shop drawings shall be furnished for Engineer review prior to factory assembly of the AC DRIVES. These drawings shall consist of elementary power and control wiring diagrams and enclosure outline drawings. The enclosure drawings shall include front and side views of the enclosures with overall dimensions and weights shown, conduit entrance locations and nameplate legend details.

C. Standard catalog sheets showing voltage, horsepower, maximum current ratings and recommended replacement parts with part numbers shall be furnished for each different horsepower rated AC DRIVES provided.

D. Qualifications

1. Manufacturer of the AC DRIVES shall be a certified ISO 9001 facility.
2. AC DRIVES and all associated optional equipment shall be UL LISTED according to UL508C Power Conversion Equipment. A UL label shall be attached inside each enclosure as verification.
3. AC DRIVES shall be designed constructed and tested in accordance with NEMA, NEC, VDE, IEC standards.
4. All AC DRIVES shall be tested with an actual AC induction motor, 100% load and temperature cycled within an environmental chamber at 104F. Documentation shall be furnished to verify successful completion at the request of the Engineer.
5. AC DRIVES door mounted pilot devices shall be tested to verify successful operation. Documentation shall be furnished upon written request of the Engineer.
6. AC DRIVES shall undergo QA test procedures and be submitted to a hi-pot test with all enclosed devices mounted and wired, prior to shipment.

1.06 DELIVERY, STORAGE AND HANDLING

A. AC DRIVES and all components shipped loose shall be handled and stored in accordance with manufacturer's instructions and recommendations as outlined in applicable Installation and Maintenance Manuals. Three (3) copies of these instructions shall be included with the equipment at time of shipment.

B. Inspect and report concealed damage to carrier within their required time period. Owner is not responsible for damages incurred during shipping, handling and storage.

C. Store in a clean, dry space. Maintain factory protection and/or provide an additional heavy canvas or heavy plastic cover to protect structure from dirt, water, construction debris, and traffic. Where applicable, provide adequate heating within enclosures to prevent condensation.

1.07 OPERATION AND MAINTENANCE MANUALS

A. AC DRIVES operation and maintenance manuals shall be provided with each assembly shipped, and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

1.08 WARRANTY

A. Manufacturer shall warrant AC DRIVES to be free from defects in materials and workmanship for the lesser of one (1) year from date of installation or eighteen (18) months from date of purchase.

1.09 IDENTIFICATION

A. AC DRIVES shall be identified with the equipment tag number indicated on the Contract Documents and the accepted shop drawings. Nameplates shall be furnished and installed as required Specification Section(s):

1. 16075 – Electrical Identification

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. AC DRIVES shall be designed, constructed and installed in accordance with the best practices of the trade, and shall operate satisfactorily when installed as shown in the Contract Documents.

B. Subject to compliance with the Contract Documents all AC DRIVES shall be of the same manufacturer and provided by:

1. Yaskawa Manufacturing USA Inc.
2. No equal

C. Alternate control techniques other than Pulse Width Modulated (PWM) are not acceptable.

2.02 FEATURES

A. Certifications

1. Listed to UL508C and CAN/CSA-C22.2 No. 14-05
2. In conformity with EMC Directive (2004/108/EC) and Low Voltage Directive (2006/95/EC). Standards applied; EN 61800-3:2004, EN 61800-5-1:2007
3. Electric Power Research Institute. Certified compliant with standards SEMI F47 and IEC 61000-4-34

B. Hardware

1. Utilize latest SCR or IGBT technology on the input rectifier.
2. Utilize switching logic power supply operating from the DC bus.
3. Incorporate phase-to-phase and phase-to-ground MOV protection on the AC input line.
4. Microprocessor based inverter logic shall be isolated from power circuits.
5. Utilize latest generation IGBT technology on the inverter section.
6. Battery receptacle for Lithium battery power to the Real Time Clock.
7. Additional DPI port for handheld and remote Human Interface Module (HIM) options.
8. Dedicated Digital Input for hardware enable.

9. Conformal coated printed circuit boards.
10. Optional onboard 24VDC Auxiliary Control Power Supply.

C. Standard Control Functions

1. Ability to operate with motor disconnected “No Load Test”.
2. Provide a controlled shut down, when properly protected, with no component failure in the event of an output phase to phase or phase to ground short circuit. Provide annunciation of the fault condition.
3. Provide multiple programmable stop modes including Ramp, Coast, DC-Brake, Ramp-to-Hold, Fast Braking, and Current Limit Stop.
4. Provide multiple acceleration and deceleration rates.
5. Adjustable output frequency up to 65Hz.

D. EtherNet/IP Control

1. Ability to provide ON-OFF control of the AC DRIVE.
2. Ability to control outputs and manage status information locally within the AC DRIVES.
3. Ability to function stand-alone or complimentary to supervisory control.
4. Ability to speed reaction time by processing in the AC DRIVES.
5. Ability to provide scaling, selector switches, or other data manipulations not already built into the AC DRIVES.
6. Ability to read inputs/write outputs and exclusively control the AC DRIVES.
7. Ability to provide an option for decision making if communication is lost with main controller.
8. Ability to control other AC DRIVES via a peer-to-peer EtherNet/IP network.
9. Ability to write programs off-line.

E. Motor Control

1. Selectable Sensorless Vector, Flux Vector, V/Hz, and Adjustable Voltage Control modes selectable through programming.
2. AC DRIVES shall be supplied with a Start-Up and Auto-Tune mode.
3. The V/Hz mode shall be programmable for fan curve or full custom patterns.
4. Capable of Open Loop V/Hz.

F. Current Limit

1. Programmable current limit from 20-160% of rated output current.
2. Current limit shall be active for all drive states: accelerating, constant speed and decelerating.
3. AC DRIVES shall employ PI regulation with an adjustable gain for smooth transition in and out of current limit.

G. Acceleration / Deceleration

1. Accel/Decel settings shall provide separate adjustments to allow either setting to be adjusted from 0-3600SEC.
2. A second set of remotely selectable accel/decel settings shall be accessible through digital inputs.

H. Speed Profiles

1. Programming capability shall allow the user to produce speed profiles with linear acceleration/deceleration or "S-Curve" profiles that provide changing accel/decel rates.
2. S-Curve profiles shall be adjustable.

I. PID Control

1. AC DRIVES shall incorporate an internal process PI regulator with proportional and integral gain adjustments as well as error inversion and output clamping functions.
2. The feedback shall be configurable for normal or square root functions. If the feedback indicates that the process is moving away from the set-point, the regulator shall adjust the drive output until the feedback equals the reference.
3. Process control shall be capable of being enabled or disabled with a hardwire input. Transitioning in and out of process control shall be capable of being tuned for faster response by preloading the integrator.
4. Protection shall be provided for a loss of feedback or reference signal.

J. Skip Frequencies

1. Three adjustable set points that lock out continuous operation at frequencies which may produce mechanical resonance shall be provided.
2. The set points shall have a bandwidth adjustable from Maximum Reverse Speed to Maximum Forward Speed.

K. Fault Reset / Run

1. AC DRIVES provide up to nine (9) automatic fault reset and restarts following a fault condition before locking out and requiring manual restart.
2. The automatic mode shall not be applicable to a ground fault, shorted output faults and other internal microprocessor faults.
3. The time between restarts shall be adjustable from 0.5-30SEC.

L. Run on Power Up

1. A user programmable restart function shall be provided to allow restart of the equipment after restoration of power after long duration power outages. Restart time dependent on presence of incoming signal.

M. Fault Memory

1. The last thirty-two (32) fault codes shall be stored and time stamped in a fault buffer.
2. Information about the AC DRIVES condition at the time of the last fault such as operating frequency, output current, dc bus voltage and twenty-seven (27) other status conditions shall be stored.
3. A power-up marker shall be provided at each power-up time to aid in analyzing fault data.
4. The last thirty-two (32) alarm codes shall be stored and time stamped for additional troubleshooting reference.

N. Overload Protection

1. AC DRIVES shall provide internal overload protection.
2. Overload protection shall be speed sensitive and adjustable.
3. A viewable parameter shall store the overload usage.

O. Flying Start

1. AC DRIVES shall be capable of determining the speed and direction of a spinning motor and adjust its output to "pick-up" the motor at the rotating speed. This feature is disabled by default.

P. Input and Output

1. Input / Output modules shall consist of both analog and digital I/O.

    a. No jumpers or switches shall be required to configure digital inputs and outputs.
    b. All digital input and output functions shall be fully programmable.
    c. The control terminal blocks shall be rated for 115VAC.
    d. Inputs shall be optically isolated from the drive control logic.
    e. The control interface card shall provide input terminals for access to fixed AC DRIVES functions that include start, stop, external fault, speed, and enable.
    f. AC DRIVES shall be capable of supporting up to eight (8) analog inputs, eight (8) analog outputs, sixteen (16) digital inputs, eight (8) relay outputs, eight (8) transistor outputs, and three (3) Positive Temperature Coefficient (PTC) inputs.

2. Analog Inputs:

    a. Minimum quantity of two (2) differentially isolated, ±10V (bi-polar) / 11 bit plus sign, 88kOHM input impedance, 4-20mA or 1-5V.
    b. Analog inputs shall be user programmable for a variety of uses including frequency command and process loop input. Analog inputs shall be user programmable for function scaling (including invert), offset, signal loss detect and square root.

3. Analog Outputs:

    a. Minimum quantity of two (2) ±10V (bi-polar) / 11 bit & sign, 2kOHM minimum load, 4-20mA, 11 bit plus sign, 400kOHM maximum load.
    b. The analog output shall be user programmable to be proportional to one of fourteen (14) process parameters including output frequency, output current, encoder feedback, output power.
    c. Programming shall be available to select either absolute or signed values of these parameters.

4. Digital Inputs:

    a. Minimum quantity of four (4) digital inputs rated 24VDC/115VAC.
    b. All inputs shall be individually programmable for multiple functions including: Start, Run, Stop, Auxiliary Fault, Speed Select, Jog and Process PI functions.

5. Digital Outputs:

    a. Minimum two (2) relay output (N.O. or N.C.).
    b. For 240VAC or 24VDC, N.O. contact output ratings shall be 2A max., general purpose (inductive)/resistive. N.C. contact output ratings shall be 2A max., resistive only.
    c. Relays shall be programmable to multiple conditions including: Fault, Alarm, At Speed, Drive Ready and PI Excess Error.
    d. Timers shall be available for each output to control the amount of time, after the occurring event, that the output relay actually changes state.
    e. Minimum one (1) transistor output.
    f. For 24VDC, transistor output rating shall be 1A max, Resistive.

6. Reference Signals:

    a. AC DRIVES shall be capable of using the following input reference signals:

        1) Analog inputs
        2) Preset speeds
        3) Remote potentiometer
        4) Digital MOP
        5) Human Interface Module
        6) Communication modules

    b. Loss of Reference

        1) AC DRIVES shall be capable of sensing reference loss conditions.

2) In the event of loss of the reference signal, the AC DRIVE shall be user programmable to the following:
3) Fault AC DRIVES and coast to stop.
4) Issue a minor fault - allows the AC DRIVES to continue running while some types of faults are present.
5) Alarm and maintain last reference.
6) When using a communications network to control the AC DRIVES, the communications adapter shall have these configurable responses to network disruptions and controller idle (fault or program) conditions:

a) Fault
b) Stop
c) Zero Data
d) Hold Last State
e) Send Fault Configuration

Q. Metering

1. At a minimum, the following parameters shall be accessible through the Human Interface Module (HIM):

a. Output Current in Amps
b. Output Voltage in Volts
c. Output Power in kW
d. Elapsed MWh
e. DC Bus Voltage
f. Frequency
g. Heatsink Temperature
h. Last eight (32) faults
i. Elapsed Run Time
j. IGBT Temperature

R. Faults

1. At a minimum, the following faults shall be accessible through the HIM:

a. Power Loss
b. Undervoltage
c. Overvoltage
d. Motor Overload
e. Heat Sink Over-Temperature
f. Maximum Retries
g. Phase to Phase and Phase to Ground Faults

S. Predictive Diagnostics

1. At a minimum, the following predictive diagnostic features shall be provided:

    a. Relay Output Life Cycles based on load type and amps.
    b. Hours of Fan Life based on load and ambient temperature.
    c. Motor Bearing life based on expected hours of use.
    d. Motor Lubrication schedule based on hours of use.
    e. Machine Bearing life based on expected hours of use.

T. Real-Time Clock

1. Shall be capable of providing time stamped events.
2. Shall have the ability to be set locally or via a remote controller.
3. Shall provide the ability to be programmable for date, MM:DD:YYYY and local time zones HH:MM:SS.

U. Terminal Blocks

1. Separate screw-cage terminal blocks shall be provided for control and power wiring.
2. I/O screw-cage terminal blocks shall be removable with wiring in place.

V. Adjustments

1. A digital interface can be used for all set-up, operation and adjustment settings.
2. All adjustments shall be stored in nonvolatile memory (EEPROM).
3. No potentiometer adjustments shall be required.
4. EEPROM memory for factory default values shall be provided.
5. Software must be available for trending and diagnostics, as well as online and offline programming functionality.

2.03 AC DRIVES SYSTEM

A. Voltage

1. Capable of accepting the nominal existing electrical power system of 480VAC 3PH @ 60Hz.
2. The supply input voltage tolerance shall be ± 10% of nominal line voltage.

B. Displacement Power Factor

1. AC DRIVES shall be capable of maintaining a minimum true Power Factor (Displacement P.F. X Distortion P.F.) of 0.97 lagging or better at rated load and nominal line voltage, over the entire speed range.
2. AC DRIVES shall operate with the existing electrical power system to include the facility back-up generator. AC DRIVE shall not produce a leading power factor during any point in operation.

C. Efficiency

1. A minimum of 96.5% (+/- 1%) at 100% speed and 100% motor load at nominal line voltage.
2. Control power supplies, control circuits, and cooling fans shall be included in all loss calculations.
3. Operating ambient temperature range without derating: 0°C-40°C (32°F-104°F)
4. Operating relative humidity range shall be 5-95% non-condensing.
5. Operating elevation shall be up to 1000M (3,300FT) without derating.

D. Sizing

1. AC DRIVES shall be rated based on continuous output amps, and matched to meet or exceed the nameplate-rated Motor Full Load Amps (FLA) of those motors as shown in the Contract Documents.
2. Overload current rating of each AC DRIVES System shall be rated appropriately for the application.

E. Auto Reset/Run

1. For faults other than those caused by a loss of power or any other non-critical fault, AC DRIVES shall provide a means to automatically clear the fault and resume operation.

F. Ride-Through

1. AC DRIVES System shall attempt to ride through power dips up to 20% of nominal. The duration of ride-through shall be inversely proportional to load. For outages greater than 20%, AC DRIVES shall stop the motor and issue a power loss alarm signal to a process controller, which may be forwarded to an external alarm signaling device.

G. Run on Power Up

1. AC DRIVES shall provide circuitry to allow for remote restart of equipment after a power outage. Unless indicated in the Contact Documents, faults due to power outages shall be remotely resettable. AC DRIVES shall indicate a loss of power to a process controller, which may be forwarded to an external alarm signaling device. Upon indication of power restoration, the process controller will attempt to clear any faults and issue a run command, if desired.

H. Network Communications

1. AC DRIVES shall provide at a minimum one (1) Modbus and one (1) Ethernet Modbus TCP communications ports. In addition, the following communications options shall be provided as necessary for communications. Reference network communication requirements as specified elsewhere in the Project Specification Sections.

a. Ethernet IP and/or Modbus TCP, RJ45 dual port for daisy chain

2. Ethernet ports shall be IPv6 compliant, allow for web server access and provide network management via SNMP and clock synchronization.
3. AC DRIVES shall provide an embedded web server for enhanced diagnostic, configuration, parameter access, and energy management. There shall be the capability to create a user-defined custom dashboard for viewing drive and process status through tables, charts, and graphical views. It shall be possible to export data in standard table format using the webserver, for information around energy consumption as well as error and warning history.
4. AC DRIVES communications modules shall be capable of being remotely powered by a separate external 24VDC to allow for continued communications when AC DRIVES power supply is off.
5. AC DRIVES shall provide integration connectivity via

    a. DHCP protocol for Fast Device Replacement
    b. DTM library in compliance with standard FDT technology

6. Diagnostics and Configuration

    a. AC DRIVES shall allow Windows based PC software for configuring and diagnosing the AC DRIVES. It shall be possible to set and modify parameters, control the AC DRIVES, read actual values and make trend analysis using the software. The PC-tools may be connected to the AC DRIVES by wired or wireless connection.
    b. AC DRIVES shall display all faults in plain text and help screens shall be available to guide the user in the troubleshooting. Codes are not acceptable.
    c. AC DRIVES shall provide a Real Time Clock management for time stamping of detected errors.
    d. AC DRIVES shall display detected errors with QR codes to guide the user in the troubleshooting.
    e. AC DRIVES must have the ability to dynamically display I/O status.

7. Isolation / Bypass Starters / Controllers

    a. Where required in the Project Specifications and/or as shown in the Contract Documents, provide and install a Full Voltage Non-Reversing Starter (FVNR) or Reduced-Voltage Solid-State (RVSS) motor controller sized as required to start and control the motor load instead of the AC DRIVE.
    b. FVNR or RVSS shall be UL listed and shall include, but shall not be limited to, a contactor capable of carrying the motor inrush and motor full load current.

c. An overload provision independent of the AC DRIVE shall be provided to protect the motor in the BYPASS mode.
d. FVNR or RVSS motor starter/controller components shall be integrated inside the AC DRIVE with steel barriered construction, segregating the BYPASS motor controller from the AC DRIVE and shall be fully tested by the manufacturer.

I. Human Interface Module (HIM)

1. AC DRIVES shall provide a HIM with integral LCD display, operating keys and programming keys.
2. An enclosure door-mounted HIM, rated NEMA/UL Type 4/12, shall be provided.
3. The HIM shall have the following features:

a. An eight (8) line by (240 x 160) pixel backlit LCD display with graphics capability.
b. Shall indicate AC DRIVES operating conditions, adjustments and fault indications.
c. Shall be configured to display in the following three (3) distinct zones:

1) The top zone shall display the status of direction, AC DRIVES condition, fault / alarm conditions and Auto/Manual mode.
2) The middle zone shall display AC DRIVES output frequency.
3) The bottom zone shall be configurable as a display for either programming menus / information or as a two (2) line user display for two additional values utilizing scaled units.

d. Shall provide digital speed control.
e. The keypad shall include programming keys, AC DRIVES operating keys (Start, Stop, Direction, Jog and Speed Control), and numeric keys for direct entry.

J. AC DRIVES Enclosure Input Disconnect

1. Provide an enclosure door interlocked disconnect with power-rated fuses.
2. AC DRIVES shall match the Available Interrupting Current (AIC) and Short Circuit Current Rating (SCCR) of the existing equipment as referenced in the Contract Documents.
3. Operator Handles

a. Provide externally operated main disconnect handle.
b. Handles shall be lockable with up to three (3) lockout/tagout padlock positions.

K. Control Power Transformer

1. Provide a control power transformer mounted and wired inside of the AC DRIVES enclosure.
2. The control power transformer shall be rated for the all AC DRIVES power requirements and control circuitry to include ancillary devices.

L. Harmonics

1. Mitigation

a. AC DRIVES shall be compliant with IEEE519-1992 standards at the input AC DRIVES terminals based upon the input power phase imbalance within 0.5% of nominal line voltage and under full AC DRIVES output current ratings.

2. Equipment

a. AC DRIVES shall include 3% effective impedance. If integral to the AC DRIVE, a DC choke shall be used.
b. Passive Harmonic Filter with Capacitor Cutout Contactor:

1) AC DRIVES shall utilize a Passive Harmonic Filter that is designed to limit harmonic distortion (current and voltage) to levels that allow the overall system to meet IEEE519-1992. The Passive Harmonic Filter shall include a capacitor cut-out contactor to disconnect the capacitor assembly under no-load, low-load and/or generator power conditions.

c. Load Filters:

1) AC DRIVES shall include, but not be limited to, a motor protection filter unit designed to limit peak voltages and reduce electrical stress on the motor insulation. This option shall be required for motor lead lengths longer than 200FT.

M. Auxiliary Relays

1. Provide relays for Drive Alarm, Drive Fault, Drive Run, and System Status Faults (as required).
2. The relays shall be (2 N.O. & 2 N.C.). The relay contacts shall be rated for 115VAC/30VDC, 5A resistive, 2.5A inductive.

N. Control Interface

1. The control terminals shall be rated for 115VAC.

2. The control interface shall provide input terminals for access to AC DRIVES functions that include start, stop, external fault, speed-select, and enable, as required.

O. Motor Space Heater Control and auxiliary motor control loads

1. AC DRIVES shall provide the control circuitry to energize motor space heaters whenever the motor is not running via internal power.
2. The motor space heater control shall be interlocked with the AC DRIVES and shall be energized whenever the motor is not running
3. An LED pilot light with shall be mounted on the AC DRIVES enclosure door for indication of Motor Heater On.

    a. Reference Section 2.3 P

P. Switch Operators and Pilot Lights

1. E-Stop / Disable Mushroom Push Button

    a. Provide and install a maintained mushroom style push button, mounted on the enclosure door that when pushed, will disable the AC DRIVE and immediately stop operation.

2. Hand/Off/Auto Mode Selector Switch

    a. Provide a HAND-OFF-AUTO selector switch, mounted on the enclosure door.
    b. HAND-OFF-AUTO selector switch shall start the AC DRIVES in the HAND mode and stop the AC DRIVES in the OFF mode.
    c. In the AUTO mode the AC DRIVES shall be started and stopped from a remote RUN contact.
    d. In all modes, Auxiliary and Enable inputs to the AC DRIVES control interface board must be present before the AC DRIVES will start.
    e. When a HIM is present, the stop function shall always be available to stop the AC DRIVES regardless of the selected mode (HAND or AUTO). The HIM will be non-functional (except for the display and programming) when the switch is in OFF mode. The HIM shall stop the AC DRIVES if the switch is in the AUTO mode with the remote start contact initiated.
    f. AC DRIVES speed reference shall be controlled from the HIM, unless a separate door-mounted potentiometer is provided, when in HAND mode (factory default setting).
    g. AC DRIVES speed reference shall be controlled by a remote 4-20mA input when in AUTO mode.

3. VFD/Off/Bypass Selector Switch

    a. Where required in the Project Specifications and/or shown in the Contract Documents, provide and install an VFD-OFF-BYPASS selector switch, mounted on the enclosure door.
    b. In the VFD mode, the AC DRIVE shall operate the VFD controller and stop the AC DRIVE in the OFF mode.
    c. In BYPASS mode, the AC DRIVE shall operate the Full-Voltage Non-Reserving Starter or the Reduced Voltage Solid-State Starter (as required) motor controller in the BYPASS mode and stop the AC DRIVE in the OFF mode.
    d. The operator shall have full control of the bypass starter by operation of the door-mounted selector switch.
    e. When the AC DRIVES are supplied with a HAND-OFF-AUTO selector switch, the auto mode shall also control the RUN / STOP of the bypass operation.

4. Pilot Lights

    a. Provide LED pilot lights, mounted on the enclosure door, for indication of the following status:
    a. Power ON / Controller READY pilot light, LED, BLUE
    b. RUNNING pilot light, LED, GREEN, push-to-test
    c. STOPPED pilot light, LED, RED, push-to-test.
    d. HAND / AUTO pilot lights, LED, AMBER, push-to-test
    e. FAULT(S) pilot light, LED, AMBER, push-to-test
    f. Additional pilot lights shall be installed as required in accordance with the Contract Documents.

5. All operators and pilot lights shall be (30mm), NEMA Type 4/13, mounted on the enclosure door.

Q. Motor Run Time Meter

1. Provide a digital, non-resettable, door-mounted elapsed time meter.
2. The meter shall be electrically interlocked with the Drive Run relay to indicate actual motor operating hours.

R. Motor Thermal Protection

1. Motors equal to and greater than 250hp nameplate and/or as shown on the Contract Documents

    a. Provide a door-mounted RTD module/interface and panel-mounted scanner for over-temperature and under-temperature protection.
    b. RTD module shall monitor at least eight (8) motor mounted RTDs minimum and shall have at least three (3) output relays for alarm, trip and fault.

c. Customer contacts shall be rated 5A 250VAC resistive.

PART 3 EXECUTION

3.01 FACTORY ACCEPTANCE TESTING

A. AC DRIVES shall go through a non-witnessed, Factory Acceptance Test (FAT) prior to shipment. FAT shall include, but not limited to, the following:

1. Physical Inspection of the following:

   a. Structure
   b. Electrical conductors, including, but not limited to, the following:

      1) Power and Control wiring

2. Electrical Tests:

   a. General electrical tests shall include, but shall not be limited to, the following:

      1) Power circuit phasing
      2) Control circuit wiring
      3) Device electrical operation
      4) No-load motor testing
      5) Forced faults
   b. AC dielectric tests shall be performed on the power circuits.

3. Markings/labels include, but shall not be limited to, the following:

   a. Instructional type
   b. UL/CSA
   c. Inspector's stamps

4. Each device shall be configured and addressed to correspond with software setting.
5. A read/write test shall be performed prior to shipment on network devices.
6. Testing shall be designed to verify system operation and shall include, but shall not be limited to, these verifications as a minimum:

   a. Drawings and bill of materials
   b. I/O addressing, hard-wired and digital
   c. Correct device operation by I/O address
   d. Host communications
   e. Control network interface

B. Manufacturer shall use integral quality control checks throughout the manufacturing process to ensure that AC DRIVES meet operating Specifications.

C. A certified test report of all standard FAT procedures, tests, results and corrective actions shall be shipped with AC DRIVES.

D. Manufacturer shall notify Engineer two (2) weeks prior to the date the tests are to be performed

3.02 EXAMINATION

A. Examine concrete flooring and/or concrete equipment pad(s) to receive AC DRIVES for compliance with installation tolerances and other conditions affecting performance of the product as required by the manufacturers installation instructions and recommendations to include Engineer installation details. Do not proceed with installation until unsatisfactory conditions have been met or corrective action has been taken.

3.03 INSTALLATION

A. Contractor shall install AC DRIVES per the manufacturer's recommendations and the Contract Documents.

B. All necessary hardware to secure the assembly in place shall be provided by the Contractor.

C. AC DRIVES shall be installed and checked in accordance with the manufacturer's recommendations. This shall include but not limited to:

1. Checking to ensure that concrete flooring and/or concrete equipment pad(s) are level to within 0.125IN per 3FT feet of distance in any direction; reference Section 2.3B
2. Checking to ensure that all bus bars are torqued to the manufacturer's recommendations
3. Assembling all shipping sections, removing all shipping braces and connecting all shipping split mechanical and electrical connections
4. Securing AC DRIVES to concrete flooring and/or concrete equipment pad(s).
5. Inspecting and installing all circuit breakers in their proper compartments.

3.04 FIELD QUALITY CONTROL

A. Clean, inspect, test, and energize AC DRIVES in accordance with applicable NECA / NEiS standards and recommendations.

B. Field testing shall be done in accordance with the requirements specified in Specification Sections:

1. Division 2 – Site Works
2. 16080 – Electrical Testing
3. Coordinate inspections and tests as required

C. After completing installation, cleaning, and testing, touch up scratches and mars on finish to match original finish.

D. Provide the services of a qualified factory-trained manufacturer's representative to provide start-up of the equipment specified under this Section for a period of one (1) working days.

E. Contractor shall provide three (3) copies of the manufacturer's field startup report.

3.05 TRAINING

A. Contractor shall provide a training session for up to five (5) Owner's representatives for one (1) normal workday at a job site location determined by the Owner.

B. Training sessions shall be conducted by a manufacturer's qualified representative. The training program shall consist of the instruction on the operation of the assembly, circuit breakers, and major components within the assembly.

END OF SECTION

SECTION 16271 DRY-TYPE LOW-VOLTAGE DISTRIBUTION TRANSFORMERS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified, and required to furnish and install dry type low-voltage distribution transformers.

B. Related Sections:

1. Section 16050, Electrical – General Provisions
2. Section 16075, Identification for Electrical Systems.
3. Section 16160, Panelboards.
3. Section 16450, Grounding and Bonding for Electrical Systems.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. NEMA ST-20, Dry Type Transformers for General Applications.
2. NEMA TP-1, Guide for Determining Energy Efficiency for Distribution Transformers.
3. NEMA TP-2, Standard Test Method for Measuring the Energy Consumption for Distribution Transformers.
4. UL 1561, Dry Type General Purpose and Power Transformers.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. NEC Article 450, Transformers and Transformer Vault (Including Secondary Ties).

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Schedule of transformers to be furnished with ratings and other required technical data.

b. Proposed location for each transformer, including pad layout, dimensions, and appurtenances.

2. Product Data:

a. Supplier's technical information for transformers proposed for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Dry Type Two-Winding Transformer:

1. Type: Dry type, air cooled, low temperature rise. Transformers 15 kVA and larger shall be energy efficient, complying with NEMA TP-1 Class 1 efficiency levels. Transformers less than 15 kVA shall be general purpose.
2. Rating: KVA, primary voltage and connection, secondary voltage and connection, frequency and number of phases shall be as shown on the Drawings.
3. Insulation: Insulation and average winding temperature rise (in a 40 degree C maximum ambient) for rated kVA per the following table. Energy efficient transformers shall be capable of 15 percent continuous overload at 150 degrees C temperature rise.

kVA Rating	Insulation Class (degrees C)	Temperature Rise (degrees C)
1 to 15 kVA	150	80
25 to 500 kVA	180	115

4. Winding Taps, Transformers 15 kVA and Less: Two 5-percent below rated voltage, full capacity taps on primary winding.
5. Winding Taps, Transformers 25 kVA and Larger: Two 2-1/2-percent above rated voltage and four 2-1/2+ percent below rated voltage, full capacity taps on primary.
6. Basic impulse level shall be 10 kV.
7. Sound Level: NEMA ST-20 standard.
8. Enclosure: UL listed for the application.
9. Identification: Identify transformers in accordance with Section 16075, Identification for Electrical Systems, with the transformer number and voltages, connection data, kVA ratings, impedance, and overload capacity.
10. Transformers shall comply with NEMA ST-20, NEMA TP-1, NEMA TP-2, and UL 1561.
11. Transformers shall bear the label of the Underwriters' Laboratories, Inc.

B. Non-Linear Load, K Factor Rated Transformer:

1. K Factor rated transformers shall meet the requirements specified in this Section for dry-type two-winding transformers and, in addition, the following:

a. Type: 100 percent non-linear rated, specifically designed to handle non-linear loads with double size neutral. Transformer shall include an electrostatic shield grounded to the transformer core.
b. UL K Factor: K = 13.
c. Impedance: Three percent minimum, five percent maximum.

C. Dry Type Buck and Boost Transformer:

1. Buck and boost transformers shall meet the requirements specified in this Section for dry-type two-winding transformers, except as specified below:

a. Insulation and average winding temperature rise for rated kVA as follows:

kVA Rating	Insulation Class (degree C)	Temperature Rise (degree C)
0.25 to 2 kVA	150	80
3 to 7.5 kVA	180	115

D. Dry Type Shielded Isolation Transformer:

1. Shielded isolation transformers shall meet the requirements specified in this Section for dry-type two-winding transformers, except as specified below:

a. Transformers shall be provided with quality, full width electrostatic shields in a maximum effective coupling capacitance between primary and secondary of 33 picofarads. With transformers connected under normal, loaded operating conditions, the attenuation of line noise and transients shall equal or exceed the limits listed in the table in Paragraph 2.1.D.1.b of this Section:.
b. Common mode noise attenuation:

Frequency	Attenuation
0 to 1.5k Hz	120 db
1.5 k Hz to 10k Hz	90 db
10 k Hz to 100k Hz	65 db
100 k Hz to 1M Hz	40 db

c. Transverse mode noise attenuation:

Frequency	Attenuation
1.5 to 10k Hz	52 kb
10 to 100k Hz	30 db
100k to 1M Hz	30 db

d. Provide electrostatic shield between the primary and secondary winding and grounded to the transformer core.
e. Isolate core and coil from enclosure using vibration absorbing mounts.

E. Manufacturers: Provide products of one of the following:

1. Square D Company.
2. Or approved equal.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine the conditions under which the dry type transformers are to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install transformers on walls or floors at locations shown. Install floor mounted transformers on raised concrete bases. Provide sufficient access and working space for convenient and safe operation and maintenance.

B. Mount transformers so that vibrations are not transmitted to the building structural parts and other equipment. Make connections to transformers with flexible conduit.

C. Adjust tap settings to provide proper voltage at panelboards.

D. Install dry type transformers in conformance with governing codes and manufacturer's instructions and recommendations, and the Contract Documents.

END OF SECTION

SECTION 16289 SURGE PROTECTIVE DEVICES

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install surge protective devices (SPD).
2. SPDs furnished under this Section shall be ANSI/UL 1449 Type 2 integrating both surge suppression and high-frequency noise filtering suitable for use on low-voltage distribution systems.

B. Related Sections:

1. Section 16050, Electrical – General Provisions.
2. Section 16430, Switchboards.
3. Section 16423, Motor Control Centers.
4. Section 16160, Panelboards.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. ANSI/UL 1449, Surge Protective Devices.
2. IEEE C62.11, Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV)
3. IEEE C62.41, Recommended Practice on Surge Voltages in Low-voltage AC Power Circuits.
4. IEEE C62.45, Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1,000 V and Less) AC Power Circuits.
5. UL 1283, Electromagnetic Interference Filters.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Shall have at least five years of experience manufacturing and servicing products substantially similar to those required and shall be able to submit documentation of at least five installations in satisfactory operation for at least five years each.

B. Component Supply and Compatibility:

1. Obtain all products included in this Section regardless of component manufacturer from a single SPD manufacturer.
2. SPD manufacturer shall review and approve or prepare all Shop Drawings and other submittals for all components furnished under this Section.
3. Components shall be suitable for the specified service conditions and shall be integrated into overall assembly by SPD manufacturer.

C. Regulatory Requirements: Comply with the following:

1. NEC 110.9, Requirements for Electrical Installations, Interrupting Rating.
2. NEC 240.21, Overcurrent Protection, Location in Circuit.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Electrical and mechanical drawings for each type of unit, showing electrical ratings, dimensions, mounting provisions, connection details, and layout diagrams.
b. Components list and nameplate schedule.
c. Summary sheets with schedules of equipment.

2. Product Data:

a. Manufacturer’s technical information, including catalog information.
b. Manufacturer's technical specifications with assembly and component ratings.

E. Informational Submittals: Submit the following:

1. Certifications:

a. Certification that SPD devices comply with standards referenced in this Section.

2. Source Quality Control Submittals:

a. Report of results of testing and inspections performed at manufacturer’s shop.

3. Supplier Reports:

a. Submit written report of results of each visit to Site by Supplier’s service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.

4. Qualifications Statements:

a. Manufacture, when requested by ENGINEER.

F. Closeout Submittals: Submit the Following

1. Operations and Maintenance Data:

a. Submit in accordance with Section 01730, Operating and Maintenance Data.
b. Include acceptable test reports, maintenance data and schedules, description of operation, wiring diagrams, and list of spare parts recommended for one year of operation with current price list.

2. Warranty Documentation: Submit example warranty at time of shipment of the equipment. Include final warranty accepted by ENGINEER in the operations and maintenance manual for the equipment.

1.05 STORAGE, AND HANDLING.

A. Delivery:

1. Upon delivery, check for evidence of water that may have entered equipment during transit.

B. Storage:

1. Store SPD equipment in a clean, dry location with controls for uniform temperature and humidity. Protect equipment with coverings and maintain environmental controls.
2. Protect equipment from corrosion and deterioration.

1.06 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive Owner of other rights or remedies Owner may otherwise have under the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under the Contract Documents. The obligations of Contractor under the Contract Documents shall not be limited in any way by the provisions of the specified special warranty.

B. Special Warranty on Materials and Equipment:

1. Provide manufacturer's written warranty, running to the benefit of Owner, agreeing to correct, or at option of Owner, remove or replace materials or equipment specified in this Section found to be defective during a period of five years after the date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Provide equipment of one of the following:

1. Schneider Electric/Square-D Company.
2. Eaton/Cutler-Hammer.

3. General Electric.
4. Or approved equal.

2.02 EQUIPMENT

A. General:

1. SPD shall be modular, high-energy, parallel design with fast-acting transient voltage suppression using metal oxide varistors. Equipment shall provide noise attenuation with electromagnetic interference filter.

2. SPD shall comply with requirements of the following:

   a. ANSI/UL 1449.
   b. UL 1283.
   c. IEEE C62.11, IEEE C62.41 and IEEE C62.45.

3. SPD shall be suitable for operation under the following environmental conditions:

   a. Relative Humidity: Zero to 95 percent, non-condensing.
   b. Frequency: 47 to 63 Hertz.
   c. Temperature: Zero to 149 degrees F.

4. SPD operating voltage and IEEE C62.41 and IEEE C62.45 Category A, B, and C application environments shall be suitable for the associated SPD location(s) shown or indicated on the Drawings.

5. SPD shall be suitable for internal and external mounting. Where shown on the Drawings, SPD shall be factory-mounted and integrated into distribution equipment specified under the following Sections:

   a. Section 16050, General Provisions for Electrical Systems.
   b. Section 16423, Motor Control Centers.
   c. Section 16160, Panelboards.

B. SPD shall include a surge suppression path for each mode as required for the system configuration shown on the Drawings. Each mode shall be individually fused and equipped with thermal cutouts. SPD short-circuit rating shall be 200 kA. Protection modes shall include, to the extent applicable, the following:

1. Line-to-line.
2. Line-to-neutral.
3. Line-to-ground.
4. Neutral-to-ground.

C. SPD shall include electromagnetic interference/radio frequency interference (EMI/RFI) noise rejection filter with attenuation up to 30 dB from 10 kHz to 100 MHz.

D. SPDs and components in the operating path shall have maximum continuous operating voltage greater than 115 percent of nominal system operating voltage.

E. ANSI/UL 1449 minimum withstand rating shall be 20 kA per pole, and ANSI/UL 1449 voltage protection rating for SPD shall not exceed the following:

Modes	208Y/120	480Y/277
L-N,L-G, N-G	800	1200
L-L	1200	2000

F. SPD surge capacity based upon IEEE C62.41 location category shall, as a minimum, be the following:

Category	Application	Per Phase	Per Mode
C	Service entrance	240 kA	120 kA
B	High exposure locations (distribution equipment)	160 kA	80 kA
A	Branch locations	120 kA	60 kA

2.03 ACCESSORIES

A. Provide SPD equipped with the following accessories:

1. Surge counter with display for indicating the number of surges detected.
2. LED indicators for monitoring device status.
3. Audible alarm and silence switch for indicating an inoperative condition.
4. Dry contacts, “Form C”, for remote annunciation of unit status.
5. Indicators, counter, alarm, and silence switch shall be visible and accessible from front of the SPD. When SPD is integral to switchgear, motor control center, panelboard, or other equipment, indicators, counter, alarm, and silence switch shall be visible and accessible from front of the equipment in which the SPD is installed.

2.04 SOURCE QUALITY CONTROL

A. Perform manufacturer’s standard factory tests on equipment. Tests shall be in accordance with IEEE C62.45 and ANSI/UL 1449.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which materials and equipment will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install SPD at locations shown on the Drawings in accordance with equipment manufacturer’s recommendations, Laws, and Regulations, and the Contract Documents.

B. Conductor length between suppressor and connection point shall be as short and as straight as possible.

END OF SECTION

SECTION 16423 MOTOR CONTROL CENTERS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install motor control centers.
2. Wiring shall conform to Section 16120, Wires and Cables.
3. Provide intelligent motor control centers (iMCCs) where indicated on drawings. Where not indicated to be iMCCs, provide same communications-ready components (e.g., metering, iMPRs,) as iMCCs without interconnecting networking components such as network gateways, switches, cabling, and power supplies for those devices.
4. CONTRACTOR to provide Variable Frequency Drives (VFD) as described in next section.

B. The CONTRACTOR shall provide the coordination:

1. CONTRACTOR to provide coordination with MCC Supplier and Yaskawa Manufacturing to install YASKAWA AC Drives inside MCC. MCC supplier to ship readied MCC sections to Yaskawa USA manufacturing for VFD installation. Yaskawa will be responsible for installation of VFD's including all control power and wiring. Yaskawa will also be responsible for all communication wiring required in MCC. Warrantee of VFD separate from MCC.
2. To properly size circuit breakers, starters, and control power transformers, obtain motor nameplate data on equipment being furnished under this and other contracts as required.
2. To properly size control power transformers, obtain data on motor space heater and other accessories.
3. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before motor control center Work.

C. Related Sections:

1. Section 16075, Identification for Electrical Systems.
2. Section 16120, Wires and Cables
3. Section 16010 Electrical Power Studies
4. Section 16289, Surge Protective Devices
5. Section 16260, Variable Frequency Drives (VFD)

1.02 REFERENCES

A. Standards referenced in this Section are:

1. ANSI/IEEE C37.2, Electrical Power System Device Function Numbers and Contact Designations.
2. ANSI/NETA ATS, Acceptance Testing Specifications for Electrical Power Equipment and Systems.
3. NEMA ICS 18, Motor Control Centers.
4. NEMA ICS 1, Industrial Controls and Systems: General Requirements.
5. UL 845, Motor Control Centers.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Shall have not less than twenty years' experience in the United States of producing equipment substantially similar to that required and shall be able to submit documentation of not less than five installations in satisfactory operation for at least five years each.

2. Independent Field Testing Firm:

   a. Retain an independent testing firm to perform field acceptance testing of motor control centers.
   b. Testing firm and its assigned personnel shall be experienced in inspecting and testing motor control centers.
   c. Testing firm shall be a member company of NETA.

B. Component Supply and Compatibility:

1. Obtain materials and equipment included in this Section, regardless of component manufacturer, from one motor control center equipment manufacturer.
2. Motor control center equipment manufacturer shall review and approve, or shall prepare, all Shop Drawings and other submittals for components furnished under this Section.
3. Equipment shall be specifically constructed for specified service conditions. Equipment and components shall be integrated into overall motor control center equipment system by motor control center equipment manufacturer.

C. Regulatory Requirements: Comply with the following:

1. NEC Article 430, Motors, Motor Circuits, and Controllers.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

    a. Outline and summary sheets with schedules of equipment in each unit.
    b. One-line diagrams indicating circuit breaker sizes, bus rating, motor controller ratings, and other pertinent information to demonstrate compliance with the Contract Documents.
    c. Unit control schematic and elementary wiring diagrams showing numbered terminal points and interconnections to other units.

2. Product Data:

    a. Manufacturer specifications, cut sheets, dimensions, and technical data for all components, materials, and equipment proposed for use.

3. Testing Plans, Procedures, and Testing Limitations:

    a. Not less than 30 days prior to actual factory testing, submit proposed testing methods, procedures, and apparatus.
    b. Not less than 30 days prior to actual field testing, submit proposed testing methods, procedures, and apparatus.

E. Informational Submittals: Submit the following:

1. Supplier Instructions:

    a. Instructions for shipping, storing and protecting, and handling the materials and equipment.
    b. Installation data for the equipment, including setting drawings, templates, and directions and tolerances for installing anchorage devices.
    c. Instructions for start-up and troubleshooting.

2. Source Quality Control Submittals:

    a. Reports of completed factory testing, including procedures used and test results.

3. Site Quality Control Submittals:

    a. Reports of completed field testing, including procedures used and test results.

4. Supplier Reports:

    a. Submit written report of results of each visit to Site by Supplier's service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.

5. Qualifications Statements:

a. Independent testing firm.
b. Manufacturer, when requested by ENGINEER.

F. Closeout Submittals: Submit the following:

1. Operations and Maintenance Data:

a. Submit complete installation, operation and maintenance manuals including test reports, maintenance data and schedules, description of operation, and spare parts information.
b. Manuals shall include record drawings of control schematics, including point-to-point wiring diagrams.
c. Comply with Section 01730, Operating and Maintenance Data.

G. Maintenance Material Submittals: Furnish the following:

1. Spare Parts:

a. Furnish, tag, and box for shipment and long-term storage the following spare parts and special tools for each motor control center lineup furnished:

Item	Quantity per Switchgear Lineup Furnished
1) Starters and feeder breakers	Quantities and sizes as shown on drawings
2) Fuses	Six of each type and size used
3) Auxiliary control relays	Two, with at least two normally open and two normally closed contacts
4) Control power transformers	Two of each size used
5) Indicating lamps	Twelve
6) Covers for indicating lamps	Six of each color used
7) Starters: Contact kits for Size 1 motor starter	Two sets
8) Starters: Contact kits for Size 2, Size 3, and Size 4 motor starters	One set of each size

b. Furnish a list of additional recommended spare parts for an operating period of one year. Describe each part, the quantity recommended and current unit price.

1.05 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling, and Unloading:

1. Packing:

a. Inspect prior to packing to assure that assemblies and components are complete and undamaged.
b. Protect mating connections.
c. Indoor containers shall be bolted to skids. Breakers and accessories shall be packaged and shipped separately.
d. Cover all openings into enclosures with-vapor inhibiting, water-repellent material.

2. Upon delivery, check materials and equipment for evidence of water that may have entered equipment during transit.
3. Handling:

a. Lift, roll or jack motor control center equipment into locations shown.
b. Motor control centers shall be equipped to be handled by crane. Where cranes are not available equipment shall be suitable for placement on rollers using jacks to raise and lower the groups.

B. Storage and Protection:

1. Store motor control center equipment in a clean, dry location with controls for uniform temperature and humidity. Protect equipment with coverings and maintain environmental controls.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Provide equipment by one of the following:

1. Schneider Electric/Square D Company.
2. No equal.

2.02 MATERIALS

A. General: Motor control center lineups shall comply with NEMA ICS 18 and be provided as shown with the following ratings:

1. Service: Voltage rating and number of wires shall be as shown or indicated on the Drawings. Motor control center shall operate from a three-phase, 60 Hertz system.
2. Wiring: NEMA Class II, Type B.
3. Enclosure: NEMA 1 with gaskets on all doors.
4. Interrupting Capacity Rating: Motor control center shall have an interrupting capacity rating as shown or indicated on the Drawings. Devices shall be suitable for minimum rating indicated.
5. Motor control center lineups shall be UL-rated as suitable for service entrance where shown or indicated on the Drawings and as required.

B. Construction: Provide equipment with the following:

1. Totally-enclosed structure, dead front, consisting of nominal 20-inch deep, 20-inch wide, 7.5-feet high vertical sections bolted together to form a unit assembly.
2. Vertical sections shall have side sheets extending the full height and depth of section.
3. Removable lifting angles for each shipping section.
4. Two removable floor sills for mounting.
5. Horizontal wireways top and bottom, isolated from horizontal bus and readily accessible.

    a. Wireway openings between sections shall have rounded corners and rolled edges.

6. Isolated vertical wireways with cable supports, accessible through hinged doors, for each vertical section.

    a. Wireway shall be separate from each compartment and remain intact when compartment is removed.

7. All-metal non-conducting parts electrically continuous.
8. Comply with NEMA ICS 18.

C. Bus System:

1. Rating: Bus bracing and bus current capacities as shown or indicated on the Drawings.
2. Bus bars shall be tin-plated, copper-rated, and comply with UL heat rise standards.
3. Bus bar connections shall be easily accessible with simple tools.
4. Main Horizontal Bus:

    a. Continuous, edge-mounted, and isolated from wireways and working areas.
    b. Mount the bus in vertical center of motor control center to provide easy access and even heat distribution.
    c. Bus shall be supported, braced, and isolated by high-strength, non-tracking, FRP material.

5. Vertical Bus:

    a. Continuous, and isolated by glass polyester barrier.
    b. Rated for 300 amperes continuous minimum, and at least equal to full-load rating of all installed units in the associated stack.

6. Grounding Bus: Full length mounted across the bottom, drilled with lugs of appropriate capacity as required.
7. Neutral Bus: Insulated, continuous through control center for four-wire services, drilled with lugs of appropriate capacity as required.

D. Unit Compartments:

1. Provide individual front door for each unit compartment. Fasten door to stationary structure, instead of the unit itself, so that door can be closed when unit is removed.
2. Starter and feeder unit doors interlocked mechanically with unit disconnect device to prevent unintentional opening of door while energized and unintentional application of power while door is open, with provisions for releasing interlock for intentional access and application of power.
3. Padlocking arrangement permitting locking disconnect device in the "OFF" position with at least three padlocks with door closed or open. Equip unit disconnect devices located in the top compartment, compartment sized 12 inches or higher, with extender handle complying with UL 845. Extender handle shall allow disconnect operating handle to be located above NEC's height limitation of six-feet, seven-inches above floor.
4. Equip compartments as shown or indicated on the Drawings:

    a. Blank compartments, unused space, and compartments shown or indicated on the Drawings as "SPACE" shall have bus covers and be complete with necessary hardware for future installation of a plug-in unit.
    b. Provide shutters for each compartment that automatically open when unit is inserted and automatically close when unit is removed.

5. Provide wiring and device identification:

    a. Identify compartment doors, devices, and field wiring in accordance with Section 16075, Identification for Electrical Systems.
    b. Identify internal control conductors with permanent wire markers. Each wire shall be identified by a unique number attached to wire at each termination point.
    c. Identify internal control devices with permanent markers. Each device shall be identified by a unique number attached to each device.
    d. Numbering system for each wire and control device shall be identified on the wiring diagrams in the Shop Drawings and shall reflect the actual designations used in the Work.

6. NEMA 1 minimum motor starter size. Starter units completely draw out type in Sizes 1 and 2 and draw out type after disconnecting power leads only in Sizes 3 and 4.
7. Motor starters shall be NEMA-rated and include magnetic contactor, with encapsulated magnet coils. Wound coils are unacceptable. Control shall be 120 Vac unless indicated otherwise.

    a. Starters shall be full-voltage non-reversing unless shown or indicated otherwise on the Drawings.
    b. Reversing Starters:

1) Single-speed, full-voltage with two contactors and extra interlocking contacts.

c. Reduced Voltage Solid-State Starter:

1) General:

a) Provide solid-state, step-less, current limiting, soft-start, motor controllers (RVSS) as shown or indicated on the Drawings.
b) RVSS shall be three-phase type and shall include an overload relay and at speed isolation contactor.
c) Provide NEMA rated full voltage By-Pass contactor as shown on drawings.
c) Provide subsystems that will protect RVSS from damage due to phase loss, over-current and over-voltage.
d) Current Rating: 115 percent of motor nameplate rated current, continuous, minimum.

2) Required Features:

a) Adjustable current limit of not more than 250 percent of motor nameplate full-load current throughout entire motor acceleration period including first three cycles of voltage waveform from instant start signal is engaged.
b) Adjustable voltage acceleration, from two to 30 seconds. Acceleration shall be continuous not in steps.
c) Adjustable voltage deceleration, from two to 30 seconds. Deceleration should be continuous, not in steps.
d) Phase loss detection.
e) PUSH-TO-TEST LED diagnostic indicators.
f) Static over-current and over-voltage trip.
g) Phase reversal, line or fuse loss, and under-voltage protection.
h) Power unit over temperature protection.
i) Motor inverse time overload protection.
j) Input line transient over-voltage protection.

3) Enclosure:

a) Cooling fans, if required, shall incorporate anti-friction bearings and internal impedance type motor protection.
b) If cooling fans are used, enclosure for that section shall be NEMA 12 FVF, or NEMA 12 EFVFF force ventilated with filters, in accordance with NEMA ICS 1-110, installed by motor control center manufacturer.

4) On start-up, start driven equipment at zero current and allow driven equipment to accelerate to maximum speed without exceeding the set current limit.
5) On normal shutdowns, ramp driven equipment down at set deceleration rate that is non-regenerative for motor prior to shutdown.
6) On emergency shutdowns, remove power to motor.
7) Diagnostic LEDs: Provide LED (Push to Test) on unit front that indicate the following:

a) Control power on.
b) Motor power on.
c) Motor running.
d) Motor fault.
e) High Pressure
f) RVSS fault.

8) Control Outputs:

a) Control output shall be electrically isolated, dry, normally open SPDT contacts, rated 10 amps at 120 vac.
b) Provide the following control outputs:

i. Motor running.
ii. Motor stopped
iii. Motor fault.(Overtemp)
iv. High Pressure
v. RVSS fault.

8. Overload Relays: Provide an overload relay for each motor starter. Overload relays shall be in accordance with the following:

a. Electronic Overload Relays: Relays shall be electronic type. Electronic relays shall be multi-function, adjustable, current sensing, type, and include overload, phase-unbalance, phase-loss, and equipment type ground fault in one package.
c. Each overload relay shall be manual reset type and shall include provisions for resetting by an insulating button on front of starter unit door.
d. Each overload relay shall include a normally-open auxiliary contact for remote alarm purposes.
e. Size each overload relay for full-load amperes and service factor of actual motors installed.

9. Individual control power transformers for all starters, capacity as required for all control circuit devices, 150 VA minimum, Class A insulation, two primary fuses, 120-volt secondary, one secondary fuse, and the other secondary leg grounded.
10. Motor horsepower shown are preliminary. Circuit breaker trips and starter overload heaters to be coordinated with the actual equipment installed.

11. Auxiliary contacts, relays, timers as required for specified control functions and those shown on Drawings.
12 Starter devices, including spare contacts, shall be wired to numbered terminal blocks.
13. Terminal blocks for field connections to unit compartments shall be plug-in/pull-apart type. Terminals shall be fully accessible from the front. Terminals shall be mounted near the front of vertical wireway.
14. Control devices shall be 600-volt heavy duty, NEMA A600. Relays shall have convertible contacts. Pilot devices shall be oil tight. Pilot lights shall be transformer type with six-volt secondary. .
15. Feeder Circuit Breakers: LSI adjustable electronic trip thermal magnetic type 100% Rated.

    a. Circuit breakers of 100 amp frame or less shall be 100% rated mounted in a dual mount compartment (two breakers in one space factor) or shall mount in one-half space factor, unless otherwise shown or indicated on the Drawings.

16. Motor Starter Circuit Breakers: Magnetic trip only motor circuit protectors.
17. Provide the following diagrams and tables inside of door for each compartment:

    a. Elementary wiring diagram.
    b. Table of overload heater sizes with correct heater highlighted.
    c. Table of motor circuit protector settings with correct setting highlighted.

18. Where shown or indicated on the Drawings incorporate solid state protective relaying package (SSPRP) into motor starter for motor protection. Unit shall incorporate the ANSI/IEEE C37.2 device function numbers and selectable indications and communication modules indicated below:

    a. Product and Manufacturer:

        1) GE MultiLin SR469.
        2) Or MCC manufacturers equal.

    b. Motor Protection Device Functions:

        1) Stator winding over-temperature (Device 49).
        2) Short circuit (Device 50).
        3) Motor overload (Device 49/50/51).
        4) Locked rotor - multiple start (Device 48).
        5) Phase reversal (Device 46).
        6) Ground fault (Device 50G/51G).
        7) Mechanical jam.
        8) Unbalance/negative sequence currents (Device 46).
        9) Undercurrent (Device 37).
        10) Motor bearing over-temperature (Device 38).
        11) Thrust bearing over-temperature (Device 38).
        12) Over-voltage (Device 59).

13) Undervoltage (Device 27).
14) Voltage sequence (Device 47).
15) Main trip and lockout output relay (Device 86).
16) Alarm output relay (Device 74).

c. Selectable Indications:

1) Average motor current.
2) Average motor temperature.
3) Motor current for each of the three phases.
4) Motor temperature readout for six winding RTDs.
5) Motor thrust-bearing temperature readout for two bearing RTDs.
6) Ground fault current.
7) Percent of motor capacity used.
8) Line-to-line and line-to neutral voltages, all three phases.
9) Average 15-minute kVA.
10) Average 15-minute kW.
11) Average 15-minute kVAR.
12) Maximum percent full load current since initial startup.
13) Hottest RTD and temperature since initial startup.
14) Highest percent current unbalance since initial startup.
15) Highest ground fault current since initial startup.
16) Highest motor bearing temperature since initial startup.
17) Highest load bearing temperature since initial startup.
18) Maximum line voltage since start.
19) Minimum line voltage since start.
20) Number of motor starts attempted.
21) Number of motor starts completed.
22) Hours of operation.
23) Number of trips from each of ten protective functions.
24) All measured values at the time of a motor trip.
25) Values that have been loaded for system inputs and trip points.

d. Communication Module: RS232 capable of uploading all the above protective function attitudes and the above-listed selectable indications upon being queried by a host PLC connected via RS232 communication port.

19. Main and Tie Circuit Breakers: 100% rated, LSIG Electronic trip, thermal magnetic, molded case type, unless shown or indicated otherwise. Mains to have maintenance switch to limit Arcflash exposure.

Where shown or indicated, equip main and tie breakers with PLC and relay interlocking. Interlocking shall allow only two of the three breakers to be closed at a time.

2.03 MAIN METERING DEVICE

A. Provide a main meter device as shown or indicated on the Drawings.

1. Microprocessor based monitoring device shall include complete electrical metering in one package. Device shall include self-contained potential transformers and self-protected internal fuses.
2. Device shall have Ethernet output capabilities and imbedded webpages for communication to SCADA. Provide all gateway equipment as necessary.
3. Device shall be mounted on compartment door to allow operations and maintenance personnel access to meter menu and display.
4. Device shall include trend analysis, event logging, and recording. Device shall also include the following direct-reading metered values:

a.	Volts:	0.2 percent accuracy.
b.	Amperes:	0.2 percent accuracy
c.	Watts, Vars and VA:	0.5 percent accuracy
d.	Power Factor:	1.0 percent accuracy
e.	Frequency:	0.05 percent accuracy
f.	Watt, and VA Hours:	0.5 percent accuracy
g.	Var Hours:	1.0 percent accuracy
h.	Watt, Var and VA Demand:	0.4 percent accuracy
i.	THD-Voltage:	50th harmonic
j.	THD-Current:	50th harmonic
k.	Individual Ampere Harmonics:	50th harmonic
l.	Individual Voltage Harmonics:	50th harmonic

5. Metering device shall have the following additional features:

    a. Trend analysis that displays minimum and maximum values for each metered parameter with date and time of each occurrence.
    b. Input range of device shall accommodate external current transformers with ranges from 100/5 to 5000/5 and potential transformers from a ratio of 120:120 to 500,000:120. Three current transformers suitably rated shall be included.
    c. Alarm contacts rated five amps at 120 VAC.
    d. Three analog outputs programmable to reflect the metered parameters, except kilowatt hours and kilovar hours.
    e. Communication capability, using RS-485, Modbus RTU Protocol.

6. Control power shall be drawn from monitored incoming AC line. Device shall have non-volatile memory and not require battery backup. During power failure, device shall retain preset parameters.

B. Manufacturers

1. PM 8000 by Schneider Electric.
2. Or approved manufacturers equal.

2.04 SURGE PROTECTIVE DEVICES

A. Provide a surge protective device in accordance with Section 16289, Surge Protective Devices, for each motor control center bus shown on the Drawings. Surge protective devices shall be included and factory-mounted within the motor

control center by motor control center manufacturer. Surge protective device monitoring and display shall be visible from the motor control center front.

2.05 SOURCE QUALITY CONTROL

A. Prior to shipping, perform factory tests on motor control centers. Tests shall include manufacturer's standard tests and the following:

1. Physical inspection and checking of components.
2. Mechanical operation and device functionality tests.
3. Primary, control, and secondary wiring hi-pot tests.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which Work is to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install materials and equipment at locations shown or indicated on the Drawings. Install equipment on concrete bases in accordance with the Contract Documents and manufacturer's recommendations and instructions.

B. For installations against masonry walls, provide an insulation board, 1/4-inch minimum thickness, between motor control center and wall for corrosion protection. Trim board neatly within outline of motor control center.

C. Openings in top or side of motor control centers for other than conduit entrance are not allowed.

D. Bundle cable circuits together within enclosures and identify with durable tag secured to cabling twine.

E. Set motor circuit protectors at lowest setting that allows motor starting without nuisance tipping.

F. Verify that wiring diagrams on inside of door of each compartment reflect the circuitry actually provided and that correct overload heater size and motor circuit protector setting are noted.

G. Install in conformance with manufacturer's recommendations, Laws and Regulations, and the Contract Documents.

H. Connections to existing facilities shall be in accordance with Division 01 – General Requirements.

3.03 FIELD QUALITY CONTROL

A. Site Tests:

1. Perform field testing and inspection of motor control centers. Inspect and test each motor control center after installation. Testing and inspection shall be in accordance with the manufacturer's recommendations and the Contract Documents, and be performed by manufacturer's factory-trained representative, Inform OWNER and ENGINEER when equipment is correctly installed, prior to testing. Do not energize equipment without permission of OWNER.
2. Test Equipment, Calibration and Reporting: All test equipment, instrument calibration and test reports shall be in accordance with ANSI/NETA ATS.
3. Perform the following minimum tests and checks before energizing equipment:

    a. Verify all overload and device settings.
    b. Inspect mechanical and electrical interlocks and controls for proper operation.
    c. Check tightness of bolted connections.
    d. Measure insulation resistance of each bus section, phase-to-phase and phase-to-ground.
    e. Measure insulation resistance of each starter, phase-to-phase and phase-to-ground.
    f. Measure insulation resistance of each control circuit with respect to ground.
    g. Perform other tests recommended by equipment manufacturer.

4. Perform acceptance testing of motor control centers. Inspect and test each motor control center. Testing and inspection shall be performed by the independent testing firm, after completion of field testing specified in Paragraph 3.3.A.3 of this Section.

    a. Visual and Mechanical Inspection: Perform inspection of each motor control center in accordance with ANSI/NETA ATS. Inspection shall include:

        1) Inspect for proper anchorage, damage, and grounding.
        2) Verify all overload and device settings.
        3) Check tightness of bolted connections.

5. Electrical Tests: Perform electrical testing of each motor control center in accordance with ANSI/NETA ATS. Testing shall include:

    a. Measure insulation resistance of each bus section, phase-to-phase and phase-to-ground.
    b. Measure insulation resistance of each starter phase-to-phase and phase-to-ground.
    c. Measure insulation resistance of each control circuit with respect to ground.
    d. Test motor overload units by current injection.
    e. Perform operational tests by initiating control devices for proper operation.
    f. Perform contact resistance test and insulation resistance test for each circuit breaker.

g. Determine long-time, short-time, and instantaneous pick-up and delay as required.

B. Manufacturer's Services: Provide a qualified, factory trained serviceman to perform the following:

1. Supervise unloading and installation of equipment.
2. Instruct CONTRACTOR in installing equipment.
3. Inspect, test, and adjust equipment after installation and ensure proper operation.
4. Instruct operations and maintenance personnel in operation and maintenance of the equipment.
5. Manufacturer's technician shall make visits to the Site as follows:

a. First visit shall be for supervising unloading and handling of equipment and for instructing CONTRACTOR in proper equipment installation, and assisting in installing equipment. Technician shall train installing personnel in advance in proper handling and rigging of equipment. Minimum number of hours on-Site: 2 hours.
b. Second visit shall be for checking completed installation, start-up of system; and performing field quality control testing. Technician shall test the system as specified in Article 3.3.A of this Section. Technician shall operate and test the system in the presence of ENGINEER and verify that equipment complies with the Contract Documents and manufacturer's requirements. Technician shall adjpust the system to initial settings as specified in Article 3.4 of this Section. Minimum number of hours on-Site: 4 hours.
c. Third visit shall be to instruct operations and maintenance personnel.

1) Furnish services of manufacturer's qualified, factory-trained specialists to instruct OWNER's operations and maintenance personnel in recommended operation and maintenance of equipment.
2) Training requirements, duration of instruction and qualifications shall be in accordance with Section 01730, Operating and Maintenance Data.
3) Number of hours on-Site shall be in accordance with Section 01730, Operating and Maintenance Data.

d. Technician shall revisit the Site as often as necessary until installation is acceptable.
e. Furnish services of manufacturer's factory-trained service technicians to correct defective Work within 72 hours of notification by OWNER during the correction period.

6. All costs, including expenses for travel, lodging, meals and incidentals, and cost of travel time, for visits to the Site shall be included in the Contract Price.

3.04 ADJUSTING

A. Calibrate, set, and program all protective devices. Coordinate protective devices furnished under this Section and provide proper settings of devices in accordance with the study performed under Section 16010, Electrical Power Studies.

3.05 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee and warrant all materials and labor provided under this Section for three (3) years from date of Substantial Completion in accordance with Section 01740 and Section 16050 of these Specifications.

END OF SECTION

SECTION 16430 - SWITCHBOARDS

PART 1 GENERAL

1.01 REQUIREMENT SUMMARY

A. Contractor shall furnish and install floor-mounted dead-front low-voltage Switchboards which consist of an enclosure, circuit breakers, instruments and metering equipment, monitoring equipment or control equipment, with associated interconnections and supporting structures connected solidly (bussed) to Metal-Enclosed Draw-Out Switchboard as indicated on the Contract Documents and as specified herein.

1. Distribution Switchboard - Furnish and install the distribution switchboard(s) shown on the Contract Documents and specified in this Specification Section 2. Max Depth of Switchboard line up 48".
2. Switchboard is configured in a Main-Tie-Tie-Main (A&B buss) with a generator lug connection. Provide Automatic Transfer Operations (ATO) between Main 1, Main 2 and Utility transformers. ATO will also transfer via Open Transition to standby power using Tie breakers and will provide signaling to generators for start, stop and fault communication. Synchronization of generators will be done using on-board synchronizer system provide by Generator Manufacturer. Provide both hardwired and data highway communication to generator and Plant SCADA system.

B. Equipment supplier shall preform and provide all data and reports as required for the Switchboards and all associated connected loads as shown in the Contractor Documents in accordance with the Project Specification Sections.

1.02 RELATED WORK SPECIFIED ELSEWHERE

In addition to the requirements specified in this Section, the requirements of Division 16 and those Project Specification Sections referenced therein shall be applied.

A. Related Specification Sections include but not limited to:

1. 16010 – Electrical Power Studies
2. 16070 – Hangers and Supports
3. 16289 –Surge Protection Devices

1.03 REFERENCES

Switchboards and overcurrent protection devices referenced herein are designed and manufactured according to the following appropriate codes and regulations.

A. Codes and Standards:

1. ANSI/NFPA 70 - National Electric al Code (NEC).
2. ANSI/IEEE C12.16 - Solid-State Electricity Metering.
3. ANSI C57.13 - Instrument Transformers.
4. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.

5. NEMA PB 2 - Deadfront Distribution Switchboards, File E8681
6. NEMA PB 2.1 - Proper Handling, Installation, Operation and Maintenance of Deadfront Switchboards Rated 600 Volts or Less.
7. NEMA PB 2.2 - Application Guide for Ground Fault Protective Devices for Equipment.
8. UL 50 - Cabinets and Boxes.
9. UL 98 - Enclosed and Dead Front Switches.
10. UL 489 - Molded Case Circuit Breakers.
11. UL 891 - Dead-Front Switchboards.
12. UL 943 - Standard for Ground Fault Circuit Interrupters.
13. Federal Specification W-C-375B/Gen - Circuit Breakers, Molded Case, Branch Circuit and Service.

1.04 SUBMITTALS

Contractor shall reference and provide all documentation for all Division 16 Sections as required per Specification Sections:

1. 01340 – Shop Drawings, Product Data and Samples

A. For Engineer Review

1. The following information shall be submitted to the Engineer:

    a. Master drawing index
    b. Front view and plan view of the assembly
    c. Three-line diagrams
    d. Schematic diagrams
    e. Nameplate schedule
    f. Component list
    g. Conduit space locations within the assembly
    h. Assembly ratings include but not limited to:

        1) Short-circuit rating
        2) Voltage
        3) Continuous current rating

    i. Major component ratings include but not limited to:

        1) Voltage
        2) Continuous current rating
        3) Interrupting ratings

    j. Cable terminal sizes
    k. Product data sheets

2. Where applicable, the following additional information shall be submitted to the Engineer:
    a. Busway connection(s)

b. Composite front view and plan view of close-coupled assemblies

B. For Construction

1. The following information shall be submitted for record purposes:

a. Final as-built drawings and information for items listed in Section 1.4B, and shall incorporate all changes made during the manufacturing process
b. Wiring diagram(s)
c. Certified production test report(s)
d. Installation information

C. Qualifications

1. For approval, manufacturer shall have specialized in the manufacturing and assembly of Switchboards for at least fifty (50) years.
2. Furnish products listed by Underwriters Laboratories Incorporated and in accordance with standards listed in Section 1.3.
3. Manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
4. Equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
5. Switchboards shall bear a UL 891 label.

1.05 DELIVERY, STORAGE AND HANDLING

A. Switchboards and all components shipped loose shall be handled and stored in accordance with manufacturer's instructions and recommendations as outlined in applicable Installation and Maintenance Manuals. Three (3) copies of these instructions shall be included with the equipment at time of shipment.

B. Switchboards section(s) shall be delivered in individual shipping splits for ease of handling. Sections shall be individually wrapped for protection and mounted on shipping skids as required to prevent tipping.

C. Inspect and report concealed damage to carrier within their required time period. Owner is not responsible for damages incurred during shipping, handling and storage.

D. Store in a clean, dry space. Maintain factory protection and/or provide an additional heavy canvas or heavy plastic cover to protect structure from dirt, water, construction debris, and traffic. Where applicable, provide adequate heating within enclosures to prevent condensation.

1.06 OPERATION AND MAINTENANCE MANUALS

A. Switchboards operation and maintenance manuals shall be provided with each assembly shipped, and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

B. Operation and Maintenance manuals, drawings etc. to be provided within the assemblies shall be water-proof and fire-resistant utilizing tear-resistant paper.

1.07 WARRANTY

A. Manufacturer shall warrant Switchboards to be free from defects in materials and workmanship for the lesser of one (1) year from date of installation or eighteen (18) months from date of purchase.

1.08 IDENTIFICATION

A. Switchboards shall be identified with the equipment tag number indicated on the Contract Documents and the accepted shop drawings. Nameplate(s) shall be securely affixed in a conspicuous place on Switchboard. Nameplates shall be furnished and installed as required Specification Section(s):

1. 16075 – Identification for Electrical Systems

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Switchboards shall be provided by one of the manufacturers listed:

1. Square D / Schneider Electric USA
2. Eaton Cuttler Hammer
3. ABB
4. Acceptable as Specified in the Owner's Approved Products List

B. Manufacturer of Switchboards shall be the same as the manufacturer of the circuit breakers or the switches mounted within Switchboards.

C. Switchboards shall be by the same manufacture as the Metal-Enclosed Draw-Out Switchgear for the purposes of stocking common breaker types, series ratings, etc.

2.02 SWITCHBOARD - GENERAL

A. Short Circuit Current Rating: Switchboards shall be rated with a minimum short circuit current rating of 65kA RMS symmetrical at 600VAC maximum or as shown on drawings.

B. Control voltage for switchboard shall be 24VDC or as shown on drawings

C. Future Provisions: All unused spaces provided, unless otherwise specified, shall be fully equipped for future devices, including all appropriate connectors and mounting hardware.

1. Enclosure: NEMA 1G/12
2. Sections shall be aligned front and rear.
3. Removable steel base channels 1.5IN shall be bolted to the frame to rigidly support the entire shipping section for moving on rollers and floor mounting.
4. Switchboards enclosure shall be painted on all exterior surfaces. The paint finish shall be a medium gray, ANSI #49, applied by the electro-deposition process over an iron phosphate pre-treatment.

5. All front covers shall be screw removable with a single tool and all doors shall be hinged with removable hinge pins.
6. Top and bottom conduit termination areas shall be clearly indicated on shop drawings.
7. Individual circuit breaker compartments, shall be segregated from adjacent compartments and sections by means of steel barriers to the maximum extent possible. It shall be equipped with draw-out rails and primary and secondary disconnecting contacts. Removable hinge pins shall be provided on the breaker compartment door hinges. Current transformers for feeder instrumentation, shall be located within the appropriate breaker cells and be front accessible, removable, and provided with shorting terminal blocks in the front wireway. Circuit breaker doors shall not be ventilated.

2.03 NAMEPLATES

A. Engraved nameplates, mounted on the face of the Switchboards, shall be furnished for all main and feeder circuits as indicated in the Contract Documents; reference Section 1.8.

B. Furnish master nameplate giving Switchboards designation, voltage ampere rating, short-circuit rating, and manufacturer's name.

C. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's drawings.

2.04 BUS

A. All bus bars shall be silver-plated copper, tin-plated copper or tin-plated aluminum, whichever is standard. Plating shall be applied continuously to all bus work. Ground bus may be copper or aluminum. If switchboard can be exposed to chlorine or chlorine off-gassing do not use aluminum.

B. Switchboards bussing shall be of sufficient cross-sectional area to meet UL Standard 891 temperature rise requirements. The phase and neutral through-bus shall have an ampacity as shown in the Contract Documents. The neutral shall be of equivalent ampacity as the phase bus bar. Tapered bus is not acceptable. Full provisions for the addition of future sections shall be provided. Bussing shall include all necessary hardware to accommodate splicing for future additions. Connections shall be bolted with Grade 5 bolts and conical spring washers.

C. Ground bus shall be sized per NFPA70 and UL 891 Tables 25.1 and 25.2 and shall extend the entire length of the Switchboard. Provisions for the addition of future sections shall be provided.

2.05 WIRING / TERMINATIONS

A. Small wiring, necessary fuse blocks and terminal blocks within the Switchboards shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked

for identification corresponding to appropriate designations on manufacturer's wiring diagrams.

B. All control wire shall be type SIS and 14AWG for control circuits. Wire bundles shall be secured with nylon ties and anchored to the assembly with the use of pre-punched wire lances or nylon non-adhesive anchors. All groups of control wires leaving the Switchboards shall be provided with screw-cage terminal blocks with suitable numbering strips and provisions for 10AWG field connections. Provide printed heat-shrink sleeve wire markers at each end of all control wiring. Plug-in terminal blocks shall be provided for all shipping split control wires. Terminal connections to remote devices or sources shall be front accessible via doors above each circuit breaker.

2.06 BREAKERS

A. Main and Tie Breakers shall be Draw-Out type, with Maintenace By-pass switch. Provide adjustable electronic trip with LSIG and Harmonics protection.

1. Provide all appurtenances for draw-out and breaker removal. Feeder breakers shall be bolt-on type. Provide adjustable LSI protection.

B. Control voltage for breaker operation shall be 24VDC or as shown on drawings. The removable power circuit breaker element shall be equipped with disconnecting contacts and interlocks for draw-out application. It shall have four positions, CONNECTED, TEST, DISCONNECT and REMOVED. The breaker draw-out element shall contain a worm gear levering IN and OUT mechanism with removable lever crank. Levering shall be accomplished via the use of conventional tools. Mechanical interlocking shall be provided so that the breaker is in the tripped position before levering IN or OUT of the cell. Interlocking that trips the breaker will not be accepted. The breaker cell shall include an optional provision for key locking open to prevent manual or electric closing. Padlocking shall provide for securing the breaker in the connected, test, or disconnected position by preventing levering. Breaker shall be ready to accept connection of remote racking device without modification of breaker, cell or door.

C. Instrument / Auxiliary Device Compartment

1. Relays, meters, control switches, etc., shall be mounted on a formed front-hinged panel compartment as required.
2. Current transformers and potential transformers quantities and ratios shall be in accordance with the Drawings.
3. Current transformers shall be window type, 600V, 10KV BIL suitable for relaying and metering medium-voltage metal clad switchgear applications and mounting in the breaker compartment. Circuit transformers shall be accessible for inspection and maintenance and allow addition or changing without removing high voltage insulated connections.
4. Current transformers shall have a continuous thermal current rating factor of 1.33 or greater at 30 degrees C ambient. Current transformers shall have a short time thermal rating of 75 times or greater rated current for one second. Mechanical ratings shall equal the close and latch rating of circuit breakers.

5. Current transformers accuracy class shall be in accordance with IEEE C57.13, relaying accuracy shall be in accordance with:

Transformer Rate	Minimum Relaying Accuracy Class
100/5	C10
150/5 to 300/5	C20
400/5 and 500/5	C50
600/5 and 1000/5	C100
1200/5 to 3000/5	C200

6. Current transformers used for differential protection shall have the same ratio, same secondary excitation characteristics, and same manufacturer type. Minimum relaying accuracy class for all differential protection current transformers shall be C200.
7. Potential transformers shall be draw-out type in rollout carriages and equipped with current limiting fuses both on primary and secondary sides. Potential transformers shall be automatically disconnected from the power source as access door is opened or carriage withdrawn. Locate potential transformers and fuses either in auxiliary compartment of the vertical section or in a separate auxiliary unit as required.
8. Insulate potential transformers for full voltage and BIL rating of medium-voltage metal clad switchgear. Potential transformers shall have a 0.3 percent ANSI accuracy classification and a thermal rating at 30 degrees C ambient of 750VA for 5 KV applications and 1500VA for applications above.
9. Potential transformer secondaries shall be grounded. Secondary leads of each current transformer shall be wired directly to shorting type terminal blocks.

D. Instruments

1. Current Transformers (CT)

   a. All circuit breaker compartments shall have provision for front-accessible mounting of up to four (4) CTs per phase (ANSI standard relay accuracy), two (2) on bus side and two (2) on cable side of circuit breaker. The CT assembly shall be insulated for the full voltage rating of the switchgear. CT wiring shall be Type SIS 12AWG. Relaying and metering accuracy shall conform to ANSI Standards.

2. Voltage Transformers (PT)

   a. All PT's shall be drawout mounted with primary current-limiting fuses and shall have ratio(s) as required. The PT shall have mechanical rating equal to the momentary rating of the circuit breakers and shall have metering accuracy per ANSI Standards.

2.06 BATTERY SYSTEM (NOT USED)

A. Provide a battery system, including batteries and charger, to operate breaker control circuits for switchboard breaker, automatic transfer system and protective relay and accessories as shown on Drawings. Battery system design shall comply with the following:

1. Voltage: 24 volts dc or as shown on drawings.
2. Environmental conditions: 40 to 100 degrees F.
3. Continuous Load: In accordance with switchboard manufacturer for 2 hours minimum.
4. Four circuit breaker operations singly in sequence with closing, charging, and tripping ratings in accordance with switchboard manufacturer. Include steady state loads and remote protective relays as shown on Drawings.
5. Ten percent design margin and 125 percent aging factor.

B. Battery:

1. Batteries will be sized to meet the specified loads and run time.
2. Battery Type: Valve Regulated Lead Acid (VRLA)
3. Battery Lifespan: 20 Years
4. Battery enclosures will be free standing with internal support racks.
5. Enclosures and support racks will be painted or coated with corrosion inhibiting compound.
6. Batteries will be spaced to provide even temperature distribution and proper cooling airflow.
7. Battery terminals will be accessible without interference or removal of auxiliary equipment.
8. Battery cells will be delivered filled and charged. Cells must receive a commissioning charge within 6 months of leaving the factory. Cells with a manufacture date in excess of 1 calendar year prior to on-site installation will not be accepted.
9. Approved Manufacturers

    a. Exide Technologies
    b. East Penn Manufacturing
    c. Approved Equal

C. Battery Management System:

1. Include a cell level battery management system capable of:

    a. Battery, string, and cell voltage monitoring
    b. Cell temperature and impedance monitoring
    c. Float and discharge current monitoring
    d. Cell discharge and recharge performance
    e. Battery block charging equalization
    f. Programmable alarms

g. Fault logging an data trending capabilities
h. SCADA connection via Ethernet using Modbus TCP protocol

D. Charger:

1. General:

a. Rectifier may be 6 pulse, 12 pulse, filtered, or active front end topology as required to meet THDV limit at the input terminals of the charger.
b. Rectifier will be constant voltage, constant current.
c. Rectifier will restart automatically upon application of AC power.
d. Rectifier will have Ethernet communications port with Modbus TCP, DNP3, or IEC 61850 protocol.

2. Input:

a. Rectifier will operate at a nominal voltage of 240 VAC, 1 phase.
b. Minimum voltage tolerance range: 95% to 105% of nominal.
c. Total harmonic distortion: 10%
d. Minimum input power factor: 0.95 lagging
e. Minimum conversion efficiency: 89%

3. Output:

a. Nominal output voltage: 24 VDC or as shown
b. Maximum output ripple: 1% of nominal at full load

4. Battery Float Charge Operation:

a. Rectifier will be capable of charging batteries to 90% capacity in a 10-hour period after batteries have been discharged to their minimum cell voltage.
b. Battery charging parameters will be adjustable through a menu driven controller such that multiple battery manufacturers may be accommodated.

5. Approved Manufacturers:

a. Stored Energy Systems LLC: SENS
b. Hindle Power Inc.
c. No Approved Equal

2.07 METERING

Provide main meter device as shown on the Drawings, and in accordance with the following:

A. Microprocessor-based Monitoring Device:

1. Device shall provide complete electrical metering in one package. Device shall include self-contained potential transformers and self-protected internal fuses.
2. Mount device on compartment door to allow personnel access to meter menu and display.
3. Device shall include trend analysis, event logging, and recording. Device shall include the following direct reading metered values:

a.	Volts:	0.2 percent accuracy.
b.	Amperes:	0.2 percent accuracy
c.	Watts, Vars, and VA:	0.5 percent accuracy
d.	Power Factor:	1.0 percent accuracy
e.	Frequency:	0.05 percent accuracy
f.	Watts, and VA Hours:	0.5 percent accuracy
g.	Var Hours:	1.0 percent accuracy
h.	Watts, Var, and VA Demand:	0.4 percent accuracy
i.	THD-Voltage:	50th harmonic
j.	THD-Current:	50th harmonic
k.	Individual Ampere Harmonics:	50th harmonic
l.	Individual Voltage Harmonics:	50th harmonic

B. Metering device shall have the following additional features:

1. Trend analysis that shall display minimum and maximum values for each metered parameter with date and time of each occurrence.
2. Input range of device shall accommodate external current transformers with ranges from 100/5 to 5000/5 and potential transformers from a ratio of 120:120 to 500,000:120. Three current transformers suitably rated shall be included.
3. Alarm contacts rated five amps at 120 vac.
4. Three analog outputs programmable to reflect the metered parameters, except kilowatt hours and kilovar hours.
5. Communication capability, using RS-485, Modbus RTU Protocol or Ethernet as indicated on the Drawings

C. Microprocessor-based Monitoring Device:

1. Device shall provide complete electrical metering in one package. Device shall include self-contained potential transformers and self-protected internal fuses.
2. Mount device on compartment door to allow operator access to meter menu and display.
3. Device shall include trend analysis, event logging, and recording. Device shall include the following direct reading metered values:

a.	Volts:	0.2 percent accuracy.
b.	Amperes:	0.2 percent accuracy
c	Control power shall be drawn from the monitored incoming AC line.	

4. Device shall have non-volatile memory and not require battery backup. During power failure, device shall retain preset parameters

D. Manufacturers

1. PM 8000 by Schneider Electric.

2. Or approved manufacturers equal.

2.07 FINISH

A. All exterior and interior steel surfaces of Switchboards shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish shall be ANSI 61.

2.08 ACCESSORIES

A. AUTOMATIC TRANSFER OPERATION (ATO)

1. Process Logic Controller (PLC) based controller provide by switchboard manufacturer, with Human Machine Interface (HMI)
2. Operator interface will be a 15" touch screen panel mounted to the face of the switchgear. All adjustable parameters including transition timings, voltage tolerance, and generator exerciser program parameters will be available to the operator through a password protected interface. All breaker status, generator status, and utility source status will be displayed graphically on a mimic bus. All system alarms will be accessible through the HMI for display and acknowledgment.
3. Switchgear shall include a Main-Tie-Tie-Main automatic, open transition, transfer control scheme, between two normally active input supply lines and two paralleled generator sources. On-Board Paralleling by generator manufacturer The control shall also include manual-automatic open transition, re-transfer.
4. Control scheme shall have the following:

    a. Electrical interlocking of the Main and Tie circuit breakers to prevent paralleling of the two input supply lines at all times.
    b. Electrical interlocking of the Generator and Tie circuit breakers to prevent paralleling of the two generators.
    c. Over-current trip lockout to prevent breaker closure into a fault.
    d. Breaker transfer adjustable time delay, 0-1 minute, for residual voltage decay.
    e. Automatic transfer, to automatically open the main breaker and close the Tie circuit breaker, after an adjustable time delay, 0-5 minutes, upon detection of a loss of normal voltage on a given input supply. The voltage device shall be three phase type suitable for monitoring low or loss of voltage on each of the three phases and be electronically adjustable through the HMI.
    f. Automatic re-transfer, based upon the position of a master re-transfer switch. When the switch is in auto, the control shall

automatically open the Tie circuit breaker, after an adjustable time delay, 0-5 minutes, upon detection of the return of the input supply voltage and close the Main circuit breakers after the breaker transfer delay.

g. Manual re-transfer, based upon the position of a master re-transfer switch. When the switch is in manual, breaker transfer shall be manual based upon the position of open-auto-close switches, one for each breaker.

h. One dry contact output each for G1 and G2 start command.

i. One discrete input for interconnection with the plant SCADA system to start and end generator operations. Dry contact from SCADA closes

B. SURGE PROTECTION

1. Provide surge protective devices as indicated in Contract Documents and as specified in Specification Section(s):

a. 16289 –Surge Protection Devices

2.09 SPARE PARTS AND ACCESSORIES

A. Provide spare parts for Switchboards as recommended by the manufacturer.

PART 3 EXECUTION

3.01 FACTORY ACCEPTANCE TESTING

A. All Switchboards shall go through a standardized Factory Acceptance Test (FAT) prior to shipment. FAT shall include, but not limited to, the following:

1. After assembly, the complete Switchboard shall be tested to ensure the accuracy of the wiring and the functioning of all equipment.
2. Main bus system shall be given a dielectric test of 2.2kV for one minute (1MIN) between live parts and ground and between opposite polarities.
3. A certified test report of all standard FAT procedures, tests, results and corrective actions shall be shipped with Switchboards.
4. Manufacturer shall notify Engineer two (2) weeks prior to the date the tests are to be performed

3.02 EXAMINATION

A. Examine concrete flooring and/or concrete equipment pad(s) to receive Switchboards for compliance with installation tolerances and other conditions affecting performance of the product as required by the manufacturers installation instructions and recommendations to include Engineer installation details. Do not proceed with installation until unsatisfactory conditions have been met or corrective action has been taken.

3.03 INSTALLATION

A. Contractor shall install Switchboards per the manufacturer's recommendations and the Contract Documents.

B. All necessary hardware to secure the assembly in place shall be provided by the Contractor

C. Switchboards shall be installed and checked in accordance with the manufacturer's recommendations. This shall include but not limited to:

1. Checking to ensure that concrete flooring and/or concrete equipment pad(s) are level to within 0.125IN per 3FT feet of distance in any direction; reference Section 2.3B.
2. Checking to ensure that all bus bars are torqued to the manufacturer's recommendations
3. Assembling all shipping sections, removing all shipping braces and connecting all shipping split mechanical and electrical connections
4. Securing Switchboards to concrete flooring and/or concrete equipment pad(s).
5. Inspecting and installing all circuit breakers in their proper compartments

3.04 FIELD QUALITY CONTROL

A. Clean, inspect, test, and energize Switchboards in accordance with applicable NECA / NEiS standards and recommendations.

B. Verify circuit breakers are in the proper locations and that setting of trip units, devices and current sensor taps match values scheduled on the approved shop drawings.

C. Exercise each circuit breaker three (3) times to verify smooth mechanical operation.

D. Verify proper torque of accessible bus connections and mechanical fasteners after installing Switchboards.

E. Field testing shall be done in accordance with the requirements specified in Specification Sections:

1. Division 2 – Site Works
2. 16080 – Electrical Testing
3. Coordinate Inspections And Tests As Required

F. After completing installation, cleaning, and testing, touch up scratches and mars on finish to match original finish.

G. Provide the services of a qualified factory-trained manufacturer's representative to provide start-up of the equipment specified under this Section for a period of three (3) working days.

H. The Contractor shall provide three (3) copies of the manufacturer's field startup report.

3.05 TRAINING

A. Contractor shall provide a training session for up to five (5) Owner's representatives for two (2) normal workdays at a job site location determined by the Owner.

B. Training sessions shall be conducted by a manufacturer's qualified representative. The training program shall consist of the instruction on the operation of the assembly, circuit breakers, and major components within the assembly.

END OF SECTION

SECTION 16450 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope: ALL SITES

1. CONTRACTOR shall provide labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install complete grounding for electrical systems, structures, and equipment.
2. CONTRACTOR to test integrity and performance of existing ground grid including all connections to ground which encompasses equipment grounds and lightning system. Excavation may be necessary. Contractor to correct all deficiencies.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. ANSI/NETA ATS, Acceptance Testing Specifications for Electrical Power Equipment and Systems.
2. ASTM B8, Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard or Soft.
3. UL 467, Grounding and Bonding Equipment.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Field Acceptance Testing Firm: Retain services of independent testing firm to perform acceptance field testing of grounding system. Testing firm shall have experience in testing grounding systems, surge suppression devices, grounding currents, leakage currents, ground loops, wiring errors, and shall be a member company of NETA. Contractor to correct all deficiencies.

2. Lightning Protection System: CONTRACTOR to employ the services of a Master licensed lighting installer to perform, inspection and testing of the lightning system. Contractor to correct all deficiencies.

B. Regulatory Requirements

1. National Electrical Code, (NEC).

a. NEC Article 250, Grounding and Bonding.

1.04 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

a. Listing of grounding connector types identifying where each will be used.
b. Layouts of each structure's ground grid.
c. Test point construction details.

2. Product Data:

a. Manufacturer's technical information for grounding materials proposed for use.

3. Testing Plans:

a. Ground resistance test procedure.

B. Informational Submittals: Submit the following:

1. Field Quality Control Submittals

a. Results of ground resistance tests at each test point.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bare Ground Cable:

1. Manufacturers: Provide products of one of the following:

a. Cablec Corporation.
b. General Cable Corporation.
c. Southwire Cable Company.
d. Or approved equal.

2. Material: Soft-drawn, tinned plated bare copper stranded cable complying with ASTM B8. No. 4/0 AWG minimum size for connection between ground rods and to busbars, motor housings, MCC's, transformers and switchgear unless otherwise shown or indicated on the Drawings. No. 4 AWG minimum for all others.

B. Ground Rods:

1. Manufacturers: Provide products of one of the following:

a. Copperweld, Bimetallics Division.
b. ITT Blackburn Company.
c. Or approved equal.

2. Material: Copper-clad rigid steel rods, 3/4-inch diameter, 10 feet long minimum.

C. Grounding Connectors:

1. Products and Manufacturers: Provide one of the following:

a. Pressure Connectors:

1) O.Z./Gedney, Division of General Signal Corporation.
2) Burndy Corporation.
3) Or approved equal.

b. Welded Connections:

1) Cadweld by Erico Products, Incorporated.
2) Therm-O-Weld by Burndy Corporation.
3) Or approved equal.

2. Material: Pressure connectors shall be copper alloy castings, designed and fabricated specifically for items to be connected and assembled with Durium or silicone bronze bolts, nuts, and washers. Welded connections shall be by exothermic process utilizing molds, cartridges, and hardware designed specifically for connection to be made.

D. Grounding Additive:

1. Grounding additive, in its set form, shall have resistivity of not more than 20 ohm-cm.
2. Product and Manufacturer:

a. Ground Enhancement Material (GEM) by Erico
b. Or approved equal.

3. Grounding additive shall be permanent and maintenance-free, without requiring recharging with salts or chemicals that may be corrosive, and shall maintain its earth resistance with time.
4. Grounding additive shall set up firmly and not dissolve or decompose or otherwise pollute soil or groundwater.
5. Grounding additive shall be suitable for installation in dry form or in slurry form.
6. Grounding additive shall not depend on continuous presence of water to maintain its conductivity.

E. Ground Test Well

1. Provide heavy-duty test well suitable for heavy-duty traffic.
2. Manufacturer

a. Advanced Lightning Technology
b. Or approved equal.

3. Diameter and Material: 12.75-inch outside diameter, Schedule 80 PVC.
4. Depth: Two feet.

5. Cover: Provide test well with cast iron cover marked, “Ground” with cast iron ring to support lid.

F. Ground system components shall comply with UL 467.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions for the Work and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with Work until unsatisfactory conditions are corrected.

3.02 STRUCTURE GROUND SYSTEM

A. Inspect and Test ground grids as shown and indicated on the Drawings.

B. As needed, provide No. 4/0 bare copper cable around exterior perimeter of structures at not less than 2.5 feet below grade, unless otherwise shown or indicated on the Contract Documents.

C. For structures with steel columns, provide No. 4/0 ground cable from grid to each column around perimeter of structure. Connect cable to steel with exothermic welds.

D. Connect grids to continuous underground water pipe system, when practical.

E. For new structures with concrete foundation or footings, connect structure’s reinforcing steel or other concrete-encased electrode to grounding grid.

F. Provide accessible test points for measuring the ground resistance of each grid.

G. Weld all buried connections except for test points. All welds must conform to manufacturers specifications which extends to the number of welds a mold can be used for and the quality of the weld. Compression connections are unacceptable.

3.03 EQUIPMENT GROUNDING

A. Ground electrical equipment in compliance with NEC article 250, local regulations and the Contract Documents.

B. Equipment grounding conductors shall be **tin plated** bare stranded copper cable of adequate size installed in metal conduit where required for mechanical protection. Ground conductors, pulled into conduits with non-grounded conductors, shall be insulated. Insulation shall be green.

C. Control panels grounding conductors shall be **tin plated** bare stranded copper cable of adequate size to ground grid from AC ground bus, and an insulated stranded copper cable of adequate size to ground grid from DC ground bus.

D. Connect ground conductors to conduit with copper clamps, straps, or with grounding bushings.

E. Connect to piping by welding or brazing. Use copper bonding jumpers on gasketed joints.

F. Connect to equipment by means of lug compressed on cable end. Bolt lug to equipment frame using holes or terminals provided on equipment specifically for grounding. Do not use hold-down bolts. Where grounding provisions are not included, drill suitable holes in locations recommended by equipment manufacturer or designated by ENGINEER.

G. Connect to motors by bolting directly to motor frames, not to soleplates or supporting structures.

H. Connect to service water piping by means of copper clamps. Use copper bonding jumpers on gasketed joints.

I. Scrape bolted surfaces clean and coat with conductive oxide-resistant compound.

3.04 FIELD QUALITY CONTROL

A. Site Tests:

1. Test completed grounding grid system for resistance to earth ground using an electrical three-terminal ground resistance tester and Fall of Potential Method. Test all grounded cables and metal parts for continuity of connection. ENGINEER or OWNER will witness the testing. Provide Test Report.
2. Separately test for AC Ground Impedance using a loop impedance tester. Measure the actual ac impedance of the ground wiring. Impedance should be tested and not exceed 0.25 ohms.
3. Separately test for Ground Currents, and Leakage Currents. ENGINEER or OWNER will witness the testing. Provide Test Report. Report Leakage currents to Engineer if in excess of 10mA.
4. Grounding system maximum resistance shall not exceed five ohms impedance under normally dry conditions (48 hrs. after last rainfall) when measured by ground resistance tester. Resistance values above five ohms shall be brought to ENGINEER's attention. Provide additional ground rods as required to attain a resistance to ground of less than five ohms for each ground grid. Add grounding additive installing additional ground rods to increase their effectiveness.
5. Acceptance Testing:

    a. Perform acceptance testing of grounding system. Testing shall be performed by testing firm in accordance with ANSI/NETA ATS.
    b. Test Equipment, Calibration and Reporting: Test equipment, instrument calibration, and test reports shall comply with ANSI/NETA ATS.

END OF SECTION

SECTION 16501 LIGHTING

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install lighting fixtures and associated controls.
2. Provide fixtures in accordance with NEC Class 1 Div 2 classified areas as shown on drawings.
3. Refer to Lighting Schedule shown on drawings.

B. Coordination:

1. Coordinate location of fixtures with piping, ductwork, openings, and other systems and equipment and locate clear of interferences.
2. Coordinate fixtures to be mounted in hung ceilings with the ceiling suspension system proposed.

C. Related Sections:

1. Section 16050, Electrical – General Provisions.
2. Section 16075, Identification for Electrical Systems.
3. Section 16160, Panelboards.

1.02 REFERENCES

A. Standards referenced in this Section are:

1. UL 844, Luminaires for Use in Hazardous (Classified) Locations.
2. UL 935, Safety of Fluorescent Lamp Ballasts.
3. UL 1029, Safety of High-Intensity- Discharge Lamp Ballasts.
4. UL 1598, Safety of Luminaires.
5. UL 8750, Safety of LED Lighting

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. NEC Article 410, Luminaires, Lamp holders, and Lamps.
2. Florida Building Code 2017, Wind Load Requirements

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:

a. Schedule of light fixtures to be furnished, indicating fixture type and location for each.
b. Customized wiring diagrams.

2. Product Data:

a. Manufacturer's technical information, specifications, standard wiring diagrams, and catalog cuts for lighting fixtures proposed.
b. Fixture construction details.
c. ETL photometric and isocandle curves for each fixture proposed.
d. Verification that recessed fixtures to be mounted in hung ceilings are compatible with ceiling suspension system proposed.

B. Informational Submittals: Submit the following:

1. Manufacturer's Instructions:

a. Instructions and recommendations for handling, storing, and protecting the equipment.
b. Installation instructions for the equipment, including setting drawings, templates, and directions and tolerances for installing anchorage devices.

C. Maintenance Material Submittals: Submit the following:

1. Spare Parts and Extra Stock Materials: Furnish spare parts for each type of unit required as indicated in Part 2 of this Section.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Upon delivery, inspect equipment for evidence of water that may have entered equipment during transit.

B. Storage:

1. Store lighting fixtures, controls, related materials and equipment in clean, dry location with controls for uniform temperature and humidity. Protect materials and equipment with coverings and maintain environmental controls.
2. Store materials and equipment for easy access for inspection and identification. Keep materials and equipment off ground, using pallets, platforms, or other supports. Protect materials and equipment from corrosion and deterioration.

PART 2 PRODUCTS

2.01 MATERIALS

A. Type: Lighting fixtures required shall be in accordance with the Lighting Fixture Schedule on the Contract Drawings. Fixtures shall be complete with supports, ballasts, lamps, and incidentals, as required.

B. Fixtures in hazardous locations shall be listed in accordance with UL 1598 and UL 844. Materials shall by suitable for the area classification(s) shown or indicated on the Contract Drawings, and specified in Section 16050, Electrical – General Provisions.

C. Lamps:

1. Fluorescent: Fluorescent lamps shall be Toxic Characteristic Leaching Procedure (TCLP) compliant for low mercury content. Linear fluorescent lamps shall be T8, energy-efficient, extended life type. Compact fluorescent lamps shall be long-life, energy-efficient type.
2. LED fixtures shall be modular and allow for separate replacement of LED lamps and drivers. User serviceable LED lamps and drivers shall be replaceable from the room side. Dimmable LED fixtures shall have either a 0-10 volt, 3-wire dimming driver, or a two-step (50%-100%) line voltage, two switch controlled dimming driver, as shown on the drawings.

    a. LED lamps shall have a color temperature of 3500 degrees K, a CRI of 80 minimum, and a lumen maintenance L70 rating of 50,000 hours minimum.

3. High Pressure Sodium: Shall be TCLP-compliant for low mercury content. Lamps shall be clear with high-efficacy and lumen maintenance.
4. Metal Halide: Shall be fabricated for low mercury content and be TCLP-compliant when available. Lamps shall be clear-pulse, start type with high-efficacy and lumen maintenance.
5. Incandescent: Inside-frosted.
6. Spare Parts and Extra Stock Materials: Ten percent spare lamps of each type and wattage.

D. Ballasts:

1. Fluorescent: UL 935 listed, high power factor, energy-efficient type, equipped with thermal protectors (Type “P” ballast), compatible with lamps installed. Indoor two-lamp fluorescent ballasts shall be electronic type with total harmonic distortion of less than 20 percent. Ballast factor shall be 0.85 minimum with total of less than 61 watts input. Provide cold weather type ballast where indicated in the Lighting Fixture Schedule.
2. High Intensity Discharge: UL 1029 listed, high power factor, constant wattage, stabilized autotransformer with line starting current the same or less than operating current.
3. Ballasts sound level shall be 30 decibels or less, sound rating “A”.
4. Ballasts shall be INTERTEK (ETL) listed and Certified Ballast Manufacturer Association, CMB-certified.

5. For fixtures utilizing double-ended lamps, provide fixture disconnecting means within the fixture.
6. LED drivers shall be electronic-type, labeled as compliant with radio frequency interference (RFI) requirements of FCC Title 47 Part 15, and comply with NEMA SSL 1 “Electronic Drivers for LED Devices, Arrays, or Systems”. LED drivers shall have a sound rating of “A”, have a minimum efficiency of 85%, and be rated for a THD of less than 20 percent at all input voltages.
7. Spare Parts and Extra Stock Materials: Ten percent spare ballasts of each type and quantity, but not less than one.

E. Fixtures located in area identified as hazardous in Section 16050, Electrical – General Provisions, shall each be approved as a complete assembly, shall be clearly marked to indicate maximum wattage of lamps for which they are approved, and be protected against physical damage by suitable guards.

F. Hardware: Provide necessary hangers, supports, conduit adaptors, reducers, hooks, brackets, and other hardware required for safe fixture mounting. Hardware shall have protective, non-corrosive finish.

G. Outdoor Fixtures: Provide each fixture to be installed outdoors with cut-off lens to reduce the fixture’s light pollution emissions.

H. Time Switch:

1. Type: Astronomic dial time switch with day-omitting device.
2. Products and Manufacturers: Provide of one of the following:

    a. 7000Z Series by Tork Time Controls, Inc.
    b. Or equal.

3. Timing Motor: Heavy-duty, synchronous, self-starting, high torque, 120-volt or 277-volt, 60 Hertz, as shown on the Contract Drawings.
4. Capacity: 40 amps per pole at 277 volts.
5. Dial: 24-hour rotation, with gear to provide one revolution per year that automatically raises the “ON” and “OFF” settings each day according to seasonal changes of sunset and sunrise.
6. Reserve Power: Spring driven reserve sufficient to operate time switch contacts for not less than 30 hours after power failure. On restoration of power, time switch shall transfer to synchronous motor drive and automatically rewind reserve.

I. Lighting Contactor and Controls:

1. Provide a lighting contactor and control system for control of each area where shown on the Drawings.
2. Product and Manufacturer: Provide products of one of the following:

    a. Type SM03 by Square D Company.
    b. Or Approved equal.

3. System shall include:

a. Enclosure sized as required, complete with input control fuse and screw type terminal blocks rated 300-volt, 20-amp quantity for all circuits, unless indicated otherwise on the Drawings.
b. Single coil, electrically-operated, mechanically-held contactor. Contactor shall be rated 30-amp, 600-volt, with 120-volt operating coil, unless indicated otherwise on the Contract Drawings. Number of poles shall be as shown on the Contract Drawings. Provide multiple contactors when necessary.
c. Where lighting contactors are controlled by photocell, provide a 120-volt, two-pole control relay, enclosure mounted to convert the two-wire photocell control to three-wire control required by contactor. Control shall include a cover mounted on-off-auto selector switch for “manual” or “auto” selection of operation. In “auto” position, contactor shall respond to photocell.
d. Enclosure: As required for area classification per Section 16050, Electrical – General Provisions.
e. Identify panel in compliance with Section 16075, Identification for Electrical Systems.

J. Photocell:

1. Products and Manufacturers: Provide one of the following:

a. 2100 Series by Tork Time Controls, Inc.
b. Or equal.

2. Cadmium sulfide hermetically-sealed cell, fully temperature compensated, with time delay of not less than 15 seconds to prevent false switching.
3. Built-in fail safe light level selector, adjustable within limits of two to 50 foot-candles and factory set at 25 foot-candles.

K. Fixture-Lowering Hanger System:

1. General:

a. Provide corrosion-resistant system that lowers fixtures to ground level to allow maintenance on fixtures. Provide lowering hanger system for each fixture as shown on the Contract Drawings.

2. Products and Manufacturers: Provide one of the following:

a. Thompson Hangers, by Joslyn Hi-Voltage Corp.
b. Or equal.

3. System:

a. Upper or fixed housing of lowering devices shall contain:

1) Attached pulley.
2) Single point latching mechanism.
3) Guide.

4) Upper or socket electrical contacts.

b. Lower or moveable housing of lowering devices shall contain:

1) Operating line termination.
2) Positioning stem and lower half of latch assembly.
3) Lower electrical contacts.
4) Fixture adapter.

c. Fixtures shall be lowered on a guide line to allow operation of system in adverse weather and with structural clearance. Angles of the guide line to the structure shall be in accordance with to lowering device manufacturer's instructions.
d. Operating line shall be high-strength/high-flexibility stainless steel and supplied by the lowering device manufacturer.
e. Each operating line shall be encased in conduit where lower than eight feet above finished floor.
f. Non-hanger termination shall be of enclosed and surface mounted design.
g. Pulleys shall be supplied by hanger manufacturer as required to prevent excessive cable sag and allow lateral offsets between fixture location and cable termination.
h. Provide portable manual winch.

4. Electrical:

a. Contact material shall be silver-impregnated/silver-plated plate copper. Contacts shall use ball and socket design for ease of alignment and to allow for residual building vibration and movement.
b. Contact pressure shall be supplied by springs remote from current conductors and shall not be part of current-carrying path.
c. Termination of wiring shall be to crimp connectors.
d. Provide electrical insulation of contacts by porcelain standoffs.
e. Lowering device shall be make-and-break rated, UL-approved, as follows:

1) 250 vac: 30 amps
2) 600 vac: 15 amps
3) 250 vdc: 10 amps

f. Lowering device shall have eight contacts rated at 120 vac, 15 amps.

5. Mechanical:

a. System loading capacity: 200 pounds.
b. Manual or power winch operation.
c. Housing manufactured with copper-free or low copper content cast aluminum.
d. Operation shall be slow pull/quick release method.
e. Maintenance-free design.

f. Latching means shall be single point centered design to facilitate even wear over life of hangar.
g. Provide a tag line to facilitate lateral movement over inaccessible spaces. Tag line shall consist of the following parts by hanger manufacturer:

1) Termination kit for wall.
2) Manual winch.
3) Operating cable.
4) Pulley for upper mounting.

L. Motion/Occupancy Sensor:

1. Products and Manufacturers: Provide one of the following:

a. Leviton, Motion Sensor Field-of-View PR 150-1LW
b. Or equal.

2. Adjustable time delay interval of 15 seconds to 15 minutes.
3. Equipped with passive infrared (PIR) sensing technology.

2.02 LIGHT EMITTING DIODE (LED) LIGHTING

The LED Fixture shall consist of a LED Luminaire Assembly, LED Driver and mounting hardware.

A. LED Lighting Fixture. LED Fixture requirements are as described below:

1. The input to the LED Lighting Fixture shall be 120 to 277VAC (±10%), 60HZ or as indicated in the Contract Document.
2. Correlated Color Temperature (CCT) shall be minimum 4000K or as indicated in the Contract Document.
3. Color Rendering Index (CRI) shall be ≥70.
4. A minimum of 50,000 operating hours before reaching the L70 lumen output degradations point without catastrophic failure, or as indicated in the Contract Document.
5. Conform with UL 8750.
6. Compliance to FCC CFR Section 15.

B. LED Luminaire Assembly Luminaire Assembly requirements as described below:

1. Definition: Luminaire Assembly is the LED assembly without LED driver.
2. Input voltage shall be 24VDC, 36VDC or as indicated in the Contract Document.
3. CCT, CRI, Minimum life and UL conformity requirements are as defined in above article LED Lighting Fixture.

C. LED Driver LED: Driver requirements are as described below:

1. Must operate input voltage between 120VAC to 277VAC (±10%).
2. Operating frequency must be 60Hz.
3. Must be rated to operate between -40ºC to +50ºC.

4. Must have a minimum efficiency of 85%.
5. Self protected including short circuit protection.
6. Compliance to FCC CFR Section 15

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. General:

1. Fixture mounting heights and locations indicated on the Drawings are approximate and are subject to revision in the field where necessary to clear conflicts and obstructions.
2. Mounting Heights: Mounting heights or elevations are to bottom of fixture or to centerline of device.
3. Install fixtures in accordance with Laws and Regulations, the Contract Documents, and manufacturer instructions and recommendations.
4. Mount fixtures so that sufficient access is available for ready and safe maintenance.
5. Securely fasten equipment to walls or other surfaces on which equipment is mounted.

B. Suspended Fixtures:

1. Pendant-mount using 1/2-inch diameter conduit stems.
2. Ground to outlet box.
3. Attach mounting to building structure with expansion anchors.
4. Fixtures shall not be dependent on the outlet box cover screws for support.

C. Surface Mounted Fixtures:

1. Attach to appropriate outlet box.
2. Attach to surface using fasteners and sealing washers when mounting fixture in damp or wet locations.

D. Boxes and Fixtures:

1. For units mounted against masonry or concrete walls, provide suitable 1/4-inch spacers to prevent mounting back of box directly against wall.
2. Bolt units rigidly to building with expansion anchors, toggle bolts, hangers, or Unistrut.
3. Do not install boxes with open conduit holes.
4. Cable each circuit and identify with tag.

E. Re-lamp all fluorescent fixtures provided under this Contract with new lamps following Substantial Completion.

F. Mount photocells as shown and adjust foot-candle setting for proper dusk and dawn photo-control. Provide wiring in conduit from photocell to controls.

G. Fixture Lowering System:

1. Hangers shall be plumb.
2. Provide adequate clearance between operating line and structural members, pipes, ducts, and other equipment and devices to avoid interference.
3. Conduit runs enclosing operating lines shall be straight with no offset bends.

3.03 SCHEDULES

A. See Drawings for Lighting Schedule

END OF SECTION

SECTION 16505 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install hangers and supports for electrical systems.
2. Area Classifications: Materials shall by suitable for the area classification(s) shown or indicated on the Contract Drawings, and specified in Section 16050, Electrical - General Provisions.

B. Related Sections:

1. Section 16050, Electrical - General Provisions
2. Section 16110, Conduits and Fittings

1.02 REFERENCES

A. Standards referenced in this section are:

1. ASTM A123/A123M, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A1011/A1011M, Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
3. ASTM E84, Test Method For Surface Burning Characteristics of Building Materials

1.03 QUALITY ASSURANCE

A. CONTRACTOR shall have a minimum of five years in support systems and have installed system based on vibration, seismic and wind load calculations. If required, prepare a listing of such installations in the past five years.

1.04 SUBMITTALS

A. Shop drawings and product data as described in Division 1.

B. Operation and maintenance data as described in Division 1.

C. In addition, submit the following:

D. Action Submittals: Submit the following:

1. Shop Drawings:
   a. Detailed installation drawings showing dimensions and compatibility with proposed layout.

2. Product Data:

a. Manufacturer's name, product designation, and catalog number of each material item proposed for use.
b. Manufacturer's specifications including material, dimensional and weight data, and load capacity for each supporting system component proposed for use.
c. Pictorial views and corresponding identifying text of each component proposed for installation.
d. Documentation that confirms product compatibility with Laws and Regulations.

E. Informational Submittals: Submit the following:

1. Certifications:

a. Submit certifications required under this Section.

2. Manufacturer's Instructions:

a. Manufacturer's installation instructions, including but not limited to recommended torque values for all fasteners and hardware.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Provide products of one of the following:

1. B-Line.
2. Kindorf.
3. Unistrut
4. Or equal.

2.02 MATERIALS

A. Strut, Fittings, and Accessories:

1. General

a. Unless otherwise shown or indicated, strut shall be 1-5/8 inches by 1-5/8 inches. Double struts shall be two pieces of the same strut, welded back-to-back at the factory.
b. Attachment holes, when required, shall be factory-punched on hole centers approximately equal to the cross-sectional width and shall be 9/16-inch diameter.
c. Fittings, braces, brackets, hardware, and accessories shall be Type 316 stainless steel.
d. Strut nuts shall be spring captured Type 316 stainless steel.
e. Square and round washers shall be Type 316 stainless steel.

2. Strut materials shall be suitable for area classifications indicated in Section 16050, Electrical – General Provision, and shown or indicated on the Contract Drawings.

a. Dusty Locations:

1) Strut shall be 12-gage carbon steel, hot-dip galvanized after fabrication, complying with ASTM A123/A123M.

b. Wet Locations:

1) Strut shall be 12-gage Type 316 stainless steel.

c. Corrosive Locations:

1) Strut shall be 12-gage Type 316 stainless steel.

a. Chlorine or Sulfuric Areas:

1) Strut shall be fiberglass-reinforced plastic (FRP) complying with ASTM E84.
2) Fabricate materials either by pultrusion or extrusion process.
3) Strut, fasteners and fittings shall have a surface veil over 100 percent of the surface to protect against UV degradation.
4) Manufacture fasteners and fittings from long glass fiber-reinforced polyurethane or vinyl-ester resins.
5) Thread rods shall be made from fiber-reinforced vinyl-ester resin.

B. Hanger Rods:

1. Material:

a. Dry Locations: All-thread, zinc-coated
b. Wet, Corrosive, or Hazardous Areas: Stainless steel.

2. Size: Not less than 3/8-inch diameter, unless otherwise shown on the Contract Drawings or specified.

C. Beam Clamps for Attaching Threaded Rods or Bolts to Beam Flanges for Hanging Struts or Conduit Hangers:

1. Beam clamps shall be stainless steel equipped with stainless steel square-head set screw, and shall include threaded hole sized for attaching the all-thread rod or threaded bolt.

D. Miscellaneous Hardware:

1. Bolts, screws, and washers shall be stainless steel.
2. Hex Nuts: Shall be stainless steel and include nylon inserts.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Provide hangers and supports for electrical systems with necessary channels, fittings, brackets, and related hardware for mounting and supporting materials and equipment. Provide anchor systems, concrete inserts, and associated hardware for proper support of electrical systems.

B. Install equipment and devices on hangers and supports as shown on the Contract Drawings, as specified, and as required.

C. Install hangers and supports level, true, free of rack, and parallel and perpendicular to building walls and floors, so that the hangers and supports are installed in a neat, professional, workmanlike manner. Per NECA/NEIS installation standards

D. Holes in suspended ceilings for rods for hangers and supports and other equipment shall be provided adjacent to bars, where possible, to facilitate removal of ceiling panels.

E. Coordinate installation of hangers and supports with equipment, cabinets, consoles, panels, enclosures, boxes, conduit, cable tray, wireway, busway, cablebus, piping, ductwork, lighting fixtures, and other systems and equipment. Locate hangers and supports clear of interferences and access ways.

F. Anchor Bolts, Expansion Anchors, and Concrete Inserts: Shall be in accordance with Section 05500, Metal Fabrications, and requirements of this Section.

G. Mounting of Conduit:

1. Provide space of not less than 1/4-inch between conduit surfaces and abutting or near surfaces except struts, cable trays, steel beams, and columns.
2. Fasten conduit to struts, cable trays, steel beams, and columns using specified clamps and straps as shown, specified, and required.
3. Devices shall be compatible with size of conduit and type of support. Following installation, size identification shall be visible and legible.
4. Install conduit supports and fasteners in accordance with Section, 16110, Conduits and Fittings.

H. Supports for Cabinets, Consoles, Panels, Enclosures, and Boxes:

1. Freestanding: Unless otherwise specified or shown on the Contract Drawings, provide supports for floor-mounted equipment, cabinets, consoles, panels, enclosures, and boxes. Such supports shall be 3.5-inch high concrete equipment base with a 45 degree chamfered edge. Base shall extend 2-inches beyond outside dimensions of equipment on all sides.

2. Wall-Mounted:

   a. Provide space not less than 1/4-inch between cabinets, consoles, panels, enclosures, and boxes and the surface on which each is mounted. Provide non-metallic or stainless steel spacers as required.
   b. Do not mount equipment, enclosures, panels, and boxes directly to beams or columns. Mount struts to beams or columns using beam clamps, and mount equipment, enclosures, panels, and boxes to the struts.

3. Floor Stand Rack:

   a. Where equipment, cabinets, consoles, panels, enclosures, and boxes cannot be wall-mounted, provide an independent floor stand rack.
   b. Floor stand rack shall consist of struts, plates, brackets, connection fittings, braces, accessories, and hardware assembled in a rigid framework suitable for mounting of intended materials and equipment.
   c. Equip floor stand racks with brackets and bases for rigidly-mounting the framework to the ceiling or floor, as applicable; or equip floor stand racks with beam clamps, angle plates, washers, and bolts for fastening to beam flanges, as applicable.
   d. When equipment, cabinets, consoles, panels, enclosures, and boxes weigh more than 100 pounds:

      1) Main vertical supports of floor stand rack assemblies shall be back-to-back struts.
      2) Bracing, clamping and anchoring of each floor stand rack shall be sufficient to ensure rigidity of the floor stand rack with the intended equipment, enclosures, conduit, cable tray, busway, cablebus, and wireway installed. Floor stand racks shall not be deflected more than 1/8-inch by a 100-pound force applied at any point on the floor stand rack in any direction.

I. Drilling into beams or columns is not allowed unless authorized by ENGINEER.

J. Tighten nuts and bolts to the manufacturer's recommended torque values.

K. Field Cutting:

1. Cut edges of strut and hanger rod shall have rounded corners, edges beveled, and burrs removed. If field cutting the strut is required, use clean, sharp, dedicated tools. Remove oil, shavings, and other residue of cuttings prior to installation.
2. Coatings: To prevent corrosion:

    a. Coat cut edges with zinc-rich paint for galvanized steel.

END OF SECTION

CITY OF TARPON SPRINGS, FLORIDA

STANDARD TECHNICAL SPECIFICATIONS

FEBRUARY 2011

PUBLISHED BY:

DEVELOPMENT SERVICES DEPARTMENT

TABLE OF CONTENTS

GENERAL CONSTRUCTION OPERATIONS 4
ACRONYMS & ABBREVIATIONS 5
SURVEY & LAYOUT BY CONTRACTOR 6
QUANTITY MEASUREMENTS SURVEY BY CONTRACTOR 7
PERMITTING AS-BUILT SURVEY REQUIREMENTS BY CONTRACTOR 8
AS-BUILT SURVEY REQUIREMENTS (UTILITY) BY CONTRACTOR 9
MOBILIZATION 10
MAINTENANCE OF TRAFFIC 11
MAINTENANCE OF TRAFFIC (ITEMIZED) 12
WATER FOR DUST CONTROL 14
PREVENTION, CONTROL & ABATEMENT OF EROSION & WATER POLLUTION 15
DRAIN PIPE WITH SOCK (FOR SEDIMENTATION CONTROL) 16
CLEARING & GRUBBING 17
ROOT CONTROL BARRIER 18
EARTHWORK & RELATED OPERATIONS 19
GRADING 22
DREDGING 23
FLOWABLE CONCRETE FILL 24
BEDDING MATERIAL 25
STABILIZATION 26
FINISH SOIL LAYER (ORGANIC TOPSOIL) 27
BASE COURSES 28
ROADWAY BASE (RECYCLED CRUSHED CONCRETE/GRADED AGGREGATE) 29
SUPERPAVE ASPHALT BASE 31
OPTIONAL BASE COURSE 32
BITUMINOUS TREATMENTS SURFACE COURSES & CONCRETE PAVEMENT 33
MILLING & RESURFACING OF EXISTING ASPHALTIC CONCRETE PAVEMENT & ROADWAY BASE 36
ASPHALTIC CONCRETE FRICTION COURSE 39
PAVEMENT 40
DRIVEWAY RESTORATION 41
BRICK PAVEMENT REMOVAL 42
BRICK PAVEMENT INSTALLATION 43
STRUCTURES 45
BOX CULVERT SECTION 46
REINFORCING STEEL 48

INLETS, MANHOLES & JUNCTION BOXES 49
RELOCATION / ADJUSTMENT OF EXISTING UTILITIES 50
SKIMMER FOR OUTFALL DRAINAGE STRUCTURE 51
PIPE CULVERTS & STORM SEWERS 52
JACK & BORE 55
U-TYPE ENDWALLS & FLARED OR MITERED END SECTIONS 56
UNDERDRAIN 57
INCIDENTAL CONSTRUCTION 59
CURB & GUTTER 60
REMOVE & RESET GRANITE CURB 61
SIDEWALK 62
RIPRAP 64
GUARDRAIL 65
FENCING 66
DIRECTIONAL BORE 67
SODDING 68
HIGHWAY SIGNING 69
STREET LIGHTING CONDUIT SYSTEM 70
SHEETING & BRACING 71
BARRICADES 72

GENERAL CONSTRUCTION OPERATIONS

Measurement and Payment
The items of work and the pay item numbers specified in the Schedule of Values contained in the Proposal are identified specifically with the corresponding primary Section numbers of the Technical Specifications, and are hereby incorporated by reference as extensions of the corresponding Technical Specifications.

The pay item descriptions shown in the Specifications, as, for example, Asphaltic Concrete or Concrete, Class II, shall be deemed to include all additional descriptive wording shown on the Plans or in the Schedule of Prices for the respective pay items.

The contract price shown for the various pay items in the Schedule of Values contained in the Proposal upon which award of the Contract is based shall constitute full compensation for all work and materials described and specified in the Specifications for the respective pay items.
Any pay items which appear on the Bid Submittal Sheets (Schedule of Values) and for which there is no technical or special provisions contained in Division I, the pay item shall be provided, measured, and paid as per the provisions of the FDOT Specifications, latest edition. Technical provisions have been included which may not have pay items listed on the Bid Submittal Sheets (Schedule of Values). These technical provisions are included as incidental to other items covered under other technical provisions which are included herein.

De-Watering Testing Requirements
If there is no separate pay item for de-watering, then the cost for de-watering shall be included in the pay items where de-watering is required. The Contractor will monitor the de-watering discharge to ensure that turbidity levels remain under the State allowed level of 29 Nephelometric Turbidity Units (units used to measure turbidity) above background. If turbidity levels exceed these State standards, activities will cease and corrective measures will be implemented until the discharge is in compliance. The Contractor shall make every effort to contain the discharge within City owned drainage.

Should the Contractor choose to de-water to waters of the State, the Contractor must meet the testing requirements of 62-621.300(2) or 62-621.300(1), including water quality testing. For all pay items where de-watering is required, said pay items shall include the testing, reporting, and notification requirements described in the "State of Florida - Department of Environmental Protection - Generic Permit for Discharge of Produced Ground Water From Any Non-contaminated Site Activity" [62-621.300(2)] or "State of Florida - Department of Environmental Protection - Generic Permit for Discharges from Petroleum Contaminated Sites" [62-621.300(1)].

ACRONYMS & ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ASTM	American Society of Testing and Materials
CITY or CTS	City of Tarpon Springs
FDOT	Florida Department of Transportation
ID	Inside Diameter
PCED	Pinellas County Public Works Engineering Department
SCHEDULE OF VALUES	The Schedule of Values contained in the Proposal (Division W)
TON	A weight of two thousand (2000) pounds
FDOT SPECIFICATIONS	FDOT Standard Specifications for Road and Bridge Construction (current edition unless otherwise stated including latest FDOT approved interim specifications)
FDOT DESIGN STANDARDS	FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System (current edition unless otherwise stated) (including latest FDOT approved interim details)

SURVEY & LAYOUT BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete the survey and layout by the Contractor, in accordance with the section “SURVEY AND LAYOUT” in Division B of these specifications, to completely construct the project, to the satisfaction of the Engineer.

This work shall include providing all lines, grades, boundaries and required survey and/or layout necessary to construct and inspect the project. All right-of-way and easement boundaries and centerline control points shall be established and maintained through the contract period by the Contractor.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements specified in section “SURVEY AND LAYOUT” of Division B of these specifications.

The Contractor shall be responsible to perform all layouts in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the survey and layout requirements of this project. All field books and calculations, related to layout, shall be available to the engineer upon request, for a period of one year after construction completion.

Basis of Payment:
The pay quantity shall consist of all materials and labor necessary to complete the survey and layout by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

QUANTITY MEASUREMENTS SURVEY BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all quantity measurements by the Contractor, to the satisfaction of the Engineer.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to quantity measurements and shall be responsible to perform all measurements in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the measurement requirements of this project.

The Contractor shall provide summaries to the City, signed and sealed by a Florida registered Professional Land Surveyor, listing all items measured, measurement quantities and dates of measurements, within 5 days after receiving written request from the City.

The items that require measurements include, but are not limited to:

- Roadway items (surface course, base, stabilization, curb, sidewalks, etc.)
- Drainage items (inlets, pipes, box culverts, etc.)
- Other items (Handrails, guardrail, fencing, gates, landscaping, sod, fill, excavation, etc.)

In the case of dispute in quantity measurements, the City reserves the right to have CTS Development Services Department – Engineering Division, verify all measurements and calculations. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

Basis of Payment:
The pay quantity shall consist of all materials and labor necessary to complete the quantity measurements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

PERMITTING AS-BUILT SURVEY REQUIREMENTS BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all required permitting as-built requirements, to the satisfaction of the Engineer.
The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to this as-built survey and shall be responsible to perform all survey operations in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the permitting as-built requirements of this project.

The Contractor shall provide the as-built survey to the City, signed and sealed by a Florida registered Professional Land Surveyor, within 25 days after receiving written request from the City. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

The items that require as-built surveying shall include:

- Control structures - weir and grate elevations and dimensions
- Ponds - top of bank, toe of slope, etc.
- Sanitary Sewer Structures – Rim and Invert elevations
- Other items (if specified in Technical Special Provisions)

Basis of Payment:
The pay quantity shall consist of all materials and labor necessary to complete the permitting as-built survey requirements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

AS-BUILT SURVEY REQUIREMENTS (UTILITY) BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all required as-built survey requirements for City of Tarpon Springs Utility Lines or other Utility Lines specifically listed in these specifications, to the satisfaction of the Engineer.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to this as-built survey and shall be responsible to perform all survey operations in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the utility as-built requirements of this project.

The Contractor shall provide the utility as-built survey to the City, signed and sealed by a Florida registered Professional Land Surveyor, prior to final project approval and release of monies retained by the City. The contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

The items that require as-built surveying shall include:

- CTS Sewer Line
- CTS Water Line
- CTS Storm Sewer
- Other Utility Lines (if specified in Special Technical Provisions)

Basis of Payment:
The pay quantity shall consist of all materials and labor necessary to complete the utility as-built survey requirements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

MOBILIZATION

The work specified under this Section consists of the preparatory work and operations in mobilizing to begin work on the project, including but not limited to those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site(s), and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities as required by these specifications, special provisions, and state and local laws and regulations.

The Contractor shall furnish, install, and maintain station boards (every 100 ft) on one side of the project for the duration of the project. The station boards shall be 48 inch long, 1" x 4" lumber, painted white with 3 inch black stenciled numbers. Station boards shall be removed by the Contractor upon written notice of the Engineer.

The Contractor and all sub-contactors shall enter into an agreement with the property owner for the acquisition and use of all staging areas or privately owned property, and a copy of such agreement/s will be furnished to the City prior to the use of such property. The agreement will hold the City of Tarpon Springs harmless and absolve the City of any and all liability or responsibility for the duration of the agreement.

The cost of bonds and any required insurance, consideration for indemnification to the City and the Engineer, and any other preconstruction expenses necessary for the start of the work, excluding the cost of construction materials, shall also be included in this Section.

Pay item for Mobilization shall include taking pictures and a video of the project by the Contractor, prior to construction beginning, for the purpose of documenting existing conditions. The pictures and video shall be provided to the City prior to beginning construction.

Pay item for Mobilization shall also include the furnishing and placement of door hangers on all properties immediately affected by the project, prior to commencing construction, informing said properties of construction time frame, road closures or as directed by the Engineer.

Basis of Payment
The work and incidental costs specified as being covered under this Section shall be paid for at the contract lump sum price, for Mobilization, in accordance with the following schedule:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for Mobilization
5	25
10	50
25	75
50	100

Partial payments shall be limited to ten percent (10%) of the original contract amount for the project. Any remaining amount will be paid upon completion of all work on the project.

When more than one project (separate Project Fund Number) is included in the Contract, the above percentages shall apply separately to each of the projects, where separate pay items for Mobilization apply.

MAINTENANCE OF TRAFFIC

The work specified under this Section consists of the maintaining of vehicular and pedestrian traffic within the limits of the project for the duration of the construction period, in accordance with the requirements of Section 102 of the FDOT Specifications, as amended herein and in accordance with the Plans.

The road shall be kept open to two-way traffic for the duration of the construction period, except that, DURING NON-PEAK TRAFFIC PERIODS, one lane of traffic will be permitted provided that flagmen are used and prior approval is obtained from the City. The Contractor will not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices, in accordance with the Plans and FDOT Design Standards, applicable edition, and the State of Florida Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations for Streets and Highways on the State Maintained Systems, applicable edition, and shall take all necessary precautions for the protection of the work and the safety of the public for the duration of the construction period. The work specified under this Section shall include removal of pavement markings, installation of pavement striping, markings and reflective markers, and all materials and construction necessary to create temporary connections for street, driveways and pedestrian traffic. The applicable edition of the documents referenced herein shall be the current edition or that edition of the respective documents specified in the Plans.

Temporary Curb (Asphaltic or Concrete) shall not be used, with the following exception: Portable Temporary Low Profile Barrier for Roadside Safety, in accordance with FDOT Index 412, can be used in lieu of barrier walls for design speeds of 45 mph or less, where a low profile is desired to maintain sight distance at intersections and driveways. Portable Temporary Low Profile Barrier for Roadside Safety shall be paid for under the contract unit value for Barrier Wall (Temporary) Low Profile Concrete (Linear Foot), and will be full compensation for furnishing, installing, maintaining, relocating and removing the barrier wall. The contractor shall not receive additional compensation for relocating the barrier wall (i.e., from one construction phase to another). The approved "Portable Temporary Low Profile Barrier for Roadside Safety" is a proprietary design by the University of Florida. Only those barrier units cast by producers licensed by the University of Florida will be allowed for installation. Availability of this device may be limited as a result of demand; this should be considered in establishing project schedules calling for this device.

Basis of Payment
The work specified under this Section shall be paid for at the contract lump sum price for Maintenance of Traffic. The lump sum MOT shall be paid on a pro-rated monthly amount based on the contract time. Unless specified for under a separate pay item, the lump sum item shall include all costs for Maintenance of Traffic shown in the Plans, including, but not limited to, the following temporary items:

- Temporary Traffic Barricades
- Temporary Pavement for Maintenance of Vehicular Traffic (Install and Remove)
- Temporary Pavement for Maintenance of Pedestrian Traffic (Install and Remove)
- Temporary Pavement Markings, Pavement Striping and Reflective Markers
- Temporary Traffic Control Signals
- Temporary Curb (Includes Paint & Delineators)
- Panels Arrow Advance
- Temporary Vehicle Impact Attenuators
- Temporary Variable Message Signs
- Flagmen
- Off Duty Law Enforcement Officer
- Temporary Drainage
- Commercial Materials for Driveway Maintenance
- Temporary Concrete Barrier Wall (Including Mounted Lights-Type C Steady Burn)

MAINTENANCE OF TRAFFIC (ITEMIZED)

The work specified under this Section consists of the maintaining of vehicular and pedestrian traffic within the limits of the project for the duration of the construction period, in accordance with the requirements of Section 102 of the FDOT Specifications, as amended herein. The road shall be kept open to two-way traffic for the duration of the construction period, except that, during non-peak traffic periods, one lane of traffic will be permitted provided that flagmen are used and prior approval is obtained from the City. The Contractor will not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices, in accordance with the Plans and FDOT Design Standards, applicable edition, and the State of Florida Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations for Streets and Highways on the State Maintained Systems, applicable edition, and shall take all necessary precautions for the protection of the work and the safety of the public for the duration of the construction period.

The work specified under this Section shall include all work shown in the Plans including, but not limited to, removal of existing pavement markings, installation and removal of pavement striping, markings and reflective markers, and all materials and construction necessary to create temporary connections for street, driveways and pedestrian traffic. The pay item for “Maintenance of Traffic – Lump Sum” shall include all work necessary for maintenance of vehicular traffic and pedestrian traffic, unless otherwise specified to be paid for under other items of work. Payment for pavement markings to be used during maintenance of traffic shall be paid for under Sections 706-710 of these specifications.

Temporary Curb (Asphaltic or Concrete) shall not be used, with the following exception: Portable Temporary Low Profile Barrier for Roadside Safety, in accordance with FDOT Index 412, can be used in lieu of barrier walls for design speeds of 45 mph or less, where a low profile is desired to maintain sight distance at intersections and driveways. Portable Temporary Low Profile Barrier for Roadside Safety shall be paid for under the contract unit value for Barrier Wall (Temporary) Low Profile Concrete (Linear Foot), and will be full compensation for furnishing, installing, maintaining, relocating and removing the barrier wall. The contractor shall not receive additional compensation for relocating the barrier wall (i.e., from one construction phase to another). The approved "Portable Temporary Low Profile Barrier for Roadside Safety" is a proprietary design by the University of Florida. Only those barrier units cast by producers licensed by the University of Florida will be allowed for installation. Availability of this device may be limited as a result of demand; this should be considered in establishing project schedules calling for this device. The applicable edition of the documents referenced herein shall be that edition of the respective documents specified in the Plans.

Basis of Payment

The work specified under this Section shall be paid for in accordance with the following individual pay items:

- Maintenance of Traffic (lump sum)
- Temporary Traffic Barricades
- Temporary Pavement for Maintenance of Vehicular Traffic (Install & Remove)
- Temporary Pavement for Maintenance of Pedestrian Traffic (Install & Remove)
- Temporary Pavement Markings, Pavement Striping and Reflective Markers
- Temporary Traffic Control Signals
- Temporary Curb (Includes Paint & Delineators)
- Panels Arrow Advance
- Temporary Vehicle Impact Attenuators
- Temporary Variable Message Signs

- Flagmen
- Off Duty Law Enforcement Officer
- Temporary Drainage
- Commercial Materials for Driveway Maintenance
- Temporary Concrete Barrier Wall (Including Mounted Lights-Type C Steady Burn)

Note: If a pay item for one of the items above is not provided in the “Schedule of Values”, then the cost for said item/work shall be included in the “Maintenance of Traffic” (Lump Sum) pay item.

WATER FOR DUST CONTROL

The work specified under this Section consists of the furnishing and application of Water on the construction area including but not limited to sub-grade, un-surfaced base, or other un-surfaced traveled ways, in order to control dust resulting from construction operations. The locations and frequency of application shall be as directed by the Engineer. The Contractor must comply with Item 23 of Part 'B' of the City's "General Conditions for Construction" as it relates to water used for construction and testing purposes.

Basis of Payment
The work specified under this Section shall be paid for at the contract unit price per thousand gallons of Water for Dust Control.

PREVENTION, CONTROL & ABATEMENT OF EROSION & WATER POLLUTION

The work specified under this Section shall consist of the furnishing and application of measures required to control erosion on the project and in areas where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects of public or private property adjacent to the project right of way and damage to work on the project. These measures will consist of construction and maintenance of temporary erosion control features including baled hay or straw, silt fences, floating turbidity barriers, staked turbidity barriers, rock bags, or as otherwise shown on the Plans or Stormwater Pollution Prevention Plan (SWPP). The furnishing and application of these measures shall be in accordance with Section 104 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable standard drawings of the FDOT Design Standards.

The work shall consist of the construction of baled hay or straw dams across water flow paths, and the placement of baled hay or straw barriers around drainage structures during the construction thereof, to protect against downstream or lateral accumulations of silt and debris. The dams shall be placed so as to effectively control silt and debris dispersion under the conditions present on the project, or any conditions created during construction activities, which might tend to produce erosion or the accumulation of silt and debris. Silt fences and turbidity barriers shall be constructed in accordance with the details shown in the Plans, or as may be directed by the Engineer, in a manner such as to insure the adequate performance of their intended function.

The Contractor shall inspect on a daily basis and re-establish, at no additional expense to the City, all baled hay or straw dams, silt fences, turbidity barriers, rock bags or sections thereof, which may become damaged, destroyed or otherwise rendered unsuitable for their intended function during the construction of the project. The work specified under this Section shall include the installation and inspection, re-establishment and maintenance of all required baled hay or straw dams, silt fences, turbidity barriers and rock bags, and all other work required to control effectively the downstream or lateral accumulation of silt and debris, control erosion, reduce suspended solids in downstream waters, and the removal of all such temporary erosion control facilities upon completion of the project. The work specified under this Section shall include the removal and proper disposal of debris, sediment, etc, which accumulates against erosion control or turbidity barriers. It will also include the removal of the erosion control barriers after construction is deemed complete.

The re-establishment and maintenance described above; shall be performed within twenty-four (24) hours after receiving notice by the Engineer. For each day following the twenty-four (24) hour period the deficiency is not corrected, the Contractor shall be assessed an amount of Five Hundred ($500.00) dollars per day. Payment to the City of said sums may become payable under the provisions of this article and shall be made by identifying said sums as a credit item on the Contractor's monthly pay estimate.

The Contractor shall be required to submit to the City (for review and approval) a project-specific plan for erosion and sedimentation control and construction phasing, prior to commencing construction activities. The plan will demonstrate the methodology for minimizing the amount of area disturbed and soil exposed at any one time and the corresponding erosion control measures. The plan must be approved and accepted by the City prior to commencing construction work. A deficient plan submittal by the contractor, and the subsequent need to re-submit a revised plan to the City for review, shall not constitute a basis for claiming a delay by the Contractor. There is no separate pay item for costs associated with the plan. All costs associated with the plan shall be included in the pay items for which erosion control will be needed.

Basis of Payment

The pay quantities for the work specified under this Section shall be each of Bales of Hay or Straw, linear feet of Silt Fences, linear feet of Floating Turbidity Barriers or Staked Turbidity Barriers, each of Rock Bags, each of Soil Tracking Prevention Devices, actually constructed, placed and accepted, as authorized by the Engineer, and maintained to the satisfaction of the Engineer for the duration of the construction period.

DRAIN PIPE WITH SOCK (FOR SEDIMENTATION CONTROL)

The work specified under this Section consists of the temporary installation of Drain Pipe with Sock type products for the specific purpose of preventing and controlling soil erosion runoff and intrusion into stormwater drainage systems.

Drain sock products, such as “ADS Sock” or approved equal, shall be installed to conform to the requirements set forth by the manufacturer and guidelines regulated by the Pinellas County Environmental Management Department for erosion control measures. Perforated PVC pipe, in lieu of ADS pipe, or approved equal, may also be used.

The SOCK material shall be an ultra-porous filter (synthetic wrap material) that provides water entry and sediment protection and fits (in a snug manner) over the pipe. It shall be 100% knitted polyester (or approved equal), with an equivalent opening size of 30 to 40, burst strength of 100-135 (ASTM D 3786), fiber size of 100-200 denier per filament, 2.5 to 3.5 ounces per square yard (ASTM D 3776). It shall be free of folds and tears and will be replaced immediately, by the contractor and at the contractor’s expense, should such folds and tears occur.

The Contractor shall provide the Engineer a manufacturer’s certificate stating the manufacturer’s name, product name, style number and other pertinent information fully describing the product, to obtain approval prior to use.

The work specified under this Section shall include all preparation, installation and maintenance of the product per the manufacturer’s specifications. It shall also include removal of product from inlets at the end of the construction phase.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each of Drain Pipe with Sock (pipe + synthetic wrap material) required to span the opening of the inlet, satisfactorily installed, accepted and removed at the end of construction. The pay quantity of each shall include varying lengths, ranging from the minimum to maximum inlet throat openings shown in plans

CLEARING & GRUBBING

The work specified under this Section consists of the clearing and preparation of sites for proposed construction, in accordance with the requirements of Section 110 of the FDOT Specifications, as amended herein.

The work specified under this Section shall include the removal and off-site disposal of all trees indicated on the Plans to be removed, the removal and off-site disposal of all brush, stumps, roots, rubbish and debris, and all obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas, the removal and off-site disposal of all existing facilities, structures and pavement indicated on the Plans to be removed, plugging of water wells, and the removal and off-site disposal of all buildings, structures, appurtenances, and other facilities necessary to prepare the area for the proposed construction.

All buildings, structures, utilities and other obstructions indicated on the Plans to remain shall be carefully protected against displacement or damage.

Except as otherwise provided for in these Specifications, the work to be performed under this Section shall also include the clearing and grubbing necessary for the excavation of detention ponds, borrow pits, and the like, and the clearing and grubbing necessary for the construction of designated haul routes.
Included under this Section shall be the removal and off-site disposal of all product and debris except that which is to be salvaged or which is required to complete the construction of the project. Whenever it is necessary to cut for removal large roots of trees to be preserved, the roots to be cut shall be cleaned prior to cutting and cut with a saw. Cut shall be smooth without jagged edges.

The Contractor shall make his own inspection to determine the character, density and extent of trees, vegetation and other items subject to removal and disposal under these provisions. The attention of the Contractor is directed to the fact that the burning of debris resulting from clearing and grubbing operations shall not be permitted within City-owned lands or rights-of-way.

Nothing in these provisions shall be construed to authorize the removal or disturbance of any tree or other form of vegetation, or any marine, land or air creature natural habitat, which may be subject to the jurisdiction of regulatory agencies.

This section shall also include the cost for trimming of trees by an arborist and disposal of the trimmings, as shown on the plans and/or required for construction of project.

This section shall also include the temporary relocation of mailboxes during construction and permanent relocation after construction has been completed.

Basis of Payment
The pay quantity shall consist of all clearing and grubbing required in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one lump sum quantity, unless otherwise specified in the schedule of values.

ROOT CONTROL BARRIER

The work specified under this Section consists of the installation of Root Control Barrier in trenches, alongside hardscape structures such as sidewalks, curbing, pavements concrete and building foundations to prevent structural damage due to root penetration, in accordance with these specifications, at locations as directed by the Engineer.

Root control barrier, such as “Biobarrier” or approved equal, shall be installed to conform to the requirements as set forth by the manufacturer, to a minimal depth of 18” below finish grade of adjacent sidewalk or curbing. Root Barrier shall be free of folds and tears to produce an effective barrier between concrete construction and trees. Installation shall be perpendicular to finish grade and all edges shall be below finish grade once restoration of the adjacent disturbed area has been completed.

Product labels shall clearly show the manufacturer or supplier name, style number, and roll number and shall include a compliance statement certifying that all ingredients and inspection standards for this product have been met.

The Contractor shall provide to the Engineer a manufacturer’s certificate stating the manufacturer’s name, product name, style number, chemical composition and other pertinent information to fully describe the product. The Contractor shall affix an applicable MSDS (Material Safety Data Sheet) to the outside of each shipping container for the product.

The work specified under this Section shall include all preparation of sub-grade and the furnishing of all necessary incidental items for proper installation per the manufacturer’s specifications.

Basis of Payment
The work specified under this Section shall be paid for in Linear Feet, of root control barrier, of widths specified by the applicable pay items, actually constructed and accepted.

EARTHWORK & RELATED OPERATIONS

Excavation and Embankment

The work specified under this Section consists of the excavation and embankment required for completion of the project. All work specified under this Section shall conform to the requirements of Section 120 of the FDOT Specifications, except as amended herein.

Excavation specified under this Section shall include the excavation and removal of all existing materials, debris, obstructions, structures and utilities encountered during excavation, except where designated in the Plans or Specifications to remain, between the original ground or top of existing pavement and the surface of the completed earthwork, within the limits shown in the Plans. Fill material, borrow material, and embankment shall consist of suitable earthen material acceptable to the Engineer. Ownership of all suitable excavated material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor. The Contractor shall not over-excavate a construction site below the elevations shown in the Plans and Permits, unless specifically pre-approved by the City.

All fill and embankment material shall be A-1 or A-3 soil material, per AASHTO M-145 classifications. If A-3 material is used, it shall have a minimum average lab permeability of 5x10-5 cm/sec (0.14 ft./day) as per FM I-T215. Sites such as stormwater management areas or mitigation sites located within the project corridor identified by the Contractor for possible use as Embankment must be presented to the Engineer for approval prior to use. Any borrow source is required to have the appropriate soil and materials testing required per Pinellas County and FDOT standards and specifications to qualify as Embankment. In addition, borrow sources shall not be in conflict with any specific stormwater or environmental permit and/or contract requirements. The Engineer of Record and the City do not guarantee or qualify any materials, identified in the plans as Regular Excavation, as being suitable borrow or a suitable borrow source.

EXCAVATION OF UNSUITABLE MATERIAL specified under this Section consists of the removal of muck, clay, rock and all other types of unsuitable material and shall include the supply, placement and compaction of fill material as replacement for unsuitable material.

The location and quantity of unsuitable material is estimated, and is approximate only. The removal of unsuitable material may be required at additional locations to be determined in the field by the Engineer, after unsuitability is confirmed by testing laboratory. For roadway construction in general, unsuitable material shall be removed to a minimum depth of four (4) feet below proposed centerline grade, or as directed by the Engineer in the field. In areas adjacent to existing structures, the Contractor shall remove unsuitable material to a minimum depth of four (4) feet below proposed grade, or as directed by the Engineer, and backfilled immediately with suitable material. Testing shall be performed in compliance with Item 44 of the City's "General Conditions for Construction".

EXCAVATION OF DETENTION POND AND/OR MITIGATION AREA specified under this Section shall include all excavation required for the construction of detention ponds, mitigation areas, reservoirs and other facilities of a similar nature and also shall include all grading, the preparation of side slopes, compacting as required, final dressing and all incidental work required for the construction of detention ponds.

Unless otherwise provided for in these Specifications, the work to be performed under this Section shall include the hauling, to designated sites, of all material which may remain the property of the City, and the stockpiling, compaction, and shaping of such material to the template lines shown in the Plans or as directed by the Engineer. Except as otherwise provided for in the Plans and Specifications, all surplus

material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor. Pay item for excavation of detention pond shall include the excavation of unsuitable materials.

FILL MATERIAL Work specified under this Section consists of the placement and compaction of fill material for such purposes as filling of ditches and channels, and the filling of substantial voids and depressions. The fill material used to replace excavated unsuitable material shall be paid under "excavation of unsuitable material."

The work specified under this Section shall include the shaping, compaction and dressing of material to the condition required for the placement of embankment, bedding, pavement or other material, and where required, to the slopes and tolerances normally associated with final grading operations, such as required for seeding and the placement of sod. The work specified under this Section shall include the furnishing of all required borrow material. Borrow material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement.

For limits of payment, where no other material, such as embankment, pavement, bedding or other select material, is to be constructed over fill material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the finished earthwork lines for Fill Material shown in the Plans. Where embankment is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the straight line connecting the highest points of original ground to which Fill Material is to be placed. Where bedding or other select material is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the bottom line of bedding or select material, whichever is encountered first. Where pavement is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the bottom line of Stabilization, Base material or pavement, whichever is first encountered. The limits of payment defined above shall be adjusted as necessary by the Engineer to exclude payment for such quantities of suitable fill material, measured in cubic yards after placement and compaction, as may be available as surplus material on the project site. Testing shall be performed in compliance with Item 44 of the City's "General Conditions for Construction".

EMBANKMENT work specified under this Section consists of the furnishing and placement of material where such work involves the construction of embankment, side slopes, and the shaping and dressing of material to neat lines conforming to definite geometric configurations, such as required in the construction of berms, road-beds and other embankments, and the reshaping of ditches, stream channels and pond bottoms, fill and backfill, and miscellaneous grading required for the completion of the project. Material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement.

Where grading operations outside the limits shown in the Plans require the placement, compaction, shaping and dressing of fill material for the completion of the project, and where no separate pay items for such work are provided in the Schedule of Values, such work, including the furnishing of borrow material, shall be included under this Section. Borrow material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement. The limits of payment for Embankment shall extend from the line of contact with original ground or Fill Material to the finished earthwork lines shown in the Plans. Where pavement is to be constructed over Embankment the upper limit of payment for Embankment shall be the bottom line of Stabilization, Base material or pavement, whichever is first encountered.

Basis of Payment
When the quantity for a pay item under this Section is shown in the Schedule of Values as a lump sum quantity, the pay quantity shall consist of all work described and specified herein which may be required in connection with the construction of the project, performed to the satisfaction of the Engineer. Unless

specified to be paid for at the lump sum price, the work specified under this Section shall be paid for at the contract price per cubic yard. If the contractor has a claim that actual volumes are greater than what is depicted in the contract, then the contractor shall be responsible for providing signed and sealed surveys (pre & post), with volume calculations, to substantiate any contractor claim/request for additional compensation.
For FILL MATERIAL, payment shall be made only for the furnishing and placement of such quantities of fill material as may be required in excess of suitable material available on the project site as surplus material.

For FILL MATERIAL AND BORROW MATERIAL, the pay quantity for work specified herein shall be the number of cubic yards of material actually furnished, as determined by field measurement of the compacted in-place material, and accepted by the Engineer.

FOR BORROW MATERIAL, at the discretion of the Engineer, the material furnished under this Section may be measured in its loose state and the volume thereof converted to the equivalent volume of compacted in-place material. In such case a shrinkage factor of 35% shall be assumed, and the equivalent volume of compacted in-place material shall be taken as the volume of the material in its loose state multiplied by the factor 0.74074.

For EMBANKMENT, the work specified herein shall be paid for under the pay items shown in the Schedule of Values for Embankment. All quantities shown in the Plans or the Schedule of Values shall be the theoretical quantities calculated, with no factor applied for shrinkage, losses due to clearing and grubbing, or any other consideration. It shall be the responsibility of the Contractor to address the various factors affecting the cost of the completed work, and to include in the unit bid price the costs associated with such factors.

If the schedule of values does not provide a specific pay item for the aforementioned work, then the work shall be included in the pay item for grading (lump sum).

GRADING

All work specified under this Section shall conform to the requirements of Sections 110 and 120 of the FDOT Specifications, except as amended herein.

Except for that work excluded under other provisions of this Section, and except as provided for under other Sections of these Specifications, the work to be performed under this Section shall consist of all excavation, the supply, placement and compaction of all embankment and fill material, all grading of roadway shoulders and ditches, the construction or re-channelization of all ditches and swales, all graded road connections, the shaping or reshaping of slopes, all final dressing, and all other earthwork operations required for the completion of the project. The Contractor shall not over-excavate a construction site below the elevations shown in the Plans and permits, unless specifically pre-approved by the City.

Unless otherwise provided for, all borrow material required for the completion of work performed under this Section shall be furnished by the Contractor from areas provided by the Contractor.

When the project includes the construction of Road Base, the work performed under this Section shall include also the furnishing, placement and compaction of all embankment material required between existing ground and the bottom of the Road Base.

The work to be performed under this Section shall not include the excavation of unsuitable material, or the furnishing or placement of borrow material as replacement for unsuitable material, or other items of work for which separate payment is to be made, but shall include the placement and compaction of suitable fill material as replacement for unsuitable material where suitable fill material is available as surplus material from the project site.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

Basis of Payment
The pay quantity for work specified under this Section shall be one lump sum quantity which shall include all work described and specified herein.

DREDGING

The work specified under this Section consists of the dredging of submerged channels and areas by the use of drag lines or by methods of hydraulic dredging.

Dredging by the use of drag lines or other non-hydraulic methods shall be classified as regular dredging.

Dredging by hydraulic methods shall be classified as hydraulic dredging.

All dredging operations shall conform to the applicable requirements of Section 120 of the FDOT Specifications, as amended herein, and shall be performed in accordance with all provisions and conditions of all permits issued for dredging operations on this project.

Dredging shall include all labor, equipment and materials necessary for cleaning, deepening and widening an area, canal, creek or area by the use of a dredge, or any other type of machinery or equipment used to clean, deepen, or widen and also pumping (and/or otherwise transporting) of the dredged material to the spoil site. It shall also include all work associated with spoils site area, stockpile management, disposition of dredged materials, discharge/containment of settling ponds, geo-tubes (if applicable), etc.

All dredged material shall become the property of the contractor and the contractor shall be responsible for transportation of dredged material to a suitable off site disposal area (unless specified otherwise).

Basis of Payment
The quantity to be paid for under this Section shall be one lump sum of cubic yards quantity which shall include all items of work described and specified for:

- Dredging, Regular
- Dredging, Hydraulic

FLOWABLE CONCRETE FILL

All work specified under this Section shall conform to the requirements of Section 121 of the FDOT Specifications, except as amended herein. The work specified under this Section consists of the furnishing and application of Flowable Concrete Fill, as shown on the Plans, and as directed by the Engineer. The unit price shall include all excavation to the springline of pipe, disposal of excess excavated soil, formwork if required, placement of flowable fill and all other operations required to protect the pipe. This Section shall include all cost of the mixture, any ad-mixtures; cost for delivery, labor and finishing for Excavatable or Non-Excavatable Flowable Concrete Fill, as specified in the Plans. Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 10% passing the 200 mesh sieve may be used for the Fine Aggregate. High air generators or foaming agents may be used in lieu of conventional Air Entraining Admixtures and may be added at jobsite and mixed in accordance with manufacturer's recommendation.

Mix Design
Flowable Concrete Fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable Concrete Fill contains a low cementitious content for reduced strength development. Submit mix designs to the Engineer for approval. If conditions warrant, an anti-washout admixture shall be added to the mix design at the dosage rate of 3 gallons per cubic yard. This is an add-on product and must be specified when ordering.

Production and Placing
Deliver Flowable Concrete Fill using concrete construction equipment. Place Flowable Concrete Fill by chute, pumping or other methods approved by the Engineer. Revolution counter requirements are waived.

Construction Requirements
Use straps, soil anchors or other approved means of restraint to assure correct alignment when Flowable Concrete Fill is used as backfill for pipe or where flotation or misalignment may occur. Place Flowable Concrete Fill to the designated fill line without vibration or other means of compaction. Do not place Flowable Concrete Fill during inclement weather, e.g. rain or ambient temperatures below 40° F. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

Acceptance
Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer with FM 1-T 197. Provide a hand held penetrometer to measure the penetration resistance of the hardened Flowable Concrete Fill.

Basis of Payment
When the item of Flowable Concrete Fill is included in the Contract, payment will be made at the contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

BEDDING MATERIAL

Crushed Stone
The work specified under this Section consists of the furnishing and placement of crushed stone as bedding and backfill material for concrete pipe culvert and standard drainage structures.

The crushed stone used under this Section shall be of the Size Number specified in the Plans and shown in the table “Standard Sizes of Coarse Aggregate” contained in Section 901-1.4 of the FDOT Specifications, and shall be placed in accordance with the Plans or placed to a thickness of 10 inches unless otherwise directed by the Engineer. For drainage structures, the bedding material shall extend beyond the outside bottom dimensions of the structure for a distance of 12 inches, or as shown in the Plans or as directed by the Engineer. For pipe and box culverts, the bedding is to be extended for a distance of 12 inches beyond the outside diameter or width of the culvert, or as shown in the Plans, or as directed by the Engineer.

No payment will be allowed for select bedding material, which might be utilized for convenience in lieu of dewatering. Bedding material shall only be used if the plans require it at a specific location or if the inspector deems it necessary, at a specific location, after de-watering efforts are considered ineffective.

Basis of Payment
The pay quantity for work specified under this Section shall be the number of tons of crushed stone, of the various sizes specified, actually placed and accepted. The tonnage to be paid for shall be determined from batch weights, truck scale weights, volume measurements or other methods approved by the Engineer.

STABILIZATION

Type B
The work specified under this Section consists of the stabilizing of designated portions of the roadbed to provide a firm and unyielding sub-grade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The construction of stabilized roadbed shall conform to the requirements of Section 160 of the FDOT Specifications, as amended herein.

Premixed Stabilization shall be required when the proposed pipe culvert falls within the area to be stabilized.

The work specified under this Section shall include the furnishing and placement of all stabilizing material required, and all mixing, shaping and compacting of the stabilized area.

Unless the Engineer has specifically provided authorization in writing, the Engineer will determine compliance with the bearing value requirements by the Limerock Bearing Ratio (LBR) method (FM 5-515), including Sections 6.0 and 6.1, specifying that the material will be soaked prior to penetration. The under-tolerance for a Specified Bearing Value of LBR 40 shall be 2.0.

The material utilized for type B stabilized subgrade, either existing or imported material, in addition to the 'select stabilized material,' shall be suitable material having a plasticity index less than ten and a liquid limit less than 40.

The Engineer will conduct materials testing during construction. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Plans and Specifications. Certain tests (e.g., Limerock Bearing Ratio Tests) performed may require a number of days (four to six) for the test results to be obtained by the Engineer. If the test results indicate that the material represented by the test is not in accordance with the Plans and Specifications, all such materials, whether in place or not, will be rejected. The bearing value determined by the initial LBR test will be used to determine compliance with Specifications, and an additional 'verification' test will not be performed unless otherwise authorized by the Engineer. Unless otherwise permitted by the Engineer, the Contractor shall correct the material in non-compliance by additional work performed or replacement of the material.

Basis of Payment
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Stabilization, Type B, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

FINISH SOIL LAYER (ORGANIC TOPSOIL)

The work specified under this Section consists of the preparation of a 6 inch layer of existing soil mixed with imported material, if necessary to achieve the pH and the OM levels required in 162-4 of the FDOT “Standard Specifications” as amended. The Topsoil shall be composed of organic soil, which may consist of muck, mucky peat and peat and shall have an organic matter content of 30% or more if the mineral fraction is more than 50% clay, or more than 20% organic matter if the mineral fraction has no clay. Placement of the soil shall be as specified in the plans and as directed by the Engineer.

Materials for, and the application of, topsoil shall conform to the requirements of Section 162 (Prepared Soil Layer) and 987 (Prepared Soil Layer Materials) of the FDOT "Standard Specifications", as amended.

Basis of Payment:
Topsoil shall be paid for at the contract unit price per square yard of topsoil placed as specified under this section.

BASE COURSES

Roadway Base (Limerock)
The work specified under this Section consists of the construction of roadway base utilizing limerock on prepared subgrade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The construction of Limerock Base shall conform to the requirements of Section 200, 285 & 911 of the FDOT Specifications, as amended herein.

The Engineer will conduct materials testing during construction. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Plans and Specifications. Certain tests (e.g., Limerock Bearing Ratio Tests) performed may require a number of days (four to six) for the test results to be obtained by the Engineer. If the test results indicate that the material represented by the test is not in accordance with the Plans and Specifications, all such materials, whether in place or not, will be rejected. Unless otherwise permitted by the Engineer, the Contractor shall correct the material in non-compliance by additional work performed or replacement of the material.

The construction of Limerock Base under this Section shall also include the furnishing and application of a bituminous material prime coat conforming to the requirements set forth in Section 3 of the Pinellas County, Florida, Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition.

The material will be inspected, tested and approved by the Engineer prior to incorporation in the work. Any work in which material not previously approved is used, shall be performed at the Contractor's risk and may be considered as unauthorized and unacceptable and not subject to the payment provisions of the contract. Upon delivery to the project site, the material will be sampled and tested by the Engineer or a duly authorized, qualified representative of the Engineer in accordance with Pinellas County Limerock Sampling Procedures and Guidelines, or as so directed by the Engineer.

Basis of Payment
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Roadway Base, Limerock, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

ROADWAY BASE (RECYCLED CRUSHED CONCRETE/GRADED AGGREGATE)

The construction of recycled crushed concrete/graded aggregate shall conform to the requirements of Section 204 and 285 of the FDOT Specifications, as amended herein.

The work specified under this Section consists of the construction of roadway base utilizing crushed concrete on prepared sub-grade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

The construction of Crushed Concrete Base shall conform to the requirements of this Section, or, in lieu thereof, such requirements as may be established by the Engineer during construction. The Engineer shall have full authority to modify the provisions of this Section as deemed necessary, in his opinion, to meet field conditions and requirements.

The construction of roadway base under this Section shall include also the furnishing and application of a bituminous-material prime coat conforming to the requirements set forth in Section 3 of the Pinellas County, Florida, Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition.

Materials
Base material shall conform to the following gradation:

SIEVE SIZE	PERCENT BY WEIGHT PASSING
2”	100
1 1/2”	95-100
3/4”	65-90
3/8”	45-75
No. 4	35-60
No. 10	25-45
No. 50	5-25
No. 200	0-10

Material for Crushed Concrete Base shall consist only of crushed concrete and such additive materials as may be approved by the Engineer for the purpose of facilitating construction and achieving the desired characteristics of the finished in-place product. Material which shows a significant tendency toward adverse chemical or physical change on exposure to moisture will not be acceptable. The material shall be free of any Ferrous Metals.

Mechanical and Physical Properties
The material shall not contain lumps, balls, or pockets of sand or clay material in size or quantity sufficient to be detrimental to the proper bonding, finishing, or strength of the crushed concrete base.

The specific mechanical and physical properties of crushed concrete aggregate and any additive materials permitted in the construction of Crushed Concrete Base under this contract shall be determined on the basis of test results as the work progresses. The finished in-place product shall provide at least an LBR of 100 or greater.

Placement and Spreading of Material
The material shall be transported to the point where it is to be used, over crushed concrete previously placed where possible, and dumped at the end of the preceding spread. Hauling over the sub-grade, or dumping on the sub-grade for further placement operations, will be permitted only when, in the opinion of the Engineer, such procedures will not adversely affect the integrity of the completed base and sub-grade.

Base Courses
The minimum thickness of the Crushed Concrete Base constructed under this contract shall be as shown on the Plans.

Compacting and Finishing Requirements
After spreading is completed the crushed concrete shall be uniformly compacted, with water being added as required, to a density of not less than ninety eight (98%) of the maximum density as determined by AASHTO T-180. During final compaction operations, if the fine grading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to the performance of density tests on the finished base.

Priming and Maintaining
The prime coat shall be applied only when the base meets the required moisture and density requirements. At the time of priming, the base shall be firm, unyielding, and in such condition that no undue distortion will occur. The Contractor will be responsible for insuring that the true crown and template of the base are maintained, with no rutting or other distortion, and that the base meets all requirements at the time the surface course is applied.

Correction of Defects
All defects in materials and construction shall be corrected by the Contractor, at his expense, and to the satisfaction of the Engineer, as the work progresses.

Testing
Testing shall be performed in compliance with Item 44 of the City's "General Conditions for Construction".

Basis of Payment
The pay quantity for work performed under this Section shall be the number of square yards of Roadway Base, Recycled Crushed Concrete/Graded Aggregate, at the total thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

SUPERPAVE ASPHALT BASE

The work specified under this section consists of the construction of asphaltic concrete base course, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures, utilizing Superpave Asphalt Base, Type B-12.5 [the contractor may use SP-12.5 (Traffic Level B or C) in lieu of Type B-12.5, at no additional cost to the City], in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition. For composition and physical test properties and all other parameters not covered by the above referenced Pinellas County Specifications, the SP mixes shall comply with requirements of the FDOT Specifications, Section 234.

Asphaltic concrete base course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The Contractor shall be required to supply the City and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile to both parties. The Bulk Specific Gravity (Gmb) of the mixture supplied by the Contractor may be utilized by the City and its authorized representative testing laboratory to determine the volumetric properties of each production lot for acceptance purposes.

If directed by the Engineer, the Contractor may be required to supply the City (or its authorized representative testing laboratory) a test sample from each daily production lot. The sample shall be taken whenever possible from the same truck that the Contractor obtains his daily quality control test sample. The City's sample shall be a minimum of twenty thousand (20,000) grams, and shall be stored in a minimum of four (4) separate containers designed to protect the sample from loss of material during transport. Each container shall be clearly labeled with the following information: Producer's Name, Mix Type, and Date of Production. Immediately after the sample is obtained, the City's sample will be transported to the job site by the Contractor and delivered to the Engineer on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

Table 9-2, Acceptance Schedule of Payment, Pinellas County Asphalt Specifications (Page 51 of 56) shall be revised as follows for this Superpave Asphaltic Concrete specification. When determining the Pay Factor (PFSA) for the Sieve Analysis properties, the No. 4 Sieve and No. 40 Sieve shall be removed from the specification and No. 8 Sieve shall be substituted for the properties and pay factors for the No. 10 Sieve. The No. 200 Sieve shall remain as specified in Table 9-2.

When the pay item number specifies the quantity of the item in square yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment:
When the quantity for a pay item under this section is shown in the schedule of values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Base Course, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Inspector shall be the measured pay quantity.

OPTIONAL BASE COURSE

The work specified under this Section consists of the construction of optional base course, in accordance with the requirements of Section 285 of the FDOT Specifications, as amended herein. When using asphalt, the work shall be constructed in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures. For asphalt, the work specified under this Section includes the furnishing of material for, and the application of, all required tack coats.

Limerock Base shall be constructed in accordance with County specifications 200-1000. Graded Aggregate base shall be constructed in accordance with County specifications 204. Shell base shall be constructed in accordance with County specifications 250. Asphaltic concrete base course shall be constructed in accordance with County specifications 234, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. When the Bid Item Number specifies the quantity of the item in Square Yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment:
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Base Course, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this Section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Inspector shall be the measured pay quantity.

BITUMINOUS TREATMENTS SURFACE COURSES & CONCRETE PAVEMENT

Superpave Asphalt Concrete
The work specified under this Section consists of the construction of asphaltic concrete surface course, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures, utilizing Superpave Asphaltic Concrete, Type SP-9.5, Type SP-12.5 or Type SP-19.0, in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition. For composition and physical test properties and all other parameters not covered by the above referenced Pinellas County Specifications, the SP mixes shall comply with requirements of the FDOT Specifications, Section 334.

Asphaltic concrete surface course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

The Contractor shall be required to supply the City and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile to both parties. The Bulk Specific Gravity (Gmb) of the mixture supplied by the Contractor may be utilized by the City and its authorized representative testing laboratory to determine the volumetric properties of each production lot for acceptance purposes.

If directed by the Engineer, the Contractor may be required to supply the City (or its authorized representative testing laboratory) a test sample from each daily production lot. The sample shall be taken whenever possible from the same truck that the Contractor obtains his daily quality control test sample. The City's sample shall be a minimum of twenty thousand (20,000) grams, and shall be stored in a minimum of four (4) separate containers designed to protect the sample from loss of material during transport. Each container shall be clearly labeled with the following information: Producer's Name, Mix Type, and Date of Production. Immediately after the sample is obtained, the City's sample will be transported to the job site by the Contractor and delivered to the Engineering Inspector on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

Table 9-2, Acceptance Schedule of Payment, Pinellas County Asphalt Specifications (Page 51 of 56) shall be revised as follows for this Superpave Asphaltic Concrete specification. When determining the Pay Factor (PFSA) for the Sieve Analysis properties, the No. 4 Sieve and No. 40 Sieve shall be removed from the specification and No. 8 Sieve shall be substituted for the properties and pay factors for the No. 10 Sieve. The No. 200 Sieve shall remain as specified in Table 9-2.

When the Bid Item Number specifies the quantity of the item in Square Yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

The work specified under this Section includes the furnishing of material for, and the application of, all required tack coats. The tack coat requirements specified further below shall take precedence over other specifications that may be found elsewhere in these specifications or in the plans, unless directed or approved by the Engineer.

Tack Coat
The work under this Section shall cover the furnishing and placing of a bituminous tack coat on an existing surface which is to be covered by a hot bituminous plant mix material. The work shall include the cleaning of the existing surface prior to application of the tack coat. The area of treatment and the rate of

application of a tack coat shall be based on the plans and specifications after evaluating the actual surface condition on which the plant mix overlay is to be placed.

Materials
The material shall be an anionic emulsion (NTSS-1HM) blended to meet the following minimum requirements:

TEST ON EMULSIFIED ASPHALT			
PARAMETER	TEST METHOD	MIN	MAX
VISCOSITY, SF @ 77° F, SEC	AASHTO T 59	25	500
STORAGE STABILITY 1 DAY	AASHTO T 59	--------	1.0 %
STORAGE STABILITY 5 DAY	AASHTO T 59	--------	5.0 %
RESIDUE BY EVAPORATION	AASHTO T 59	50%	--------
RESIDUE BY DISTILLATION	AASHTO T 59	50%	--------
NAPHTA CONTENT	AASHTO T 59	-------	1.0 %
SIEVE TEST	AASHTO T 59	*	*

The Sieve result is tested for reporting purpose only. Sieve test may be waived if no application problems are present in the field.

TEST ON RESIDUE FROM DISTILLATION OF EMULSION			
PARAMETER	TEST METHOD	MIN	MAX
PENETRATION @ 77° F	AASHTO T 49	5	20
SOFTENING POINT	AASHTO T 53	65° C	------
ORIGNAL DSR @ 86° C	AASHTO T 315	1.0	------

Construction Requirements
(a) EQUIPMENT. It shall be the Contractor's responsibility to select the proper size and amount of equipment to provide the desired results.

(b) WEATHER AND TEMPERATURE LIMITATIONS.
The bituminous tack material shall be applied in conformity with the following:

1. WEATHER - Tack material shall not be applied on an extremely wet surface or when weather conditions are determined not suitable by the Engineer.

2. TEMPERATURE - The atmospheric temperature should be 40° F and rising. This tack material shall not be used for cold applied Asphalt pavements. This tack can be used with warm mix asphalt with lay down temperatures over 200F.

(c) PREPARATION OF EXISTING SURFACE.
Loose material, dust, dirt, and all foreign matter shall be removed from the surface to be treated. Approval of the surface before application of the tack material is required.

(d) APPLICATION.
Tack coat material shall be applied in an amount from 0.04 gallons per square yard up to a maximum of 0.08 gallons per square yard for emulsified asphalt unless altered by the Engineer. Application temperature is 150° F to 180° F. An asphalt distributor shall be provided for use on all accessible areas; inaccessible areas such as around manholes, etc. may be coated by other approved methods. When

applying tack coat, it shall be applied to all contact surfaces of curbs, gutters, manholes, and adjacent pavement edges, whenever and to the extent directed. Adjacent surfaces, such as gutters and the like, that is not to be in contact with the mix, shall be adequately protected from the spray; by means of heavy paper securely fastened in place or other satisfactory means. Any such surface soiled by tack coat material shall be cleaned and restored to its previous condition without additional compensation. Tack coat material shall be spread only far enough in advance to permit the construction to progress consistently, uniformly, and continuously after the curing period. Tack coat shall be fully cured not showing wet surface prior to placement of hot mix. Tack coat that has been damaged or worn off shall be replaced without extra compensation.

Basis of Payment:
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete, Type SP, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this Section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Engineering Inspector shall be the measured pay quantity.

MILLING & RESURFACING OF EXISTING ASPHALTIC CONCRETE PAVEMENT & ROADWAY BASE

The work specified under this Section consisting of the removal of existing asphaltic concrete pavement and roadway base, and the application of new surface course(s), shall conform to the requirements of Section 327 of the FDOT Specifications, as amended herein.

Milling Operations

A. Equipment

The equipment for the milling operation shall include a machine capable of maintaining a depth of cut and cross slope which will achieve the results specified herein. The machine shall be equipped with automatic grade controls which operate by sensing from one or more skids moving along the pavement surface, and which shall produce, where required, a skid-resistant surface texture. The machine shall be equipped with a means to effectively limit the amount of dust escaping from the removal operation. Special attention is directed to the fact that, if the machine is equipped with preheating devices, local environmental and other regulations governing operation of this type of equipment may vary considerably from place to place. It shall be the Contractor's responsibility to be familiar with, and to comply with, all such local regulations, as well as State and Federal rules, and to obtain all permits required for the operation of such equipment.

B. Construction

The existing pavement and base shall be removed to varying depths in a manner which will restore the pavement surface to a uniform longitudinal profile and cross-section as specified herein. Where indicated in the Plans, removal shall be to a specified depth and shall produce a specified cross slope. The longitudinal profile of the milled surface shall be established by skid sensor on the side of the cut nearest the centerline of the road. The cross slope of the milled surface shall be established by a second skid sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The Engineer may waive the requirements for the automatic grade or cross slope controls where the situation warrants such action. The milling pattern, in conjunction with the pavement lay-down operation, shall be approved by the Engineer prior to starting each phase.

If approved by the Engineer, the Contractor may elect to make multiple cuts to achieve the required pavement configuration or depth of cut.

The forward speed of the milling machine may be restricted by the Engineer to assure an acceptable finished surface.

Existing signal loops are to be located in the field prior to milling. Installation of signal loops shall be placed prior to final resurfacing course. Loops shall not be cut into the final surface course. After loop installation is complete, MEG readings shall be performed according to FDOT Specifications. Payment for signal loops shall be included in this Section, unless otherwise provided for in a different Section of this Contract.

Replacement of existing traffic loops shall immediately follow milling operations. Any cut loops shall be replaced within two (2) calendar days. For each day after the two (2) day period that the cut loops are not replaced, the Contractor shall be assessed the amount of one thousand ($1,000.00) dollars per day. Payment to the County of such sums as may become payable under the provisions of this article shall be made by identifying the said sums as a credit item on the Contractor's final pay estimate.

The milling machine shall be operated to effectively minimize the amount of dust being emitted from the machine. Pre-wetting of the pavement may be required.

Prior to opening to traffic an area which has been milled (except for areas in which the roadway base is temporarily exposed), the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, fine material which will dust under traffic. This

operation shall be conducted in a manner such as to minimize the potential for traffic hazards and pollution to the air.
Sweeping of the milled surface with a power broom shall be required prior to the placement of new surface course.

At the time of paving operations, immediately prior to placement operations, the use of a pick-up sweeper will be required in areas as directed by the Engineer. Special care shall be taken to clean all loose material from the area adjacent to the curb and gutter prior to paving operations.

C. Finished Surface
If the milled surface is to be the final surface of the pavement, it shall have either continuous or intermittent striations or any other preapproved pattern which will provide an acceptable level of skid resistance. If pavement is to be constructed over the milled surface it shall have a texture which will produce good bonding.

The finished surface shall have a reasonably uniform texture, shall be within 1/4 inch of a true profile grade, and shall have no deviation in excess of 1/4 inch from a straight edge applied to the pavement perpendicular to the centerline. Areas varying from a true surface in excess of the above stated tolerance may be accepted without correction if the Engineer determines that they were caused by preexisting conditions which could not reasonably have been corrected by the milling operations. Any unsuitable texture or profile, as determined by the Engineer, shall be corrected by the Contractor at no additional expense to the City.

The Engineer may require the re-milling of any area in which a surface lamination causes a non-uniform texture to occur.

D. Salvageable Materials
All surplus existing materials resulting from milling operations, except those materials designated by the Engineer as deleterious materials, shall remain the property of the City.
All salvageable materials claimed by the City shall be transported to and stockpiled at locations as indicated on the Plans

The transporting and stockpiling of salvageable materials shall be performed by the Contractor. The method of handling and stockpiling of salvageable materials shall be approved by the Engineer.

E. Disposable Materials
All surplus materials not claimed by the City shall become the property of the Contractor, and shall be disposed of by the Contractor in areas provided by the Contractor.

F. Coordination of Milling Operations and Paving Operations
No milled surface shall be left open to vehicular traffic for a period greater than five (5) consecutive calendar days. For each day after the five (5) day period that the milled surface is left open to vehicular traffic, the Contractor shall be assessed the amount of two thousand ($2,000.00) dollars per day. Payment to the City of such sums as may become payable under the provisions of this article shall be made by identifying the said sums as a credit item on the Contractor's final pay estimate.

Adjustment of Utilities
All utilities and related structures requiring adjustment shall be adjusted by their owners at the owner's expense. The Contractor shall arrange his schedule to allow utility owners the time required for such adjustments. All utility adjustments shall be completed prior to the commencement of milling and resurfacing operations. Prior to commencing milling operations Contractor shall confirm that proposed milling does not negatively affect a utility.

Resurfacing
After the milled areas are declared by the Engineer to be suitably prepared for resurfacing operations, and all utility adjustments have been completed to the satisfaction of the Engineer, the areas shall be resurfaced in accordance with the materials and thicknesses specified in other applicable Sections of these Specifications.

Prior to installation of the resurfacing material, the milled surfaces shall be thoroughly cleaned of all dust and loose material, and a uniform application of tack shall be applied as specified in the Pinellas County Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition, Section 3-7, at a rate of 0.04 to 0.06 gallons per square yard.

The "overlay" exception referenced in Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, latest edition, Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment
The pay quantity for work specified under this Section shall be the number of square yards of milling, of the various materials and the thicknesses thereof specified in the applicable pay items shown in the Schedule of Values, completed and accepted.

The work specified under this Section for milling operations shall be paid for under various pay items shown in the Schedule of Values for:

- Mill Existing Asphalt Pavement
- Mill Existing Asphalt Pavement and Shell Base

No payment shall be made under this Section for work related to resurfacing operations. All payment for such work shall be made under separate pay items specified in other Sections of these Specifications.

No payment shall be made for the adjustment of utilities. The cost of adjusting utilities shall be borne by the respective utility owners.

ASPHALTIC CONCRETE FRICTION COURSE

FDOT Types FC-2, FC-3, FC-5, and FC-6
The work specified under this Section consists of the overlaying of prepared roadway surfaces with an asphaltic concrete surface course identified in the FDOT Specifications as Asphaltic Concrete Friction Course.

The materials for and the construction of Asphaltic Concrete Friction Course shall conform to the requirements of Section 337 of the FDOT Specifications, as amended herein.

The work specified under this Section includes the furnishing of material for, and the application of, all required tack coats.

Asphaltic Concrete Friction Course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

When the Bid Item Number specifies the quantity of the item in Square Yards, the “overlay” exception referenced in Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, latest edition, Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Friction Course of the type and thickness specified in the applicable pay item, actually constructed and accepted.

PAVEMENT

Cement Concrete, Driveways
The work specified under this Section consists of the furnishing and placement of cement concrete pavement for the construction or restoration of driveways and driveway aprons, and the construction or restoration of concrete sidewalk across driveways.

Cement concrete pavement used for the work specified under this Section shall consist of Class I concrete, reinforced with 6 X 6 – W1.4xW1.4 welded wire fabric, placed on compacted subgrade. Concrete pavement for driveways, driveway aprons and sidewalk across driveways shall have a minimum thickness of six (6) inches.

Materials and construction shall conform to the requirements of Section 350 of the FDOT Specifications.

The Engineer may direct that the specified pavement thickness be increased to meet loading requirements identified in the field. In such cases the additional quantities shall be converted to the number of square yards corresponding to the specified thickness, and payment shall be made at the contract price per square yard for the specified thickness.

The work specified under this Section shall include the furnishing and placement of all forms, pavement, welded wire fabric and incidental accessories, and all grading, compaction and other incidental work not paid for under other pay items.

Substitution (by the contractor) of welded wire fabric with fibermesh requires that the contractor provide documentation confirming that specific type of proposed fibermesh is equivalent or superior to welded wire fabric in terms of structural characteristics. After receipt of documentation from the contractor, the City shall have the option of accepting or rejecting the requested substitution.

Basis of Payment
The pay quantities for work specified under this Section shall be the number of square yards of Pavement, Cement Concrete (Driveways), of the various thickness' specified in the applicable pay items, actually constructed and accepted.

DRIVEWAY RESTORATION

In Kind
The work specified under this Section consists of the restoration in kind of existing driveways, other than concrete and asphalt/limerock driveways, disturbed during construction, including the furnishing and placement of materials for the restoration in kind of driveways and driveway aprons, and the restoration of existing sidewalk across driveways.

Restoration of concrete and asphalt/limerock driveways shall not be paid under this Section when separate pay items for concrete and asphalt/limerock driveways are provided in the Contract. However, if separate pay items for concrete and asphalt/limerock driveways are not provided in this contract, then this Section shall also include restoration of concrete and asphalt/limerock driveways.

The work specified under this Section includes the furnishing and placement of all materials, and the construction of all forms, joints, bracing, expansion joint materials, wire fabric reinforcement, reinforcing steel, accessories, the application of required surface finishes, all required clearing and grubbing, excavation and backfilling and cleaning up after the work is completed, and all other required work necessary to complete restoration in kind of existing driveways.

Basis of Payment
The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of driveways, actually restored and accepted.

BRICK PAVEMENT REMOVAL

General
The work specified under this Section consists of the removal and palletizing of bricks between the limits shown on the plans and shall include all the labor to remove and stack the bricks by hand.

Brick Pavement Removal
The Contractor shall take care while removing the bricks, as the bricks will be used to rebuild the street. The Contractor shall submit his plan for brick removal to the City for approval at least 14 calendar days prior to initiation of the work. The Contractor's method of brick removal shall minimize damage to the existing brick to the extent possible. Use of a front end loader, bobcat bucket, or similar equipment will not be allowed unless approved by the engineer. The City of Tarpon Springs will supply pallets where the bricks must be stacked neatly to a maximum of 10 courses. The Contractor shall wrap the pallets of brick in plastic to secure the bricks prior to removal from the site. The Contractor will transport the bricks to and from the City's storage facility. No pallets of bricks or loose bricks are to be left on the site at any time the site is unattended.

Brick covered with asphalt pavement shall not be salvaged and shall be properly disposed of by the Contractor.

Basis of Payment
The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard of bricks removed and transported to the City's storage facility.

BRICK PAVEMENT INSTALLATION

General
The work specified under this Section consists of the installation of brick street base, fine crushed concrete bedding course, compaction, sand joint filler to the lines shown on the plans and six (6) inches of crushed concrete and shall include all the labor to place the bricks.

The roadway base shall be constructed using crushed concrete compacted in accordance with PAVEMENT section of these specifications.

A fine crushed concrete bedding course shall be constructed on all completed bases for brick pavement. Brick pavement shall be laid in a running bond pattern on a completed base with a fine crushed concrete bedding course and only clean, whole, sound brick shall be used. The brick shall be laid in close contact and the joints of each course shall be uniformly staggered with respect to the adjacent course. Whole brick shall be used except in starting and finishing a course and fitting pavement around manhole tops or other structures. Proper crown, slope and grade must be maintained.

Bricks shall be clean and free from foreign materials before installation.

Installation should start from a corner or straight edge and proceed forward over the undisturbed fine crushed concrete bedding course.

Bricks shall be plumb, level, and true to line grade; shall be installed properly, coincide and align with adjacent work and elevations.

Brick should be installed hand tight on the undisturbed fine crushed concrete bedding course. String lines should be used to hold pattern lines true.

Gaps between the edges of the brick surface shall be filled with standard bricks or with bricks cut to fit. Cut bricks should be no smaller than one-third the size of full bricks. Care should be taken when establishing the laying pattern to insure that less than one-third bricks are minimized.

Bricks are set into the fine crushed concrete bedding course by roller or plate vibrator capable of 3,000 to 5,000 compaction force. Vibration shall be conducted in crossing paths until the pavement surface is smooth and required elevation is achieved. Gaps between bricks at this point should be filled to about two-thirds of the brick's full height. Gaps between edges should be no more than 3/16-inches wide after vibration. Gaps greater than 3/16 inch suggest that less than satisfactory interlock will be achieved. Bricks within three feet of unrestrained edges must not be compacted.

Once bricks are vibrated into place, clean, dry sand shall be hand swept with brooms over the pavement surface and vibrated once or into the remaining unfilled gaps between bricks to the height of the joint level. Surplus sand should be swept from the pavement surface and disposed of. The completed brick pavement installation should be washed down and cleaned to provide a clean finished workmanlike installation.

The work specified under this Section shall also include furnishing and preparing the fine crushed concrete bedding course, excavation, backfilling and compaction of the sub-base, installation of base course material and the edge restraint system called for in the Plans.

Mock Ups
The Contractor shall install a 4-foot by 4-foot brick pavement area as described in this Section. This area will be used to determine acceptability of the surcharge of the fine crushed concrete bedding course, joint size, lines, laying pattern(s), color(s) and texture of the job. This area will be protected and maintained by

the Contractor's project manager until final acceptance of the scope of the work covered in this Section has been granted. This area shall be the standard from which the work will be judged.

Fine Crushed Concrete Bedding Course
Fine crushed concrete bedding course shall be clean, non-plastic, free of deleterious or foreign matter. The Contractor shall not deposit fine crushed concrete bedding course upon any portion of the aggregate base course until the base course has been approved by the Owner's Engineer. The Contractor shall spread the fine crushed concrete bedding course evenly over the area to be paved. The Contractor shall screed the sand to a level that will produce a 1-inch thickness when the bricks have been placed and vibrated. Adjust the sand level to insure that the final pavement elevation will be 1/4 to 3/8 inches higher than adjacent edge restraints (curb, gutter, etc.) to allow for proper surface drainage.

Basis of Payment
The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard of (Re-use) bricks installed and per square yard of (New) bricks installed and shall include all work and materials described and specified herein. Payment includes cleaning (re-use brick) and transporting brick from the City's storage facility.

STRUCTURES

Concrete Structures
The work specified under this Section consists of the construction of concrete structures, concrete endwalls, gravity walls, cast-in-place concrete box culverts, wingwalls for cast-in-place and pre-cast box culverts and other concrete members, in conformance with the lines, grades, dimensions and notes shown in the Plans. This Section does not include concrete pavement, incidental concrete construction and concrete structures paid for under separate pay items.

Unless otherwise specified, concrete structures shall be constructed of concrete of FDOT Class I, II, III or IV, according to whichever is shown on the Plans, or in applicable drawings of the FDOT Design Standards, latest edition. Endwalls shall be constructed of Class I or Class IV concrete, whereas Box Culverts and Concrete Wingwalls shall be constructed of Class II or Class IV concrete, whichever is specified in the Plans and applicable pay items. All Portland Cement Concrete shall comply with Section 9-2.1 of the FDOT Specifications.

Materials, placement, finishing and curing shall conform to the requirements of Sections 346 and 400 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable drawings of the FDOT Design Standards. A surface finish, of the Class specified on the Plans, or in applicable drawings of the FDOT Design Standards, shall be applied to all exposed surfaces of concrete structures. A Class 2 surface finish shall be required on all endwalls and wingwalls. All concrete shall be a minimum of 3,000 psi strength. If a greater strength than 3,000 psi is specified in the plans or specifications, then the contractor shall construct the concrete at the greater specified strength.

The work specified under this Section includes the furnishing and placement of all concrete, and the construction of all forms, falsework, joints, bracing, expansion joint materials, wire fabric reinforcement, reinforcing steel, weep holes, bearing pads, the setting of anchor bolts, dowels and similar accessories, the application of required surface finishes, all required clearing and grubbing, excavation and backfilling and cleaning up after the work is completed, and all required pumping, drainage diversion or other work required to handle drainage flow during construction. The work specified under this Section shall include also the furnishing and placement of reinforcing steel and accessory items for endwalls and headwalls, but not for cast-in-place concrete box culverts and wingwalls.

Basis of Payment
The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per cubic yard, the pay quantity shall be the number of cubic yards of Concrete, of the Class designated in the applicable pay items, actually placed and accepted.

The pay quantity for work specified under this Section shall be the number of cubic yards of Concrete, computed within the neat lines of the structure or wall, as shown on Plans, actually placed and accepted. No deductions shall be made for weep holes, chamfers, scorings, fillets, or radii 1-1/2 square inches or less in cross-sectional area.

BOX CULVERT SECTION

Concrete, Pre-cast
The work specified in this Section consists of the construction of Pre-cast Concrete Box Culvert. The work shall be done in accordance with these specifications and the requirements of Section 410 of the FDOT Specifications, as amended herein, and in conformity with the lines, grades, dimensions, and notes shown in the Plans.

Materials and Manufacture
The materials and manufacture of Pre-cast Concrete Box Culvert sections shall conform to the requirements of the following specifications, as amended herein:

AASHTO M259 –for box sections with two feet or more of earth cover and subjected to highway loading, or subjected to dead load only.

AASHTO M273 –for box sections with less than two feet of earth cover and subjected to highway loading.

When approved by the Engineer, in writing, ASTM C789 may be used in lieu of AASHTO M259, and ASTM C850 may be used in lieu of AASHTO M273, subject to such requirements as may be stipulated, in writing, as a condition of approval. Also required is conformance with FDOT Structures Design Guidelines, latest edition and amendments thereto.

Concrete
Concrete shall be Class IV. Minimum concrete cover for slightly aggressive environment shall be 2 inches, and for moderately or extremely aggressive environment shall be 3 inches.

Construction
The methods for construction of trench and foundation, and for laying and backfilling shall conform to the requirements specified in Section 430 of the FDOT Specifications, with the following additional requirements:

Trench, Foundation, Laying and Backfill
The bedding shall consist of coarse concrete sand or other suitable granular material placed below the culvert to a minimum depth of 6 inches and to a minimum width of one foot outside the exterior walls of the culvert, between graded forms set one foot outside each exterior wall of the box culvert. When required by the Plans, other special bedding shall be provided.

Lifting Holes
Holes provided for lifting or joint restraint shall be sealed by plugging, using a non-shrinking mortar in accordance with Section 934 of the FDOT Specifications. Mortar shall be properly cured to insure a sound and watertight plug.

Joints
Field joints for Pre-cast Concrete Box Culvert shall be made with a butyl rubber-based pre-formed plastic gasket material, or as detailed in the Plans. Culverts to be laid with joints made from preformed plastic gasket material shall be subject to the applicable requirements of Section 430-7.3 of the FDOT Specifications, with the following additional requirements:

1) The culvert producer shall furnish to the Engineer a written recommendation as to the cross-sectional area of gasket material which will create a watertight seal. This recommended cross-sectional area shall be the minimum permitted for gasket material.

2) The outside of each joint shall be completely wrapped with either a woven or non-woven filter fabric. The fabric shall be a minimum of two feet in width, and shall be secured tightly against the box culvert section by metal or plastic reinforced strapping.
3) When specified in the Plans, the joint shall be secured by a suitable device capable of holding the sections to line and grade as well as fully home. These devices shall be removed after sufficient backfill has been placed and compacted to secure the sections.

Detail Drawings
Shop drawings, signed and sealed by a Florida licensed professional engineer, shall be submitted to the Engineer for review.

Details of special units, modifications and required devices shall be submitted for review to the Engineer prior to the manufacture thereof.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of linear feet of Box Culvert Section, Concrete, Pre-cast, and portions thereof, of the sizes of box culvert specified in the applicable pay items, actually constructed and accepted. Payment for this quantity shall constitute full compensation for all work specified under this Section.

REINFORCING STEEL

The work specified under this Section consists of the furnishing and placement of reinforcing steel and wire fabric in concrete structures, and in incidental concrete construction.

The materials, fabrication and placement of Reinforcing Steel shall conform to the requirements of Section 415 of the FDOT Specifications, as amended herein, such additional requirements as may be shown on the Plans, and, when specified herein or on the Plans, applicable drawings of the FDOT Design Standards.

Grade 60 reinforcing steel shall be used.

The Contractor shall submit reinforcing steel shop drawings to the Engineer for approval. The shop drawings shall show clearly the locations for all slab bolsters and high chair layouts.

Basis of Payment
When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per pound, the pay quantity shall be the number of pounds (lbs) of Reinforcing Steel actually placed and accepted.

INLETS, MANHOLES & JUNCTION BOXES

FDOT & PCED Type Structures
The work specified under this Section consists of the construction of Inlets, Manholes, Junction Boxes, Underdrain Inspection Manholes, Shoulder Gutter Inlets, Yard Drains, Back-of-Sidewalk Drains, and similar small drainage structures. The work under this Section shall also include the adjustment of structures shown in the Plans to be adjusted or which are required to be adjusted for the satisfactory completion of the work. New structures shall be constructed in accordance with these specifications, City of Tarpon Springs Engineering Divison standard construction details, and Florida Department of Transportation standard construction details.

The work specified under this Section shall also consist of the furnishing and placement of filter fabric wrap around all pipe-to-structure joints and grouting in accordance with City of Tarpon Springs Standard Detail. Cost for fabric wrap and grout shall be included in the cost of the drainage structure. Materials and construction shall conform to the requirements of Section 425 of the FDOT Specifications as amended herein, and such additional requirements as may be shown on the Plans, applicable standard drawings of the City of Tarpon Springs Engineering Division, and applicable drawings of the FDOT Design Standards. Pay items for FDOT/PCED drainage structures/inlets shall include cost of constructing frames and covers. Frames and covers shall be manufactured from grey iron in accordance with ASTM-A48 class 35B,. Said covers shall weigh 120 lbs. (minimum). They also shall be capable of withstanding a minimum H-20 type loading, be circular with 24" clear opening and have a 360-degree mechanically attached elastomer gasket. The frame shall weigh 70 lbs. (minimum) with a depth not exceeding 4 inches. The flange shall have bedding slots, bolt holes and lifting eyes. The cover and frame shall be constructed in accordance with City of Tarpon Springs Standard Details for all types of manhole frames and covers. Pay items for adjustment of inlets and/or manholes shall comply with and be constructed in accordance with Section 425 of the FDOT Specifications.

Grates for Drainage Structures
All grates for drainage structures shall be galvanized steel grates having a diamond, hexagonal or similar reticuline pattern. Additionally, all grates utilized on drainage structures within right-of-way or other areas subject to vehicular traffic shall be secured to the structure and shall be capable of withstanding H20 loading, and shall be the equivalent of those grates manufactured by U.S. FOUNDRY & MANUFACTURING CORPORATION in its H20 Loading series.

Underdrain Inspection Manholes
Underdrain Inspection Manholes shall be as shown in the Plan and the City of Tarpon Springs Engineering Division Standard Details book, latest edition.

The work specified under this Section shall include the furnishing and placement of all concrete, reinforcing steel and accessory items, removable clean-out plugs for upstream ends of underdrains (“T-gripper mechanical plugs without bypass” or approved equal), gratings, frames, covers and any other necessary fittings, and providing plugs and openings in existing structures, as shown in the Plans or as directed by the Engineer, all forms and falsework, all excavation and backfilling around the structure, all labor and materials required to restore the work site and affected property and facilities to a condition acceptable to the Engineer, and the disposal of surplus materials not claimed by the City. Unless otherwise provided for in the contract documents all materials disposed of by the Contractor shall be disposed of in areas provided by the Contractor.

Basis of Payment
The pay quantity for the work specified under this Section shall be the number each of the structures identified in the applicable pay items, satisfactorily completed and accepted.

RELOCATION / ADJUSTMENT OF EXISTING UTILITIES

The work specified under this Section shall consist of all the labor, materials and necessary incidentals to relocate and/or make vertical adjustments to structure tops, valve boxes, meter boxes and incidental items to the proposed grade in accordance with the plans.

The work specified under this Section shall also include adjusting and reconstructing existing grate inlet or other structure tops to manhole tops including ring and cover for structures located within the proposed roadway typical section or other pavement areas as shown on the plans. Materials and construction shall conform to the requirements of Section 425 of the Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, 2000 edition, except as amended herein, and such additional requirements that may be shown on the plans and applicable drawings of the Florida Department of Transportation (FDOT) Roadway and Traffic Design Standards, 2004 edition.

Basis of Payment
The pay quantity for the work specified under this Section shall be the number each of the structures identified in the applicable pay items, satisfactorily completed and accepted. The quantities determined as specified above shall be paid for at the contract price per each for adjustment and/or relocation of water valves, meters, manholes, inlet structures or electrical outlets.

SKIMMER FOR OUTFALL DRAINAGE STRUCTURE

The work specified under this Section consists of the construction of a Skimmer as shown in the plans. If the plans do not provide the necessary details, then the work specified under this Section shall be in accordance with FDOT standard detail index number 240, as amended herein, and as directed by the Engineer.

The skimmer shall be UV Stabilized High Density Solid Polyethylene 0.5" Thick – Matte Finish - Light Grey Color, in accordance with the dimensions specified in FDOT index 240. Unless otherwise specified in the plans, the skimmer will consist of two (2) side panels, one front panel, two (2) flat bars, and accessory hardware. The cost of the skimmer shall be paid for separately in the pay item provided for in the schedule of values (Division W).

Basis of Payment:
The pay quantities for the work specified under this Section will be per square foot actually constructed and accepted. The bid contract unit price will include full compensation for the furnishing and installation of all materials, hardware, and other items necessary to completely install the skimmer.

PIPE CULVERTS & STORM SEWERS

The work specified under this Section consists of the furnishing and installation of steel reinforced round or elliptical Concrete Pipe Culvert, Polyvinyl-Chloride (PVC) Pipe Culverts or round corrugated High Density Polyethylene (HDPE) Pipe with an integrally formed smooth interior in conformity with the lines, grades and elevations shown on the Plans, and as directed by the Engineer, in accordance with the manufacturer's recommendations and in accordance with the requirements of Section 430 of the FDOT Specifications, as amended herein, and all applicable drawings of the FDOT Design Standards, latest edition. The designation “concrete pipe” in the pay items refers to steel reinforced concrete pipe as described in ASTM C361 and C507.

For HDPE pipe, the pipe and fittings shall be made of polyethylene compounds and shall meet or exceed the requirements of ASTM D1248, ASTM F810, ASTM F667, and AASHTO M294-97. Pipe shall be equivalent to the HDPE pipe manufactured by Advanced Drainage Systems, Inc or equal. The nominal size of the pipe and fittings is based on the nominal inside diameter of the pipe. Joints may be made with bell and spigot or with couplings, but the outside diameter must be uniform throughout the length of the pipe. Joints shall utilize gaskets to ensure a watertight seal. All pipe joints shall be wrapped with filter fabric pipe jackets. Cost for filter fabric pipe jackets shall be included in the cost of the pipe. If specified in the Plans, non-corrosive pipe straps and screw anchor assembly shall be installed at the specified spacing.

For PVC pipe, the pipe shall have a permanently installed reinforced rubber ring gasket in an integral bell joint. The pipe shall meet the requirements of ASTM D 3034. There shall be no evidence of splitting, cracking or breaking while meeting the specifications as outlined in ASTM D 1784 and no shattering or splitting result when the pipe is tested in accordance with ASTM 2444. Joint tightness shall conform to ASTM D 2152. All concrete pipe joints shall be wrapped with filter fabric pipe jackets. Cost for filter fabric pipe jackets shall be included in the cost of the pipe.

The work shall include all excavation, sheeting and bracing, trench boxes, backfilling and compacting around the culvert, patching through existing endwalls, the furnishing and installation of fittings, including pipe strap and screw anchor assembly, disposal of surplus materials and the connection of proposed pipes to existing structures. All backfill shall be compacted to a density of at least 100% of the maximum density as determined by AASHTO T 99, Method C, for concrete pipes and 95% of the maximum density as determined by AASHTO T 99, Method C, for metal and plastic pipes.

The Contractor shall make every attempt to dewater the area with normal dewatering equipment including, but not limited to, surface pumps, sump pumps, wellpoints and header pipes and trenching/digging machinery. Once the Engineer is satisfied that the Contractor has made every effort to dewater the area, and the conditions still remain wet, the Engineer will then consider authorization for payment for the use of select material. In either case, the Contractor must schedule the backfilling work to allow the Engineer to determine staged in-place density determinations as the area is being backfilled. If the area is backfilled without the specified in-place density being verified, and the ground water subsequently rises above the backfilled area adjacent to the structure, no payment will be made for this pipe culvert/storm sewer/structure until the area can be dewatered and the specified density verified by the Engineer.

In locations outside the plane describe by a two (horizontal) to one (vertical) slope downward from the roadway shoulder line or back of curb as applicable and along storm sewer outfall lines where no vehicular traffic will pass over the pipe, compact the backfill to a density of at least ninety-five (95) percent of the maximum density as determined by AASHTO T 99, Method C.

All joints of round and elliptical concrete pipe shall be wrapped with filter fabric pipe jackets. Elliptical pipes shall have rubber gasket joints. Cost for filter fabric pipe jackets shall be included in the cost of the pipe.

Unless specified to be paid for under other items, the work under this Section shall include the restoration of all driveways, curb, sidewalk, sod and any other existing features and facilities disturbed or damaged in the performance of the work. Existing features and facilities shall be restored to the condition existing prior to the commencement of construction activities. Payment for restoration under this Section shall be made only for that restoration within the limits of payment shown in the Plans for such restoration. The Contractor shall restore, at his expense, and in accordance with the intent of these Specifications and the details and notes for restoration shown in the Plans, all existing features and facilities disturbed or damaged during construction activities outside the limits of payment shown in the Plans. Unless otherwise specified in the Plans, lawn sprinkler systems shall be removed from the public right-of-way and capped off at the right-of-way line. Unless otherwise specified, concrete pipe shall meet the design requirements of class III ASTM C76.

The work to be performed under this Section shall not include the excavation of unsuitable material, the furnishing, placement and compaction of fill material as replacement for unsuitable material, the furnishing and placement of bedding material, or other items of work for which separate payment is to be made.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. The suitable material shall be stored by the Contractor for use on the project until the City determines it is no longer needed. All costs associated with the storage shall be included in the cost of the pipe. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

The work under this Section shall include the internal televising of new stormwater drainage pipes and drainage structures. The Contractor shall provide the City with a video CD of the completed stormwater drainage system, and a written report. The Contractor shall pump down and clean the pipes and drainage structures, to the satisfaction of the City, prior to televising.

The video CD shall be of the standard format, in color, with all pertinent data and observations recorded as audio on the CD. The data should include:

1) An accurate recorded footage of the pipe lengths.
2) The drainage structure number and pipe size.
3) The run of the pipe and direction of flow (i.e. from S-1 to S-2).
4) Details of structural defects, broken pipes, sags, dips, misalignments, obstructions and infiltration.

The written report shall include the 4 items listed above.

All visual and television inspections shall be completed in the presence of a City inspector prior to the placing of any concrete, asphalt or sod. Televising shall occur after backfilling is complete and water table returns to natural levels. For pipes located under roadways, televising shall occur after road has been stabilized. A 360-degree view shall be taken of each joint. Any deficient or damaged pipe discovered during televising shall be the responsibility of the Contractor to repair or replace at the Contractor's expense. The televising shall include a numerical scale by which viewers of the video can visually determine the precise width of cracks and/or joint gaps. The contractor must notify the City 48 hours prior to any televising.

As a complement to the video, the Contractor shall also provide digital photos of areas of concern in electronic (computer CD) and hard-copy form (in color).

All known or indicated breaks shall be repaired by the Contractor regardless of the test allowances. Faulty sections of drainage pipes or drainage structures rejected by the Engineer shall be removed and re-laid by the Contractor. Sections of pipe that are repaired, re-laid or replaced shall be re-televised at the Contractor's expense.

In all cases that a leak is found, re-televising shall be required at the Contractor's expense, to confirm that the problem has been resolved.

F949 PVC pipe shall have a 100-year service life, and meet the requirements of ASTM F 949. This shall apply to pipe sizes up to and including a maximum inside diameter of 36 inches. F949 PVC pipe shall be installed according to manufacturer's requirements, and of Section 430 of the FDOT Specifications, and all applicable drawings of the FDOT Design Standards (latest version - including latest interim standard).

Additional requirements beyond ASTM F 949 are as follows:

A. When F949 PVC pipe is located under roadways and driveways, the minimum cover requirement (between the bottom of base and top of pipe) shall be 18 inches.

B. During installation, F949 PVC pipe shall not experience ongoing direct sunlight exposure, such as above ground, unshaded installations, such as bare-pipe mitered end sections.

C. F949 PVC pipe shall be manufactured from PVC compounds having no less than 1.0 part of Titanium Dioxide per 100.0 parts of PVC resin, by weight.

D. F949 PVC pipe shall be installed within 2 years from the date of manufacture. Pipe more than 2 years of age may not be used unless it can be demonstrated, to the satisfaction of the Engineer, that the pipe has been adequately protected from direct exposure to sunlight.

E. Contractor is responsible for identifying and field verifying the locations and fill requirements for F949 PVC pipe. In such cases, F949 PVC pipe shall not be used where the minimum or maximum cover for the proposed storm sewer does not meet FDOT Index #205, or as amended herein.

F. Tight Joints shall be an integral bell-gasketed joint. When the joint is assembled, it shall prevent misalignment of adjacent pipes and form a watertight joint (10.8 psi test per ASTM D3212, titled: "Standard Specification for Joints for Drain and Sewer Pipes"), using Flexible Elastomeric Seals, per ASTM F477, as required.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of the types and sizes of pipe specified in the applicable pay items, actually constructed and accepted, including that portion of the pipes extending into the walls (farthest point) of the structures to which the pipes are connected. Payment for this quantity shall constitute full compensation for all work specified under this Section, and shall include the televising and digital photos specified herein and dewatering (unless contract has separate dewatering pay item). For all pipe culverts, payment shall also include filter fabric pipe jackets at all joints.

JACK & BORE

The work specified under this Section consists of the installation of casing under roadways, railroads and other types of embankment by tunneling or driving through the embankment.

Jacking and boring under railroad embankments shall conform to Section 556 and applicable requirements of Section 430-6 of FDOT Specifications, except as amended herein. The Contractor shall be solely responsible for any damages from negligent operations or failure to comply with the methods and procedures prescribed.

In accordance with the requirements of Section 556 and applicable requirements of Section 430-6 of the FDOT Specifications, it shall be the responsibility of the Contractor to devise and use adequate methods and procedures to insure the safety and integrity of jacking and boring operation, and to prevent damage to existing facilities. The Contractor shall be solely responsible for any damages to existing facilities.

The work specified under this Section shall include all materials, labor and equipment required for the acceptable completion of the casing installation by means of Jack and Bore operations and shall include casing spacers.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of linear feet of jacking and boring, measured as the length from end to end of pipe casing.

U-TYPE ENDWALLS & FLARED OR MITERED END SECTIONS

The work specified under this Section consists of the construction of U-Type Endwalls for pipe culverts and the furnishing and installation of pipe culvert end sections, flared or mitered, in accordance with the requirements of Sections 346, 400, 415 and 430 of the FDOT Specifications, latest edition, as amended herein, all applicable drawings of the FDOT Design Standards, latest edition, and the details and notes shown in the Plans.

A Class II surface finish shall be applied as directed by the Engineer.

The work specified under this Section shall include all forms, bracing, concrete, reinforcing steel, grates and other required materials and accessories, all clearing and grubbing, excavation, backfilling, disposal of surplus material, and any other incidental work required to complete the installation of the end sections to the satisfaction of the Engineer.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

Basis of Payment
For U-Type Endwalls, the pay quantities for the work specified under this Section shall be the number each actually constructed and accepted.

For End Sections, Flared or Mitered, the pay quantities for the work specified under this Section shall be the number each of the types and sizes of End Sections specified in the applicable pay items actually constructed and accepted.

UNDERDRAIN

Polyvinyl Chloride (PVC), High Density Polyethylene (HDPE) and Roadway
The work specified under this Section consists of the furnishing and installation of Polyvinyl-Chloride (PVC) Pipe for roadway underdrain systems, and shall include all pavement cuts, trench excavation, the furnishing and installation of all filter aggregate, earth backfill and filter wrap material, and all restoration not paid for under separate pay items.

When incorporated by reference into the Specifications for such work, applicable provisions of this Section shall apply also to the furnishing and installation of underdrain systems for retention/detention ponds, stormwater treatment filtration systems, and other facilities requiring the installation of underdrain.

The furnishing and installation of underdrains shall conform to the requirements of Section 440 of the FDOT Specifications, as amended herein, and to the details shown in the City's Standard Roadway Underdrain Detail and applicable pavement restoration details contained in the Plans. Where a conflict occurs between the specifications and the details shown on the Plans, the details shown on the Plans shall govern.

Polyvinyl-chloride pipe for use as underdrain shall conform to the requirements of ASTM F 758 or ASTM F 949. Also, PVC underdrain manufactured from PVC pipe meeting ASTM D 3034, perforated in accordance with the perforation requirements given in AASHTO M 36 or AASHTO M 196 will be permitted.

HDPE Pipe for use as underdrain shall conform to the requirements of AAASHTO M294 and the cell classification as defined in ASTM3350. The gasket material shall conform to the requirements of ASTM F477. The pipe shall possess male and female pipe ends, which allow the construction of overlapping, gasketed pipe joints in conformance with the requirements of ASTM D3212.

All roadway underdrain, including that installed under driveways, shall be perforated in accordance with the perforation detail shown in the Plans, except that in the vicinity of trees, and under roadways, non-perforated sections of underdrain shall be used where directed by the Engineer.

Underdrain installed under driveways, streets and other pavement shall be installed by open-cut trenching in accordance with the details shown in the City's Standard Roadway Underdrain Detail and applicable pavement restoration details contained in the Plans. Underdrain installed in the vicinity of trees shall be installed in accordance with the provision entitled "Underdrain in the Vicinity of Trees" contained in these Specifications.

Underdrain shall be placed as directed by the Engineer to avoid conflict with existing utilities. Any change in the location of underdrain, or the length of underdrain used, from that shown on the Plans, shall be authorized in writing by the Engineer.

No separate payment will be made for non-perforated roadway underdrain. It shall be the responsibility of the Contractor to determine from inspection of the project site the quantity of non-perforated underdrain anticipated to be required in the vicinity of trees and under roadways.

Underdrain cleanout plugs shall be installed in the upstream ends of underdrains wherever the upstream end is connected to a storm water inlet structure or junction box and at all bends. Underdrain plugs shall be "T-gripper mechanical plugs without bypass" or equal, and shall be considered incidental to the cost of the underdrain pipe, unless a separate pay item is provided.

Underdrain in the Vicinity of Trees

When underdrain is to be installed in the vicinity of trees designated on the Plans or by the Engineer to be preserved, trenching, and the installation of underdrain in such areas, shall be accomplished by hand operations in order to prevent damage by machinery to the trees and their root systems. Filter aggregate and the top membrane shall be deleted in areas where intertwined root systems may prevent excavation of the trench to standard width, and the underdrain installed in such areas shall consist of solid-walled underdrain (non-perforated) of the specified material laid on grade, with all backfill material placed, compacted and dressed by hand to the required final grades.

Restoration Requirement
Unless specified to be paid for under other items, the work under this Section shall include the restoration of all driveways, curb, sidewalk, sod, lawn sprinkler systems and any other existing features and facilities disturbed or damaged in the performance of the work.

Unsuitable Material
Unless otherwise provided for under separate pay items in this contract, the work to be performed under this Section shall include the excavation of unsuitable material, the furnishing, placement and compaction of fill material as replacement for unsuitable material.
Identification

Each section of underdrain pipe delivered to the construction site shall be clearly stamped with the ASTM designation, in a size and pattern such as to be immediately visible to the Engineer.

Basis of Payment
The work specified under this Section shall be paid for under the pay items for Underdrain, Polyvinyl-Chloride (PVC), Perforated, HDPE or Roadway. No separate payment will be made for non-perforated underdrain.

The pay quantity for the work specified under this Section shall be the number of linear feet of Underdrain, of the various types and sizes specified in the applicable pay items, actually constructed and accepted.

INCIDENTAL CONSTRUCTION

Pipe Handrail
The work specified under this Section consists of the furnishing and erection of Aluminum or Steel pipe handrail, in accordance with the requirements of Section 965 of the FDOT Specifications, as amended herein.

Steel Pipe Handrail shall be constructed of galvanized steel pipe railings, with galvanized steel diamond wire fabric, assembled and erected as shown in the Plans.

Aluminum Pipe Handrail shall be constructed in accordance with the requirements of Section 965 of the FDOT Specifications, and Index No. 870 of the FDOT Design Standards, latest edition.

The work specified in this Section includes the furnishing and erection of all posts, railing, bracing, wire fabric and anchorage assemblies required for the completed work.

Basis of Payment
The pay quantity for the work specified under this Section shall be the total horizontal length measured in linear feet of the handrail structure, actually constructed and accepted. The handrail structure length shall be measured in terms of total horizontal length from end to end and shall not mean the total of tubing or posts.

CURB & GUTTER

Concrete
The work specified under this Section consists of the construction of concrete curb, curb and gutter, valley gutter, shoulder gutter, and traffic separators in accordance with the requirements of Section 520 of the FDOT Specifications, as amended herein, applicable drawings of the FDOT Design Standards, latest edition, applicable standard construction details of the City of Tarpon Springs Engineering Division, and the details and notes shown in the Plans.

Job-mix design formulas for all Portland Cement Concrete, of the type specified, shall be submitted at least 14 days prior to use on the project. The submitted formulas shall be derived or approved by the City and/or its agents. All concrete mix designs shall meet FDOT Concrete Class mix guidelines, except as follows:

WHEN APPROVED, IN WRITING, BY THE ENGINEER, an Alternate Class I Concrete mix design formula, for concrete curb and gutter to be placed by automated curb machines, may show, as a substitution for #57 aggregate, an amount of #89 aggregate not to exceed 33 percent, by weight, of the #57 aggregate.

All Portland Cement Concrete shall be FDOT Class I Concrete with a minimum cementitious content of 508 lbs/cy, a maximum water cementitious ratio of 0.50 lbs/lb, and a minimum compressive strength of three thousand (3000) psi at twenty-eight (28) days.

The work specified under this Section shall include the construction of all Curb Transitions called for in the Plans in accordance with the details shown or referenced in the Plans, the furnishing and placement of all required Reinforcing Steel, and the furnishing and construction of all necessary forms.

Basis of Payment:
The pay quantities for the work specified under this Section shall be the number of linear feet of concrete curb, curb and gutter, valley gutter, shoulder gutter, wheel stops or traffic separator actually constructed and accepted. Payment for the quantities determined as specified herein shall constitute full compensation for all work specified under this Section.

REMOVE & RESET GRANITE CURB

The work specified under this Section consists of all the labor, materials and necessary incidentals for the removal and resetting of granite curb (straight and curved) in accordance with the details and notes shown on the Plans.

Granite curb shall be cleaned by pressure washing or other suitable means to remove dirt, asphalt, paint and other foreign material prior to resetting.

Contractor shall repair damage to any surface or facility adjacent to the granite curb that is caused by the removal and resetting of the granite curb. No separate measurement or payment will be made for such repairs.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of linear feet of granite curb actually constructed and accepted. Payment for the quantities determined as specified herein shall constitute full compensation for all work specified under this Section.

SIDEWALK

Concrete

The work specified under this Section consists of the construction of Concrete Sidewalk to the lines and grades shown on the Plans, and as directed by the Engineer.

The construction of Concrete Sidewalk shall conform to the requirements of Section 522 of the FDOT Specifications, as amended herein, to the details and notes shown in the Plans, and to all applicable drawings of the FDOT Design Standards, latest edition, and the Pinellas County Department of Public Works Standard Construction Details, latest edition.

Unless otherwise specified, concrete sidewalk for pedestrian traffic shall be constructed to a minimum thickness of four (4) inches, with no reinforcement. Concrete sidewalk having a design thickness greater than four (4) inches shall be reinforced with either Welded Wire Fabric or Reinforcing Steel bars, as shown on the Plans or as approved by the Engineer.

All Portland Cement Concrete shall be FDOT Class I Concrete with a minimum cementitious content of 508 lbs/cy, a maximum water cementitious ratio of 0.50 lbs/lb, and a minimum compressive strength of three thousand (3000) psi at twenty-eight (28) days.

If separate restoration pay items are not provided, then the work specified under this Section shall include the restoration, to the condition existing prior to the commencement of construction activities, of all existing roadway pavement, curb and gutter, driveways, sidewalk, topsoil, and sod disturbed or damaged in the performance of the work specified under this Section. All surplus materials resulting from construction operations shall remain the property of the City until all construction requirements have been fulfilled, and such materials as may be acceptable to the Engineer for restoration purposes shall be so utilized.

The work specified under this Section shall include the furnishing and construction of all necessary forms, and the furnishing and placement of all required Welded Wire Fabric or Reinforcing Steel. Substitution (by the contractor) of welded wire fabric with fibermesh requires that the contractor provide documentation confirming that specific type of proposed fibermesh is equivalent or superior to welded wire fabric in terms of structural characteristics. After receipt of documentation from the contractor, the City shall have the option of accepting or rejecting requested substitution, depending on the amount of savings that will be extended to the City.

Sidewalk shall be constructed according to FDOT Design Standards (latest version - including latest interim standard) Index 310, and sidewalk ramps shall be constructed according to FDOT Design Standards (latest version - including latest interim standard) Index 304, unless a separate detail is provided. However, all 6" thick (or greater) concrete sidewalks shall be reinforced with either welded wire fabric or reinforcing steel bars.

Driveway walk-around widths previously shown to be 3 ft. minimum are revised to 4 ft. minimum; a reduction to 3 ft. minimum is allowed only in restricted conditions, when specifically approved by the Engineer. Ramp widths previously shown to be 3 ft. minimum are revised to 4 ft. minimum; a revision to 3 ft. is allowed only in restricted conditions when specifically approved by the Engineer.

Concrete Sidewalk Curb Ramps shall be constructed to a minimum thickness of six (6) inches and shall be reinforced with either welded wire fabric or reinforcing steel bars; reinforcing shall be as specified on the plans or as directed by the Engineer. Contractor shall install an expansion joint at each edge of a curb cut.

Detectable Warnings on Walking Surfaces shall be in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.29.2, and FDOT Section 527 Detectable Warnings on

Walking Surfaces. Detectable warnings may consist of tiles, pavers or mats. Use detectable warnings with size and pattern as shown in the plans comprised of truncated domes aligned in parallel rows in accordance within Index 304 of the FDOT Design Standards (latest version - including latest interim standard). Do not use detectable warnings with a diagonal pattern. Mats shall not be the adhesive/glued down type. However, thermo-type/torch down thermoplastic mat applications and other types (i.e., anchored), in accordance with FDOT specifications, shall be acceptable.

Contractor shall prepare the surface and install detectable warnings in accordance with the detectable warning manufacturer's recommendations and instructions, using materials and/or equipment recommended and approved by the manufacturer, for adherence to cementitious substrate surfaces. Mortar topping [351-2(d) Materials] shall not be used. The quantities to be paid for will be: (1) Detectable warnings that are applied to newly constructed concrete sidewalk/curb ramps will be included in the cost of the concrete sidewalk/curb ramp. (2) Detectable warnings that are applied to existing curb ramps will be paid per square feet for each detectable warning that is furnished, installed and accepted.

Contractor shall submit for review and approval by the Engineer, certification that detectable warnings planned for use meet the requirements of FDOT Section 527-2.2 "Material Properties" as well as manufacturer's installation recommendations and instructions. The City reserves the right to select which product can be utilized. Tactile surfaces shall be colored black.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of square yards of Sidewalk, Concrete, at the thicknesses specified in the applicable pay items, actually constructed and accepted.

RIPRAP

Rubble
The work specified under this Section consists of the construction of riprap composed of broken stone or broken concrete. The construction of rubble riprap shall conform to the requirements of Section 530 of the FDOT Standard Specifications, as amended herein, the details and notes shown on the Plans, and, where specified herein or on the Plans, applicable drawings of the FDOT Design Standards, latest edition.

Materials
Rubble riprap shall consist entirely of broken stone or broken concrete conforming to the following requirements:

- The material shall be sound, hard, durable rubble, free of open or incipient cracks, soft seams, or other structural defects, consisting of broken stone or broken concrete that are rough and angular.

The material shall be free of cracks, soft seams or other structural defects. The pieces shall be roughly angular, and the lot shall be reasonably free of thin, flat or elongated pieces.

Stones shall be of a graded mixture, with gradation and weights in accordance with applicable requirements of Section 530-2.2 – Rubble, in the FDOT Specifications.

Construction Methods
The riprap shall be dumped in place and arranged to form compact layers conforming to the neat lines called for in the Plans, and to the thickness' specified, plus or minus three inches.

The riprap shall be placed in a manner such that the smaller pieces are evenly distributed and placed so as to fill the voids between the larger pieces, and in a manner to avoid sharp exposed edges.

Basis of Payment
Rubble material shall be measured by the ton, in its surface-dry natural state. Measurement shall be by railroad scales, truck scales, barge displacement, volume measurements or other methods approved by the Engineer. Weights shall be determined as specified in Section 530 - 4.2 of the FDOT Standard Specifications. The Engineer shall approve which of the methods, i.e., railroad weights, truck weights, barge displacement, or volume measurements, is to be used.

If the method of truck weights is to be used, duplicates of the sworn certificates of weight shall be furnished with each truckload of material, and presented to the job inspector for his signature. Certificates of weight not signed by the job inspector will not be considered for payment.

GUARDRAIL

Metal

The work specified under this Section consists of the construction and/or removal of Metal Guardrail in accordance with the requirements of Section 536 of the FDOT Specifications, as amended herein, applicable drawings of the FDOT Design Standards, latest edition, and the details and notes shown on the Plans. Box Beam guardrail shall be constructed in accordance with the details shown in the Plans. If there is no specific pay item for removal of guardrail, then the cost for removal of guardrail shall be included in the pay item for Clearing and Grubbing, if required for satisfactory completion of the project and/or called out in the contract.

Basis of Payment

The pay quantity for Guardrail under this Section shall be the number of linear feet of guardrail, measured along the centerline of the guardrail panel, actually constructed and accepted. Payment for the said pay quantity shall be full compensation for all work and materials specified in the construction of metal guardrail, including posts, fasteners, any required bending of the guardrail panels, miscellaneous asphalt (3 inches thick) and any other materials or work incidental to the construction of the guardrail, except that work and materials specified to be paid for under other pay items.

The pay quantity for End Anchorage Assembly shall be the number each of end anchorage assemblies actually installed and accepted. Payment for the said pay quantity shall be full compensation for all work and materials specified in the construction of guardrail anchorage assemblies, including miscellaneous asphalt (3 inches thick).

The work specified under this Section shall be paid for under the pay items for guardrails, including metal guardrail with timber posts, steel posts, end anchorage assembly, metal guardrail (box beam type) and other pay items related to guardrails.

FENCING

FDOT Type B
The work specified in this Section consists of the construction of chain link fencing, and the furnishing and installation of cantilever gates as shown in the Plans. If shown in the Plans, the work in this Section shall also include vinyl coated fence fabric, extra-length posts and top rails.

The construction of Fencing under this Section shall conform to the applicable provisions of Section 550 of the FDOT Specifications and Index Nos. 801, 802 & 803 of the FDOT Design Standards, latest edition, as amended herein, and the lines, grades, dimensions and notes shown in the Plans. Fencing shall be constructed to the heights specified in the Plans.

The construction of Cantilever Gates under this Section shall conform to the applicable requirements of Section 550 of the FDOT Specifications and Index Nos. 801, 802 & 803 of the FDOT Design Standards, latest edition, as amended herein, and the details and notes shown in the Plans. Cantilever gates shall be of the type specified in the Plans (i.e., swing, slide, etc).

Basis of Payment
The pay quantity for Fencing, FDOT Type B shall be the number of linear feet of fencing installed and accepted. Payment for this quantity shall constitute full compensation for all fence material and fastening accessories, all line posts at the length required for construction of the fence to Plan height (nominal fence height, plus two feet), all concrete encasements for posts, and all clearing and grubbing, grading and miscellaneous work necessary to the completed work, except that work for which payment is specified to be made under other pay items. Temporary fencing shall include furnishing, installation, maintenance and removal.

The pay quantity for the following shall be the number each of the different types of assembly installed at Plan height (nominal fence height, plus two feet) and accepted:

- Pull or End Post Assembly, FDOT Fencing Type B
- Corner Post Assembly, FDOT Fencing Type B

The pay quantity for Gate, Cantilever, FDOT Fencing Type B shall be the number each of the various sizes and types of gates shown in the Plans installed and accepted. Payment for this quantity shall constitute full compensation for all accessories and incidentals necessary to complete the work.

DIRECTIONAL BORE

The work specified under this Section shall include all work required for the installation for Directional Boring. The furnishing and installation of all items in connection with Directional Boring shall be in accordance with Section 555 of the FDOT Specifications.

Basis of Payment
The work specified under this Section shall be paid for under the pay items listed under the Method of Measurement and Basis of Payment sections of the FDOT Specifications, sections 555-7 and 555-8.

SODDING

The work specified under this Section shall consist of the furnishing and placement of grass sod within the limits shown on the Plans, and in such other areas as the Engineer may direct. The furnishing and placement of sod shall be in accordance with Section 575 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable standard drawings of the FDOT Design Standards. Sod shall be tropical soda apple free.

The work specified under this Section shall include all necessary mowing of sod to the satisfaction of the Engineer for the duration of the construction period. It shall include all staking of sod specified on the Plans.

If this contract includes the construction of grass medians, then the work specified under this Section shall include the furnishing and placement of 6 inches of topsoil in the median prior to the placement of the sod. Topsoil materials shall be in accordance with Section 987 of the FDOT Specifications. No clay or limerock shall be allowed in the median to a depth of 24 inches from the back of curb to the back of curb (or edge of pavement). The medians shall not be used for the disposal (burying) of debris.

When called out in the plans, sod (other than in medians) shall also include the furnishing and placement of 6 inches of topsoil prior to the placement of the sod.

Cost of topsoil shall be included in the pay items for sod, unless the contract has a separate pay item for top soil.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of square yards of Sodding, of the types specified in the applicable pay items, actually placed and accepted. This pay quantity shall include all required water and fertilizer, top soil (if applicable – see above), excavation of the trench for the sod, and the satisfactory disposal of excavated material. No payment shall be made for unauthorized areas of sodding, and no additional allowance shall be made for furnishing and applying the fertilizer and water necessary to establish the growth of sodding.

HIGHWAY SIGNING

The work specified under this Section shall include the erection, installation and furnishing of all material necessary for the completion of all signing as shown on the Plans.

All work and material shall be in accordance with Section 700 of the FDOT Specifications.

For traffic sign installation into concrete median, work shall be completed in accordance with FDOT Index No. 17302, Case VIII, post in concrete detail, and PCED Index No. 1380.

All City of Tarpon Springs sign faces shall be ASTM Type XI Retro-Reflective Sheeting for Rigid Sign Surfaces. Certifications for the sheeting material of all project signs shall be provided to the City, in accordance with FDOT Standard Specifications, Section 700, paragraph "Acceptance of Signs - Manufacturer's Certification and Recommendation". Reference to PCED Index No. 1380 shall be a requirement for sign installations into all concrete areas, and not limited to installations of signs in medians.

All existing signs that will not be used in the project shall be removed by the contractor and carefully transported to the City of Tarpon Springs, Public Works Yard 325 Ring Street, Tarpon Springs, Fl 34688; Ph: (727) 942-5606.

Cost for removal and transportation of these signs shall be included in the lump sum payment for "Clearing and Grubbing". If a sign is lost or damaged prior to, or during transportation to the City's yard, then the contractor shall provide the City with a replacement sign, in-kind, at no additional cost to the City. Existing signs shall not be removed until first receiving confirmation from the Engineer, or his designee, that the sign removal shall not adversely affect traffic flow during the construction phase. Pay items for all signs shall be for new signs without damage, original to the bid project and shall not be old, aged, or reconditioned signs posted on other projects, or from a jobsite stockpile. All signs shall have affixed to the rear face of the sign a sticker that contains the Sign Manufacturer, Date of Manufacture, Date of Installation, and Sign Sheeting Material type.

All existing signs, identified to remain or be relocated on site, shall be maintained by the contractor and (if damaged or lost) replaced with a new sign, at no additional cost to the County.

Basis of Payment
The pay quantity for the work specified under this Section shall be the number each or per assembly of item actually installed and accepted.

STREET LIGHTING CONDUIT SYSTEM

The work specified under this Section shall include all work required for the installation of street lighting conduit, pull strings furnishing and laying the pipe fittings, installation of pull construction and 36” radius sweeps at ends. The furnishing and installation of all items in connection with Street Lighting Conduit System shall be in accordance with Sections 603 to 690 of the FDOT Specifications. The work specified under this Section shall be paid for at the contract unit value as identified in the Schedule of Values and the FDOT Basis of Estimates.

Polyvinyl-Chloride (PVC)
Construction of Polyvinyl-Chloride Lighting Conduit shall conform to the requirements of Section 630 of the FDOT Specifications.

Pull Boxes
Lighting pull boxes shall comply with Section 635 of the "FDOT Standard Specifications for Road & Bridge Construction" and shall have a bolted down lid with 5-sided head bolt.

Basis of Payment
The pay quantities for the work specified under this Section shall be the number of linear feet of the types and sizes of conduit specified in the applicable pay items, actually constructed and accepted, including that portion of the conduit extending into the walls (farthest point) of the structures to which the conduits are connected including the 36” radius sweeps at ends, and the number each of pull boxes accepted and items actually installed and accepted.

The work specified under this Section shall be paid for under the pay items for Polyvinyl-Chloride (PVC) (Lighting Conduit), Lighting Cable Pull Boxes.

SHEETING & BRACING

The work specified under this Section consists of the construction of Sheeting and Bracing for trenches, retaining walls, etc., for the purpose of preventing injury to workers, damage to completed work, or disturbance of or damage to adjacent areas and existing structures and facilities resulting from the collapse of trench walls.

It shall be the responsibility of the Contractor to provide adequate Sheeting and Bracing for all trenching operations where such is required pursuant to applicable Federal, State, County and Municipal regulations. Additionally, the Contractor shall construct such Sheeting and Bracing as may be called for on the Plans, or directed by the Engineer during construction operations, for the protection of adjacent areas and existing structures and facilities.

The construction of all Sheeting and Bracing shall conform to the requirements of all applicable Federal, State, County and Municipal regulations.

The design, methods of installation, and adequacy of Sheeting and Bracing shall be, and shall remain, solely the responsibility of the Contractor. At the Contractor's option, and at no additional expense to the City, a trench box may be substituted as approved by the Engineer.

In general, sheeting and bracing shall be removed as the trench is backfilled, in such manner as to prevent the collapse of trench walls or the disturbance of or damage to adjacent areas and existing structures and facilities. The voids left by the extraction of the sheeting and bracing shall be carefully filled by jetting, ramming or other means approved by the Engineer. No sheeting or bracing shall be removed prior to obtaining permission from the Engineer. Permission from the Engineer to remove sheeting and bracing shall not relieve the Contractor of the responsibility for damages resulting from the premature removal of sheeting and bracing.

The Engineer may order, in writing, any or all sheeting or bracing to be left in place for the purpose of preventing injury to adjacent structures, property, etc. If left in place, such sheeting shall be cut off at the elevation specified by the Engineer, but in no case shall sheeting be cut off at an elevation higher than thirty-six (36) inches below the existing grade. Bracing remaining in place shall be driven in tight. The right of the Engineer to order sheeting and bracing to remain in place shall not be construed as creating any obligation on his part to issue such order.

Basis of Payment:
The work specified under this Section shall be paid for under the pay item for:

- Sheeting and Bracing, (Removed)
- Sheeting and Bracing, (Left-in-Place)

If there is not separate pay item for Sheeting and Bracing, then the cost of Sheeting and Bracing shall be included in the cost of the item (i.e., pipe, drainage structure, etc.) for which sheeting and bracing is required. The pay quantity for the work specified under this Section shall be the total number of square feet of Sheeting and Bracing used as authorized by the Engineer, measured from the surface of existing ground to a depth of two (2) feet below flow line of the proposed pipe or structure, completed and accepted. The quantity determined as specified above, shall be paid for at the contract unit price per square foot.

BARRICADES

PCED Type III
The work specified under this Section consists of the furnishing and installation of permanent traffic barricades constructed of wooden members coated with reflectorized material in accordance with the requirements of Sections 952 and 962-7 of the FDOT Specifications, as amended herein.

The barricades shall be fabricated and installed in accordance with City of Tarpon Springs Standard Details Book construction details for Type III Barricade. Stripes shall be retro-reflective white and retro-reflective red, reflectorized with a material that has a high intensity and smooth sealed outer surface. Only pressure treated posts (ASTM D-1760 pressure treatment of timber products) and galvanized coated hardware shall be used.

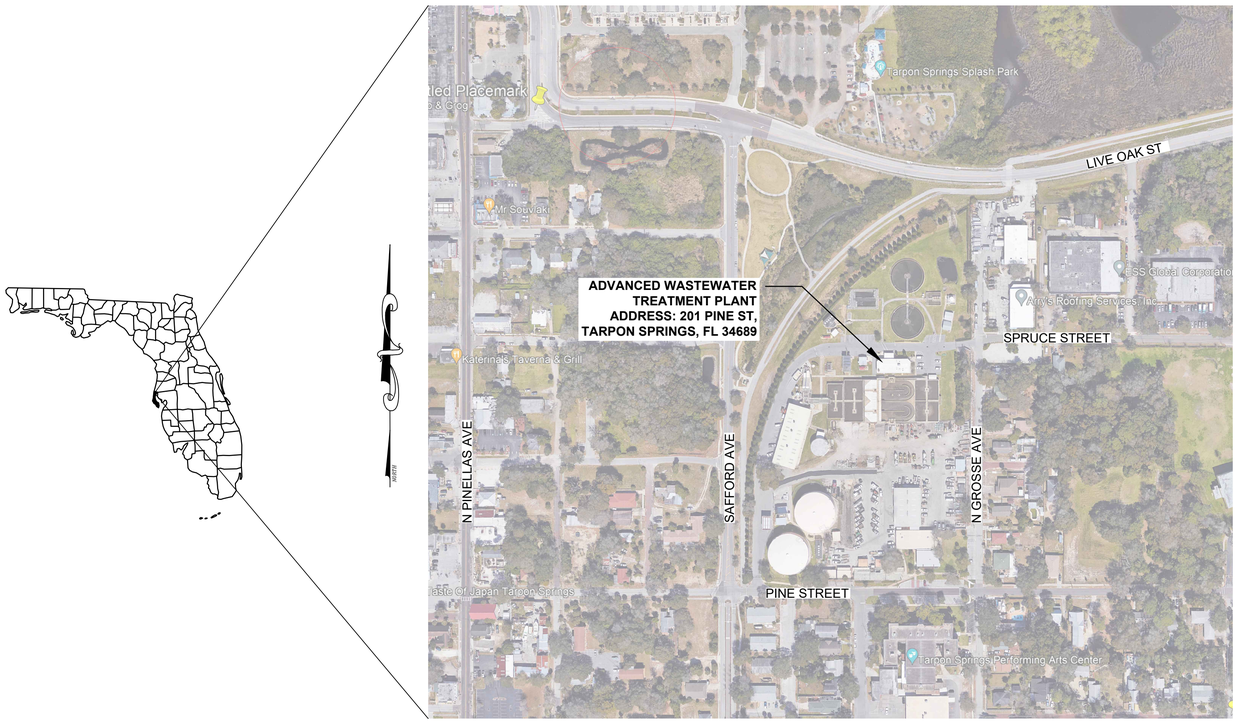
The barricades shall be permanently installed, at the locations shown in the Plans, as soon as the construction of the project reaches that stage of completion which, in the opinion of the Engineer, requires the level of protection to the public intended by the installation of the barricades.

The Contractor shall maintain the barricades, in a condition suitable for final acceptance, from such time as the barricades are installed until final acceptance of the project.

Basis of Payment
The pay quantity for the work specified under this Section shall be the number each of Barricade, PCED Type III installed and accepted.

CITY OF TARPON SPRINGS AWWTP ELECTRICAL UPGRADES

ISSUED FOR BID - APRIL 2026



PROJECT VICINITY MAP

McKIM&CREED
1365 Hamlet Avenue
Clearwater, FL 33756
Phone: (727)442-7196, Fax: (727)461-3827
CA Lic No. 29588
www.mckimcreed.com

AUBREY ARMAND HAUDRICOURT LICENSE No 66861 STATE OF FLORIDA PROFESSIONAL ENGINEER

Aubrey Haudricourt — I am approving this document 2026.04.10 13:56:01-04'00'

AUBREY A. HAUDRICOURT, STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 66861

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SHEET LIST TABLE

Sheet Number	Sheet Title
GENERAL	
G0.00	COVER SHEET
ELECTRICAL: GENERAL	
E0.00	ELECTRICAL GENERAL NOTES AND ABBREVIATIONS
E0.01	ELECTRICAL SYMBOLS 1 OF 2
E0.02	ELECTRICAL SYMBOLS 2 OF 2
ELECTRICAL: SINGLE LINES	
E1.01	SINGLE LINE DIAGRAM MCC-1 DEMO 1 OF 3
E1.02	SINGLE LINE DIAGRAM MCC-1 DEMO 2 OF 3
E1.03	SINGLE LINE DIAGRAM MCC-1 DEMO 3 OF 3
E1.04	SINGE LINE DIAGRAM SEQUENCE OF CONTRUCTION PHASE 1-3
E1.05	SINGE LINE DIAGRAM SEQUENCE OF CONTRUCTION PHASE 4-5
E1.06	FINAL SINGE LINE DIAGRAM MAIN SERVICE AND SWITCHBOARD
E1.07	SINGLE LINE DIAGRAM MCC-1
E1.08	SINGLE LINE DIAGRAM MCC-2
E1.09	SINGLE LINE DIAGRAM MCC-D
E1.10	SINGLE LINE DIAGRAM GSPS SERVICE DEMO
E1.11	SINGLE LINE DIAGRAM GSPS SERVICE PROPOSED
ELECTRICAL: PLANS	
E2.00	SITE DEMOLITION
E2.01	CHLORINE BUILDING - DEMO
E2.02	ELECTRICAL PARTIAL SITE PLAN
E2.03	MAIN BASIN EQUIPMENT LOCATION
E2.04	ELECTRICAL PARTIAL SITE PLAN NORTH
E2.05	GROUNDING PLAN
E2.06	FUEL TRANSFER PUMP PLAN
E2.07	ELECTRICAL EQUIPMENT LAYOUT
E2.08	CABLE TRAY PLAN
E2.09	LIGHTING, RECEPTACLES AND PANELBOARD SCHEDULE
E2.10	ROOF CONDENSER UNIT PLAN
E2.11	LIGHTING STATISTICS
ELECTRICAL: SCHEMATICS	
E3.01	INTERCONNECTION DIAGRAM 1 OF 2
E3.02	INTERCONNECTION DIAGRAM 2 OF 2
E3.03	VFD WIRING DIAGRAM 1 OF 3
E3.04	VFD WIRING DIAGRAM 2 OF 3
E3.05	VFD WIRING DIAGRAM 3 OF 3
ELECTRICAL: EQUIPMENT ELEVATIONS	
E4.01	EQUIPMENT ELEVATIONS
ELECTRICAL: PANELBOARD SCHEDULES	
E4.02	PANELBOARD SCHEDULES
ELECTRICAL: DETAILS	
E5.01	DUCT BANK DETAILS
E5.02	FUEL TRANSFER PUMP DETAILS 1 OF 2
E5.03	FUEL TRANSFER PUMP DETAILS 2 OF 2
E5.04	ELECTRICAL DETAILS 1 OF 2
E5.05	ELECTRICAL DETAILS 2 OF 2

ISAAC CADE DOWLESS LICENSE No 97098 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Isaac Dowless, PE
Location: Raleigh, NC
Reason: I am approving this document
Date: 2026.04.10 13:26:50-04'00'

ISAAC C. DOWLESS, STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 97098

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SHEET LIST TABLE

Sheet Number	Sheet Title
STRUCTURAL	
S0.00	GENERAL NOTES
S0.01	GENERAL NOTES & TYPICAL DETAILS
S0.02	TYPICAL DETAILS
S0.03	TYPICAL ACCESS STAIR DETAILS
S0.04	TYPICAL HANDRAIL DETAILS
S1.00	EXIST. CHLORINE BLDG. MODS FDN. & FLOOR PLAN
S1.01	EXIST. CHLORINE BLDG. ROOF PLAN
S1.02	EXIST. CHLORINE BLDG. MODS SECTIONS & DETAILS
S1.03	ACCESS STAIR & PLATFORM FRMG. PLAN, SECTIONS & DETAILS
S2.00	GENERATOR SUPPT. SLAB-ON-GRADE FDN. PLAN, SECTIONS & DETAILS
S3.00	FUEL TRANSFER PUMP, ACCESS STAIR & PLATFORM PLAN, SECT. & DET.

\\mckimcreed.com\Vosun\Data\Proj\018401\0015\ENG\80-Drawings\00.00 COVER SHEET.dwg, 4/10/2026 12:50:14 PM, South Serg

1 GENERAL NOTES

1.1 ALL WORK IS TO BE PERFORMED IN A GOOD, WORKMANLIKE AND PROFESSIONAL MANNER.

1.2 ALL CONSTRUCTION SHALL BE IN STRICT COMPLIANCE w/ THE REQUIREMENTS OF THE FLORIDA STATE BUILDING CODE (FBC), 2023 EDITION, OR LOCAL BUILDING CODE REQUIREMENTS IF MORE STRINGENT.

1.3 THESE DRAWINGS DO NOT SHOW PROVISIONS FOR SAFETY DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE REQUIRED BRACING, SHORING, AND SAFETY DEVICES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

2 COORDINATION

2.1 STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH & COORDINATED w/ CIVIL AND ELECTRICAL DRAWINGS, INCLUDING VENDOR SUBMITTAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.2 COORDINATE THE EXACT SIZE AND LOCATION OF ALL SLEEVES AND OPENINGS THROUGH WALLS OR CONCRETE SLABS w/ CIVIL AND ELECTRICAL DRAWINGS, INCLUDING VENDOR SUBMITTAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.3 ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS ARE TO BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE WORK PROCEEDS, INCLUDING ORDERING AND FABRICATING MATERIALS.

2.4 INDEPENDENT TESTING / REVIEW OF MATERIALS SHALL BE PROVIDED AS DEFINED IN PROJECT SPECIFICATIONS IF APPLICABLE. IN GENERAL PROJECT INVOLVES THE FOLLOWING:

A. SOIL / FILL COMPACTION & BEARING.
B. C.I.P. CONCRETE.
C. CONCRETE MASONRY.
D. STRUCTURAL STEEL.
E. ALUMINUM

2.5 IF COORDINATION OF INFORMATION PRESENTED CONFLICTS w/ THE PROJECT SPECIFICATIONS, CONTACT THE E.O.R. FOR CLARICATION ON WHETHER THE SPECIFICATIONS OR DRAWINGS TAKE PRECEDENCE.

2.6 IN GENERAL CALL-OUTS ARE FOR NEW CONSTRUCTION U.N.O.. EXISTING CONSTRUCTION CALL-OUTS, ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURES ARE BASED ON EXISTING RECORD DRAWINGS PROVIDED TO McKIM & CREED. THE (*) SYMBOL ON INDIVIDUAL FACILITY "STRUCTURAL" DRAWINGS INDICATES EXISTING CONSTRUCTION CALL-OUTS, CONDITIONS, ELEVATIONS AND DIMENSIONS TO BE FIELD VERIFIED BY THE GENERAL CONTRACTOR U.N.O. PRIOR TO CONSTRUCTION, INCLUDING ORDERING AND FABRICATING MATERIALS. RECORD DRAWINGS PROVIDED BY THE CITY OF TARPON SPRINGS UTILIZED INCLUDES:

A. "CONSTRUCTION PLANS FOR WASTEWATER TREATMENT FACILITY CITY OF TARPON SPRINGS, FLORIDA" BY GLACE & RADCLIFFE, INC. CONSULTING ENGINEERS (DTD. 03-1987).

2.7 SPECIAL INSPECTIONS (IF APPLICABLE): ALL FOUNDATION SOILS, REINF. STEEL, C.I.P. CONCRETE, CONCRETE MASONRY & STRUCTURAL STEEL WORK SHALL BE REVIEWED AS STATED IN CONJUNCTION w/ THEIR RESPECTIVE NOTES BELOW.

2.8 CONTRACTOR SHALL COORDINATE ALL DEMOLITION ACTIVITIES OF EXISTING CONSTRUCTION IN PLACE w/ THE OWNER. CONTRACTOR TO NOTE THE OWNER HAS THE RIGHT OF FIRST REFUSAL FOR ALL REMOVED AND / OR SCRAPPED MATERIALS AND EQUIPMENT.

3 FOUNDATIONS

3.1 SHALLOW FOUNDATION CRITERIA:
DESIGN ALLOWABLE SOIL BEARING PRESSURE - 2,500 PSF IN ACCORDANCE w/ INFORMATION INCLUDED IN THE RECORD DRAWINGS REVIEWED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THIS VALUE PRIOR TO FOUNDATION CONSTRUCTION. IN AREAS WHERE THE SOIL DOES NOT YIELD THIS BEARING STRESS VALUE, ADJUSTMENT IN THE FOOTING DEPTHS AND FOUNDATION DIMENSION MAY BE MADE BY THE ENGINEER BEFORE WORK PROCEEDS. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY SUCH ADJUSTMENTS.

DEEP FOUNDATION CRITERIA:
NOT APPLICABLE.

3.2 PREPARE THE EXISTING SUBGRADE AND / OR FILL MATERIAL BY COMPACTING THE EXISTING GRADE BELOW THE FOUNDATION TO 95% STANDARD PROCTOR TEST CRITERIA. INSTALL A MINIMUM 4" THICK LIFT OF #57 STONE BELOW ALL FOUNDATIONS. PRIOR TO COMPACTION & PLACING STONE, IN THE EVENT UNUSUAL SOIL CONDITIONS ARE UNCOVERED, NOTIFY THE OWNER AND ENGINEER PRIOR TO FOUNDATION CONSTRUCTION FOR INSTRUCTIONS HOW TO PROCEED. ADJUSTMENT IN THE FOOTING / SLAB DEPTHS AND GENERAL FOUNDATION CONSTRUCTION MAY BE MADE BY THE ENGINEER BEFORE WORK PROCEEDS. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY SUCH ADJUSTMENTS.

3.3 FOOTING & SLAB EXCAVATIONS AND FORMS SHALL BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE.

3.4 FOOTING & SLAB ELEVATIONS SHALL NOT BE RAISED OR LOWERED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

3.5 ALL EXCAVATIONS SHALL BE ADEQUATELY DEWATERED BEFORE PLACEMENT OF CONCRETE. NO CONCRETE OR CONCRETE FILL SHALL BE PLACED IN STANDING WATER. ACCUMULATION EXCEEDING 1 INCH SHALL BE PUMPED OUT.

3 FOUNDATIONS CTD.

3.6 ALL FILL MATERIAL, IF REQUIRED, BELOW FOUNDATION's SHALL BE SELECT MATERIAL FREE FROM ROOTS, TRASH WOOD SCRAPS, AND OTHER EXTRANEOUS MATERIALS. PLACE FILL IN LIFTS NOT EXCEEDING 8" IN THICKNESS.

3.7 ALL FOOTINGS, SLABS & PIERS SHALL BE CENTERED UNDER THE SUPPORTED COLUMN OR WALL MEMBER UNLESS NOTED OTHERWISE.

3.8 CONSTRUCTION JOINTS IN FOUNDATION SLABS, WALLS & FOOTINGS SHALL BE MADE AT LOCATIONS SHOWN ON DRAWINGS.

3.9 ANCHOR BOLTS SHALL BE SET BY MEANS OF TEMPLATE. "FLOATING" ANCHOR BOLTS INTO PLACE IS PROHIBITED.

3.10 CONTRACTOR IS TO VERIFY THE ELEVATION AND LOCATION OF ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. ANY "KNOWN" UTILITY LINES DAMAGED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IF ANY "UNKNOWN" UTILITY LINES ARE ENCOUNTERED WHEN EXCAVATING THE CONTRACTOR IS TO CEASE ALL EXCAVATION ACTIVITY UNTIL THE ENGINEER AND OWNER ARE NOTIFIED AND INSTRUCTIONS ARE PROVIDED ABOUT HOW TO PROCEED.

3.11 THE CONTRACTOR SHALL OBTAIN THE OWNER'S PERMISSION BEFORE ENCASING OR BACK FILLING AROUND ANY EXISTING UNDERGROUND STRUCTURE, PIPING, ELECTRICAL, OR OTHER UNDERGROUND WORK.

4 REINFORCING STEEL

4.1 BARS SHALL BE ROLLED FROM NEW BILLET-STEEL OF DOMESTIC MANUFACTURE CONFORMING TO "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT," ASTM A615, GRADE 60 AND SUPPLEMENTARY REQUIREMENT S-1.

4.2 DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "ACI DETAILING MANUAL," LATEST PUBLICATION.

4.3 REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE.

4.4 WELDED WIRE FABRIC SHALL CONFORM TO "STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT," ASTM A1064.

4.5 PLACE WELDED WIRE FABRIC AT CENTER OF SLABS-ON-GRADE AND ELEVATED SLAB TOPPINGS OVER METAL DECK, UNLESS NOTED OTHERWISE.

4.6 PROVIDE BARS AT CORNERS AND INTERSECTIONS OF WALLS & FOOTINGS OF THE SAME NUMBER AND SIZE AS LONGITUDINAL BARS, U.N.O. ON THE DRAWINGS.

4.7 FABRICATE CONTINUOUS BARS IN SLABS, WALLS AND FOOTINGS TO THE LONGEST PRACTICABLE LENGTHS.

4.8 REINFORCING STEEL SHALL NOT BE BENT AFTER BEING PARTIALLY EMBEDDED IN HARDENED CONCRETE.

4.9 BARS SHALL BE COLD BENT AND SHALL NOT BE HEATED FOR ANY REASON.

4.10 REINFORCING BARS SHALL NOT BE WELDED.

4.11 REFERENCE DRAWINGS FOR REQUIREMENTS FOR LAP SPLICING REINFORCING STEEL IN CONCRETE. ALL "LCS" SHALL CONFORM TO CLASS B SPLICE CRITERIA & IT IS ACCEPTABLE TO LAP SPLICE NON "LCS" A MINIMUM 50 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

4.12 LAP SPLICED BARS IN CONCRETE ARE TO BE WIRE TIED.

4.13 LAP SPLICED BARS IN MASONRY ARE TO BE SPACED NO FARTHER THAN 8" O.C..

5 CONCRETE

5.1 IN GENERAL CONCRETE SHALL DEVELOP 4,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS. REFERENCE PROJECT SPECIFICATIONS FOR SPECIFIC DESIGN MIX REQUIREMENTS & "DESIGN CRITERIA" DWG. S0.01 FOR APPLICATION AND NOTE THE CONCRETE MIX WORK SHALL INCLUDE THE FOLLOWING:

a.) CEMENT MATERIAL SUPPLIED SHALL BE EITHER OF THE FOLLOWING:
  i.) TYPE I OR II PORTLAND CEMENT IN CONFORMANCE w/ ASTM C150.
  ii.) BLENDED HYDRAULIC CEMENT IN CONFORMANCE w/ ASTM C595, EXCLUDING TYPE IS (≥ 70). CEMENT IN CONFORMANCE w/ ASTM 1157 IS NOT ALLOWED.
b.) FLY ASH IN CONFORMANCE w/ ASTM C618, CLASS F MAY BE INCLUDED IN THE MIX. FLY ASH SHALL BE USED AS A PARTIAL CEMENT REPLACEMENT & NOT EXCEED 25% OF THE TOTAL CEMENTITIOUS CONTENT.
c.) AGGREGATE SHALL BE "NORMAL" WEIGHT IN CONFORMANCE w/ ASTM C33.
d.) WATER SHALL BE IN CONFORMANCE w/ ASTM C94.
e.) AIR ENTRAINING ADMIXTURE IS ALLOWED PROVIDED IT IS IN CONFORMANCE w/ ASTM C260. THE TOTAL AIR CONTENT REQUIRED IS 5% ± 1%.
f.) WATER REDUCING ADMIXTURE IS ALLOWED PROVIDED IT IS IN CONFORMANCE w/ ASTM C494, TYPE A OR D.
g.) MAXIMUM SLUMP = 3" w/OUT WATER REDUCING ADMIXTURE & 6" w/ A WATER REDUCING ADMIXTURE.
h.) WATER / CEMENT RATIO (w/c) = 0.45 (MAX.).
i.) DO NOT USE PRODUCTS CONTAINING CALCIUM CHLORIDES.

5.2 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318 (2019 EDITION) & TO "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES", ACI 350 (2020 EDITION).

5.3 PLACE 1/2 INCH EXPANSION JOINT MATERIAL BETWEEN EDGES OF CONCRETE AND VERTICAL SURFACES UNLESS NOTED OTHERWISE.

5.4 PROVIDE CONSTRUCTION OR CONTROL JOINTS IN FOOTINGS, PILE CAPS, SLABS & WALLS AT LOCATIONS SHOWN ON DRAWINGS.

5.5 CHAMFER EXPOSED EDGES OF CONCRETE 3/4 INCH, UNLESS NOTED OTHERWISE.

5.6 CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER CURING OF ALL CONCRETE. CURING METHODS SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" ACI 350 AND "GUIDE TO EXTERNAL CURING OF CONCRETE," ACI 308 (LATEST EDITION).

5.7 UNLESS NOTED OTHERWISE DOWELS SHALL BE THE SAME NUMBER AND SIZE AS THE LARGEST VERTICAL AND / OR HORIZONTAL BAR TO WHICH THEY ARE SPLICED.

5.8 FINISH REQUIREMENTS FOR THIS PROJECT AS REQUIRED BY THE PROJECT SPECIFICATIONS & AS FOLLOWS:

a.) SLABS-ON-GRADE (EXTERIOR):
  TOPS = UNFORMED LEVEL BROOM FINISH.
  SIDES = SMOOTH FORMED FINISH WHERE EXPOSED & ROUGH FORMED FINISH WHERE UNEXPOSED.
b.) SLABS-ON-GRADE (INTERIOR):
  TOPS = STEEL TROWEL FLOAT FINISH, SLOPED WHERE INDICATED ON DRAWINGS.
  SIDES = SMOOTH RUB FINISH WHERE EXPOSED & ROUGH FORMED FINISH WHERE UNEXPOSED.
c.) WALLS (EXTERIOR & INTERIOR):
  TOPS = FLOAT FINISH.
  SIDES = SMOOTH RUB FINISH WHERE EXPOSED & ROUGH FORMED FINISH WHERE UNEXPOSED.
d.) EQUIPMENT PADS (INTERIOR):
  TOPS = UNFORMED LEVEL FINISH & CONFORMS w/ MFG.'s REQUIRED TOLERANCES.
  SIDES = ROUGH FORMED FINISH.

5.9 CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS FOR APPROVAL TO OWNER PRIOR TO FABRICATION. DO NOT FABRICATE REINFORCING PRIOR TO RECEIPT OF APPROVED SHOP DRAWINGS.

5.10 CONCRETE MIXES TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. COMPRESSIVE STRENGTH TEST CYLINDERS TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE CONSTRUCTION OF THE PROJECT.

5.11 ROUGHEN THE "BASE" CONCRETE POUR SURFACE TO A FULL AMPLITUDE OF 1/4" MINIMUM, WHERE NOTED ON THE CONSTRUCTION DRAWINGS.

5.12 CONCRETE ACCESSORIES AS FOLLOWS:

a.) PREFORMED WATERSTOPS SHALL BE PVC 6 INCH LONG w/ 3/8 INCH (MIN.) CENTER BULB & TAPERED RIB ENDS AND IN ACCORDANCE w/ THE PROJECT SPECIFICATIONS.
b.) EXPANSIVE WATERSTOPS SHALL BE ADEKA ULTRA SEAL KBA-1510FP. THE WATERSTOPS CAN BE EITHER ADHERED TO THE CONCRETE WITH 3M-2141 BONDING ADHESIVE OR ADEKA ULTRA SEAL P-201 OR AN APPROVED EQUAL.
c.) CAULK / SEALANT - MASTER BUILDERS ONE OR MULTI COMPONENT HIGH PERFORMANCE NON-SAG ELASTOMERIC POLYURETHANE SEALANT.
d.) BONDING AGENT - SHALL BE STRUCTURAL EPOXY ADHESIVE CONFORMING TO ASTM C-881 TYPE I OR II STRENGTH, GRADE 2, CLASS B AND C w/ BOND STRENGTH = 1,900 PSI (MIN.).
  i.) SIKA ARMATEC 110 EpoCem OR AN APPROVED EQUAL.

6 GROUT

6.1 GROUT WHERE REQUIRED SHALL BE NON-SHRINK GROUT IN CONFORMANCE TO ASTM C1107.

6.2 GROUT SHALL BE NON-METALLIC AND NON-STAINING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.

7 MASONRY

7.1 THE CONSTRUCTION OF MASONRY SHALL COMPLY w/ THE MASONRY SOCIETY's "THE BUILDING CODE REQUIREMENTS AND SPECIFICATIONS OF MASONRY STRUCTURES", TMS 602 (2016 EDITION). SPECIAL ATTENTION SHALL BE GIVEN TO THE MOISTURE CONTENT AND WEATHER CONDITIONS DURING CONSTRUCTION. REFERENCE BUILDING SERIES AND / OR THESE STRUCTURAL DRAWINGS FOR LOCATIONS OF VERTICAL CONTROL / EXPANSION JOINTS.

7.2 CONCRETE MASONRY UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C90. UNITS ARE TO BE NORMAL WEIGHT UNLESS NOTED OTHERWISE, w/ THE NET AREA OF COMPRESSIVE STRENGTH OF CONCRETE MASONRY SHALL BE 2,000 PSI.

7.3 REQUIRED COMPRESSIVE STRENGTH OF MASONRY ASSEMBLAGE, f'm, IS 1,900 PSI (MINIMUM), U.N.O. ON THE DRAWINGS.

7.4 MORTAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM C270 AND SHALL BE TYPE "S" w/ PORTLAND CEMENT (ASTM C150), MASONRY SAND (ASTM C144) AND HYDRATED LIME (ASTM C207). CALCIUM CHLORIDE IS PROHIBITED.

7.5 GROUT / CONCRETE FILL FOR HOLLOW MASONRY UNITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI & IF CONCRETE, SHALL BE NORMAL WEIGHT PEA-GRAVEL CONCRETE.

7.6 JOINT REINFORCING: "LADDER / TRUSS TYPE" REFERENCE PROJECT SPECIFICATIONS IF APPLICABLE AND / OR THESE STRUCTURAL DRAWINGS.

7.7 JOINT ANCHORS: REFERENCE PROJECT SPECIFICATIONS.

7.8 WALL TO COLUMN TIES: REFERENCE PROJECT SPECIFICATIONS.

7.9 MASONRY CONSTRUCTION INCLUDING GROUT FILL, MORTAR AND HORIZONTAL & VERTICAL REINFORCING TO BE REVIEWED BY THE THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT MASONRY & CONCRETE CONSTRUCTION OF THE PROJECT. THESE REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTERS 17 & 21 OF THE FLORIDA BUILDING CODE.

8 STRUCTURAL STEEL

8.1 STEEL SHALL CONFORM TO "STANDARD SPECIFICATION FOR STRUCTURAL STEEL," ASTM A36 (Fy=36 KSI) FOR ANGLES, PLATES & CHANNELS. WIDE FLANGE SECTIONS SHALL CONFORM TO ASTM A992 (Fy=50 KSI). HOLLOW STEEL SECTIONS (HSS) SHALL CONFORM TO ASTM A500, GRADE B (Fy=46 KSI). STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B, (Fy=35 KSI).

8.2 STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL BUILDINGS", OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC., AISC 360 (2016 EDITION), INCLUDING ALL SUPPLEMENTS AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", (LATEST EDITION).

8.3 CONNECTION BOLTS SHALL BE 3/4 INCH DIAMETER CONFORMING TO "STANDARD SPECIFICATION FOR HIGH-STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS", ASTM F3125, GRADE A325, GROUP A CRITERIA. UNLESS NOTED OTHERWISE CONNECTIONS ARE BEARING TYPE WITH THREADS EXCLUDED FROM SHEAR PLANES (GROUP A-X). STAINLESS STEEL BOLTS WHERE INDICATED SHALL BE ASTM F593, ALLOY GROUP 2 CONNECTIONS.

8.4 WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY AWS D1.1 "STRUCTURAL WELDING CODE". WELDING SHALL BE PERFORMED BY CERTIFIED PERSONNEL WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TEST PRESCRIBED IN THE AWS "STRUCTURAL WELDING CODE". ELECTRODES SHALL CONFORM TO AWS 5.5, E70XX.

8.5 LINTELS SHALL BEAR EIGHT (8) INCHES MINIMUM ON MASONRY UNLESS NOTED OTHERWISE.

8.6 THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING, AND GUYING OF STEEL FRAMING AGAINST WIND, CONSTRUCTION LOADS, AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAMING.

8.7 ALL COPES, BLOCKS, CUTS, CUT-OFFS AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENTRANT CORNERS SHAPED, AND NOTCH-FREE TO A RADIUS OF AT LEAST 1/2 INCH. THE FILLET AND ITS CONTIGUOUS CUTS SHALL MEET WITHOUT OFFSET OR CUTTING PAST THE POINT OF TANGENCY.

8.8 ANCHOR BOLTS SHALL BE ASTM F1554 OR ASTM A36 & SHALL BE EITHER HEADED w/ NUTS TACK WELDED TO BOLTS OR NON-HEADED w/ HOOKS AS REQUIRED BY THE DRAWINGS. PROVIDE (2) NUTS AND WASHERS WITH EACH ANCHOR BOLT AT COLUMNS UNLESS NOTED OTHERWISE. ANCHOR BOLTS FOR EQUIPMENT & OTHER ASSEMBLIES MAY BE POST APPLIED ANCHOR ASSEMBLIES AS INDICATED ON THE DRAWINGS & THE PROJECT SPECIFICATIONS.

8 STRUCTURAL STEEL CTD.

8.9 OVERSIZED AND SLOTTED HOLES SHALL NOT BE USED FOR BOLTED CONNECTIONS ON THIS PROJECT EXCEPT AT LOCATIONS NOTED ON DRAWINGS.

8.10 SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. AS TO LOCATION AND TYPE OF SPLICE. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON THE SHOP DRAWINGS WILL BE REPLACED.

8.11 PRE-GROUTING BASE PLATES IS NOT PERMITTED.

8.12 ALL HOLES IN STRUCTURAL STEEL ARE TO BE PUNCHED OR DRILLED. FLAME CUTTING OF STEEL IS STRICTLY PROHIBITED.

8.13 ALL DESIGN, DETAILING, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE w/ THE BUILDING CODE REFERENCED EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION.

8.14 IN GENERAL SHOP CONNECTIONS SHALL BE EITHER WELDED OR BOLTED AND FIELD CONNECTIONS SHALL BE BOLTED UNLESS NOTED OTHERWISE.

8.15 FABRICATOR / CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR OWNER / ENGINEER APPROVAL PRIOR TO FABRICATION. ALL SHOP DRAWINGS MAY BE EXPEDITED IF THE FABRICATOR ADHERES CLOSELY TO THE DETAILS, NOTES, AND INSTRUCTIONS, SHOWN ON THE DRAWINGS.

8.16 ALL GALVANIZED MATERIALS THAT ARE FIELD CUT, FIELD WELDED OR DAMAGED IN SURFACE FINISH SHALL BE CLEANED AND RE-COATED w/ A 98% ZINC RICH OXIDE AND IN CONFORMANCE w/ THE PROJECT SPECIFICATIONS IF APPLICABLE.

8.17 STRUCTURAL STEEL FRAMING & DECKING ERECTION TO BE REVIEWED BY THE THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE & STEEL CONSTRUCTION OF THE PROJECT. THESE REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTERS 17 & 22 OF THE FLORIDA BUILDING CODE.

9 ALUMINUM

9.1 ALUMINUM FABRICATION SHALL BE IN CONFORMANCE WITH THE ALUMINUM ASSOCIATION, INC. "SPECIFICATIONS FOR ALUMINUM STRUCTURES".

9.2 UNLESS NOTED OTHERWISE, MATERIALS SHALL BE:

a.) PLATE & SHEET - ASTM B209; 6061-T6, 6061-T651 ALLOY.
b.) EXTRUDED SHAPES - ASTM B221 & STANDARD STRUCTURAL SHAPES - ASTM B308; 6061-T6 ALLOY.
c.) PIPE SECTIONS FOR COLUMNS, POST & GUARDRAIL - ASTM B241; 6063-T6 ALLOY.
d.) BOLTS - ASTM A193; GRADE B8 OR ASTM 276; TYPE 316 STAINLESS STEEL.
e.) NUTS - ASTM A194; GRADE M, OR ASTM 276; TYPE 316 STAINLESS STEEL.

9.3 ALUMINUM SHALL BE SEPARATED FROM DIRECT CONTACT WITH OTHER MATERIALS (STEEL, CONCRETE, ETC.) BY BITUMASTIC COATING, OR OTHER PROTECTIVE METHOD SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE.

9.4 CONNECTIONS SHALL HAVE A MINIMUM OF TWO 3/4" DIAMETER STAINLESS STEEL BOLTS.

9.5 WELDING ALUMINUM SHALL CONFORM TO AWS D1.2 & AWS A5.10 AND THE REQUIREMENTS OF THE ALUMINUM ASSOCIATIONS "ALUMINUM DESIGN MANUAL" (LATEST EDITION) TABLE 7.1-1 FOR WELD FILLERS FOR WROUGHT ALLOYS.

9.6 REFERENCE DRAWINGS AND PROJECT SPECIFICATIONS FOR HANDRAIL & GUARDRAIL INFORMATION AND REQUIREMENTS.

10 PRECAST CONCRETE

NOT APPLICABLE.

11 PRE-ENGR. TIMBER TRUSS

NOT APPLICABLE.

12 PRE-ENGR. METAL BLDGS.

NOT APPLICABLE.

13 MISC. BUILDING MATERIALS

13.1 ALL MISCELLANEOUS MATERIALS ARE TO BE DELIVERED TO SITE & STAGED ON SITE PRIOR TO INSTALLATION. STORE ON SITE AS REQUIRED BY THE MATERIAL MANUFACTURER TO AVOID DAMAGE PRIOR TO INSTALLATION.

13.2 CAULK & SEALANT MATERIAL SHALL BE MASTERSEAL "NP 1" ONE COMPONENT, MOISTURE CURING HIGH PERFORMANCE POLY-URETHANE SEALANT, OR AN APPROVED EQUAL.

13.3 ALL MATERIALS SHALL BE SUBMITTED AS A SYSTEM COMPATIBLE w/ EACH OTHER AND THE APPROVED MASONRY WALL SYSTEM & COLOR. ALL MATERIAL STYLES & COLORS SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL PRIOR TO CONSTRUCTION. PROVIDE MATERIAL SAMPLES & MOCK ASSEMBLIES AS REQUIRED BY THE OWNER. THE TERM "CONSTRUCTION" INCLUDES ORDERING, FABRICATION OF MATERIALS & DELIVERY TO PROJECT SITE.

13.4 ROOF SYSTEM SHALL BE A THERMOPLASTIC POLYOLEFIN (TPO) SINGLE-PLY ROOFING MEMBRANE ASSEMBLY OVER RIGID INSULATION, OVER A VAPOR BARRIER ON EXISTING PRECAST REINFORCED CONCRETE DECK SLAB. REFERENCE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION. ADHESIVES & MECHANICAL ANCHORS SHALL BE RATED & INSTALLED TO RESIST COMPONENTS & CLADDING "DESIGN LOADS" WIND SPEED & PRESSURES.

13.5 GUTTERS & DOWNSPOUTS SHALL CONSIST OF MATERIALS AS REQUIRED BY THE PROJECT SPECIFICATIONS.

REV.NO.	DESCRIPTION	DATE
D	ISSUED FOR BID	2026.04.10
C	ISSUED FOR PERMITTING	2025.12.19
B	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20
A	60% SUBMITTAL - NOT FOR CONSTRUCTION	2023.08.22

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006891
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

GENERAL NOTES

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: NA
VERTICAL: NA

S0.00
DRAWING NUMBER

D
REVISION

STATUS: ISSUED FOR BID

14 ABBREVIATIONS

14.1 THE FOLLOWING LIST OF ABBREVIATIONS IS NOT INTENDED TO REPRESENT ALL THOSE USED ON THE DRAWINGS, BUT TO SUPPLEMENT THE MORE COMMON ABBREVIATIONS USED.

ADD'L	=	ADDITIONAL
AL	=	ALUMINUM
ALT.	=	ALTERNATE
BLDG.	=	BUILDING
BLK.	=	BLOCK
BM.	=	BEAM
B.O.	=	BOTTOM OF
BRG.	=	BEARING
C.I.P.	=	CAST-IN-PLACE
CLR.	=	CLEAR
CMU	=	CONC. MAS. UNIT
C.O.	=	CLEAN OUT
COL.	=	COLUMN
CONC.	=	CONCRETE
CONN.	=	CONNECTION
CONST.	=	CONSTRUCTION
CONT.	=	CONTINUOUS
COORD.	=	COORDINATE
CTR.	=	CENTER
CTR'D.	=	CENTERED
DBL.	=	DOUBLE
DIR.	=	DIRECTION
DWG.	=	DRAWING
DWG.'s.	=	DRAWINGS
EA.	=	EACH
EL	=	ELEVATION
E.O.	=	EDGE OF
E.O.R.	=	ENGINEER OF RECORD
EQ.	=	EQUAL
EQUIP.	=	EQUIPMENT
EXIST.	=	EXISTING
EXP.	=	EXPANSION
FLG.	=	FLANGE
FDN.	=	FOUNDATION
F.S.	=	FAR SIDE
FT.	=	FEET
FTG.	=	FOOTING
GA.	=	GAGE
GALV.	=	GALVANIZED
GALV'D	=	GALVANIZED
HORZ.	=	HORIZONTAL
H.P.	=	HIGH POINT
HRS.	=	HOURS
I/F	=	INSIDE FACE
INFO.	=	INFORMATION
INTR.	=	INTERIOR
JST.	=	JOIST
JT.	=	JOINT
KB	=	KNEE BRACE
LCS	=	LIQUID CONTAINMENT STRUCTURES
LLH	=	LONG LEG HORIZONTAL
LLV	=	LONG LEG VERTICAL
L.P.	=	LOW POINT
LSL	=	LONG SLOTTED
MAS.	=	MASONRY
MAT'L.	=	MATERIAL
MFG.	=	MANUFACTURER
MIN.	=	MINIMUM
MTL.	=	METAL
N/A	=	NOT APPLICABLE
NA	=	NOT APPLICABLE
NOM.	=	NOMINAL
N.S.	=	NEAR SIDE
N.T.S.	=	NOT TO SCALE
O.C.	=	ON CENTER
O/F	=	OUTSIDE FACE
O/H	=	OVERHANG
O/O	=	OUT TO OUT
OPNG.	=	OPENING
OPP.	=	OPPOSITE
ORIENT.	=	ORIENTATION
PLCS.	=	PLACES
P.P.	=	PUMP PAD
RAD.	=	RADIUS
REF.	=	REFERENCE
REINF.	=	REINFORCING
REQ'D.	=	REQUIRED
RET.	=	RETAINING
ROT.	=	ROTATE
SIM.	=	SIMILAR
SPA.	=	SPACED
SPECS.	=	SPECIFICATIONS
S.S.	=	STAINLESS STEEL
SSL	=	SHORT SLOTTED
STD.	=	STANDARD
STL.	=	STEEL
T&B	=	TOP & BOTTOM
T/D	=	TURN DOWN
THK.	=	THICK
THK'D	=	THICKENED
T.O.	=	TOP OF
T.O.S	=	TOP OF STEEL
TYP.	=	TYPICAL
U.N.O.	=	UNLESS NOTED OTHERWISE
XB	=	CROSS OR "X"-BRACE
VERT.	=	VERTICAL
W.P.	=	WORK POINT

15 DESIGN LOADS

DESIGN LOADS BASIS OF DESIGN:
FLORIDA BUILDING CODE 2023 & ASCE 7-22 FOR WIND DESIGN

EQUIP. LOAD: 2.6 k (ATS), 0.2 k (AC UNIT), 6.1 k (MCC), 2.3 k (VFD), 0.1 k (X-FRMR) & 60.0 k (GEN.)
LIVE LOAD: 300 PSF (FLOOR) & 100 PSF (ACCESS STAIRS & PLATFORMS)
ROOF LOAD: 20 PSF
SNOW LOAD: N/A
WIND LOAD: 152 mi/hr (Vult) & 118 mi/hr (Vasd), EXPOSURE C, OCCUPANCY CATEGORY III

CALCULATED WIND BASE SHEARS:
Vx = 13.9 k & Vy = 32.2 k (EXIST. CHLORINE BLDG.)
Vx = 4.9 k & Vy = 17.2 k (GEN.)

COMPONENTS & CLADDING WIND PRESSURES:
ZONE 1 ROOF PRESSURE = -77.0 & 21.9 PSF
ZONE 2 ROOF PRESSURE = -101.3 & 21.9 PSF
ZONE 3 ROOF PRESSURE = -138.3 & 21.9 PSF
ZONE 4 WALL PRESSURE = -52.3 & 53.7 PSF
ZONE 5 WALL PRESSURE = -64.6 & 53.7 PSF

SEISMIC LOAD:
SEISMIC DESIGN PARAMETERS:
RESPONSE MODIFICATION COEFFICIENT ..... R = 2.0 (EXIST. CHLORINE BLDG.)
R = 1.25 (GEN.)
SPECTRAL RESPONSE ACCELERATION ..... SHORT PERIOD S(DS) = 6.1%
SPECTRAL RESPONSE ACCELERATION ..... 1 SECOND PERIOD S(D1) = 4.4%
SEISMIC RISK CATEGORY ..... = III
SITE CLASS ..... = D
SEISMIC DESIGN CATEGORY ..... SDC = A
IMPORTANCE FACTOR ..... Ie = 1.25

BASIC STRUCTURAL SYSTEM BUILDING / NON-BUILDING TYPE STRUCTURE:
BEARING WALL SYSTEM - ORDINARY REINFORCED MASONRY SHEAR WALLS (EXIST. BLDG.)
OTHER SELF SUPPT. STRUCTURES NOT SIMILAR TO BUILDINGS (GEN.)

** NOTE: REF. INDIVIDUAL BLDG. / FACILITY STRUCTURAL DWG.'s FOR ALL "VARIES" INFO

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED?: Y

SOIL BEARING: FIELD TEST PER PROJECT GEOTECH REPORT = N/A
REF. "FOUNDATIONS" NOTE 3.1 DWG. S0.00 = 2,500 PSF

16 DESIGN CRITERIA

CONCRETE 28 DAY COMPRESSIVE STRENGTH:	
SLABS-ON-GRADE & NON LCS SLABS	f'c = 4,000 PSI
PIPE ENCASEMENTS:	f'c = 3,000 PSI ... N/A
SLABS & WALLS OF LCS:	f'c = 4,500 PSI ... N/A
BEAMS & COLUMNS OF LCS:	f'c = 4,500 PSI ... N/A
NON-LCS FOOTINGS, WALLS, COLUMNS & BEAMS:	f'c = 4,000 PSI
PILE CAPS:	f'c = 4,000 PSI ... N/A
BELOW GRADE & RETAINING WALLS:	f'c = 4,000 PSI
SIDEWALK, DRIVEWAY, CURB & GUTTER:	f'c = 3,000 PSI ... N/A
REINFORCING STEEL:	ASTM A615, GRADE 60
WELDED WIRE FABRIC:	ASTM A1064
STRUCTURAL STEEL:	REF. STRUCT. NOTE 8.1
ALUMINUM:	REF. STRUCT. NOTE 9.2 ... N/A
BOLTS SHALL BE 3/4"Ø ASTM F3125 OR TYPE 316 S.S.:	REF. STRUCT. NOTES 8.3 & 9.2.d & 9.4 ... N/A
ANCHOR BOLTS SHALL BE 3/4"Ø ASTM F-1554 OR ASTM A36 (STEEL); TYPE 316 S.S. (ALUMINUM):	REF. STRUCTURAL NOTE 8.8
STEEL ELECTRODES SHALL CONFORM TO:	AWS 5.5 E7OXX (REF. STRUCT. NOTE 8.4)
ALUMINUM WELD FILLERS ALLOYS SHALL CONFORM TO:	AWS A5.10 (REF. STRUCTURAL NOTE 9.5) ... N/A
SOIL BEARING CAPACITY:	REF. "DESIGN LOADS" TABLE

17 LEGEND

ENLARGED PLAN AREA, DETAIL =

CONC. MASONRY BLOCK = (EXISTING)

BRICK VENEER = (EXISTING)

CONC. WALL, SLAB, ETC. = (EXISTING)

GROUT = (EXISTING)

GRATING = (EXISTING)

DETAIL OR SECTION NO./SHEET NO. REFERENCE = X-SY.YY (EXISTING: X-SY.YY)

PROJECT NORTH = NORTH

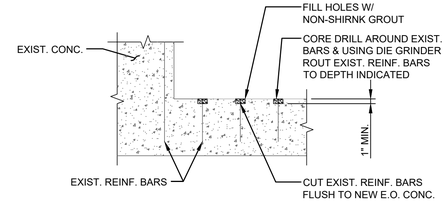
ELEVATION DATUM =

ELEVATION NO./SHEET NO. REFERENCE = X-SY.YY

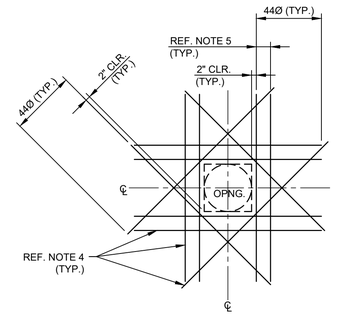
ELEVATIONS X'-X" (Y.YY') = X'-X" = DISTANCE TO/FROM FACILITY REFERENCE EL 0'-0"
Y.YY' = EQUIVALENT SITE EL VERTICAL DATUM

STEP IN FOOTING ELEVATION = $

STL. FRAMING COL. / BM. MOMENT CONNECTION =

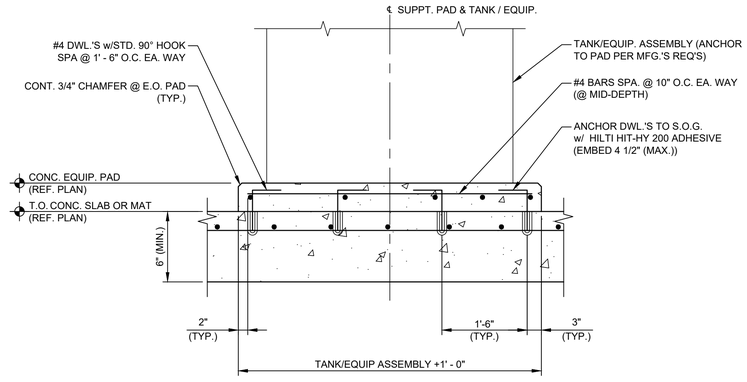


1 - DETAIL - TYP. EXPOSED REINF. BAR REPAIR
SCALE: 3/8" = 1'-0"



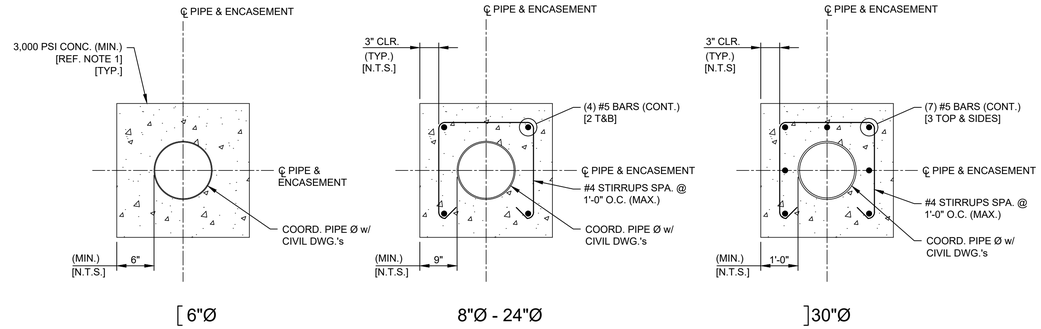
NOTES:
1. USE THIS DETAIL FOR PENETRATIONS 8" OR LARGER. FOR SMALLER OPENINGS BEND BARS IN FIELD PER ACI 318 / 350 LATEST EDITION.
2. PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENINGS. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS, EXCEPT WHERE NOTED OTHERWISE. PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING, SIZE TO BE EQUAL TO MAIN REINFORCING. LARGER Ø BAR CONTROLS IF HORZ. & VERT. BARS DIFFER (TYP. EA. FACE).
3. Ø SYMBOL = BAR DIAMETERS.
4. WHERE BAR IS INTERRUPTED BY A CJ OR CONC. EDGE BEND BAR PARALLEL TO THE JOINT EDGE & PROVIDE EITHER STD. 90°, STD. 180° OR CLASS B BAR LEG LENGTHS FOR BARS IN TENSION (U.N.O.).
5. SPACE THE ADD'L BARS @ ½ THE REQ'D BAR SPACING.

2 - DETAIL - TYP. REINF. BAR REQ.'s @ SLAB / WALL OPNG.'s
SCALE: 3/8" = 1'-0"



3 - DETAIL - TYP. EQUIPMENT PAD
SCALE: 3/4" = 1'-0"

NOTES:
1. INSTALL ENCASEMENTS AROUND PIPES BELOW BLDG. / FACILITY SLABS-ON-GRADE & BASE SLABS. IN ACCORDANCE w/ DRAWING S0.01 "DESIGN CRITERIA" TABLE, EACH PIPE ENCASEMENT SHALL BE CONSTRUCTED w/ MINIMUM 3,000 PSI 28-DAY COMPRESSIVE STRENGTH CONCRETE. REFERENCE CIVIL & MECHANICAL DWG.'s FOR LOCATIONS & LENGTHS TO EXTEND ENCASEMENTS BEYOND LIMITS OF BLDG.'s / FACILITY's.
2. REFERENCE "CONCRETE" STRUCTURAL GENERAL NOTE 5.11 ON DWG. S0.00 FOR REQUIREMENTS AND INFORMATION REGARDING ROUGHENING THE TOP OF SLAB / BOTTOM OF WALL JOINT.
3. REFERENCE DWG.'s S0.00 & S0.01 FOR ADDITIONAL STRUCTURAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA AND LEGEND.



4 - TYP. BELOW GRADE PIPE ENCASEMENT & REINF. REQ.'s
SCALE: 1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
D	ISSUED FOR BID	2026.04.10
C	ISSUED FOR PERMITTING	2025.12.19
B	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20
A	60% SUBMITTAL - NOT FOR CONSTRUCTION	2023.08.22

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

GENERAL NOTES & TYPICAL DETAILS

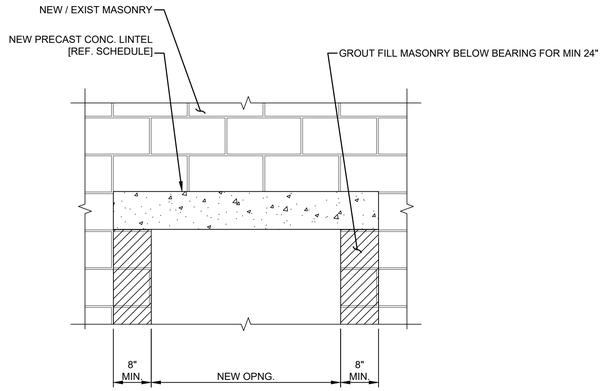
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: NA
VERTICAL: NA

S0.01
DRAWING NUMBER

D
REVISION

STATUS: **ISSUED FOR BID**



NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR ALL TEMP. SHORING PRIOR TO BEGINNING INSTALLATION.
2. CONTRACTOR TO DEMOLISH WALL SECTION AS REQUIRED FOR LINTEL INSTALLATION, BUT ENTIRE FINISHED OPENING SHALL NOT BE DEMOLISHED PRIOR TO LINTEL INSTALLATION.
3. LINTEL SHALL BEAR A MINIMUM OF 8" BEYOND THE FINISHED OPENING WIDTH ON EACH END.
4. PRIOR TO LINTEL INSTALLATION, CONTRACTOR TO SOLID GROUT MASONRY BELOW BEARING FOR A MINIMUM OF 24" DEPTH.
5. CONTRACTOR TO FURNISH LINTEL AS SCHEDULED FOR SIZE AND REINFORCEMENT.

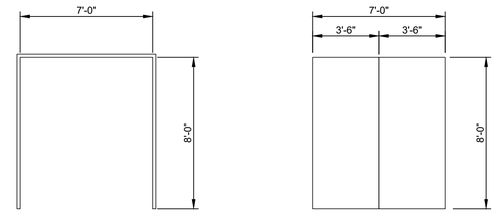
1 - DETAIL - TYP. PRECAST CONC. LINTEL IN CMU DETAIL

SCALE: 3/4" = 1'-0"

PRECAST CONCRETE LINTEL SCHEDULE						
LINTEL	WIDTH (IN)	DEPTH (IN)	BOTTOM REINF.	TOP REINF.	BOTTOM COVER (IN)	f'_c (PSI)
L1	7 5/8	7 5/8	(1) #6	N/A	2	4,000
L2	7 5/8	7 5/8	(1) #4	N/A	1 1/2	4,000

2 - SCHEDULE - PRECAST CONCRETE LINTELS

SCALE: 3/4" = 1'-0"

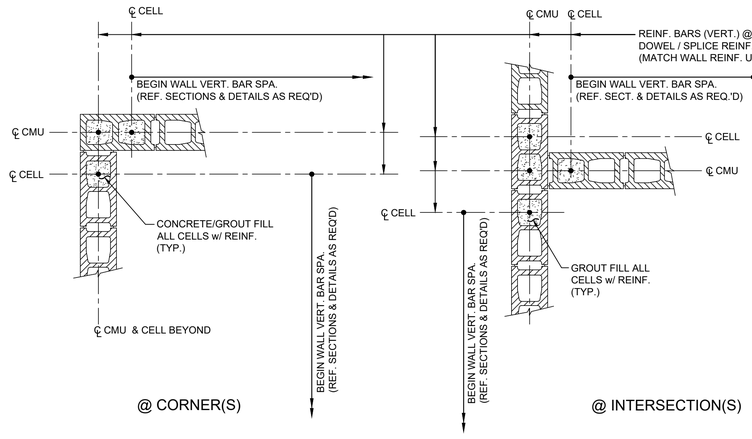


FRAME TYPE 1
HW-1

DOOR TYPE D1
DBL. STL MAN DOOR

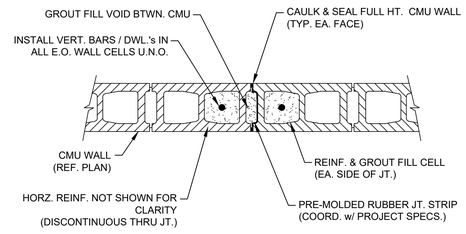
3 - DETAIL - DOOR & DOOR FRAME TYPES

SCALE: 1/4" = 1'-0"



4 - DETAIL - TYP. CMU WALL REINF. REQ.'s

SCALE: 3/4" = 1'-0"

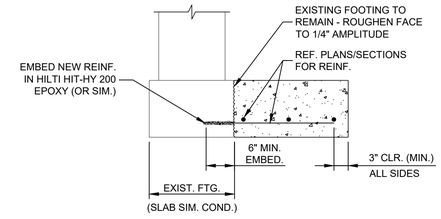


@ CMU CONTROL JT. (MCJ)

5 - DETAIL - TYP. CMU WALL MAS. CONST. JT. (MCJ)'s

SCALE: 1" = 1'-0"

NOTE:
CONNECTION TO SLAB SIM. CONDITION



6 - DETAIL - TYP. ATTACHMENT TO EXIST. FTG./SLAB

SCALE: 3/4" = 1'-0"

REV.NO.	DESCRIPTION	DATE
B	ISSUED FOR BID	2026.04.10
A	ISSUED FOR PERMITTING	2025.12.19

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

TYPICAL DETAILS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: NA
VERTICAL: NA

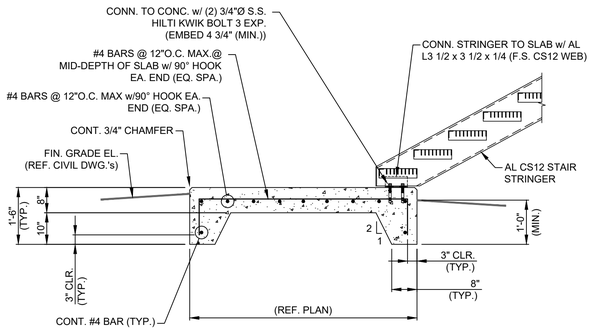
S0.02
DRAWING NUMBER

B
REVISION

STATUS: **ISSUED FOR BID**

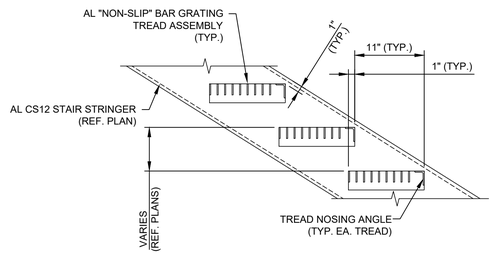
GENERAL DETAIL NOTES:

1. REFERENCE DWG.'s S0.00 & S0.01 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN LOADS, INFO, DESIGN CRITERIA AND LEGEND.
2. THE AL BEAM & STRINGER CONNECTION PLATES ARE OFFSET FROM COLUMN CENTERLINES AS REQUIRED. IN GENERAL THE ASSEMBLY CONNECTIONS INCLUDE THE FOLLOWING:
   a.) AL CS8 BEAM CENTERLINE EQUALS THE AL COL. CENTERLINE.
   b.) THE FLAT E.O. AL CS12 STRINGER EQUALS THE COL. CENTERLINE.
3. CONNECTION PLATE CENTERLINE EQUALS THE COL. CENTERLINE U.N.O..
4. ASSEMBLY IS SIM. FOR KNEE BRACE CONN.'s.



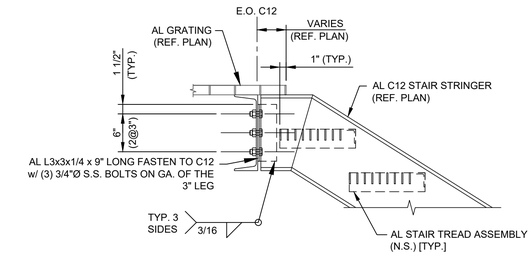
1 - DETAIL - TYP. AL. ACCESS STAIR SLAB-ON-GRADE

SCALE: 1/2" = 1'-0"



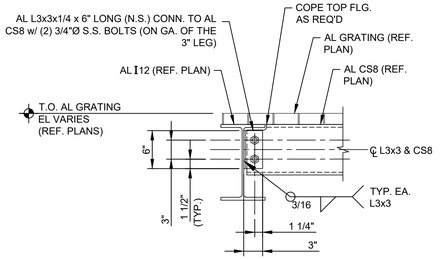
2 - DETAIL - TYP. AL. ACCESS STAIR TREAD

SCALE: 1" = 1'-0"



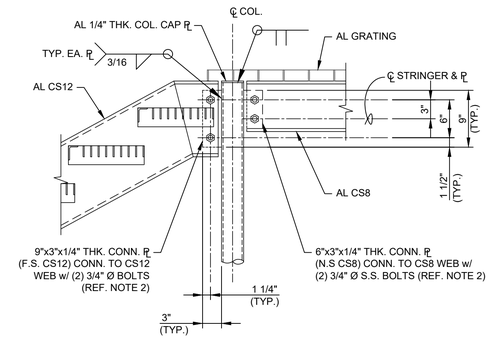
3 - DETAIL - TYP. AL. ACCESS STAIR STRINGER / AL CS12 CONN.

SCALE: 1" = 1'-0"



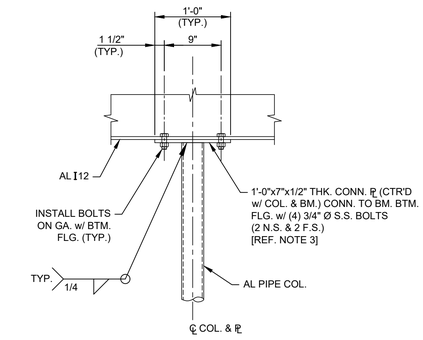
4 - DETAIL - TYP. AL I12 / AL CS8 CONN.

SCALE: 1" = 1'-0"



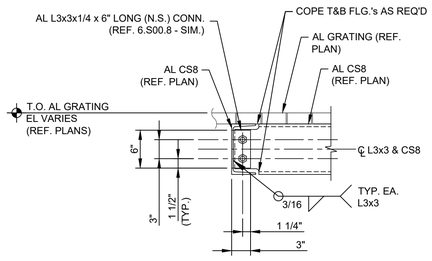
5 - DETAIL - TYP. AL. ACCESS STAIR STRINGER / AL PIPE COL. / AL CS8 CONN.

SCALE: 1" = 1'-0"



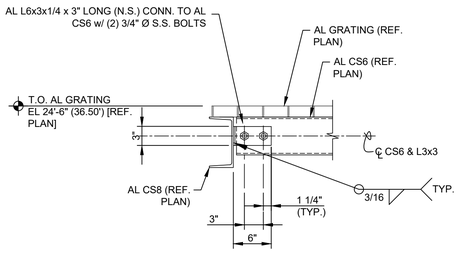
6 - DETAIL - TYP. T.O. AL COL. / AL I12 CONN.

SCALE: 1" = 1'-0"



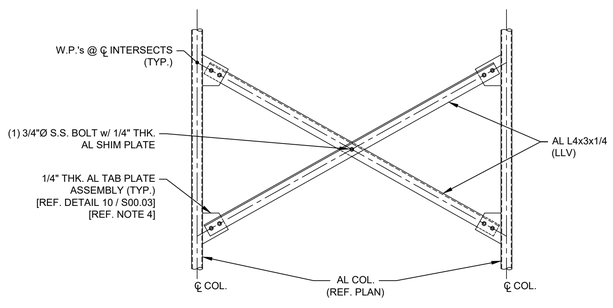
7 - DETAIL - TYP. AL CS8 / AL. CS8 CONN.

SCALE: 1" = 1'-0"



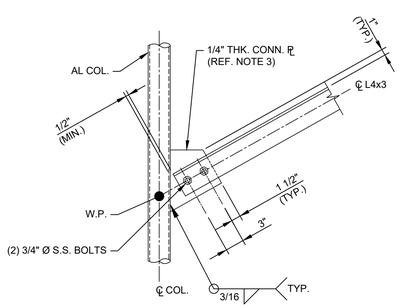
8 - DETAIL - TYP. AL CS8 / AL. CS6 CONN.

SCALE: 1" = 1'-0"



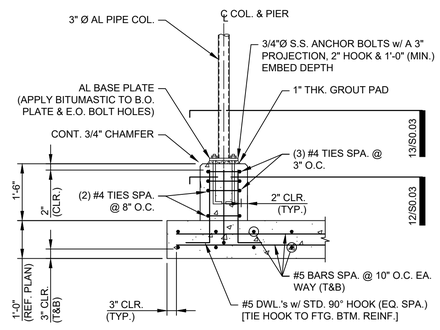
9 - DETAIL - TYP. AL. ACCESS STAIR PIPE COL. X.B.

SCALE: 1/2" = 1'-0"



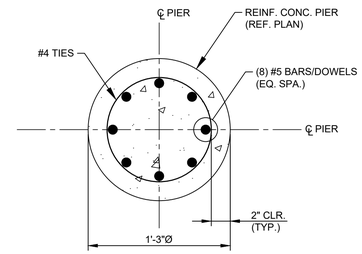
10 - DETAIL - TYP. AL. PIPE COL. / X.B. CONN.

SCALE: 1" = 1'-0"



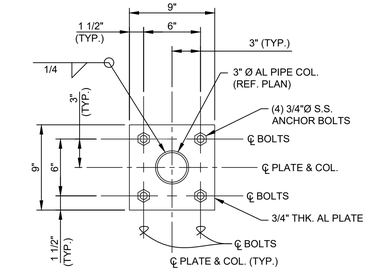
11 - DETAIL - PIPE COL. PIER / FTG.

SCALE: 1/2" = 1'-0"



12 - SECTION - THRU CONC. SUPPORT PIER

SCALE: 1 1/2" = 1'-0"



13 - DETAIL - TYP. AL. PIPE COL. BASE PL.

SCALE: 1 1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
B	ISSUED FOR BID	2026.04.10
A	ISSUED FOR PERMITTING	2025.12.19

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

TYPICAL ACCESS STAIR DETAILS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: NA
VERTICAL: NA

S0.03
DRAWING NUMBER

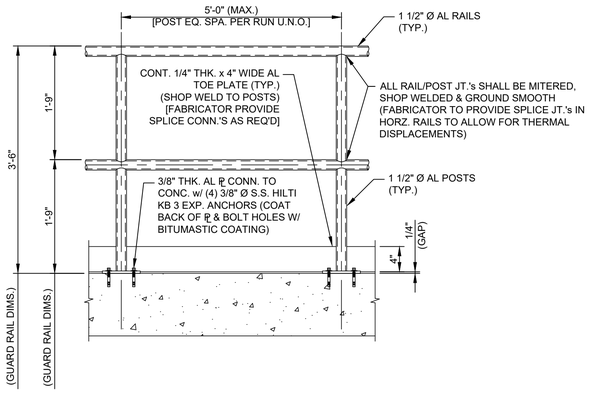
B
REVISION

STATUS: ISSUED FOR BID

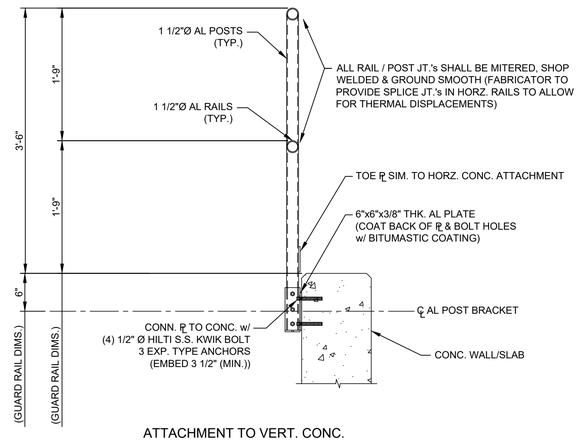
\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\STRUCTURAL\S003-SG004-10400015.DWG 04/10/2026 10:35:18 ISAAC DOWLESS

GENERAL DETAIL NOTES:

1. REFERENCE DWG.'s S0.00 & S0.01 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN LOADS, INFO, DESIGN CRITERIA AND LEGEND.



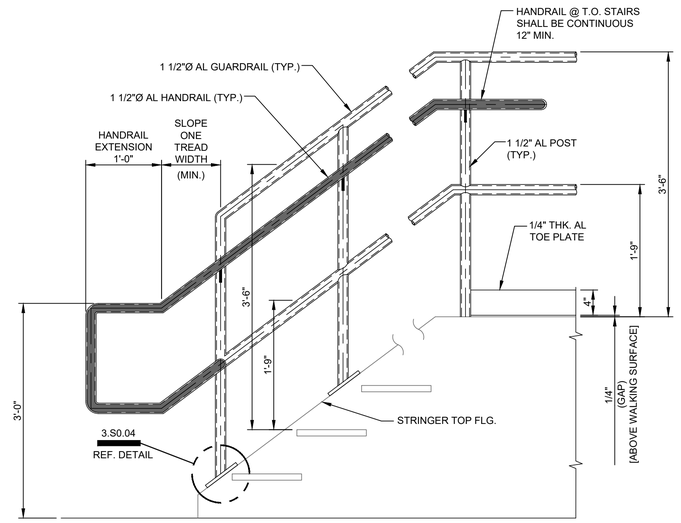
ATTACHMENT TO HORZ. CONC.
(AS INDICATED ON DWG.'s)



ATTACHMENT TO VERT. CONC.
(AS INDICATED ON DWG.'s)

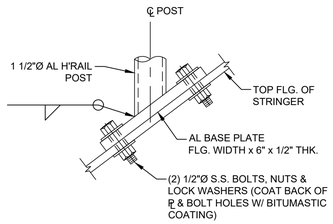
1 - DETAIL - TYP. AL GUARDRAIL & POST ASSEMBLY / CONC. CONN. REQ.'s

SCALE: 1" = 1'-0"



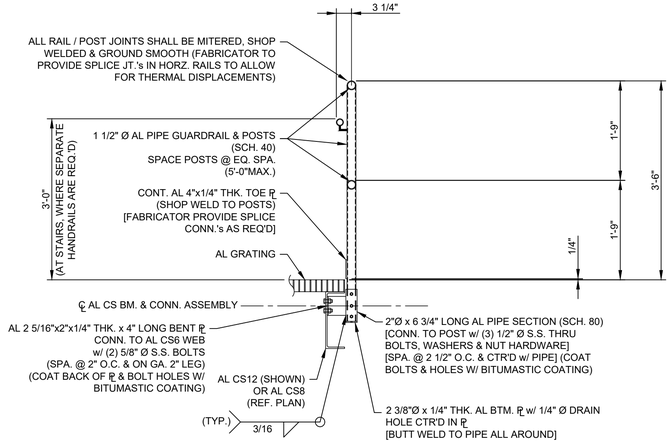
2 - DETAIL - TYP. AL GUARDRAIL, HANDRAIL & POST ASSEMBLY / AL STRINGER CONN. REQ.'s

SCALE: 1" = 1'-0"



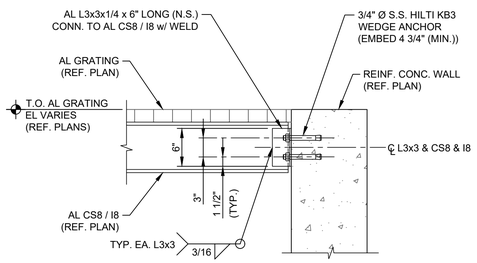
3 - DETAIL - AL POST / AL STRINGER TOP FLG. CONN.

SCALE: 3" = 1'-0"



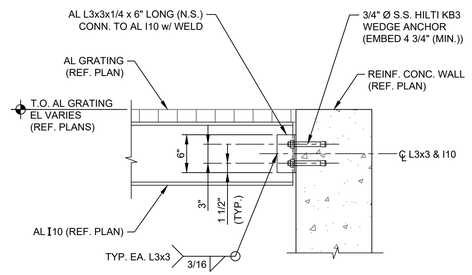
4 - DETAIL - AL GUARDRAIL POST / AL PLATFORM CONN.'s

SCALE: 1/2" = 1'-0"



5 - DETAIL - AL CS8 & I8 / CONC. WALL CONN.

SCALE: 1" = 1'-0"



6 - DETAIL - AL I10 / CONC. WALL CONN.

SCALE: 1" = 1'-0"

REV NO.	DESCRIPTION	DATE
B	ISSUED FOR BID	2026.04.10
A	ISSUED FOR PERMITTING	2025.12.19

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

TYPICAL HANDRAIL DETAILS

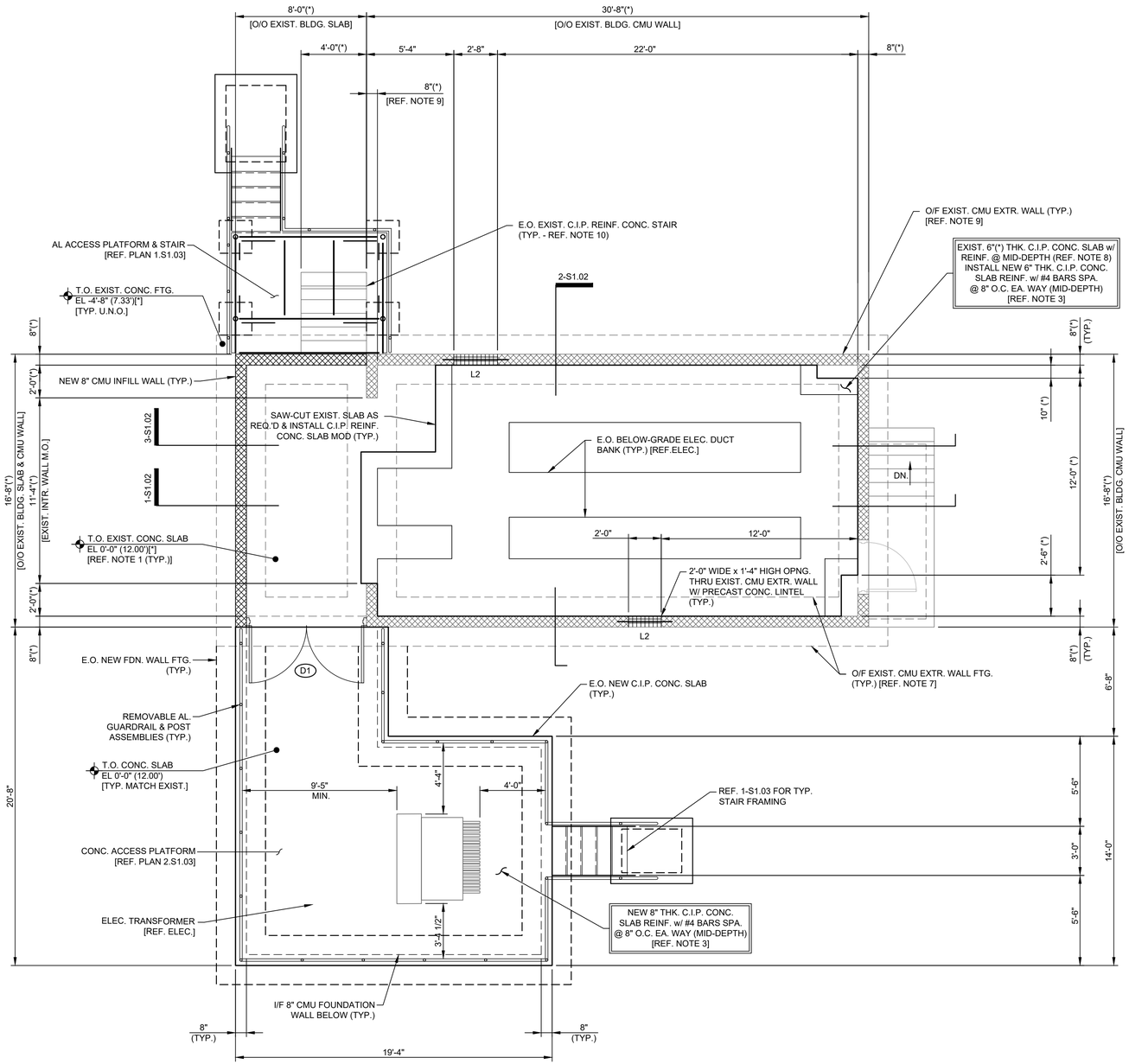
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: NA
VERTICAL: NA

S0.04
DRAWING NUMBER

B
REVISION

STATUS: **ISSUED FOR BID**



1 - PLAN - EXIST. CHLORINE BLDG. MODS FOUNDATION & FLOOR LAYOUT

SCALE: 1/4" = 1'-0"

NORTH

FOUNDATION & FLOOR PLAN NOTES:

1. REFERENCE ELEVATION FOR THE EXISTING CHLORINE BUILDING FACILITY MODIFICATIONS AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE EXISTING ELEVATED CONCRETE FLOOR SLAB ABOVE GROUND LEVEL w/ THE SLAB T.O. CONC. EL 0'-0" = EL 12'-0" (12.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. GRADE ELEVATION AROUND THIS STRUCTURE VARIES BETWEEN 8.00'(±)[*] & 8.50'(±)[*]. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
3. PREPARE SUBGRADE BELOW THE ELECTRICAL DUCT BANKS AND BELOW THE C.I.P. CONCRETE FLOOR SLABS FOR THIS FACILITY PER "FOUNDATIONS" STRUCTURAL GENERAL NOTES ON DWG. S0.00 & AS INDICATED IN SECTIONS & DETAILS.
4. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFO ONLY. REFERENCE ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
5. CONTRACTOR TO NOTE PROCESS PIPING / CONDUIT MAY NOT BE SHOWN FOR CLARITY. CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ ELECTRICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING, CONDUIT & MISCELLANEOUS EQUIPMENT EITHER SHOWN OR NOT SHOWN THIS PLAN.
6. COORDINATE w/ CIVIL, ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR LOCATIONS & INFORMATION REGARDING SLAB PENETRATIONS / CUTS FOR PIPING, CONDUIT AND / OR CABLE ROUTING REQUIREMENTS EITHER SHOWN OR NOT SHOWN.
7. REGARDING THE EXISTING C.I.P. REINFORCED CONCRETE FTG. ASSEMBLIES RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
   a.) WALL FTG.'s WERE CONSTRUCTED 3'-0" WIDE x 1'-6" THK. & REINF. w/ (3) CONT. #5 BOTTOM BARS EQUALLY SPACED (LONGITUDINAL) & #4 TRANSVERSE BARS SPA. @ 1'-0" O.C..
   b.) EXIST. REINF. 3" CLR. DISTANCE FROM THE BOTTOM & SIDES OF THE FTG. CONCRETE SURFACES.
   c.) EXIST. CONC. / CMU FOUNDATION WALL DWL.'s = #5 DWL.'s w/ 1'-0" 90° HOOKS @ VARIABLE SPACING (8" MIN. & 7'-4" MAX.). VERTICAL LEGS OF THE DOWELS INSTALLED CTR'D IN THE CELLS OF THE CMU FOUNDATION WALL & THE HOOKS TIED TO FTG. REINFORCING.
   d.) REINFORCED CELLS WERE GROUT FILLED FROM THE T.O. CONCRETE FOOTING.
8. REGARDING THE EXISTING C.I.P. REINFORCED CONCRETE FLOOR SLAB ASSEMBLY RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
   a.) SLAB REINF. = #4 BARS SPA. @ 1'-0" O.C. EA. WAY @ MID-DEPTH OF SLAB.
   b.) FOR THE EXISTING BUILDING ENCLOSURE, BETWEEN THE E.O. EXISTING SLAB & I/F OF THE EXISTING CMU WALL, A PREMOLDED EXPANSION JT. WAS INSTALLED, INDICATING THE FLOOR SLAB CONSTRUCTED INDEPENDENT OF THE EXISTING CMU WALLS & SUPPORTED ON COMPACTED FILL MATERIAL.
   c.) FOR THE EXISTING BUILDING EXTERIOR LOADING DOCK AREA THE FLOOR SLAB WAS CONSTRUCTED OVER AND SUPPORTED BY THE EXISTING CMU FOUNDATION WALLS BELOW.
9. REGARDING THE EXISTING CMU WALL ASSEMBLIES RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
   a.) DIMENSION INDICATED IS THE CMU WALL NOMINAL THICKNESS.
   b.) CMU WALLS GROUT FILLED SOLID FROM T.O. EXIST. CONC. SLAB-ON-GRADE TO T.O. EXIST. CONCRETE FOOTING's.
10. REMOVE EXISTING C.I.P. REINF. CONCRETE STAIR ASSEMBLY. SAW-CUT T.O. STAIRS TO ALIGN w/ THE O/F OF THE EXISTING CMU WALL BELOW. REPAIR EXPOSED REINFORCING BARS IN ACCORDANCE w/ DETAIL 1-S0.01. REGARDING THE EXISTING STAIRS RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
    a.) B.O. STAIRS GRADE BEAM = 1'-6"(*) DEEP x 1'-0"(*) WIDE x 4'-0"(*) LONG.
    b.) STAIRS CONSTRUCTED w/ (6) 10"(*) TREAD WIDTHS w/ TOP TREAD FLUSH w/ THE EXIST. FLOOR SLAB & (6) 7½"(*) RISERS.
    c.) EXIST. CONC. SLOPED SECTION BELOW THE STAIR TREADS / RISERS CONSTRUCTED 6" THK. & REINF. w/ #4 BARS SPA. @ 8" O.C. LONG WAY AND #3 BARS SPA. @ 1'-0 O.C. SHORT WAY.
    d.) EXIST. FLOOR SLAB / T.O. STAIRS CONN. w/ #4 DWL.'s SPA. @ 8" O.C..
11. EXPANSION JOINT MATERIAL BETWEEN THE ELECTRICAL BUILDING SUPPORT SLAB-ON-GRADE & THE ENTRY PADS. NOTE THE FOLLOWING:
    a.) INSTALL W.R. MEADOWS SEALTIGHT FIBRE EXP. JOINT MATERIAL OR AN APPROVED EQUAL.
    b.) JOINT MATERIAL IN CONFORMANCE w/ ASTM D1751.
12. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.

REV.NO.	DESCRIPTION	DATE
F	ISSUED FOR BID	2026.04.10
E	ISSUED FOR PERMITTING - REVISED TRANSFORMER CLEARANCE	2026.02.23
D	ISSUED FOR PERMITTING - REVISED STAIRS	2026.01.08
C	ISSUED FOR PERMITTING	2025.12.19
B	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20
A	60% SUBMITTAL - NOT FOR CONSTRUCTION	2023.08.22

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006891
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

EXIST. CHLORINE BLDG. MODS FDN. & FLOOR PLAN

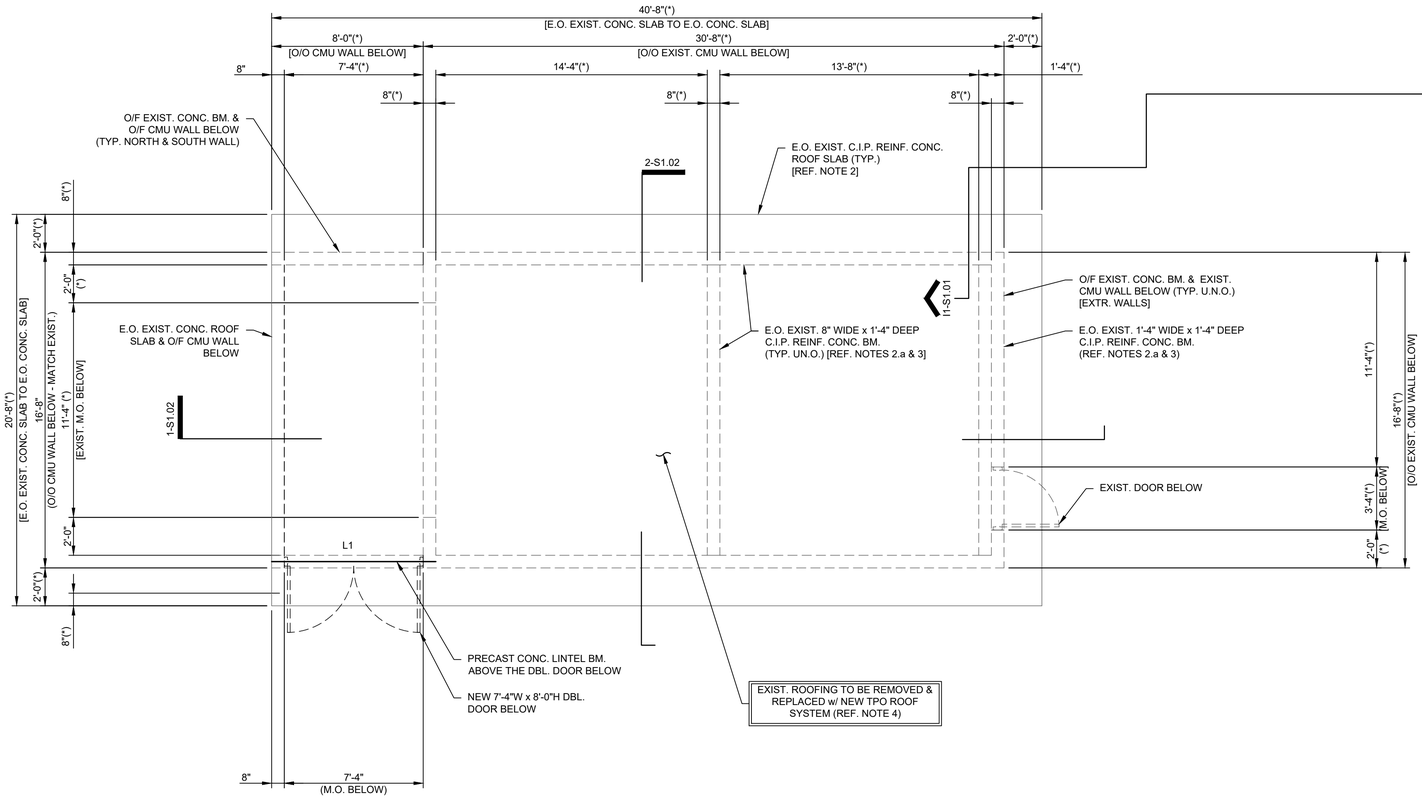
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

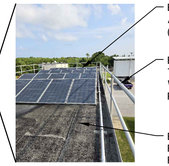
SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S1.00
DRAWING NUMBER

F
REVISION

STATUS: **ISSUED FOR BID**





EXIST. SOLAR PANEL ASSEMBLIES TO BE REMOVED (TYP.)

EXIST. AL GUARDRAIL & POST TO BE REMOVED & REPLACED WITH NEW AL GUARDRAIL & POST (TYP.)

EXIST. MODIFIED BITUMEN ROOF SYSTEM TO BE REOVED & REPLACED w/ NEW TPO ASSEMBLY (TYP.)

IMAGE I1-S01.1

NORTH

1 - PLAN - EXIST. CHLORINE BLDG. ROOF MODS LAYOUT

SCALE: 1/4" = 1'-0"

ROOF PLAN NOTES:

1. REFERENCE ELEVATION FOR THE EXISTING CHLORINE BUILDING FACILITY MODIFICATIONS AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE EXISTING ELEVATED CONCRETE FLOOR SLAB ABOVE GROUND LEVEL w/ THE SLAB T.O. CONC. EL 0'-0" = EL 12'-0" (12.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. REGARDING THE EXISTING C.I.P. REINFORCED CONCRETE ROOF SLAB ASSEMBLY RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
   a.) ROOF WAS CONSTRUCTED PLAN DIM.'s INDICATED x 8"(*) THK. SLAB. w/ MONOLITHIC BEAMS.
   b.) SLAB REINF. = #4 BARS SPA. @ 1'-0" O.C. LONG WAY & #4 BARS SPA. @ 6" O.C. SHORT WAY BTM. OF SLAB.
   c.) SLAB REINF. = #4 BARS SPA. @ 1'-0" O.C. EA. WAY TOP OF SLAB w/ BARS PERPENDICULAR TO THE CANTILEVER 6'-0" LONG.
   d.) REINF. CLEAR DISTANCES = $\frac{3}{4}$" FROM TOP & BTM. SURFACES & 2" FROM THE SIDE SURFACES OF THE CONCRETE SLAB.
3. REGARDING THE EXISTING C.I.P. REINFORCED CONCRETE MONOLITHIC ROOF BEAM ASSEMBLY's RECORD DWG.'s REVIEWED INDICATED THE FOLLOWING:
   a.) THE ROOF BM.'s WERE CONSTRUCTED 8"(*) WIDE x 1'-4"(*) DEEP IN ALIGNMENT w/ THE EXISTING NORTH, EAST & WEST CMU WALLS BELOW & MIDWAY BTWN. THE NORTH & SOUTH WALLS AS SHOWN.
   b.) THE ROOF BM. AT THE SOUTH WALL WAS CONSTRUCTED 1'-4"(*) WIDE x 1'-4"(*) DEEP AND IN GENERAL ALIGNMENT w/ THE EXISTING SOUTH CMU WALL BELOW.
   c.) THE EXIST. 8" WIDE x 1'-4" DEEP BEAMS REINFORCED w/ (2) #4 TOP BARS, (2) #6 BTM. BARS & #3 STIRRUPS SPA. @ 1'-0" O.C..
   d.) THE EXIST. 1'-4" WIDE x 1'-4" DEEP BEAMS REINFORCED w/ (3) #4 TOP BARS, (3) #6 BTM. BARS & #3 STIRRUPS SPA. @ 1'-0" O.C..
   e.) REINF/ CLEAR DISTANCES = 1" FROM TOP & BTM. SURFACES & $1\frac{1}{2}$" FROM THE SIDE SURFACES OF THE CONCRETE SLAB / BEAM.
4. NEW ROOFING SYSTEM TO CONSIST OF SINGLE-PLY TPO OVER RIGID INSULATION AND VAPOR BARRIER ON THE EXISTING C.I.P. REINFORCED CONCRETE DECK SLAB. REFERENCE "MISC. BUILDING MATERIALS" STRUCTURAL GENERAL NOTES 13.1 TO 13.5 & PROJECT SPECS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
5. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.

REV.NO.	DESCRIPTION	DATE
C	ISSUED FOR BID	2026.04.10
B	ISSUED FOR PERMITTING	2025.12.19
A	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

EXIST. CHLORINE BLDG. ROOF PLAN

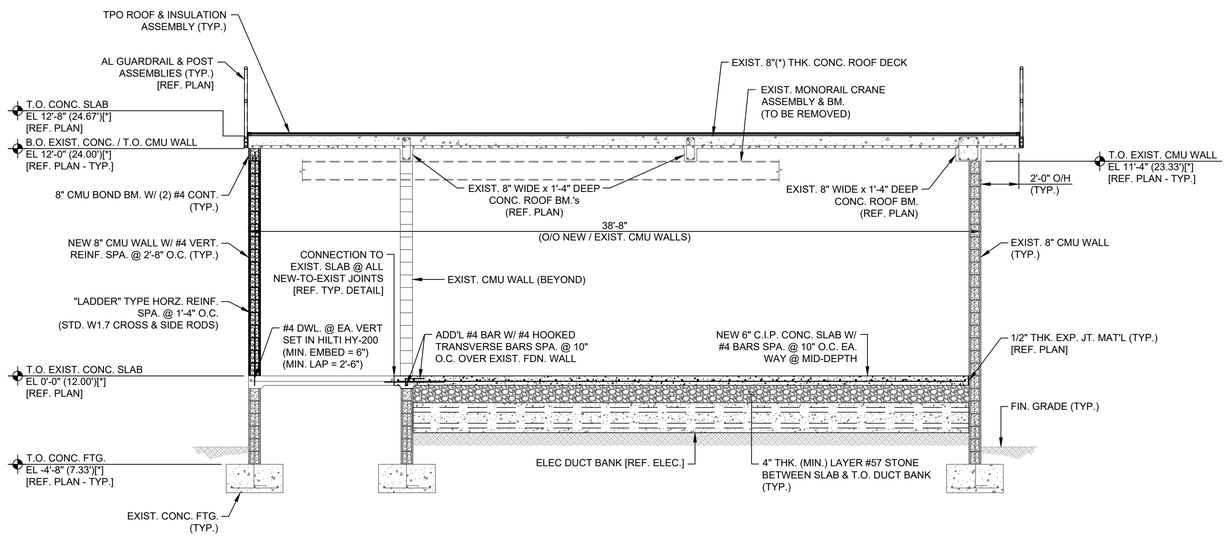
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S1.01
DRAWING NUMBER

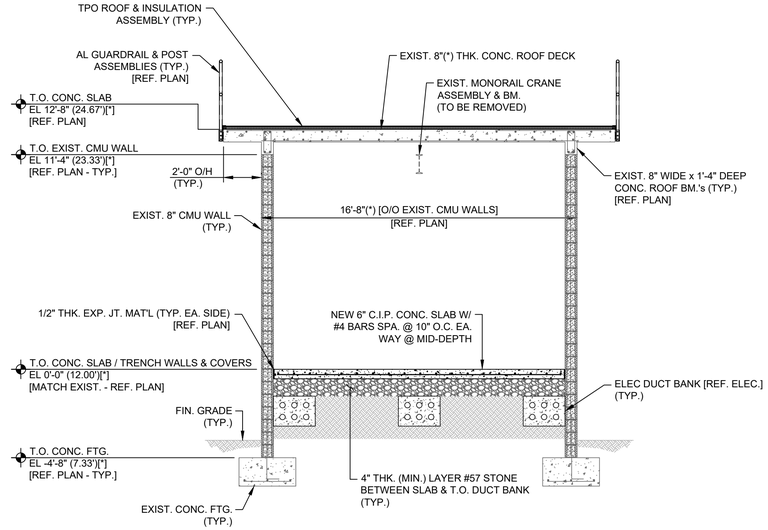
C
REVISION

STATUS: ISSUED FOR BID



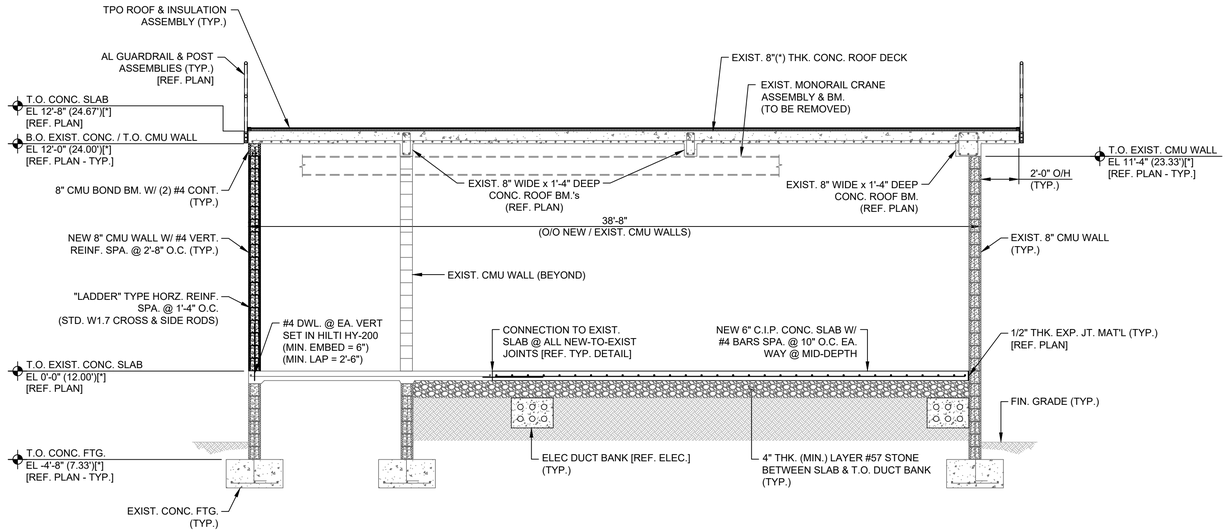
1 - SECTION - THRU EXIST. CHLORINE BLDG. MODS

SCALE: 1/4" = 1'-0"



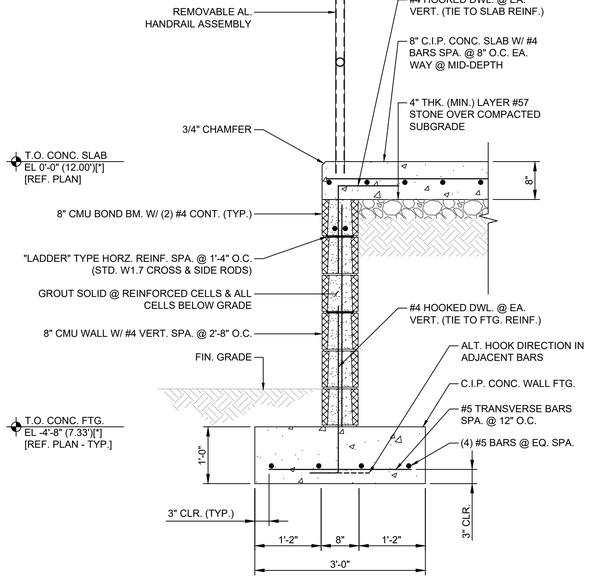
2 - SECTION - THRU EXIST. CHLORINE BLDG. MODS

SCALE: 1/4" = 1'-0"



3 - SECTION - THRU EXIST. CHLORINE BLDG. MODS

SCALE: 1/4" = 1'-0"



4 - SECTION - THRU NEW ELEVATED SLAB RETAINING WALL

SCALE: 3/4" = 1'-0"

NOTES:

1. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.

REV.NO.	DESCRIPTION	DATE
C	ISSUED FOR BID	2026.04.10
B	ISSUED FOR PERMITTING	2025.12.19
A	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

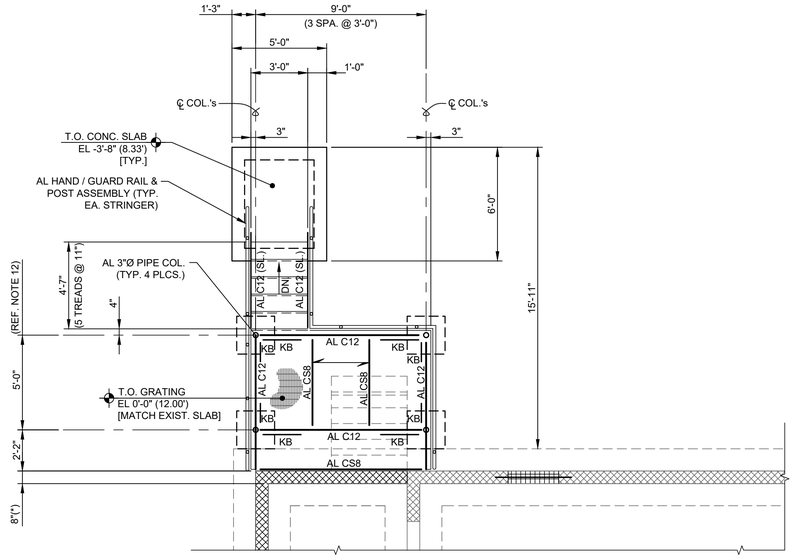
EXIST. CHLORINE BLDG. MODS SECTIONS & DETAILS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S1.02
DRAWING NUMBER
C
REVISION

STATUS: **ISSUED FOR BID**



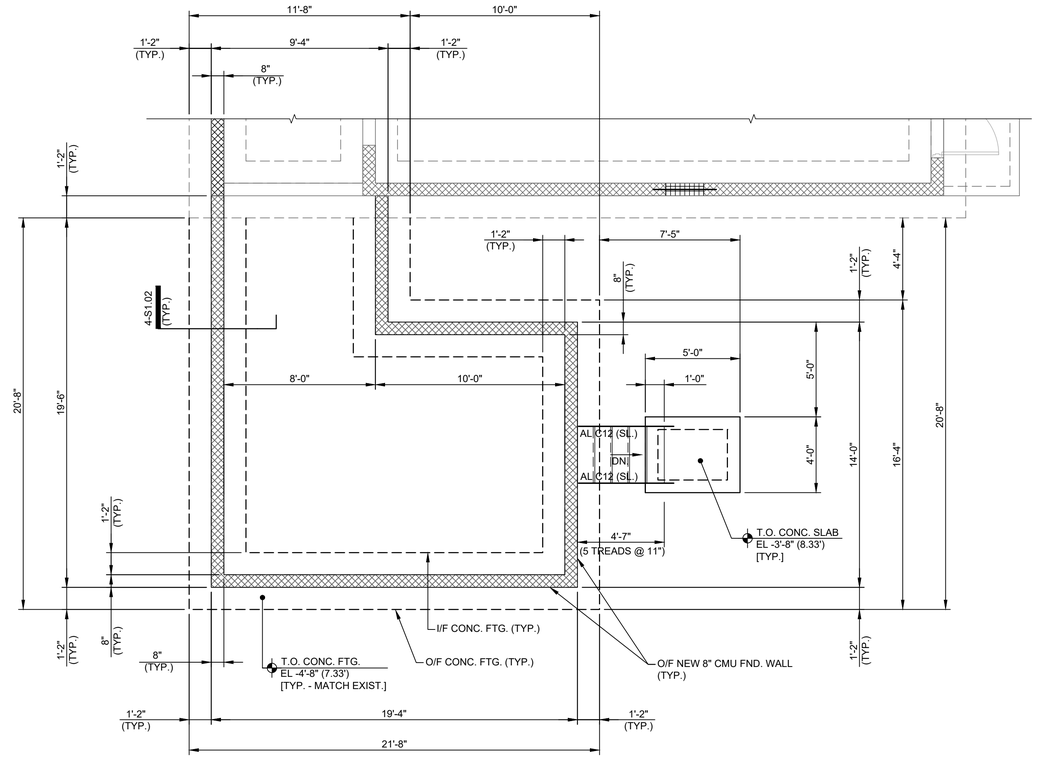
1 - PLAN - EAST ACCESS STAIR & PLATFORM FRMG. LAYOUT

SCALE: 1/4" = 1'-0"

NORTH

FRMG. PLAN NOTES:

1. REFERENCE ELEVATION FOR THE EXISTING CHLORINE BUILDING FACILITY MODIFICATIONS AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE EXISTING ELEVATED CONCRETE FLOOR SLAB ABOVE GROUND LEVEL w/ THE SLAB T.O. CONC. EL 0'-0" = EL 12'-0" (12.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. IN GENERAL BEAM FRAMING SPACING DIMENSIONS ARE TYPICAL U.N.O. THIS FRAMING PLAN, OR FRAMING ELEVATIONS, SECTIONS AND / OR DETAILS.
3. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFORMATION ONLY. CONTRACTOR TO NOTE NOT ALL EQUIPMENT MAY BE SHOWN. REFERENCE ELECTRICAL, MECHANICAL & EQUIPMENT VENDOR DRAWINGS AS REQUIRED, FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ CIVIL, ELECTRICAL, MECHANICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING & CONDUIT ASSEMBLIES EITHER SHOWN OR NOT SHOWN THIS PLAN. COORDINATE PENETRATIONS THRU GRATING PANELS PRIOR TO FABRICATION.
5. REGARDING ALUMINUM FRAMING ASSEMBLIES REFERENCE PROJECT SPECIFICATIONS & "ALUMINUM" STRUCTURAL GENERAL NOTES 9.1 THRU 9.6 FOR ADDITIONAL INFORMATION & CONSTRUCTION REQUIREMENTS. REGARDING FRAMING MEMBERS NOTE THE FOLLOWING:
   - AL C12 = C12 x 7.41 ALUMINUM AMERICAN STANDARD CHANNEL SECTION.
   - AL CS8 = CS8 x 5.79 ALUMINUM ASSOCIATION STANDARD CHANNEL SECTION.
   - AL 3"Ø = SCHEDULE 80 PIPE SECTION.
   - KB = L3 x 3 x 1/4 ALUMINUM ANGLE SECTION.
6. SYMBOL ON PLAN INDICATES ORIENTATION OF THE CHANNEL FLANGES. REFERENCE FRAMING SECTIONS & DETAILS FOR AL SECTIONS WHERE NOT SHOWN ON PLAN.
7. L KNEE BRACING (KB) LOCATIONS ARE SHOWN THIS PLAN FOR CLARITY. REFERENCE FRAMING ELEVATIONS, SECTIONS & DETAILS FOR BRACING INFO & CONNECTION REQUIREMENTS.
8. INSTALL AL GUARDRAIL & POST ASSEMBLY's AROUND THE PERIMETER OF THE PLATFORM AS SHOWN. REFERENCE TYPICAL DETAILS ON DWG. S0.04 FOR AL HAND / GUARDRAIL & POST ASSEMBLY INFO & REQ.'s. FABRICATOR TO PROVIDE SPLICE JT.'s IN HORZ. RAILS & TOE PLATES TO ALLOW FOR THERMAL DISPLACEMENTS.
9. " ⟷ " SYMBOL ON PLAN INDICATES SPAN DIRECTION OF THE ALUMINUM BAR GRATING ASSEMBLIES MAIN BEARING BARS. IN GENERAL GRATING ASSEMBLIES ARE TO BE MANUFACTURED BY REPUTABLE VENDOR(S) EXPERIENCED IN MANUFACTURING THE ASSEMBLIES REQUIRED. GRATING ASSEMBLIES ARE TO INCLUDE RECTANGULAR MAIN BEARING BARS, RECTANGULAR CROSS BARS OR RODS AND RECTANGULAR BEARING BARS ALONG PERIMETERS OF PANELS AND OPENINGS. FABRICATE ASSEMBLIES w/ MILL FINISH & CONNECTED TO FORM STANDARD PANEL WIDTHS. REFERENCE PLANS, SECTIONS & DETAILS FOR ADDITIONAL INFORMATION & REQUIREMENTS. NOTE THE FOLLOWING:
   - 9.a. GRATING "G1" = 1$\frac{1}{2}$" LIGHT DUTY ALUMINUM IN ACCORDANCE w/ MFG.'s 19-4 "SG" SERIES SPACE PROFILE.
   - 9.b. GRATING PANELS SHALL BE ANCHORED TO ALUMINUM FRMG. w/ S.S. FASTENERS & TYPE AS RECOMMENDED BY THE MANUFACTURER.
   - 9.c. COORDINATE w/ THE OWNER REGARDING PANEL ASSEMBLIES INCLUDING SERRATED TOP SURFACE SKID FINISH FOR SLIP RESISTANCE.
10. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.



NORTH

FOUNDATION & PLAN NOTES:

1. REFERENCE ELEVATION FOR THE EXISTING CHLORINE BUILDING FACILITY MODIFICATIONS AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE EXISTING ELEVATED CONCRETE FLOOR SLAB ABOVE GROUND LEVEL w/ THE SLAB T.O. CONC. EL 0'-0" = EL 12'-0" (12.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. GRADE ELEVATION AROUND THIS STRUCTURE VARIES BETWEEN 8.00'(±)[*] & 8.50'(±)[*]. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
3. PREPARE SUBGRADE BELOW THE ELECTRICAL DUCT BANKS AND BELOW THE C.I.P. CONCRETE FLOOR SLABS FOR THIS FACILITY PER "FOUNDATIONS" STRUCTURAL GENERAL NOTES ON DWG. S0.00 & AS INDICATED IN SECTIONS & DETAILS.
4. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFO ONLY. REFERENCE ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
5. CONTRACTOR TO NOTE PROCESS PIPING / CONDUIT MAY NOT BE SHOWN FOR CLARITY. CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ ELECTRICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING, CONDUIT & MISCELLANEOUS EQUIPMENT EITHER SHOWN OR NOT SHOWN THIS PLAN.
6. COORDINATE w/ CIVIL, ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR LOCATIONS & INFORMATION REGARDING SLAB PENETRATIONS / CUTS FOR PIPING, CONDUIT AND / OR CABLE ROUTING REQUIREMENTS EITHER SHOWN OR NOT SHOWN.
7. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.

REV.NO.	DESCRIPTION	DATE
E	ISSUED FOR BID	2026.04.10
D	ISSUED FOR PERMITTING - REVISED TRANSFORMER CLEARANCE	2026.02.23
C	ISSUED FOR PERMITTING - REVISED STAIRS	2026.01.08
B	ISSUED FOR PERMITTING	2025.12.19
A	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

ACCESS STAIR & PLATFORM FRMG. PLAN, SECTIONS & DETAILS

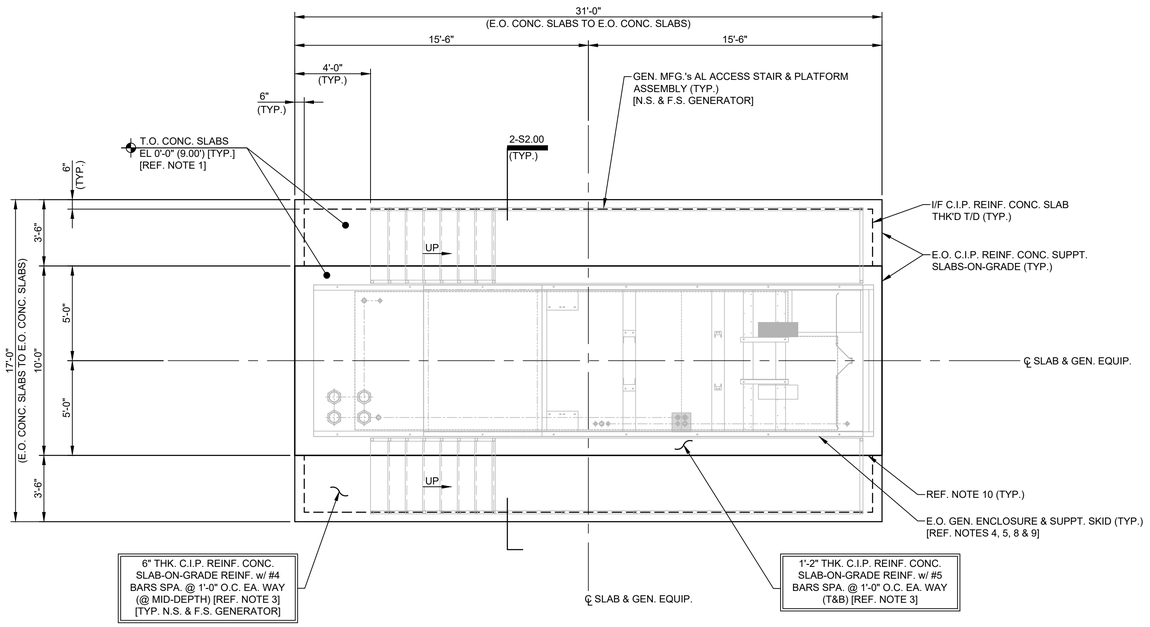
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S1.03
DRAWING NUMBER

E
REVISION

STATUS: **ISSUED FOR BID**



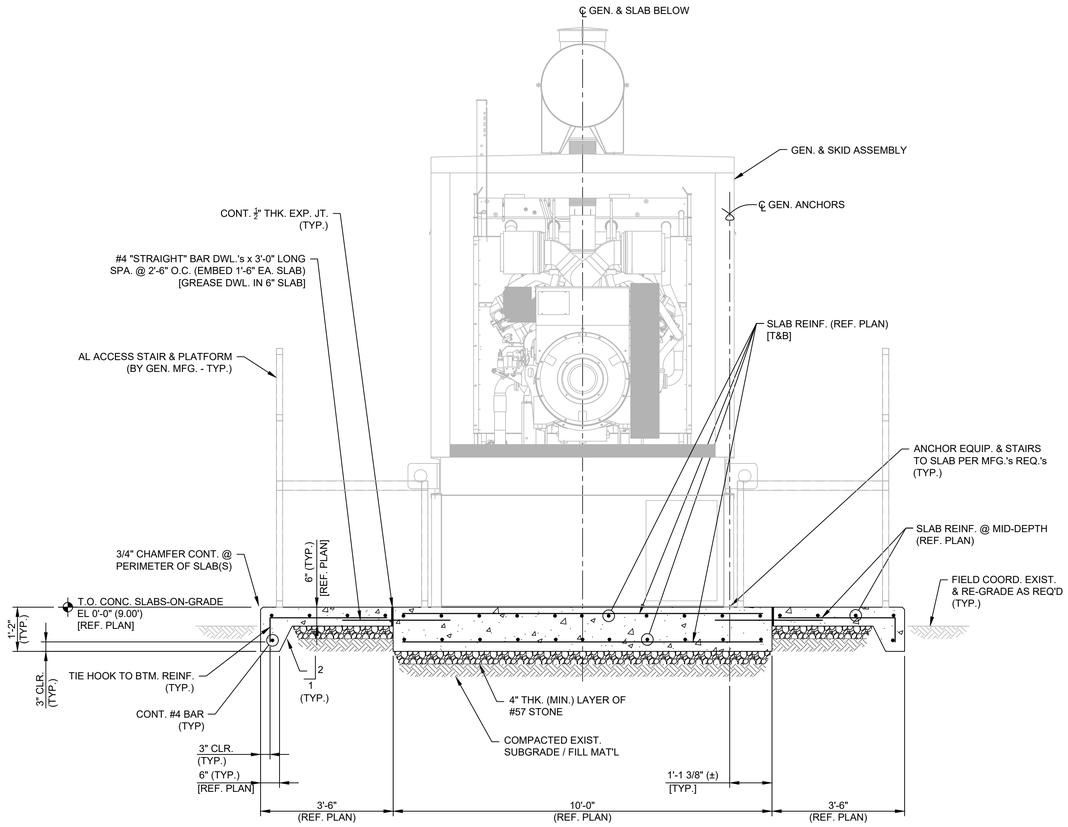
NORTH

1 - PLAN - GEN. SUPPT. SLABS-ON-GRADE FOUNDATION LAYOUT

SCALE: 1/4" = 1'-0"

GEN. SUPPT. S.O.G. PLAN NOTES:

1. REFERENCE ELEVATION FOR THE GENERATOR FACILITY AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE CONCRETE SUPPT. SLAB-ON-GRADE T.O. CONC. EL 0'-0" = EL 9'-0" (9.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. GRADE ELEVATION AROUND THIS STRUCTURE VARIES BETWEEN 8.00'(±)[*] & 8.50'(±)[*]. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
3. PREPARE SUBGRADE FOR THIS FACILITY PER THE REQUIREMENTS OF "FOUNDATIONS" STRUCTURAL GENERAL NOTES. FOUNDATIONS MAY REQUIRE CUT / FILL OF SUBGRADE SOILS. REFERENCE "FOUNDATIONS" STRUCTURAL GENERAL NOTES 3.1 THRU 3.11 ON DWG. S0.00 & AS INDICATED SECTIONS & DETAILS FOR ADDITIONAL REQUIREMENTS & INFORMATION.
4. APPROXIMATE OUTLINE OF 800 kW GENERATOR & ENCLOSURE ASSEMBLY
5. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFO ONLY. REFERENCE ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
6. CONTRACTOR TO NOTE NOT ALL EQUIPMENT & UTILITY PIPING / CONDUIT MAY BE SHOWN FOR CLARITY. CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ ELECTRICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING, CONDUIT & MISCELLANEOUS EQUIPMENT EITHER SHOWN OR NOT SHOWN THIS PLAN.
7. COORDINATE w/ CIVIL, ELECTRICAL & EQUIPMENT VENDOR DRAWINGS FOR LOCATIONS & INFORMATION REGARDING SLAB PENETRATIONS / CUTS FOR PIPING, CONDUIT AND / OR CABLE ROUTING REQUIREMENTS EITHER SHOWN OR NOT SHOWN.
8. THE GENERATOR SUPPT. SLAB-ON-GRADE DIMENSIONS ARE BASED UPON EQUIPMENT DIMENSIONS PROVIDED BY GENERATOR EQUIPMENT VENDOR's DRAWINGS. SLAB DIMENSIONS PROVIDED THIS DWG. MAY INCREASE / DECREASE DURING CONSTRUCTION DEPENDING UPON THE APPROVED EQUIPMENT SUBMITTAL SHOP DRAWING DIMENSIONS APPROVED BY THE ENGINEER OF RECORD DURING CONSTRUCTION. THE GENERATOR ASSEMBLIES DIMENSIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTING THE SLAB. NOTE THE FOLLOWING:
   a.) GENERATOR ASSEMBLY = 29'-0" LONG x 8'-0" WIDE.
   b.) GENERATOR ASSEMBLY OPERATING WEIGHT = 60,000 LB (APPROX.)
   b.) SLAB E.O. CONCRETE DIMENSIONS ARE BASED UPON THE BASE FUEL TANK SUPPORTING THE GENERATOR & ENCLOSURE ASSEMBLIES.
   c.) SLAB DIMENSIONS INCLUDE THE GENERATOR MFG.'s ACCESS PLATFORM ASSEMBLIES REQUIRED.
9. IF REQUIRED INSTALL GROUT PAD BELOW GENERATOR ENCLOSURE & FUEL TANK SKID TO ENSURE EQUIPMENT IS LEVEL & w/ IN EQUIPMENT MFG.'s TOLERANCES.
10. EXPANSION JOINT MATERIAL BETWEEN THE GENERATOR SUPPORT SLAB-ON-GRADE & THE (2) ADJACENT LONG SIDE ACCESS STAIR / PLATFORM SUPPORT SLABS-ON-GRADE. NOTE THE FOLLOWING:
   a.) INSTALL W.R. MEADOWS SEALTIGHT FIBRE EXP. JOINT MATERIAL OR AN APPROVED EQUAL.
   b.) JOINT MATERIAL IN CONFORMANCE w/ ASTM D1751.
11. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.



2 - SECTION - THRU GEN. SUPPT. SLABS-ON-GRADE

SCALE: 1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
C	ISSUED FOR BID	2026.04.10
B	ISSUED FOR PERMITTING	2025.12.19
A	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97096

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827
EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

GENERATOR SUPPT. SLAB-ON-GRADE FDN. PLAN, SECTIONS & DETAILS

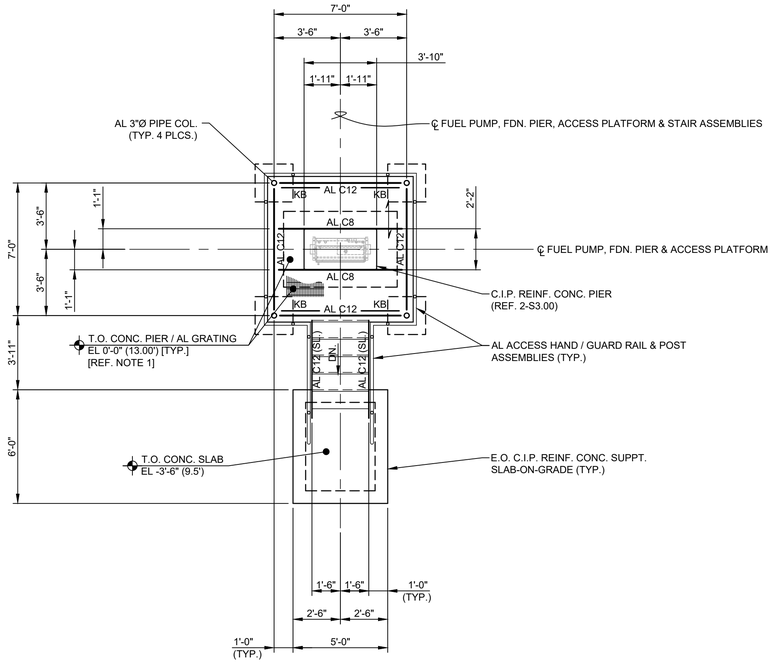
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S2.00
DRAWING NUMBER

C
REVISION

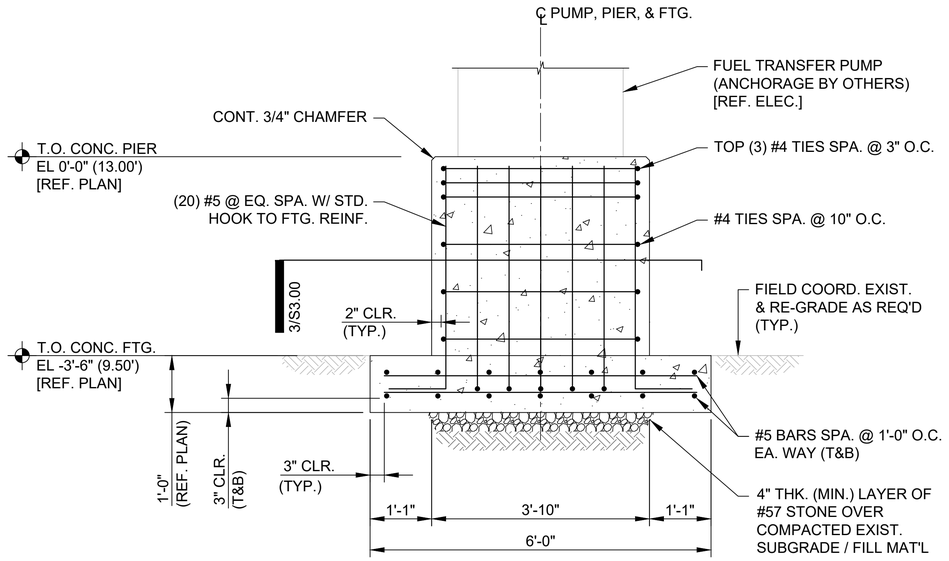
STATUS: **ISSUED FOR BID**



NORTH

1 - PLAN - FUEL TRANSFER PUMP, ACCESS STAIR & PLATFORM LAYOUT

SCALE: 1/4" = 1'-0"



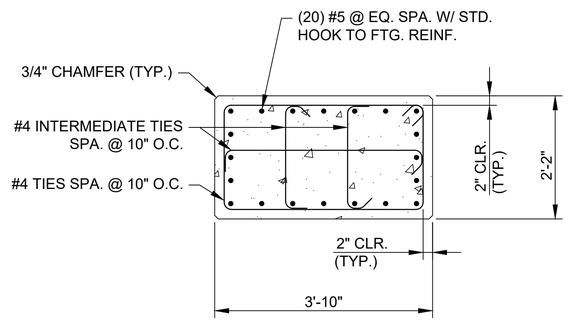
2 - DETAIL - FUEL TRANSFER PUMP PIER & FTG.

SCALE: 3/4" = 1'-0"

FRMG. PLAN NOTES:

1. REFERENCE ELEVATION FOR THE FUEL TRANSFER PUMP FACILITY AT THE EXISTING WASTEWATER TREATMENT PLANT IS THE CONCRETE SUPPT. PIER T.O. CONC. EL 0'-0" = EL 13'-0" (13.00'). CONTRACTOR SHALL VERIFY VERTICAL DATUM INDICATED EQUALS N.A.V.D.-88. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
2. GRADE ELEVATION AROUND THIS STRUCTURE IS EL 9.00'(±)[*]. REFERENCE EXISTING RECORD DRAWINGS, CIVIL AND / OR ELECTRICAL SITE DRAWINGS FOR ADDITIONAL INFORMATION.
3. IN GENERAL BEAM FRAMING SPACING DIMENSIONS ARE TYPICAL U.N.O. THIS FRAMING PLAN, OR FRAMING ELEVATIONS, SECTIONS AND / OR DETAILS.
4. EQUIPMENT LAYOUTS IF SHOWN ARE FOR GENERAL INFORMATION ONLY. CONTRACTOR TO NOTE NOT ALL EQUIPMENT MAY BE SHOWN. REFERENCE ELECTRICAL, MECHANICAL & EQUIPMENT VENDOR DRAWINGS AS REQUIRED, FOR MISCELLANEOUS EQUIPMENT LAYOUTS, ACCESSORIES, DIMENSIONS & ELEVATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING w/ CIVIL, ELECTRICAL, MECHANICAL & OTHER DISCIPLINE DWG.'s, IN ADDITION TO EQUIPMENT VENDOR DRAWING's FOR LOCATIONS & INFO REGARDING PIPING & CONDUIT ASSEMBLIES EITHER SHOWN OR NOT SHOWN THIS PLAN. COORDINATE PENETRATIONS THRU GRATING PANELS PRIOR TO FABRICATION.
6. REGARDING ALUMINUM FRAMING ASSEMBLIES REFERENCE PROJECT SPECIFICATIONS & "ALUMINUM" STRUCTURAL GENERAL NOTES 9.1 THRU 9.6 FOR ADDITIONAL INFORMATION & CONSTRUCTION REQUIREMENTS. REGARDING FRAMING MEMBERS NOTE THE FOLLOWING:
   AL C12 = C12 x 7.41 ALUMINUM AMERICAN STANDARD CHANNEL SECTION.
   AL CS8 = CS8 x 5.79 ALUMINUM ASSOCIATION STANDARD CHANNEL SECTION.
   AL 3"Ø = SCHEDULE 80 PIPE SECTION.
   KB = L3 x 3 x 1/4 ALUMINUM ANGLE SECTION.
7. SYMBOL ON PLAN INDICATES ORIENTATION OF THE CHANNEL FLANGES. REFERENCE FRAMING SECTIONS & DETAILS FOR AL SECTIONS WHERE NOT SHOWN ON PLAN.
8. L KNEE BRACING (KB) LOCATIONS ARE SHOWN THIS PLAN FOR CLARITY. REFERENCE FRAMING ELEVATIONS, SECTIONS & DETAILS FOR BRACING INFO & CONNECTION REQUIREMENTS.
9. INSTALL AL GUARDRAIL & POST ASSEMBLY's AROUND THE PERIMETER OF THE PLATFORM AS SHOWN. REFERENCE TYPICAL DETAILS ON DWG. S0.04 FOR AL HAND / GUARDRAIL & POST ASSEMBLY INFO & REQ.'s. FABRICATOR TO PROVIDE SPLICE JT.'s IN HORZ. RAILS & TOE PLATES TO ALLOW FOR THERMAL DISPLACEMENTS.
10. "◄——►" SYMBOL ON PLAN INDICATES SPAN DIRECTION OF THE ALUMINUM BAR GRATING ASSEMBLIES MAIN BEARING BARS. IN GENERAL GRATING ASSEMBLIES ARE TO BE MANUFACTURED BY REPUTABLE VENDOR(S) EXPERIENCED IN MANUFACTURING THE ASSEMBLIES REQUIRED. GRATING ASSEMBLIES ARE TO INCLUDE RECTANGULAR MAIN BEARING BARS, RECTANGULAR CROSS BARS OR RODS AND RECTANGULAR BEARING BARS ALONG PERIMETERS OF PANELS AND OPENINGS. FABRICATE ASSEMBLIES w/ MILL FINISH & CONNECTED TO FORM STANDARD PANEL WIDTHS. REFERENCE PLANS, SECTIONS & DETAILS FOR ADDITIONAL INFORMATION & REQUIREMENTS. NOTE THE FOLLOWING:
    10.a. GRATING "G1" = 1¼" LIGHT DUTY ALUMINUM IN ACCORDANCE w/ MFG.'s 19-4 "SG" SERIES SPACE PROFILE.
    10.b. GRATING PANELS SHALL BE ANCHORED TO ALUMINUM FRMG. w/ S.S. FASTENERS & TYPE AS RECOMMENDED BY THE MANUFACTURER.
    10.c. COORDINATE w/ THE OWNER REGARDING PANEL ASSEMBLIES INCLUDING SERRATED TOP SURFACE SKID FINISH FOR SLIP RESISTANCE.
11. REFERENCE DWG.'s S0.00 - S0.04 FOR ADDITIONAL GENERAL NOTES, MATERIAL SPECIFICATIONS & REQUIREMENTS, DESIGN CRITERIA, LEGEND, AND TYPICAL DETAILS.

CONTRACTOR NOTE:
ALT. DIRECTION OF 90° AND 135° HOOKS IN ADJACENT BARS BOTH VERT AND HORIZ.



3 - SECTION - FUEL TRANSFER PIER & REINF.

SCALE: 3/4" = 1'-0"

REV NO.	DESCRIPTION	DATE
C	ISSUED FOR BID	2026.04.10
B	ISSUED FOR PERMITTING	2025.12.19
A	100% SUBMITTAL - NOT FOR CONSTRUCTION	2024.12.20

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ISAAC C. DOWLESS, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ISAAC C.DOWLESS, P.E.
No. 97098

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756
Phone: (727) 442-7196, Fax: (727) 461-3827

EB0006691
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

STRUCTURAL

FUEL TRANSFER PUMP, ACCESS STAIR & PLATFORM PLAN, SECT. & DET.

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	JZM / ICD
DESIGNED	ICD
CHECKED	MSF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: AS NOTED
VERTICAL: NA

S3.00
DRAWING NUMBER

C
REVISION

STATUS: **ISSUED FOR BID**

1 ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE UTILIZED FOR THIS PROJECT

A, AMP	AMMETER / AMPERE
ACV	AIR OPERATED CONTROL VALVE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AIT	ANALYTICAL INDICATION TRANSMITTER
AL	ALUMINUM
ARMS	ARC-FLASH REDUCTION SYSTEM
AS	AMMETER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
AQD	ARC QUENCHING DEVICE
BKR	BREAKER
BLDG	BUILDING
BV	BUTTERFLY VALVE
C	CONDUIT
CAB	CABINET
CB	CIRCUIT BREAKER
CBV	CABLE BY VENDOR, INSTALLED BY CONTRACTOR
CCTV	CLOSED CIRCUIT TELEVISION
CHH	COMMUNICATION HANDHOLE
CKT	CIRCUIT
CLG	CEILING
CL2	CHLORINE
CMH	COMMUNICATION MANHOLE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL STATION
CSH	DIAPHRAGM LEAK DETECTOR
CT	CURRENT TRANSFORMER
CTRL	CONTROL
CU	COPPER
CV	CONTROL VALVE
DB	DECIBEL
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DETD	DUAL ELEMENT TIME DELAY
DISC	DISCONNECT
DN	DOWN
DPDT	DOUBLE POLE DOUBLE THROW
DPSH	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH
DWG	DRAWING
EC	EMPTY CONDUIT
EF	EXHAUST FAN
EHH	ELECTRICAL HANDHOLE
EL, ELEV	ELEVATION
ELTU	ELECTRONIC TRIP UNIT
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPRF	EXPLOSION PROOF
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FIT	FLOW INDICATION TRANSMITTER
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLOUR	FLUORESCENT
FMC	FLEXIBLE METALLIC CONDUIT
FS	FLOW SWITCH
FT	FEET OR FOOT
FUT	FUTURE
FVNR	FULL VOLTAGE NON-REVERSING STARTER
FWE	FURNISHED WITH EQUIPMENT
G, GND	GROUND
GALV	GALVANIZED
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFIC	GROUND FAULT CIRCUIT INTERRUPTER
HDG	HOT DIPPED GALVANIZED
HH	HANDHOLE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HZ	HERTZ
ID	INTERIOR DIAMETER
IHH	INSTRUMENTATION HANDHOLE
IMC	INTERMEDIATE METALLIC CONDUIT (GALVANIZED)
IMH	INSTRUMENTATION MANHOLE
IMT	INTERMEDIATE METALLIC
IN	INCHES
ITB	INSTRUMENT TERMINAL BOX
JB	JUNCTION BOX
K	THOUSAND
KA	KILOVOLT AMPERE
KAIC	THOUSAND AMPERES INTERRUPTING CURRENT
KCMIL	THOUSAND CIRCULAR MILLS
KVA	THOUSAND VOLT AMPERES
KW	KILOWATTS
KWH	KILOWATT-HOURS
LA	LIGHTNING ARRESTOR
LCP	LOCAL CONTROL PANEL
LED	LIGHT-EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LIT	LEVEL INDICATION TRANSMITTER
LP	LIGHTING PANEL, LIGHT POLE
LS	LEVEL SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
M	MOTOR
MA	MILLIAMPERE
MB	MOTOR BEARINGDETECTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MS	MOISTURE SENSOR
MSB	MAIN SWITCHBOARD
MTD	MOUNTED/MOUNTING
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE - MOTOR VIBRATION DETECTOR
NA	NON-AUTOMATIC
N/A	NOT APPLICABLE
NC	NORMALLY CLOSE
NEC	NATIONAL ELECTRIC CODE
N, NEU	NEUTRAL
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OL	OVERLOAD RELAY
P	POLE
PA	PUBLIC ADDRESS
PB	PUSH BUTTON
P/B	PULL BOX
PCP	PUMP CONTROL PANEL
PF	POWER FACTOR
PFC	POWER FACTOR CORRECTION CAPACITORS
PFD	PULL FUSE DISCONNECT
ϕ, PH	PHASE
PIT	PRESSURE INDICATION TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PR	PAIR
PRI	PRIMARY
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PTZ	PAN-TILT-ZOOM
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RMC	RIGIDREMOTE TELEMETRY UNIT
R/S	RUN/STOP HAND SWITCH
RVSS	REDUCED VOLTAGE SOFT STARTER
SCCR	SHORT CIRCUIT CURRENT RATING
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SEC	SECONDARY
SP	SPARE
SPEC	SPECIFICATION
SPD	SURGE PROTECTION DEVICE
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
ST	SHUNT TRIP
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TB	TERMINAL BOX
TEL	TELEPHONE
TEMP	TEMPERATURE
TEW	THERMOCOUPLE EXTENSION WIRE
TIT	TEMPERATURE INDICATION TRANSMITTER
TMTU	THERMAL-MAGNETIC TRIP UNIT
TS	TEMPERATURE SWITCH
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTMETER
VAC	VOLTS ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VLV	MANUAL OPERATED VALVE
VS	VOLTMETER SWITCH
WS	TORQUE SWITCH
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
ZI	ZONE INTERLOCK
ZC	STROKE POSITIONER
ZS	LIMIT SWITCH
ZSC	LIMIT SWITCH CLOSED
ZSO	LIMIT SWITCH OPEN

2 CONTRACTOR RESPONSIBILITIES

2.1. CONTRACTOR SHALL REFERENCE ALL SPECIFICATIONS, DRAWINGS AND CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.

2.2. CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY, AND CITY STANDARDS, DETAILS, AND SPECIFICATIONS.

2.3. THE GENERAL NOTES AS STATED ON THIS SHEET ARE APPLICABLE TO ALL CONTRACT DOCUMENTS AND SCOPE OF WORK UNDER THIS CONTRACT UNLESS NOTED OTHERWISE.

2.4. ALL ELECTRICAL WORK SHALL COMPLY WITH THE CURRENT NFPA, NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.

2.5. CONTRACTOR SHALL COORDINATE WITH THE LOCAL ELECTRICAL UTILITY TO ESTABLISH NEW ELECTRICAL SERVICE(S) AND FINAL CONNECTIONS TO PROVIDE UTILITY POWER AS REQUIRED TO INCLUDE ESTABLISHING TEMPORARY UTILITY ACCOUNT TO PROVIDE ELECTRICAL POWER FOR START-UP AND COMMISSIONING.

2.6. THE ELECTRICAL INSTALLATION SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE NECA/NEIS STANDARDS TO INCLUDE OWNER CONSTRUCTION STANDARDS.

2.7. CONTRACTOR SHALL PLAN AND COORDINATE ELECTRICAL CONSTRUCTION WITH ALL CRAFT/TRADE TO ACHIEVE AN EFFICIENT AND EFFECTIVE ELECTRICAL INSTALLATION.

2.8. THE SCHEDULING AND DURATION OF ANY PROCESS OR FACILITY SHUTDOWN TO REMOVE AND/OR INSTALL EQUIPMENT SHALL BE COORDINATED IN ADVANCE WITH FACILITY MANAGEMENT, ENGINEER, OWNER OR OWNER REPRESENTATIVE.

5 ELECTRICAL EQUIPMENT

5.1. 600V RATED ELECTRICAL EQUIPMENT SHALL HAVE AN AMPERE INTERRUPTING CAPACITY (AIC) RATINGS AS SHOWN ON THE CONTRACT DRAWINGS.

5.2. EQUIPMENT SHALL BE ARRANGED AND INSTALLED TO COMPLY WITH ALL CODE-REQUIRED, MANUFACTURER-RECOMMENDED AND HEAT-DISSIPATION CLEARANCES.

5.3. EQUIPMENT INSTALLATIONS AND PLACEMENTS SHALL COMPLY WITH NEC ARTICLE 110 FOR ALL CLEARANCE REQUIREMENTS.

5.4. EQUIPMENT SHALL FIT INTO THOSE SPACES AS SHOWN ON THE CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE TO PROVIDE EQUIPMENT WHICH MEETS THE SPACE REQUIREMENTS.

5.5. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTIONS FOR ALL EQUIPMENT INSTALLED AND/OR MODIFIED UNDER CONTRACT.

8 GROUNDING AND BONDING

8.1. GROUNDING AND BONDING SYSTEMS SHALL COMPLY WITH NFPA 70 AND NFPA 780 TO INCLUDE THOSE REQUIREMENTS IN APPLICABLE SPECIFICATION SECTIONS

8.2. REFERENCE GROUNDING INSTALLATION DETAILS AS SHOWN ON CONTRACT DOCUMENTS

8.3. ALL DIRECT-BURIED GROUNDING SYSTEM CONDUCTORS SHALL BE BARE 4/0AWG COPPER

8.4. ALL CONCRETE ENCASED GROUNDING SYSTEM CONDUCTORS SHALL BE TINNED 4/0AWG COPPER

8.5. ALL GROUNDING AND BONDING TAPS SHALL BE TINNED #2AWG COPPER MINIMUM

8.6. GROUNDING SYSTEM CONDUCTORS SHALL BE BURIED 30-INCH BELOW FINISHED GRADE

8.7. UNDERGROUND OR CONCRETE ENCASED GROUNDING SYSTEM CONNECTIONS SHALL BE MADE WITH EXOTHERMIC WELDS

8.8. CONNECTIONS TO STRUCTURAL STEEL AND/OR REBAR SHALL BE MADE WITH EXOTHERMIC WELDS

8.9. ELECTRICAL EQUIPMENT AND/OR FRAMING SUPPORTS SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.10. MECHANICAL EQUIPMENT AND/OR SKID FRAMING SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.11. MAN-WAY AND/OR EQUIPMENT HATCH FRAMES SHALL BE BONDED TO GROUNDING SYSTEM USING TINNED #2AWG COPPER; MECHANICAL LUGS; 316L STAINLESS-STEEL, ANTI-VIBRATION FASTENERS AND BLUE 'LOCTITE' OR EQUAL THREAD COMPOUND (MINIMUM 2 LOCATIONS)

8.12. GROUND TEST WELLS SHALL BE 15-INCH MINIMUM ROUND CONCRETE WITH CAST IRON COVER WITH BEAD WELDED LETTERING, "GROUND" AND RATED AASHTO H-10 LOADING

8.12.1. J&R CONCRETE PRODUCTS P/N E6-RT-BOX OR EQUAL

8.13. GROUNDING SYSTEM EXTENSIONS:

8.13.1. PROVIDE SUFFICIENT SLACK GROUNDING CABLE TO MAKE CONNECTIONS TO FUTURE GROUNDING CONDUCTORS, DUCTBANKS AND/OR EQUIPMENT

8.13.2. INSTALL 2.0-INCH PVC PIPE 48-INCH ABOVE FINISHED GRADE AT LOCATION AND INDICATE ON AS-BUILD DRAWINGS WITH A MINIMUM OF THREE (3) MEASUREMENTS FROM NEAREST STRUCTURES

9 SITE LIGHTING

9.1. CONTRACTOR SHALL REFERENCE ALL CONTRACT DRAWINGS PRIOR TO EXCAVATION AND INSTALLATION OF UNDERGROUND RACEWAYS, DUCTBANKS AND GROUNDING/BONDING COMPONENTS.

9.2. ALL SITE LIGHTING POWER "RUN" CONDUCTORS SHALL BE #6AWG STRANDED COPPER W/600V TYPE XHHW-2, 90°C INSULATION.

9.3. ALL SITE LIGHTING POWER "TAP" CONDUCTORS SHALL BE #10AWG STRANDED COPPER W/ 600V TYPE THHN/THWN, 90°C INSULATION.

9.4. ALL TAP AND RUN CONNECTIONS SHALL BE WATER-PROOF.

9.5. TRANSITIONS THROUGH FINISHED GRADE AND CONCRETE SHALL BE PVC-COATED ALUMINUM CONDUIT EXTENDING 12-INCHES ABOVE AND BELOW TRANSITION.

9.6. ALL SITE LIGHTING BRANCH CIRCUITS SHALL BE DIRECT-BURIED SCH-80 2.0" PVC CONDUIT UNLESS SHOWN OTHERWISE ON THE CONTRACT DRAWINGS.

3 POWER AND CONTROL RACEWAYS

3.1. EXPOSED CONDUIT SHALL BE RIGID ALUMINUM CONDUIT (RAC). GRS, IMC AND EMT ARE NOT ACCEPTABLE.

3.2. CONCEALED CONDUIT EMBEDDED IN CONCRETE SHALL BE SCH-40 PVC

3.3. DIRECT-BURIED CONDUIT SHALL BE DIRECT-BURIED SCH-80 PVC

3.4. TRANSITIONS THROUGH FINISHED GRADE AND/OR CONCRETE SHALL BE PVC-COATED RAC CONDUIT.

3.5. DRAWINGS DEPICT MAJOR DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCTS, RACEWAY, CONDUIT, ETC., TO INCLUDE CABLE, CONDUCTOR AND WIRING IN SCHEMATIC AND/OR DIAGRAMMATIC FORMATS. THE CONTRACTOR SHALL REFERENCE ALL EQUIPMENT SPECIFICATIONS AND MANUFACTURER INSTRUCTIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.

3.6. RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS ARE NOT TYPICALLY SHOWN ON THE DRAWINGS. CONTRACTOR SHALL DEVELOP LOGICAL GROUPINGS, ROUTING AND MARSHALLING OF DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCT, RACEWAY, CONDUIT, ETC., THESE SHALL NOT BE ROUTED THROUGH OR INTERFERE WITH ANY STRUCTURAL ELEMENTS. CONTRACTOR SHALL SUBMIT THESE RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS PER THE SPECIFICATIONS FOR ENGINEER REVIEW PRIOR TO INSTALLATION.

3.7. RACEWAY ROUTINGS SHALL BE ORGANIZED AND GROUPED IN A PRACTICAL MANNER TO MINIMIZE CROSS-OVERS AND SADDLES. RACEWAY INSTALLATIONS SHALL BE ARRANGED TO ENTER EQUIPMENT FOR DIRECT CONDUCTOR TERMINATIONS.

3.8. RACEWAYS SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED OR SHOWN. THESE SHALL RUN PARALLEL TO LANDSCAPE AND STRUCTURAL FEATURES WHILE THE BENDS AND TURNS SHALL BE MADE BY MEANS OF LARGE RADII FITTINGS.

3.9. PROVIDE FLEXIBLE RACEWAY CONNECTIONS TO ALL EQUIPMENT SUBJECT TO MOVEMENT AND/OR VIBRATION. CONTRACTOR SHALL MAKE RACEWAY CONNECTIONS COMPLETE AND IN ACCORDANCE WITH THE SPECIFICATIONS.

3.10. CONTRACTOR SHALL PROVIDE ALL REQUIRED PULL BOXES, TERMINAL BOXES AND JUNCTION BOXES FOR INSTALLATION FOR THE WIRING SYSTEMS IN ACCORDANCE WITH THE SPECIFICATIONS THOUGH ALL BOXES MAY NOT BE INDICATED ON THE DRAWINGS.

3.11. SPARE CONDUITS SHALL BE CAPPED OR PLUGGED WITH A PVC FITTING AND INCLUDE 200# TEST POLYPROPYLENE PULL STRING.

6 DUCTBANK SYSTEMS

6.1. DUCTBANK SYSTEM ROUTING AND SECTIONS ARE SHOWN ON THE CONTRACT DOCUMENTS AS DIAGRAMMATIC, CONTRACTOR SHALL SUBMIT PROPOSED DUCTBANK INSTALLATION LAYOUT DRAWINGS FOR ENGINEER REVIEW PRIOR TO EXCAVATION, FABRICATION AND/OR INSTALLATION

6.2. DUCTBANK SYSTEMS SHALL NOT INTERFERE WITH ANY STRUCTURAL FOUNDATION AND/OR FEATURE

6.3. DUCTBANK SYSTEMS SHALL HAVE A MINIMUM OF 18-INCH OF CLEAN COMPACTED COVER UNLESS OTHERWISE STATED IN THE CONTRACT DOCUMENTS

6.4. DUCTBANK SYSTEMS ROUTED UNDER ROADWAYS SHALL BE CONSTRUCTED AND INSTALLED PER STRUCTURAL ENGINEER OF RECORD DESIGN REQUIREMENTS

6.5. DUCTBANK SYSTEMS SHALL INCLUDE A BARE 4/0AWG COPPER GROUNDING CONDUCTOR LAID 6 TO 12-INCHES ABOVE DUCTBANK AND ROUTED INTO EACH MAN-HOLE

6.6. DUCTBANK GROUNDING CONDUCTOR SHALL BE CONNECTED WITH EXOTHERMIC WELDS TO GROUNDING SYSTEMS AS SHOWN THE DRAWINGS

6.7. DUCTBANK SYSTEMS SHALL BE ARRANGED TO ALLOW 1.5 TO 2.0-INCH MINIMUM SEPARATION BETWEEN RACEWAYS

6.8. ABS PLASTIC DUCT-SPACERS SHALL BE UTILIZED AND INSTALLED TO MAINTAIN RACEWAY SEPARATION DURING PLACEMENT OF CONCRETE

6.8.1. UNDERGROUND DEVICES INC. P/N DUCT DONUT 2C OR APPROVED EQUAL

6.9. RACEWAYS SHALL BE SECURED TO PREVENT FLOATATION DURING CONCRETE PLACEMENT WITH METALLIC HOLD-DOWN ASSEMBLIES

6.9.1. UNDERGROUND DEVICES, INC. P/N HOLD-DOWN BAR H5X-XX-2X OR APPROVED EQUAL

6.10. ALL RACEWAYS BENDS SHALL BE MADE WITH LARGE SWEEP RADII, TO MANUFACTURERS STANDARDS

6.11. ALL RACEWAYS SHALL BE REAMED, DE-BURRED AND CLEAN PRIOR TO COUPLING

6.12. ALL PVC RACEWAYS SHALL BE JOINED WITH GREY HEAVY-BODIED PVC CEMENT AND FULLY SEATED IN SLIP-COUPLING OR FITTING

6.13. ALL PVC RACEWAYS SHALL ENTER MAN-HOLE WALLS PERPENDICULAR AND HAVE BELL-END FITTINGS INSTALLED PRIOR TO DRAWING WIRES OR CABLES

6.14. RACEWAY ARRANGEMENTS SHALL BE MADE TO MAXIMUM THE DISTANCE BETWEEN 480/277V AND 208/120V FEEDER AND BRANCH CONDUCTORS FROM LOW-VOLTAGE AND FIBER OPTIC SIGNAL CABLING

6.15. DUCTBANK EXTENSIONS:

6.15.1. BULK-HEAD DUCTBANK CONCRETE POUR AND REMOVE ALL FORM WORK

6.15.2. EXTEND ALL REBAR AND CONDUITS 24" MINIMUM FROM END OF CONCRETE DUCTBANK

6.15.3. GLUE PVC END CAPS ON ALL CONDUITS. SLEEVE REBAR WITH PVC PIPE

6.15.4. INSTALL 2.0-INCH PVC PIPE 48-INCH ABOVE FINISHED GRADE AT LOCATION AND INDICATE ON AS-BUILD DRAWINGS WITH A MINIMUM OF THREE (3) MEASUREMENTS FROM NEAREST STRUCTURES

10 WIRING DEVICES

10.1. GENERAL

10.1.1. INDOORS OR NON PROCESS AREAS SHALL BE INSTALLED CONCEALED AND FLUSH WITH STAINLESS-STEEL DEVICE COVER PLATES.

10.1.2. OUTDOORS OR IN PROCESS AREAS SHALL BE INSTALLED WITHIN WEATHER-PROOF, CORROSION RESISTANT DEVICE BOXES WITH METALLIC IN-USE AND/OR WATER-TIGHT DEVICE COVER PLATES.

10.2. RECEPTACLES/GROUND FAULT CURRENT INTERRUPTING (GFCI)

10.2.1. SHALL BE INDIVIDUAL GFCI RECEPTACLE DEVICES RATED FOR 20A/120V WITH LED POWER INDICATOR.

10.2.2. GFCI RECEPTACLE DEVICES SHALL NOT SHARE NEUTRAL CONDUCTORS ON THREE-PHASE SYSTEMS

4 CABLE TRAY

4.1. THE CABLE TRAY INSTALLATION SHALL MEET ALL THE REQUIREMENTS OF ALL APPLICABLE NECA/NEIS STANDARDS. THESE INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

4.1.1. NECA 1: STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION

4.1.2. NECA/NEMA 105-2015: STANDARD FOR INSTALLING METAL CABLE TRAY

4.2. ALL CABLE TRAYS SHALL BE ALUMINUM LADDER TYPE WITH 4-INCH SIDE WALLS AND 9-INCH RUNG SPACING.

4.3. THE MANUFACTURER'S RECOMMENDED MECHANICAL LOADING SHALL NOT BE EXCEEDED.

4.4. THE CABLE TRAY SHALL BE CAREFULLY ALIGNED AND LEVELED PLUMB AND TRUE. CABLE TRAY SECTIONS AND FITTINGS SHALL BE ASSEMBLED ON THEIR SUPPORTS AND JOINED TOGETHER, USING MANUFACTURER'S STANDARD CONNECTOR UNITS, PROPERLY ALIGNED AND SECURED.

4.5. SPLICES SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO POINTS ONE-THIRD THE DISTANCE BETWEEN SUPPORT AND MIDPOINT OF THE SPAN. STRAIGHT SECTION LENGTHS SHOULD BE EQUAL TO OR GREATER THAN THE SPAN LENGTH TO ENSURE NOT MORE THAN ONE SPLICE PLATE BETWEEN SUPPORTS.

4.6. ALL METALLIC CABLE TRAYS ARE TO BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 392.60 AND BEST INDUSTRIAL PRACTICES.

4.7. ALUMINUM CABLE TRAY SYSTEMS OR SECTIONS, CONDUCTIVITY SHALL BE ESTABLISHED AND MAINTAINED BY PERFORMING THE FOLLOWING OPERATION AT EACH BONDING JUMPER LUG CONNECTION:

4.7.1. WIRE-BRUSH ALUMINUM SURFACES TO EXPOSE A BRIGHT 'WHITE' METAL SURFACE.

4.7.2. CLEAN BRUSHED SURFACES WITH DENATURED ALCOHOL.

4.7.3. APPLY ANTI-OXIDIZING COMPOUND (BURNDY PENTROX OR APPROVED EQUAL) TO CLEAN, BRUSHED SURFACES. A TIME PERIOD OF LESS THAN 5 MINUTES MUST NOT ELAPSE BETWEEN STEPS 'A' AND 'C'.

4.8. RE-APPLY ANTI-OXIDIZING COMPOUND AS REQUIRED AND BOLT LUG COMPONENTS.

4.9. SUFFICIENT SPACE SHALL BE PROVIDED AND MAINTAINED ABOUT THE CABLE TRAYS TO ALLOW ADEQUATE ACCESS FOR INSTALLING AND MAINTAINING CABLING.

4.10. ALL CABLES AND CABLE TIES SHALL BE SECURED TO CABLE TRAY RUNGS. UV-RESISTANT NYLON 'TY-WRAPS' ARE ACCEPTABLE FOR HORIZONTAL RUNS AND STAINLESS-STEEL 'TY-WRAPS' SHOULD BE USED IN VERTICAL RUNS. MAXIMUM TIE SPACING SHALL BE 12-INCHES FOR CABLES IN VERTICAL CABLE TRAYS AND 36-INCHES FOR CABLES IN HORIZONTAL. CABLE TIES SHALL BE OF SUFFICIENT TENSILE STRENGTH AND RIGIDITY TO PREVENT "SNAKING" OF CABLES.

4.11. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTIONS OF CABLE TRAYS TO ALL ELECTRICAL EQUIPMENT AS REQUIRED PER CONTRACT.

4.12. MANUFACTURED STRUT-CHANNEL BRACES, BRACKETS, FITTINGS OR POST BASES SHALL BE PROVIDED AND INSTALLED WITH ASSOCIATED HARDWARE AND FASTENERS FOR CABLE TRAY SUPPORTS.

4.13. STRUT-CHANNEL SHALL NOT BE BENT, DRILLED, MITER-CUT OR OTHERWISE MODIFIED TO PRODUCE FITTINGS, BRACES OR BRACKETS FOR CABLE TRAY SUPPORTS.

7 CABLES/ CONDUCTORS/ WIRES

7.1. QUANTITY AND SIZING OF CONDUCTORS, CABLING, WIRING AND RESPECTIVE RACEWAYS DEPICTED ON THE CONTRACT DOCUMENTS ARE SELECTED UPON THE BASIS OF DESIGN, STANDARD ELECTRICAL COMPONENTS AND/OR STANDARD EQUIPMENT WITH DIRECT ROUTED CONNECTIONS.

7.2. CONTRACTOR MAY SUBMIT FOR REVIEW BY ENGINEER AND PRIOR TO INSTALLATION, LOGICAL CONDUCTOR AND RACEWAY GROUPINGS IN COMPLIANCE WITH APPLICABLE CODES, STANDARDS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO OWNER.

7.3. CONTRACTOR SHALL PROVIDE A CIRCUIT IDENTIFICATION LABEL AT EACH END OF EACH POWER, BRANCH, CONTROL AND INSTRUMENTATION CIRCUIT CABLE ASSEMBLY, CONDUCTOR OR WIRE.

7.4. POWER/FEEDER

7.4.1. CONTRACTOR SHALL NOT EXCEED CABLE MANUFACTURER SPECIFICATIONS FOR SIDE-WALL AND TENSION LIMITS WHEN DRAWING POWER CABLES INTO RACEWAYS.

7.4.2. CONTRACTOR SHALL DRAW POWER CABLES AND CONDUCTORS WITHIN RACEWAYS UTILIZING POLYWATER LUBRICANT J OR APPROVED EQUAL.

7.4.3. NO SPLICES TO POWER CONDUCTORS AND/OR CABLING SHALL BE MADE WITHOUT ENGINEER APPROVAL. NO JUNCTIONS SHALL BE MADE BELOW GRADE WITHOUT APPROVAL OF ENGINEER.

7.5. POWER/BRANCH

7.5.1. RACEWAY AND WIRING FOR LIGHTING, RECEPTACLES AND BRANCH CIRCUITS ARE NOT TYPICALLY SHOWN ON THE CONTRACT DRAWINGS BUT SHALL BE PROVIDED AS REQUIRED UNDER THIS CONTRACT

11 HARDWARE AND SUPPORTS

11.1. ALL FASTENERS AND HARDWARE SHALL BE STAINLESS-STEEL 316L.

11.2. STRUT-CHANNEL SHALL NOT BE BENT, DRILLED, CUT OR OTHERWISE MODIFIED TO PRODUCE FITTINGS, BRACES OR BRACKETS FOR CONDUIT AND EQUIPMENT SUPPORTS.

11.3. MANUFACTURED STRUT-CHANNEL BRACES, BRACKETS, FITTINGS OR POST BASES SHALL BE PROVIDED AND INSTALLED WITH ASSOCIATED HARDWARE AND FASTENERS FOR CONDUIT AND EQUIPMENT SUPPORTS.

11.4. CONTRACTOR SHALL PROVIDE ALL SUPPORTS AND FASTENING HARDWARE FOR SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, CONTROL PANELS, ETC., AS REQUIRED IN THE SPECIFICATIONS.

11.5. CONTRACTOR SHALL PROVIDE AND INSTALL CONCRETE EMBEDDED LEVELING CHANNEL SUPPORTS FOR FLOOR MOUNTED EQUIPMENT SPANNING DISTANCES 48" AND GREATER IN LENGTH OR 36" AND GREATER IN DEPTH.

11.6. STRUCTURAL MEMBERS SHALL NOT BE DRILLED, CUT, WELDED TO, OR OTHERWISE MODIFIED WITHOUT PRIOR APPROVAL OF THE ENGINEER OF RECORD.

REV.NO.	DESCRIPTION	DATE

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

GENERAL

ELECTRICAL GENERAL NOTES AND ABBREVIATIONS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E0.00
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EA100_01040-0015.DWG 04/10/2026 12:50:15 SUVATH SENG

1 ANY BLOCKS

MCC — ANY GENERAL PANEL

XX — ANY SQUARE

XX — ANY CIRCLE

FD — ANY FIRE BLOCK

3R CB1 30AF 30AT ELTU — ANY CIRCUIT BREAKER

M 1~ 15HP 460V 21 FLA XXX — ANY MOTOR

A1 LP-100/15 a — ANY LIGHTING

A A1 EM LP-100/15 — ANY EMERGENCY LIGHTING

CCTV — ANY AUXILIARY

MCP L21-30 — ANY OUTLET

M O/C — ANY VALVE

FVNR — ANY CONTACTOR

ANY GROUND BLOCK

4 GENERAL ELECTRICAL SYMBOLS

LIGHTING, INSTRUMENT OR RECEPTACLE PANELBOARD

POWER PANELBOARD

CP — *CONTROL PANEL*

MCC — *MOTOR CONTROL CENTER*

PM — *POWER MONITOR*

A — *AMMETER*

AS — *AMMETER SWITCH*

V — *VOLTMETER*

VS — *VOLTMETER SWITCH*

FS — *FLOAT/FLOW SWITCH*

LS — *LIMIT SWITCH*

PS — *PRESSURE SWITCH*

T — *THERMOSTAT*

JB — *JUNCTION BOX, SIZE PER NEC*

E — *ELECTRICAL EQUIPMENT CONNECTION*

XXX — *ELECTRICAL MANHOLE / HANDHOLE AND THE LETTERS INDICATE THE TYPE OF THE HOLE*

5 GROUNDING / BONDING SYMBOLS

GROUND ROD TEST WELL

GROUND ROD

GROUNDING / BONDING CONNECTION EXOTHERMIC WELD

GROUNDING / BONDING CONNECTION MECHANICAL

GROUND, EARTH

G — *GROUNDING / BONDING CONDUCTOR (REFERENCE CONTRACT DOCUMENTS FOR REQUIREMENTS)*

L L — *LIGHTNING PROTECTION CONDUCTOR (REFERENCE CONTRACT DOCUMENTS FOR REQUIREMENTS)*

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

2 POWER SYMBOLS

CLASS 1/2 DIVISION I/II
CONDUIT SEAL-OFF FITTING

LOCAL CONTROL STATION
WITH THREE OR MORE SELECTOR/PUSH SWITCHES
LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION

LOCAL CONTROL STATION
WITH TWO SELECTOR/PUSH SWITCHES
LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION

LOCAL CONTROL STATION
WITH ONE SELECTOR/PUSH SWITCH
LOWER-RIGHT SYMBOL INDICATES MOUNTING LOCATION

LOCATED AT FIELD DEVICE
LOCATED AT MAIN CONTROL PANEL
LOCATED AT LOCAL CONTROL PANEL
MOUNTED ON DOOR

PSR EO 1200AT 1600AF — DRAW-OUT POWER CIRCUIT BREAKER
WITH PROGRAMMABLE SOLID STATE RELAY
'EO' DENOTES ELECTRICALLY OPERATED

ASR 1200AT 1600AF — FIXED-MOUNT POWER CIRCUIT BREAKER
WITH ADJUSTABLE SOLID STATE RELAY

300AT 300AF TMTU — CIRCUIT BREAKER, GENERIC FIXED-MOUNT
'TMTU' THERMAL-MAGNETIC TRIP UNIT
'ELTU' ELECTRONIC TRIP UNIT

CB1 ELTU — CIRCUIT BREAKER, GENERIC

CB2 — CIRCUIT BREAKER, THERMAL

CB3 — CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTOR

3R 175AT 200AF — CIRCUIT BREAKER, THERMAL ENCLOSED
TOP NUMBER DENOTES TRIP
BOTTOM NUMBER DENOTES FRAME SIZE
UPPER LEFT NUMBER DENOTES NEMA ENCLOSURE RATING

FU1 30A — FU1 30A — FUSE, GENERIC

FU1 30A 600V RK1 — FU1 30A 600V RK1 — FUSE, GENERIC
TOP NUMBER DENOTES TRIP
BOTTOM NUMBER DENOTES VOLTAGE CLASS
MIDDLE NUMBER DENOTES TYPE

L21-30 — *WIRING DEVICE, POWER RECEPTACLE WITH INTEGRAL DISCONNECT / LOAD BREAK NEMA CONFIGURATION SHOWN LOWER RIGHT*

PR1 L21-30 — WIRING DEVICE, POWER RECEPTACLE
NEMA CONFIGURATION SHOWN LOWER RIGHT

SPD LP1 480V 600A 42 CKT 3R — *PANELBOARD*

XF1 — *TRANSFORMER, POWER*
TYPE AND RATINGS AS NOTED ON THE DRAWINGS

XF2 XF2 — *TRANSFORMER, SHIELDED ISOLATION*
TYPE AND RATINGS AS NOTED ON THE DRAWINGS

CT1 100/5 — TRANSFORMER, CURRENT 'CT'
TYPE AND RATINGS AS NOTED ON THE DRAWINGS

PT1 100:1 — TRANSFORMER, POTENTIAL 'PT' OR 'VT'
TYPE AND RATINGS AS NOTED ON THE DRAWINGS

N E L — AUTOMATIC OR MANUAL TRANSFER SWITCH, STAND-ALONE
TYPE AND RATINGS AS NOTED ON THE DRAWINGS

100AT 200AF 4X/SS — SAFETY / DISCONNECT SWITCH
TOP NUMBER DENOTES FUSE SIZE (NF=NON-FUSED)
BOTTOM NUMBER DENOTES FRAME SIZE
RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING

00 21-70AT 7AF FVNR 12 — MOTOR CONTROLLER, STAND-ALONE WITH EXTERNAL DISCONNECT:
UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
UPPER RIGHT NUMBERS DENOTE AMPERE AND FRAME RATINGS
CENTER RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING
LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
FVNR FULL VOLTAGE NON-REVERSE
FVR FULL VOLTAGE REVERSIBLE
TS1W TWO SPEED - SINGLE WINDING
TS2W TWO SPEED - DUAL WINDING
RVSS REDUCED VOLTAGE SOFT STARTER
RVAT REDUCED VOLTAGE AUTO TRANSFORMER
VFD VARIABLE FREQUENCY DRIVE

1 TS2W — MOTOR CONTROLLER, FULL-VOLTAGE MCC UNIT:
UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
FVNR FULL VOLTAGE NON-REVERSE
FVR FULL VOLTAGE REVERSIBLE

1 TS1W — MOTOR CONTROLLER, PART-WINDING MCC UNIT:
UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
TS1W TWO SPEED - SINGLE WINDING
TS2W TWO SPEED - DUAL WINDING

1 RVSS — MOTOR CONTROLLER, REDUCED-VOLTAGE MCC UNIT:
UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
RVSS REDUCED VOLTAGE SOFT STARTER
RVAT REDUCED VOLTAGE AUTO TRANSFORMER

1 — MOTOR CONTROLLER, VARIABLE FREQUENCY DRIVE, MCC UNIT:
UPPER LEFT NUMBER DENOTES NEMA FRAME SIZE
LETTERS WITHIN THE SYMBOL DENOTE THE FOLLOWING:
VFD VARIABLE FREQUENCY DRIVE

3% — LINE OR LOAD REACTOR
CENTER RIGHT NUMBER DENOTES PERCENT IMPEDANCE

dV/dT — MOTOR PROTECTION FILTER

M 1~ 15HP 460V 21 FLA XXX — AC MOTOR
SINGLE OR THREE PHASE AS NOTED

CABLE-TRAY
TYPE AS NOTED ON THE DRAWINGS

WIRE WAY
TYPE AS NOTED ON THE DRAWINGS

ENCLOSURE FAN, 120VAC UON

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

3 AUXILIARY SYSTEMS

XX — AUXILIARY DETECTOR
DC DOOR CONTACT
GD GLASS-BREAK DETECTOR
MS MOTION SENSOR
CR CARD READER

IACP — *CONTROL PANEL*
MIDDLE LETTERS DENOTE THE FOLLOWING:
IACP INTRUSION ALARM CONTROL PANEL
ACP ALARM CONTROL PANEL
FOPP FIBER OPTIC PATCH PANEL

X — *ALARM BEACON*
LETTER INDICATORS COLOR

CCTV — *CLOSED CIRCUIT CAMERA*

PU — *PAGING UNIT*

LS — *PAGING UNIT WITH LOUD SPEAKER*

C — *PAGING UNIT*

SOUND POWERED TELEPHONE

TB — *FLAT CABLE TRANSITION BOX*

TELEPHONE PUNCH DOWN BLOCK

PBX — *PRIVATE BRANCH EXCHANGE*

EPN — *EXTERNAL PORT NODE*

F/C — *FIBER OPTIC CONVERTER*

LE — *LINE EXTENDER*

PCC — *PAGING CONTROL CABINET*

MUX — *MULTIPLEXOR*

XCR — *TRANSCEIVER*

MONITOR

Δ_T — *T1 DEMARCATION*

UPS — *UNINTERRUPTIBLE POWER SUPPLY*

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

REV.NO.	DESCRIPTION	DATE

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

GENERAL

ELECTRICAL SYMBOLS 1 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E0.01 DRAWING NUMBER
A REVISION

STATUS: ISSUED FOR BID

6 CONTROL DIAGRAM AND SCHEMATIC SYMBOLS

PB1 — MOMENTARY PUSH BUTTON NORMALLY OPENED

PB2 — MOMENTARY PUSH BUTTON NORMALLY CLOSED

PB3 — MUSHROOM PUSH BUTTON NORMALLY OPENED

PB4 — MUSHROOM PUSH BUTTON NORMALLY CLOSED

TG1 — TOGGLE SWITCH NORMALLY OPENED

TG2 — TOGGLE SWITCH NORMALLY CLOSED

SS1 — TWO-POSITION SWITCH NORMALLY OPENED

SS2 (O / H / A) — THREE-POSITION BUTTON NORMALLY OPENED

LS1 — LIMIT SWITCH NORMALLY OPENED

LS2 — LIMIT SWITCH NORMALLY CLOSED

LS3 — LIMIT SWITCH HELD OPENED

LS4 — LIMIT SWITCH HELD CLOSED

TS1 — TEMPERATURE SWITCH NORMALLY OPENED

TS2 — TEMPERATURE SWITCH NORMALLY CLOSED

FLS1 — FLOAT SWITCH NORMALLY OPENED

FLS2 — FLOAT SWITCH NORMALLY CLOSED

FS1 — FLOW SWITCH NORMALLY OPENED

FS2 — FLOW SWITCH NORMALLY CLOSED

PS1 — PRESSURE SWITCH NORMALLY OPENED

PS2 — PRESSURE SWITCH NORMALLY CLOSED

TD1 — ON DELAY TIME RELAY NORMALLY OPENED TIMED CLOSED NOTC

TD2 — ON DELAY TIME RELAY NORMALLY CLOSED TIMED OPENED NCTO

TD3 — OFF DELAY TIME RELAY NORMALLY OPENED TIMED OPENED NOTO

TD4 — OFF DELAY TIME RELAY NORMALLY CLOSED TIMED CLOSED NCTC

LT1 (B) — INDICATION LIGHT
W - WHITE G - GREEN A - AMBER
R - RED B - BLUE C - CLEAR

LT2 (R) — INDICATION LIGHT, PUSH-TO-TEST
W - WHITE G - GREEN A - AMBER
R - RED B - BLUE C - CLEAR

CR1 — CONTROL RELAY, GENERIC DESIGNATIONS:
CR CONTROL RELAY
MX AUXILIARY RELAY
TR TIMING RELAY
AR ALARM RELAY
RR READY RELAY

LR1 (L) — CONTROL RELAY, LATCHING

CR1 — CONTACT, NORMALLY OPENED TOP ID TAG DENOTES PARENT RELAY

LR1 — CONTACT, NORMALLY CLOSED TOP ID TAG DENOTES PARENT RELAY

SOL1 — SOLENOID, GENERIC

R1 — HEATING ELEMENT, GENERIC

ETM — ELAPSED TIME METER, ELECTRONIC

AH2 (A/V) — HORN, ALARM
A/V INDICATES AUDIO AND VISUAL ANNUNCIATION

XF3 — TRANSFORMER, CONTROL POWER RATINGS AS NOTED ON THE DRAWINGS

BAT1 — BATTERY OR DC POWER SOURCE

M / O/C — *MOTOR ACTUATED VALVE*
M MODULATING
O/C OPEN/CLOSE

S — *SOLENOID VALVE*
O/C OPEN/CLOSE

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

7 LIGHTING AND RECEPTACLE SYMBOLS

A1 / a — LP-100/15
LIGHT FIXTURE, VARIOUS TYPES
UPPERCASE CHARACTERS "A1" DENOTES TYPE,
REFER TO LIGHTING SCHEDULE OR DRAWING NOTES
LOWERCASE LETTER "a" DENOTES CONTROL SWITCH
DUAL SWITCHING INDICATED BY PAIRS OF LOWERCASE LETTERS "a,b"
NUMBER "LP-100/15" DENOTES LIGHTING PANEL AND CIRCUIT NUMBER
"NL" DENOTES NIGHT LIGHT, CIRCUIT AHEAD OF CONTROL SWITCHES.

A1 — LP-100/15 A
LIGHT FIXTURE, VARIOUS TYPES
EMERGENCY / EGRESS BATTERY BACK-UP POWER

A1 a — LP-100/15 LP-100/15
PENDANT OR CEILING MOUNTED LIGHTING FIXTURE

A / A1 — LP-100/15
WALL MOUNTED LIGHTING FIXTURE

A A1 — LP-100/15
POLE OR STANCHION MOUNTED LIGHTING FIXTURE

A A1 — LP-100/15
TWO (2) POLE OR STANCHION MOUNTED LIGHTING FIXTURE

GF A A1 — LP-100/15
POLE OR STANCHION MOUNTED LIGHTING FIXTURE WITH RECEPTACLE

A A1 EM — LP-100/15
TWO (2) LAMP EMERGENCY / EGRESS LIGHTING FIXTURE
LETTERS DENOTE TYPE

EXIT SIGN WALL MOUNTED (SINGLE FACE WITH INDICATING ARROWS) WITH BATTERY PACK ARROW INDICATES DIRECTION OF EXIT DOOR

EXIT SIGN PENDANT MOUNTED (DOUBLE FACE WITH INDICATING ARROWS) WITH BATTERY PACK ARROWS INDICATE DIRECTION OF EXIT DOOR

D / 150 — 10'-0" AFF
FIXTURE DESIGNATION SYMBOL. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION AND TYPE. ALL FIXTURES SHOWN IN A ROOM WITH THIS SYMBOL SHALL BE OF TYPE INDICATED BY LETTER; NUMBER IN SYMBOL INDICATES LAMP WATTAGE AND NUMBER OF LAMPS WHERE MORE THAN ONE (UNLESS OTHERWISE NOTED). NUMBER BELOW SYMBOL INDICATES MOUNTING HEIGHT ABOVE FINISHED FLOOR OR AS NOTED.

a S 2
WIRING DEVICE
LIGHTING CONTROL SWITCHES:
UPPER-LEFT CHARACTER "a" DENOTES SWITCH DESIGNATION.
LOWER-RIGHT CHARACTER "4" DENOTES SWITCH CONTROL
2 TWO POLE
3 THREE-WAY SWITCH CONTROL
4 FOUR-WAY SWITCH CONTROL
D DIMMER CONTROL
OS OCCUPANCY SENSOR
M MOTOR RATED SWITCH
T 24V DC MOMENTARY CONTACT SWITCH
V VARIABLE SPEED FAN SWITCH

a b SS 3D

a b c SSS 2 3 4

L21-30
WIRING DEVICE, POWER RECEPTACLE
WITH INTEGRAL DISCONNECT / LOAD BREAK
NEMA CONFIGURATION SHOWN LOWER RIGHT

PR1 L21-30
WIRING DEVICE, POWER RECEPTACLE
NEMA CONFIGURATION SHOWN LOWER RIGHT

GF
WIRING DEVICE, SINGLE DUPLEX RECEPTACLE, TYPICAL
LOWER RIGHT CHARACTERS DENOTE THE FOLLOWING:
GF GROUND FAULT CIRCUIT INTERRUPTER
IG ISOLATED GROUND
SS SURGE PROTECTIVE
WP WEATHER-PROOF
GF/WP GROUND FAULT CIRCUIT INTERRUPTER / WEATHERPROOF

GF/WP
WIRING DEVICE, DUPLEX RECEPTACLE
GROUND FAULT CIRCUIT INTERRUPTER / WEATHERPROOF
NEMA 5-20 125V 20A UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, DUPLEX RECEPTACLE
SPLIT-WIRED / SWITCHED
NEMA 5-20 125V 20A UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, QUADPLEX RECEPTACLE
NEMA 5-20 125V 20A UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, QUADPLEX RECEPTACLE
FLOOR BOX MOUNTED
NEMA 5-20 125V 20A UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, HEAT-TRACE OR SPECIAL PURPOSE RECEPTACLE
REFERENCE DRAWINGS FOR ADDITIONAL DETAILS

WIRING DEVICE, TELEPHONE
RJ-11 UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, TELEPHONE AND DATA
RJ-11 AND RJ-45 UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, DATA
RJ-45 UNLESS OTHERWISE NOTED ON DRAWINGS

WIRING DEVICE, TELEPHONE AND DATA
FLOOR BOX MOUNTED
RJ-11 AND RJ-45 UNLESS OTHERWISE NOTED ON DRAWINGS

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

8 FIRE ALARM SYSTEM

A/V 110 — *AUDIO / VISUAL ALARM INDICATOR*
HORN / STROBE NUMBER INDICATES STROBE CANDELA RATING
OTHER THAN 15

H — *HORN*

F — *PULL STATION*

FACP — *CONTROL PANEL*
MIDDLE LETTERS DENOTE THE FOLLOWING:
FACP FIRE ALARM CONTROL PANEL

B — *BELL*

FAAS — *FIRE ALARM ANNUNCIATOR STATION*

FS — *FLOW SWITCH*

TS — *VALVE TAMPER SWITCH*

END OF LINE RESISTOR

FD — *FLAME DETECTOR*

SD D — *SMOKE DETECTOR, MULTISENSOR*
D - DUCT MOUNTED
H - HIGH TEMPERATURE / THERMAL
I - IONIZATION
P - PHOTOELECTRIC

CT — *SIGNAL INPUT MODULE*

CC1 — *SIGNAL MODULE*

9 RACEWAY/LINE WEIGHTS

E — *NEW ELECTRICAL RACEWAY(S)*
E — EXISTING ELECTRICAL RACEWAY(S)
T — *NEW TELEPHONE LINE(S)*
T — EXISTING TELEPHONE LINE(S)
OHE — *OVERHEAD ELECTRICAL UTILITY*
OHT — *OVERHEAD TELEPHONE UTILITY*
UGE — *UNDERGROUND ELECTRICAL UTILITY*
UGT — *UNDERGROUND TELEPHONE UTILITY*
G — *NEW GROUNDING / BONDING*
G — EXISTING GROUNDING / BONDING
L — *NEW LIGHTNING PROTECTION CONDUCTOR*

CONCEALED RACEWAY(S) IN FLOOR SLAB, UNDERGROUND, ETC.
EXISTING RACEWAY(S) AND/OR CABLES
RACEWAY TURNED DOWN
RACEWAY TURNED UP
RACEWAY TERMINATED / CAPPED OFF
RACEWAY REMOVED / ABANDONED

042000 — *RACEWAY AND/OR CABLE ID NUMBER*

CT110 — *RACEWAY SYSTEM CALL-OUTS:*
CT - CABLE TRAY
BD - BUS DUCT
DB - DUCTBANK
EC - EXPOSED CONDUIT
WW - WIRE WAY/TROUGH

LP-3 — *RACEWAY HOMERUN TO EQUIPMENT ID TAG AS SHOWN. LINE TYPE DESIGNATES CONCEALED, EXPOSED, ETC. NUMBERS/TEXT DESIGNATE HOMERUN EQUIPMENT (I.E. PANEL BOARD CIRCUIT NUMBER).*

TO PLC-1
9#14 #12G 0.75"C
CONDUCTOR/CABLE CALL-OUT WITHIN RACEWAY

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT.
ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

REV NO.	DESCRIPTION	DATE

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

GENERAL

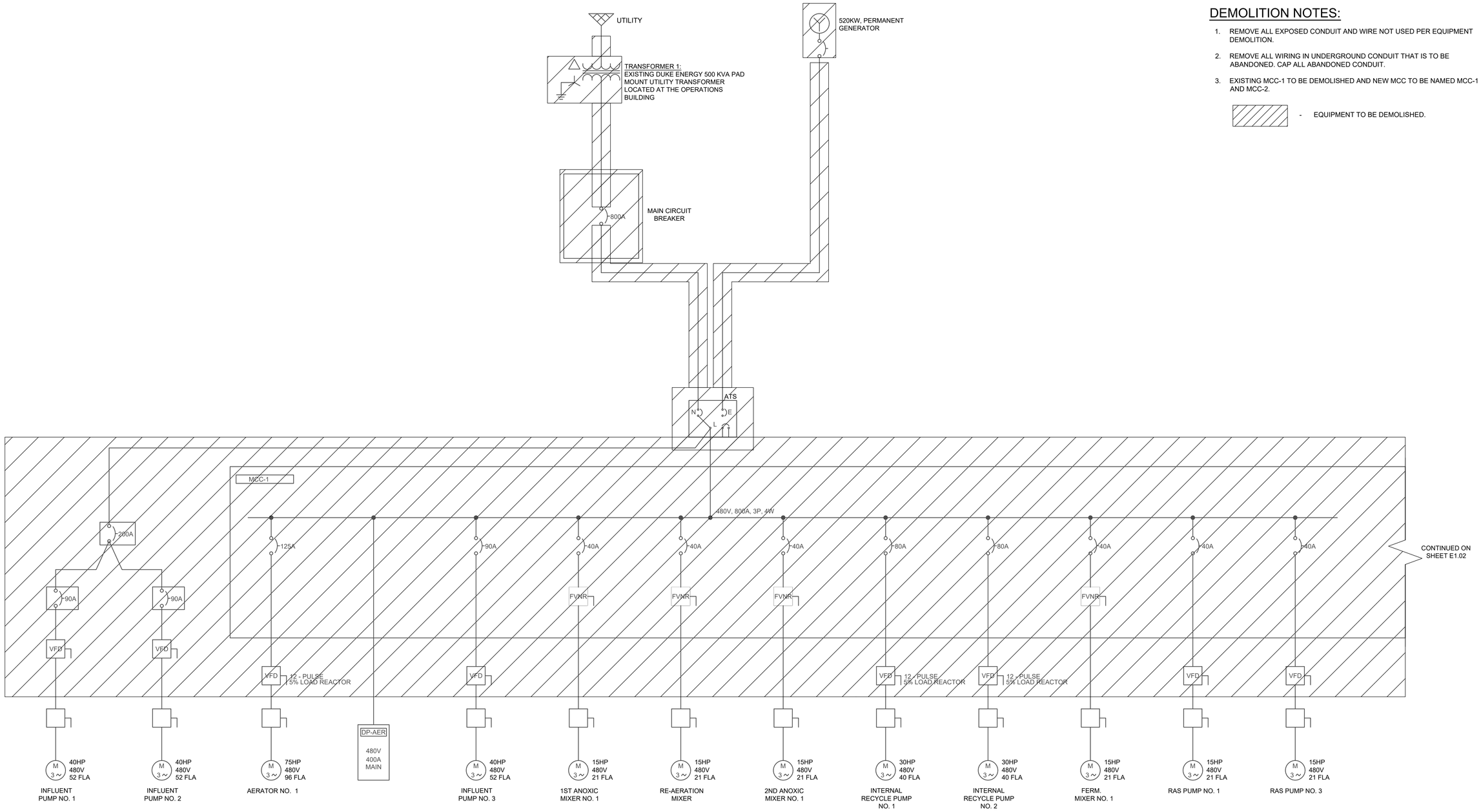
ELECTRICAL SYMBOLS 2 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E0.02 — DRAWING NUMBER
A — REVISION

STATUS: ISSUED FOR BID



DEMOLITION NOTES:

1. REMOVE ALL EXPOSED CONDUIT AND WIRE NOT USED PER EQUIPMENT DEMOLITION.
2. REMOVE ALL WIRING IN UNDERGROUND CONDUIT THAT IS TO BE ABANDONED. CAP ALL ABANDONED CONDUIT.
3. EXISTING MCC-1 TO BE DEMOLISHED AND NEW MCC TO BE NAMED MCC-1 AND MCC-2.

- EQUIPMENT TO BE DEMOLISHED.

REV NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM MCC-1 DEMO 1 OF 3

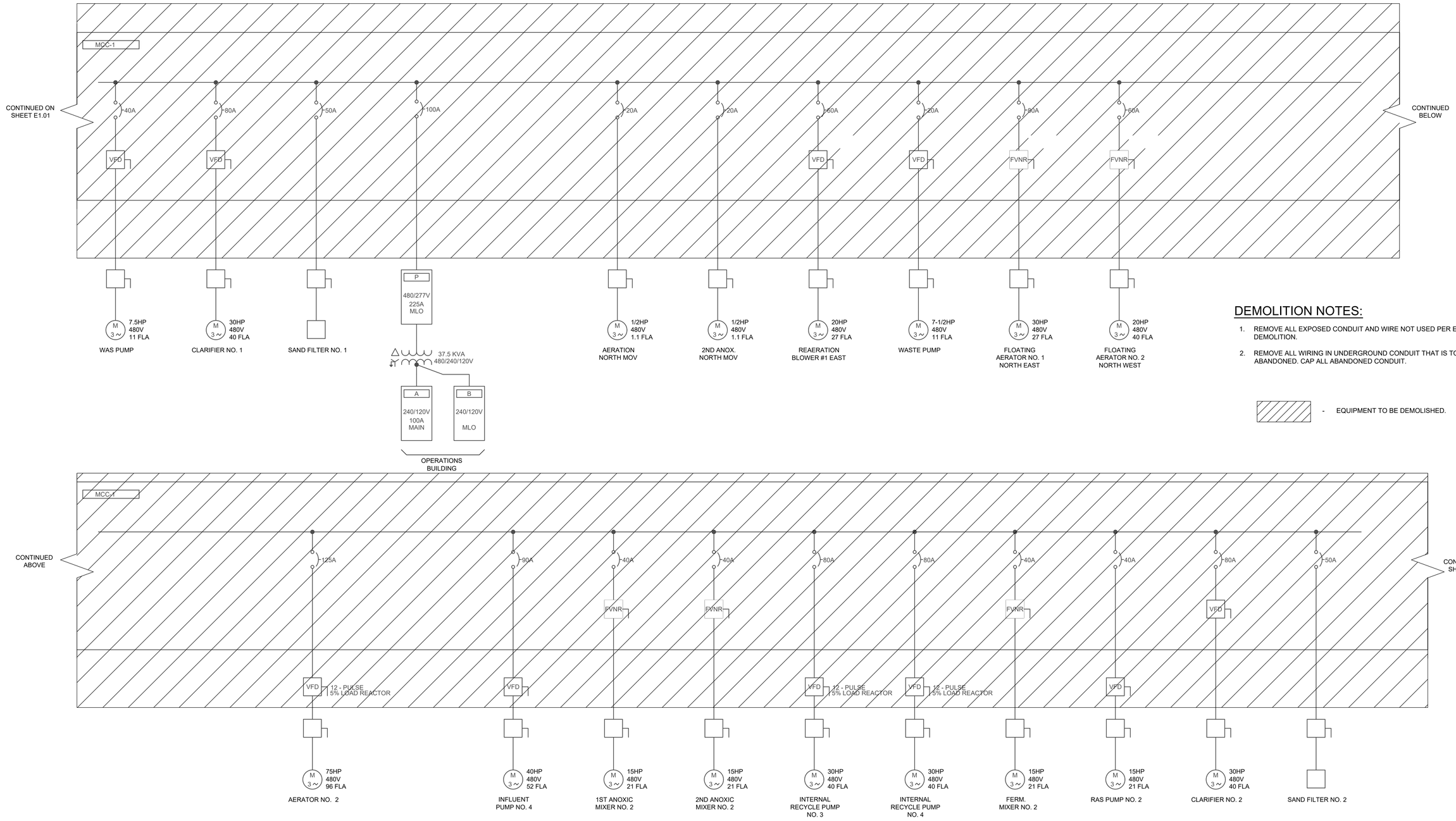
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.01
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID



DEMOLITION NOTES:

1. REMOVE ALL EXPOSED CONDUIT AND WIRE NOT USED PER EQUIPMENT DEMOLITION.
2. REMOVE ALL WIRING IN UNDERGROUND CONDUIT THAT IS TO BE ABANDONED. CAP ALL ABANDONED CONDUIT.

▨ - EQUIPMENT TO BE DEMOLISHED.

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM MCC-1 DEMO 2 OF 3

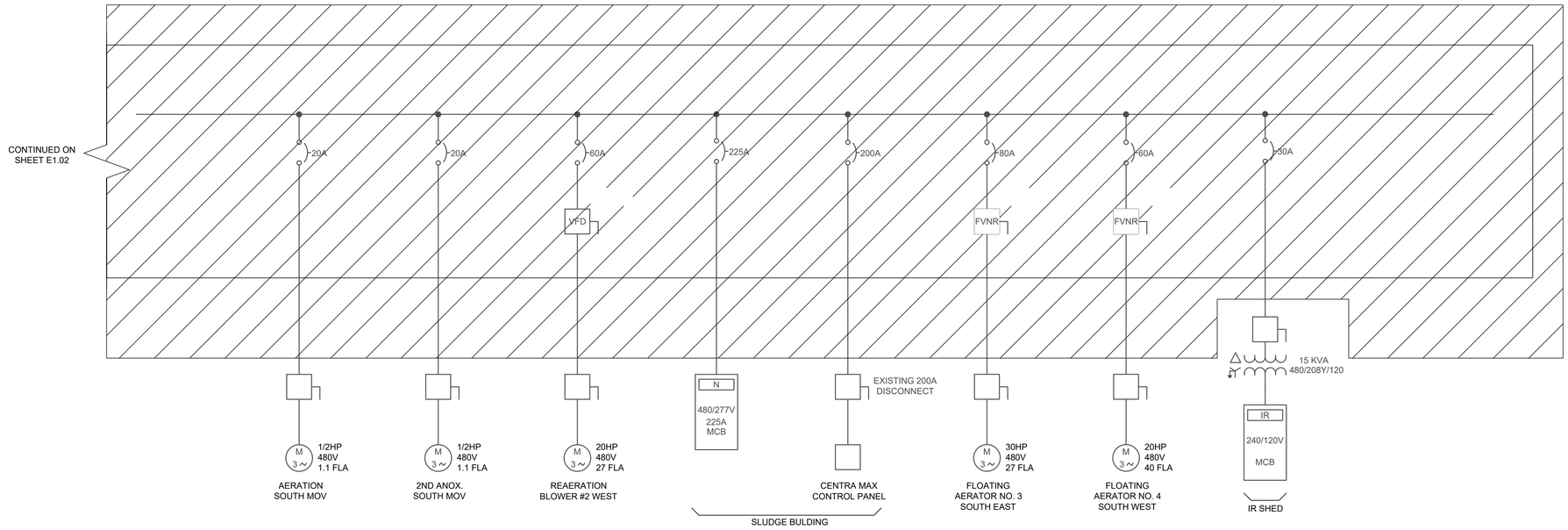
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.02
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID



DEMOLITION NOTES:

1. REMOVE ALL EXPOSED CONDUIT AND WIRE NOT USED PER EQUIPMENT DEMOLITION.
2. REMOVE ALL WIRING IN UNDERGROUND CONDUIT THAT IS TO BE ABANDONED. CAP ALL ABANDONED CONDUIT.

- EQUIPMENT TO BE DEMOLISHED.

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM MCC-1 DEMO 3 OF 3

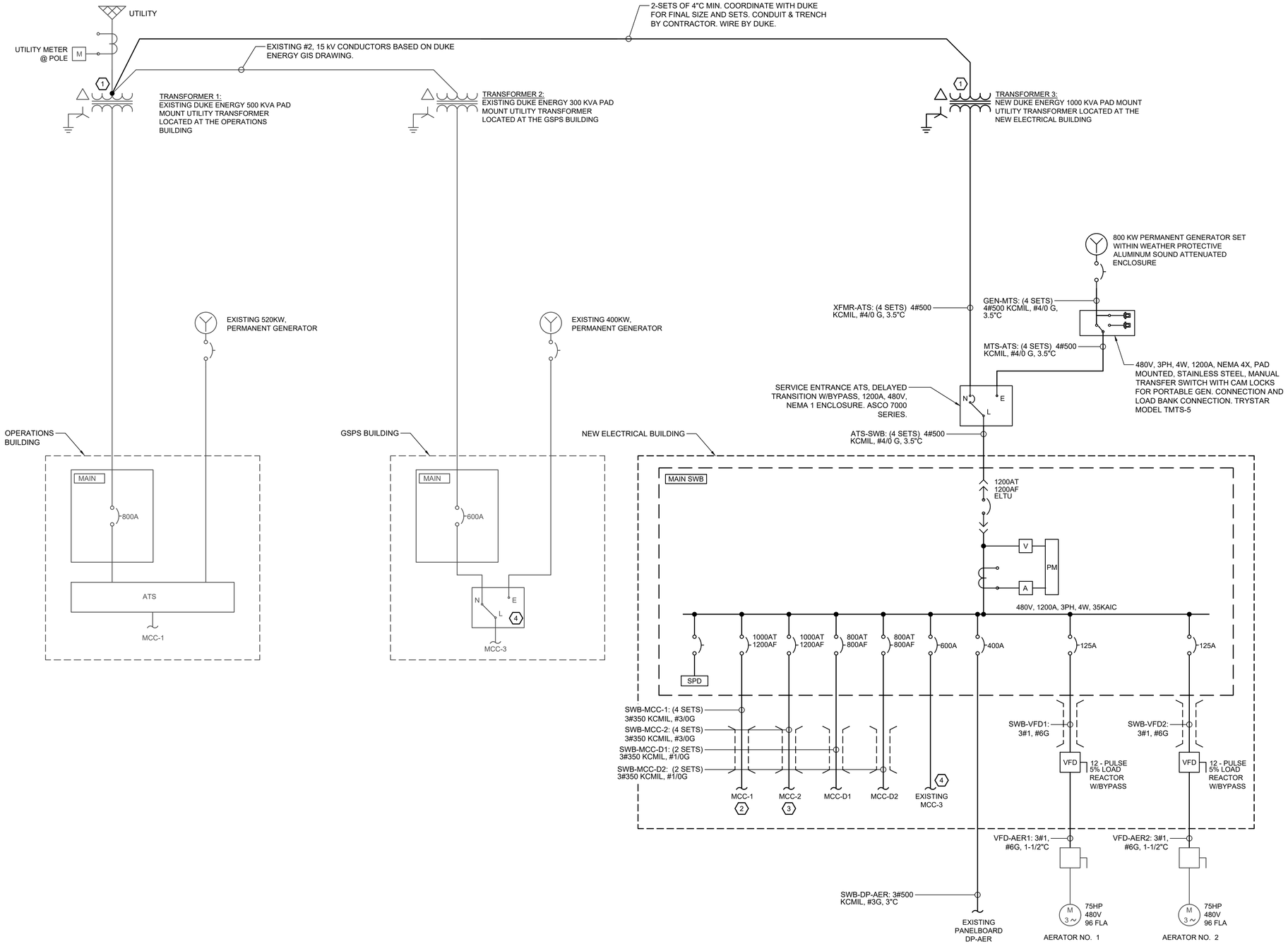
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.03
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\ES100_01040-0015 SLD.DWG 04/10/2026 12:50:17 SUVATH SENG



SEQUENCE OF CONSTRUCTION KEYNOTES:

1. PHASE 1:
INSTALL ADDITIONAL LUGS ON THE PRIMARY SIDE OF THE EXISTING 500 KVA PAD MOUNTED TRANSFORMER (XFMR 1) TO FEED NEW TRANSFORMER (XFMR 3) LOCATED AT THE NEW ELECTRICAL BUILDING. THIS CONNECTION IS SIMILAR TO THE EXISTING FEED BETWEEN XFMR 1 AND XFMR 2.

2. PHASE 2:
RE-POWER ALL EXISTING TRAIN 1 LOADS ON MCC-1. MCC-1 WILL POWER MAJORITY OF LOADS ON TRAIN 1 ALONG WITH OTHER LOADS NECESSARY TO KEEP THE PLANT FUNCTIONAL. COORDINATE WITH CITY FOR MAXIMUM DOWN TIME FOR EACH LOAD PERTINENT TO PLANT PROCESS.

3. PHASE 3:
RE-POWER ALL EXISTING TRAIN 2 LOADS ON MCC-2. MCC-2 WILL POWER MAJORITY OF LOADS ON TRAIN 1 ALONG WITH OTHER LOADS NECESSARY TO KEEP THE PLANT FUNCTIONAL. COORDINATE WITH CITY FOR MAXIMUM DOWN TIME FOR EACH LOAD PERTINENT TO PLANT PROCESS.

4. PHASE 4:
RE-CONFIGURE EXISTING ATS FOR MANUAL TRANSFER BETWEEN NORMAL POWER SOURCE AND PORTABLE GENERATOR SOURCE VIA NEW PORTABLE GENERATOR DOCKING STATION.

5. PHASE 5:
AFTER RECONNECTING ALL EXISTING LOADS TO THE NEW SWITCHBOARD AND MCC, XFMR 1 WILL BE REMOVED. COORDINATE WITH DUKE TO SPLICE THE PRIMARY CONDUCTORS AT THIS LOCATION. COORDINATE WITH THE CITY REGARDING THE MAXIMUM ALLOWABLE DOWNTIME. DURING THE UTILITY OUTAGE, THE PLANT CAN CONTINUE TO OPERATE USING GENERATOR POWER.

6. PHASE 6:
REMOVE BOTH GENERATORS AND ALL ELECTRICAL EQUIPMENT AS INDICATED ON THE DEMOLITION PLAN SHEETS E1 AND E2. COORDINATE WITH THE CITY TO DETERMINE THE PROPER DISPOSAL LOCATION FOR ALL REMOVED EQUIPMENT.

PHASE 1, 2 AND 3 PROPOSED MAIN SERVICE AND SWITCHBOARD SINGLE LINE DIAGRAM

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

MCKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGE LINE DIAGRAM SEQUENCE OF CONTRUCTION PHASE 1-3

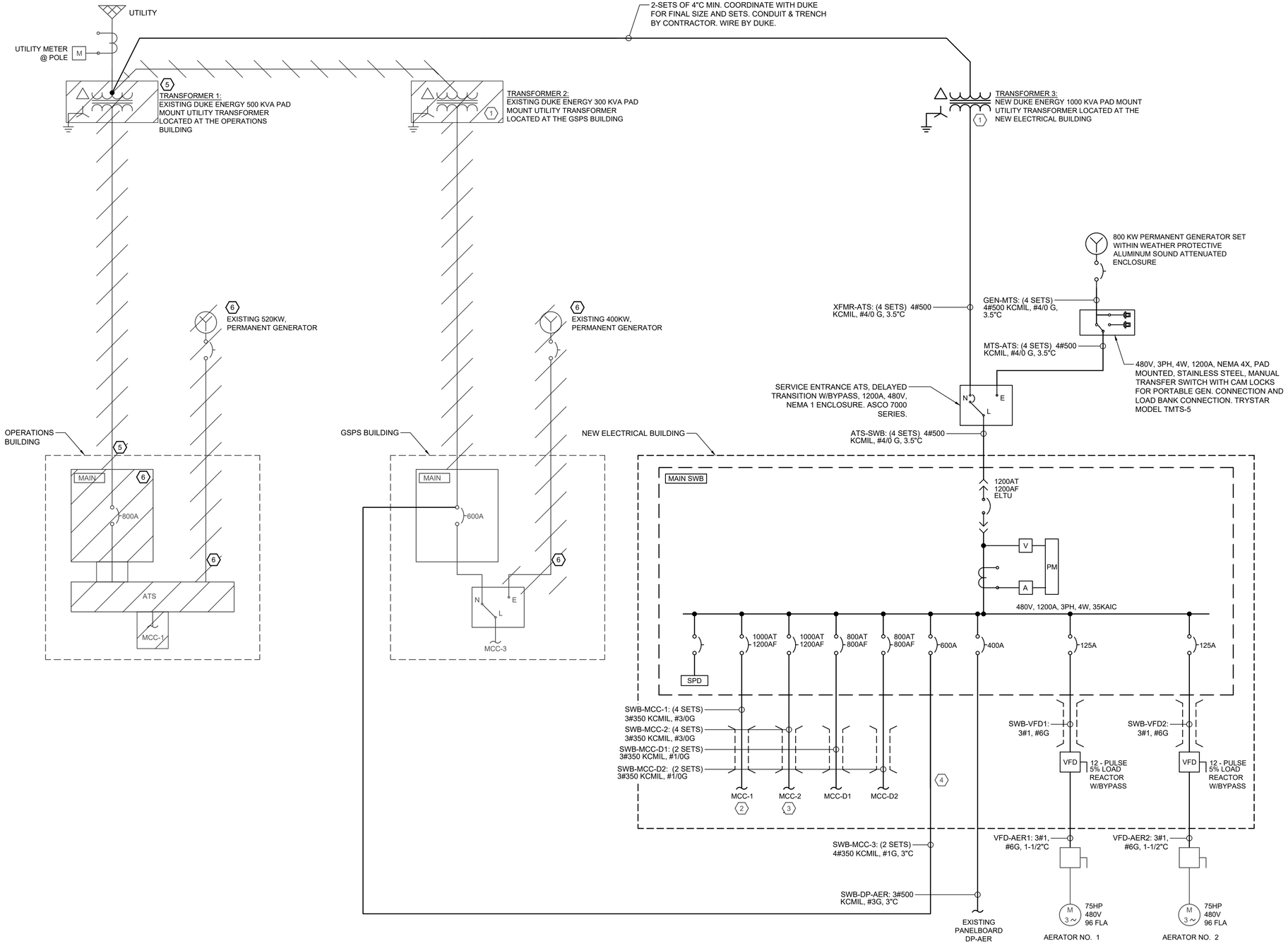
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.04
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID



SEQUENCE OF CONSTRUCTION KEYNOTES:

1. PHASE 1:
INSTALL ADDITIONAL LUGS ON THE PRIMARY SIDE OF THE EXISTING 500 KVA PAD MOUNTED TRANSFORMER (XFMR 1) TO FEED NEW TRANSFORMER (XFMR 3) LOCATED AT THE NEW ELECTRICAL BUILDING. THIS CONNECTION IS SIMILAR TO THE EXISTING FEED BETWEEN XFMR 1 AND XFMR 2.

2. PHASE 2:
RE-POWER ALL EXISTING TRAIN 1 LOADS ON MCC-1. MCC-1 WILL POWER MAJORITY OF LOADS ON TRAIN 1 ALONG WITH OTHER LOADS NECESSARY TO KEEP THE PLANT FUNCTIONAL. COORDINATE WITH CITY FOR MAXIMUM DOWN TIME FOR EACH LOAD PERTINENT TO PLANT PROCESS.

3. PHASE 3:
RE-POWER ALL EXISTING TRAIN 2 LOADS ON MCC-2. MCC-2 WILL POWER MAJORITY OF LOADS ON TRAIN 1 ALONG WITH OTHER LOADS NECESSARY TO KEEP THE PLANT FUNCTIONAL. COORDINATE WITH CITY FOR MAXIMUM DOWN TIME FOR EACH LOAD PERTINENT TO PLANT PROCESS.

4. PHASE 4:
RE-CONFIGURE EXISTING ATS FOR MANUAL TRANSFER BETWEEN NORMAL POWER SOURCE AND PORTABLE GENERATOR SOURCE VIA NEW PORTABLE GENERATOR DOCKING STATION.

5. PHASE 5:
AFTER RECONNECTING ALL EXISTING LOADS TO THE NEW SWITCHBOARD AND MCC, XFMR 1 WILL BE REMOVED. COORDINATE WITH DUKE TO SPLICE THE PRIMARY CONDUCTORS AT THIS LOCATION. COORDINATE WITH THE CITY REGARDING THE MAXIMUM ALLOWABLE DOWNTIME. DURING THE UTILITY OUTAGE, THE PLANT CAN CONTINUE TO OPERATE USING GENERATOR POWER.

6. PHASE 6:
REMOVE BOTH GENERATORS AND ALL ELECTRICAL EQUIPMENT AS INDICATED ON THE DEMOLITION PLAN SHEETS E1 AND E2. COORDINATE WITH THE CITY TO DETERMINE THE PROPER DISPOSAL LOCATION FOR ALL REMOVED EQUIPMENT.

- EQUIPMENT TO BE DEMOLISHED.

PHASE 4 AND 5 PROPOSED MAIN SERVICE AND SWITCHBOARD SINGLE LINE DIAGRAM

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGE LINE DIAGRAM SEQUENCE OF CONTRUCTION PHASE 4-5

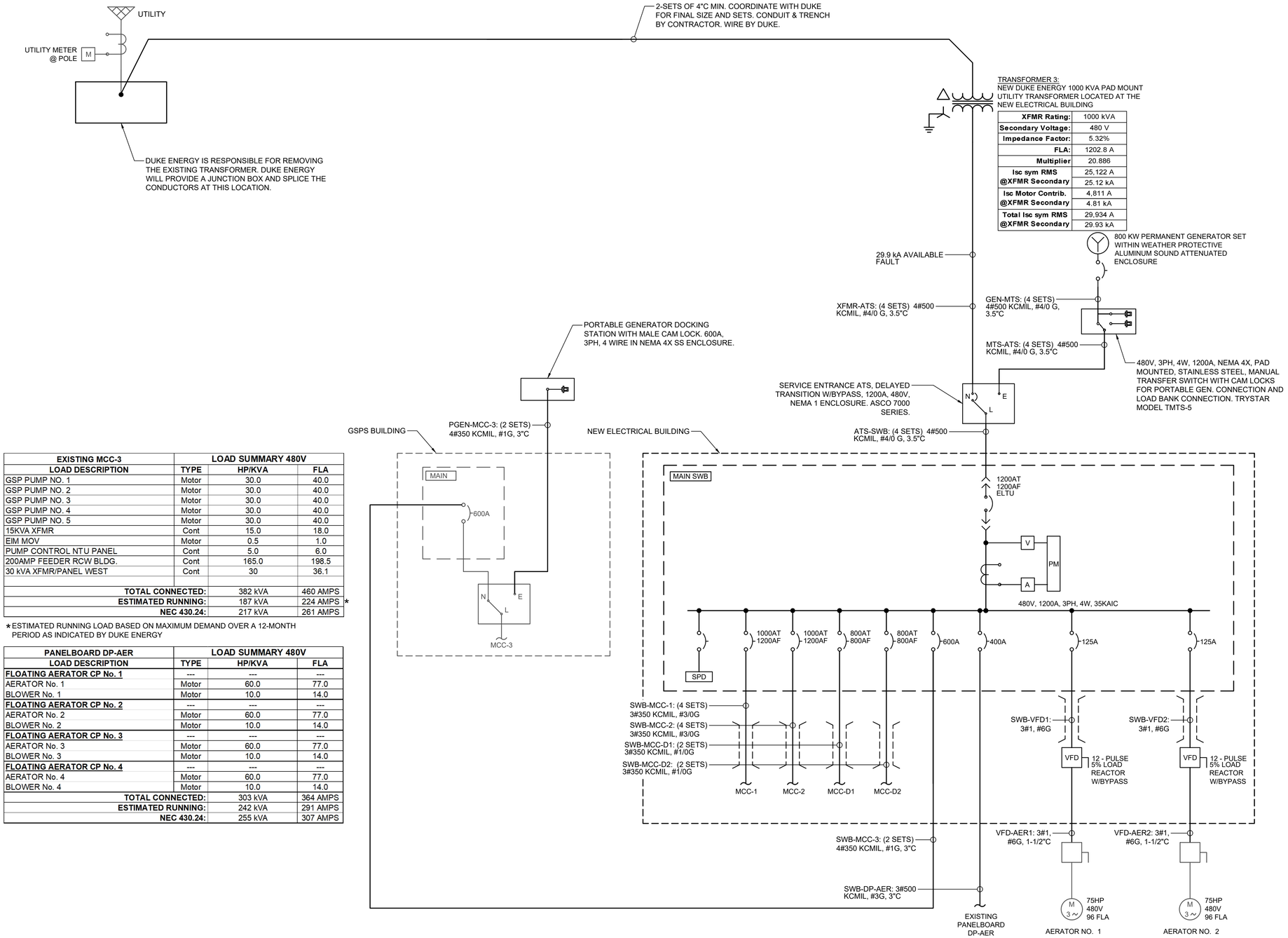
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.05
DRAWING NUMBER

A
REVISION

STATUS: **ISSUED FOR BID**



FINAL MAIN SERVICE AND SWITCHBOARD SINGLE LINE DIAGRAM

EXISTING MCC-3	LOAD SUMMARY 480V		
LOAD DESCRIPTION	TYPE	HP/KVA	FLA
GSP PUMP NO. 1	Motor	30.0	40.0
GSP PUMP NO. 2	Motor	30.0	40.0
GSP PUMP NO. 3	Motor	30.0	40.0
GSP PUMP NO. 4	Motor	30.0	40.0
GSP PUMP NO. 5	Motor	30.0	40.0
15KVA XFMR	Cont	15.0	18.0
EIM MOV	Motor	0.5	1.0
PUMP CONTROL NTU PANEL	Cont	5.0	6.0
200AMP FEEDER RCW BLDG.	Cont	165.0	198.5
30 kVA XFMR/PANEL WEST	Cont	30	36.1
TOTAL CONNECTED:		382 kVA	460 AMPS
ESTIMATED RUNNING:		187 kVA	224 AMPS *
NEC 430.24:		217 kVA	261 AMPS

*ESTIMATED RUNNING LOAD BASED ON MAXIMUM DEMAND OVER A 12-MONTH PERIOD AS INDICATED BY DUKE ENERGY

PANELBOARD DP-AER	LOAD SUMMARY 480V		
LOAD DESCRIPTION	TYPE	HP/KVA	FLA
FLOATING AERATOR CP No. 1	---	---	---
AERATOR No. 1	Motor	60.0	77.0
BLOWER No. 1	Motor	10.0	14.0
FLOATING AERATOR CP No. 2	---	---	---
AERATOR No. 2	Motor	60.0	77.0
BLOWER No. 2	Motor	10.0	14.0
FLOATING AERATOR CP No. 3	---	---	---
AERATOR No. 3	Motor	60.0	77.0
BLOWER No. 3	Motor	10.0	14.0
FLOATING AERATOR CP No. 4	---	---	---
AERATOR No. 4	Motor	60.0	77.0
BLOWER No. 4	Motor	10.0	14.0
TOTAL CONNECTED:		303 kVA	364 AMPS
ESTIMATED RUNNING:		242 kVA	291 AMPS
NEC 430.24:		255 kVA	307 AMPS

MAINSWITCHBOARD	LOAD SUMMARY 480V		
LOAD DESCRIPTION	TYPE	HP/KVA	FLA
MAIN SWITCHBOARD			
AERATOR No. 1	Motor	75.0	96.0
AERATOR No. 2	Motor	75.0	96.0
MCC-1		356 kVA	428.7
MCC-2		652 kVA	784.1
EXISTING MCC-3		382 kVA	459.6
PANELBOARD DP-AER		303 kVA	364.0
TOTAL CONNECTED:		1853 kVA	2228 AMPS
ESTIMATED RUNNING:		952 kVA	1145 AMPS *
NEC 430.24:		1050 kVA	1263 AMPS
NEC 230.42:		1190 kVA	1431 AMPS

*ESTIMATED RUNNING LOAD BASED ON MAXIMUM DEMAND OVER A 12-MONTH PERIOD AS INDICATED BY DUKE ENERGY

MCC-1	LOAD SUMMARY 480V		
LOAD DESCRIPTION	TYPE	HP/KVA	FLA
INFLUENT PUMP NO.1 (OUT OF SERVICE)	Motor	0.0	0.0
INFLUENT PUMP NO.3	Motor	50.0	65.0
1ST ANOXIC MIXER NO.1	Motor	15.0	21.0
RE-AERATION MIXER	Motor	15.0	21.0
2ND ANOXIC MIXER NO.1	Motor	15.0	21.0
INTER. RECYCLE PUMP NO. 2	Motor	40.0	52.0
INTER. RECYCLE PUMP NO. 3	Motor	40.0	52.0
FERM. MIXER NO.1	Motor	15.0	21.0
RAS PUMP NO.1	Motor	15.0	21.0
RAS PUMP NO.3	Motor	15.0	21.0
CLARIFIER NO.1	Motor	1.0	1.8
SAND FILTER NO.1	Cont	10.0	12.0
37.5 KVA XFMR OPS. BLDG	Cont	37.5	45.1
45 KVA XFMR ELEC. BLDG	Cont	45.0	54.1
AERATION NORTH MOV	Motor	0.5	1.0
2ND ANOXIC MOV	Motor	0.5	1.0
RE-AERATION BLOWER NO. 1 EAST	Motor	5.0	7.6
WASTE PUMP	Motor	7.5	11.0
~~FLOATING AERATOR NO.1 NORTH EAST~~	~~Motor~~	~~0.0~~	~~0.0~~
~~FLOATING AERATOR NO.2 NORTH WEST~~	~~Motor~~	~~0.0~~	~~0.0~~
TOTAL CONNECTED:		356 kVA	429 AMPS
ESTIMATED RUNNING:		162 kVA	194 AMPS *
NEC 430.24:		178 kVA	214 AMPS

ESTIMATED RUNNING LOAD BASED ON MAXIMUM DEMAND OVER A 12-MONTH PERIOD AS INDICATED BY DUKE ENERGY

~~////~~ = LOAD TO BE REMOVED

MCC-2	LOAD SUMMARY 480V		
LOAD DESCRIPTION	TYPE	HP/KVA	FLA
INFLUENT PUMP NO. 2	Motor	50.0	65.0
INFLUENT PUMP NO. 4	Motor	50.0	65.0
1ST ANOXIC MIXER NO.2	Motor	15.0	21.0
2ND ANOXIC MIXER NO. 2	Motor	15.0	21.0
INTER. RECYCLE PUMP NO. 3	Motor	40.0	52.0
INTER. RECYCLE PUMP NO. 4	Motor	40.0	52.0
FERM. MIXER NO.2	Motor	15.0	21.0
RAS PUMP NO.2	Motor	15.0	21.0
CLARIFIER NO.2	Motor	1.0	1.8
SAND FILTER NO.2	Cont	10.0	12.0
AERATION SOUTH MOV	Motor	0.5	1.0
2ND ANOXIC SOUTH MOV	Motor	0.5	1.0
RE-ARATION BLOWER NO. 2 WEST	Motor	5.0	7.6
480/277V PANEL N	Cont	187.0	224.9
CENTRA MAX CP DEWATERING BUILDING	Cont	166.0	199.7
FLOATING AERATOR NO.3 SOUTH EAST	Motor	0.0	0.0
~~FLOATING AERATOR NO.4 SOUTH WEST~~	~~Motor~~	~~0.0~~	~~0.0~~
~~IR SHED 15KVA XFMR~~	~~Cont~~	~~15.0~~	~~18.0~~
TOTAL CONNECTED:		652 kVA	784 AMPS
ESTIMATED RUNNING:		282 kVA	339 AMPS *
NEC 430.24:		492 kVA	591 AMPS

*ESTIMATED RUNNING LOAD BASED ON MAXIMUM DEMAND OVER A 12-MONTH PERIOD AS INDICATED BY DUKE ENERGY

~~////~~ = LOAD TO BE REMOVED

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

FINAL SINGE LINE DIAGRAM MAIN SERVICE AND SWITCHBOARD

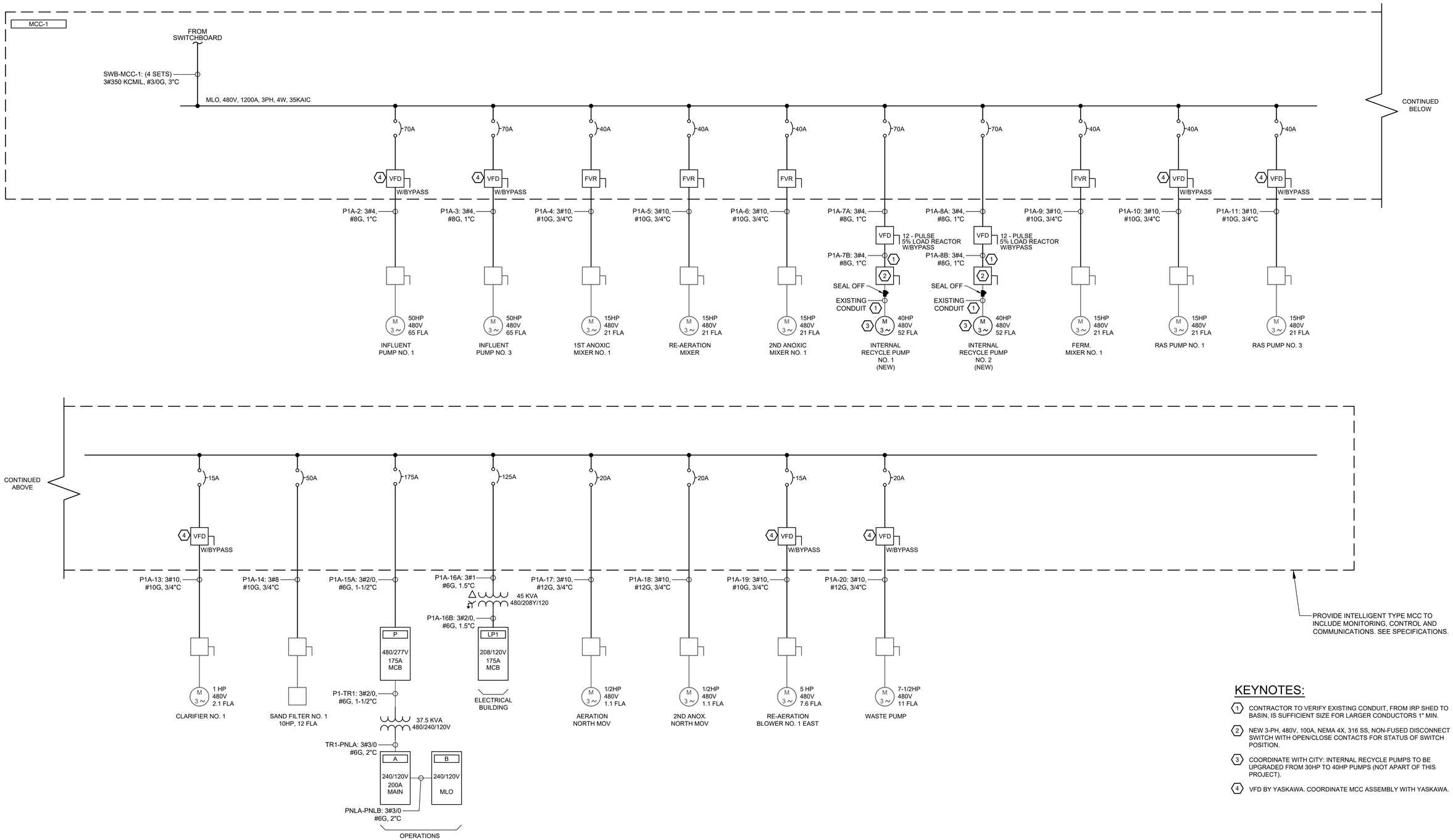
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.06
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID



KEYNOTES:

1. CONTRACTOR TO VERIFY EXISTING CONDUIT, FROM IRP SHED TO BASIN, IS SUFFICIENT SIZE FOR LARGER CONDUCTORS 1" MIN.
2. NEW 3-PH, 480V, 100A, NEMA 4X, 316 SS, NON-FUSED DISCONNECT SWITCH WITH OPEN/CLOSE CONTACTS FOR STATUS OF SWITCH POSITION.
3. COORDINATE WITH CITY: INTERNAL RECYCLE PUMPS TO BE UPGRADED FROM 30HP TO 40HP PUMPS (NOT APART OF THIS PROJECT).
4. VFD BY YASKAWA. COORDINATE MCC ASSEMBLY WITH YASKAWA.

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

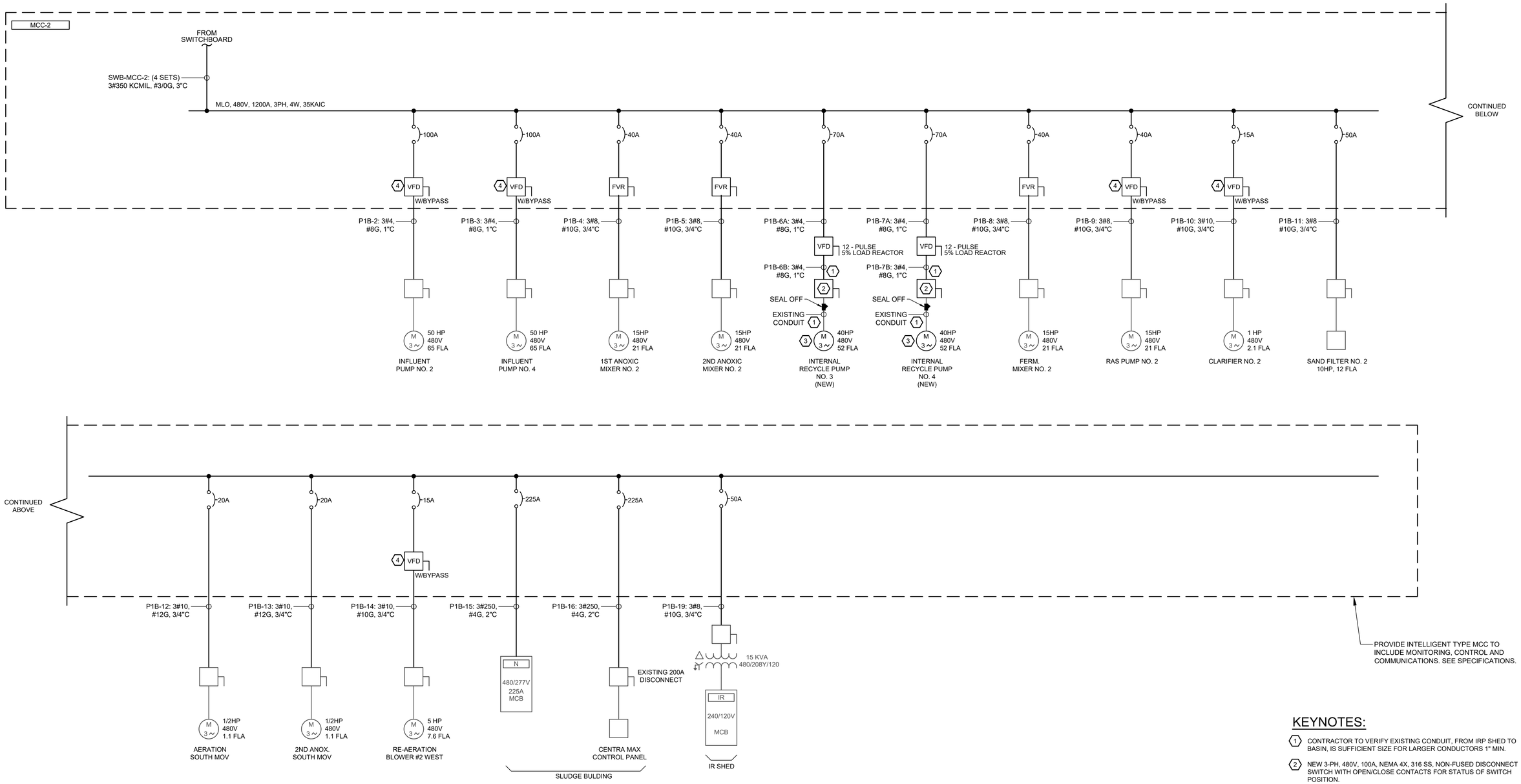
SINGLE LINE DIAGRAM MCC-1

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.07
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID



KEYNOTES:

1. CONTRACTOR TO VERIFY EXISTING CONDUIT, FROM IRP SHED TO BASIN, IS SUFFICIENT SIZE FOR LARGER CONDUCTORS 1" MIN.
2. NEW 3-PH, 480V, 100A, NEMA 4X, 316 SS, NON-FUSED DISCONNECT SWITCH WITH OPEN/CLOSE CONTACTS FOR STATUS OF SWITCH POSITION.
3. COORDINATE WITH CITY: INTERNAL RECYCLE PUMPS TO BE UPGRADED FROM 30HP TO 40HP PUMPS (NOT APART OF THIS PROJECT).
4. VFD BY YASKAWA. COORDINATE MCC ASSEMBLY WITH YASKAWA.

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM MCC-2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

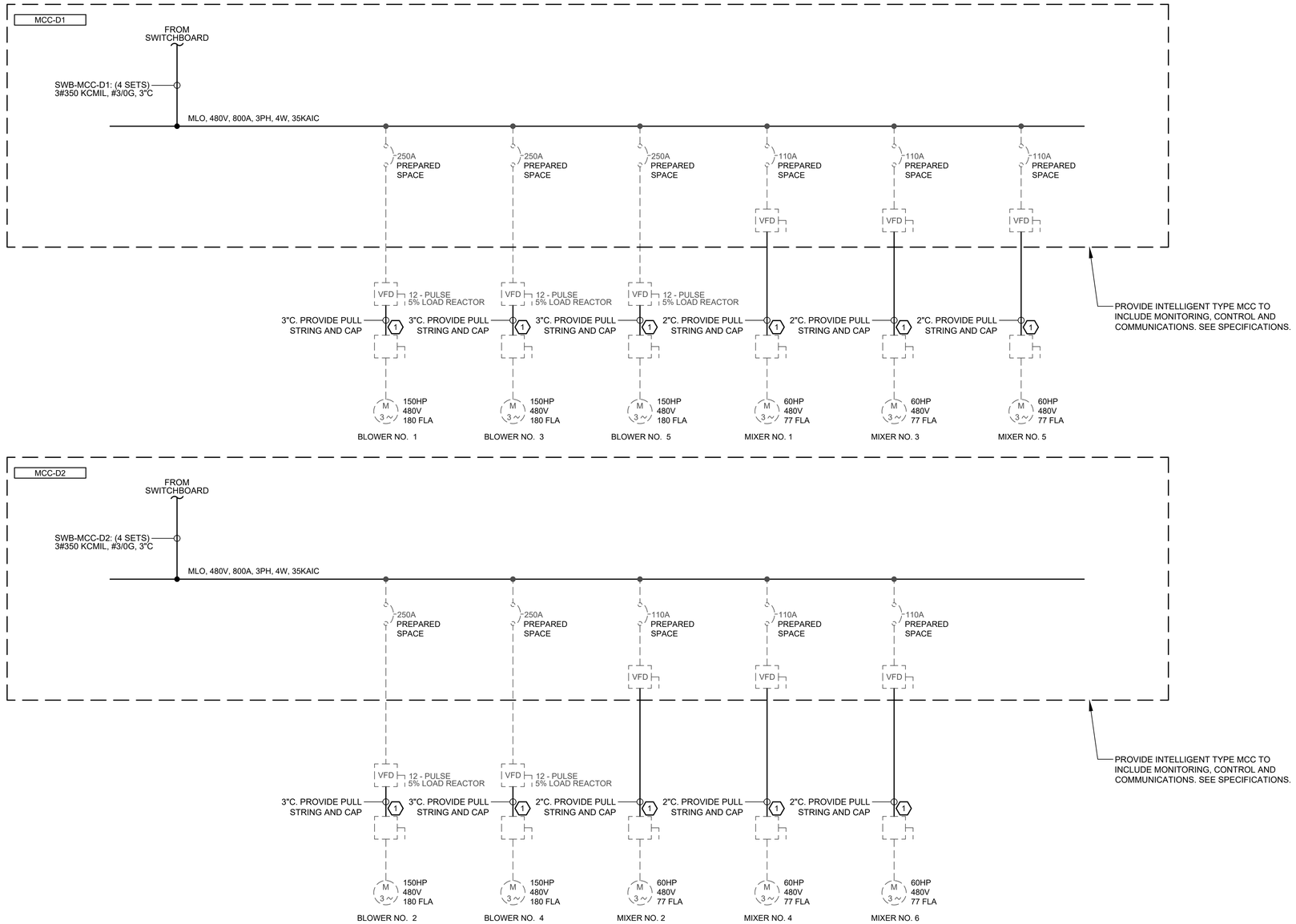
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.08
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID

KEYNOTES:

1. CONTRACTOR TO ROUTE CONDUITS TO DIFFUSER MIXER PULL BOX LOCATED ON THE EAST SIDE OF BUILDING. SEE SHEET E2.07 FOR PULL BOX LOCATION.



REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM MCC-D

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.09
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\ES100_01040-0015 SLD.DWG 04/10/2026 12:50:20 SUVATH SENG

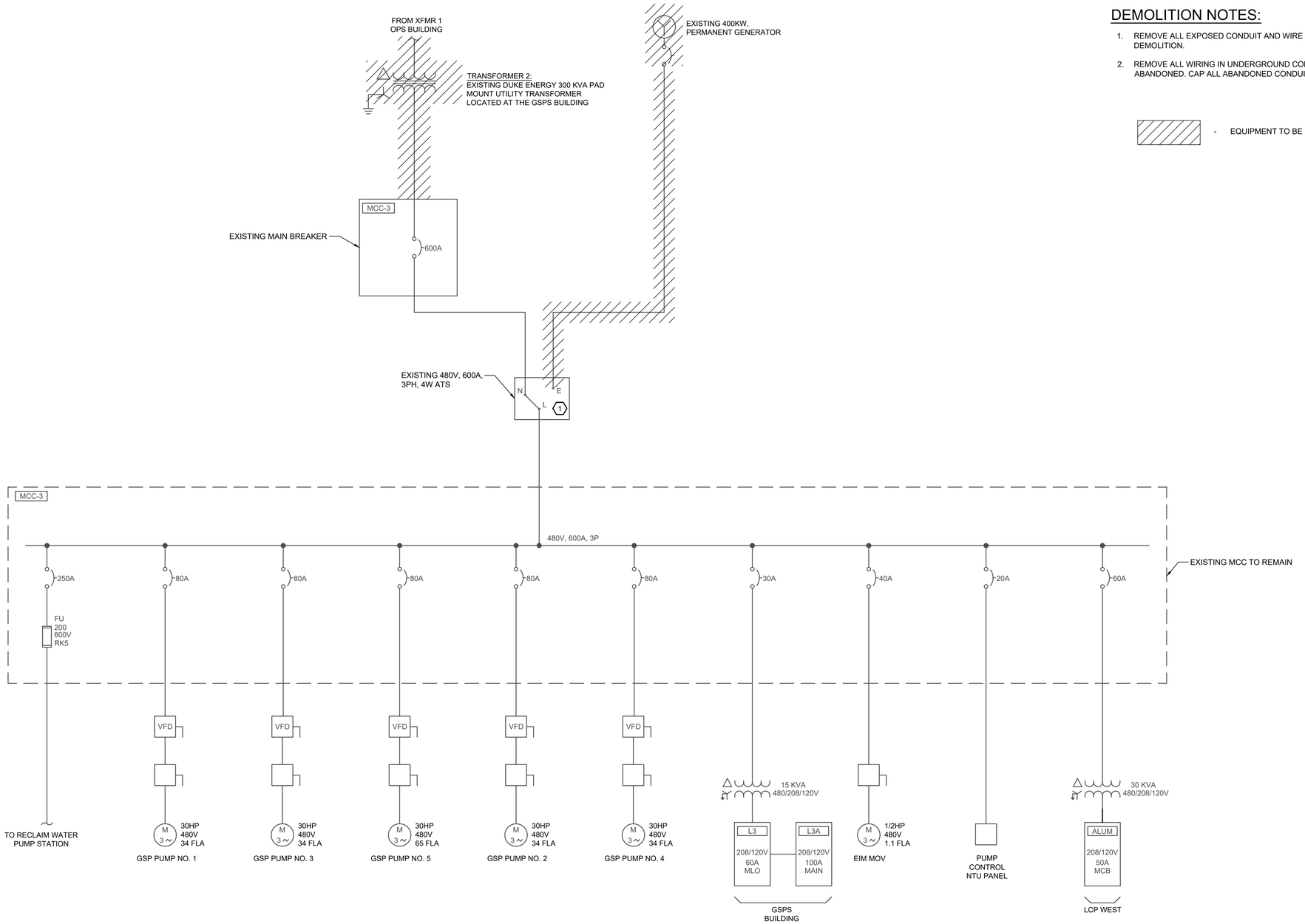
KEYNOTES:

1. CONTRACTOR TO RECONFIGURE EXISTING ATS FOR MANUAL TRANSFER. MANUFACTURER: CUMMINS/ONAN, MODEL: 306-3490-07

DEMOLITION NOTES:

1. REMOVE ALL EXPOSED CONDUIT AND WIRE NOT USED PER EQUIPMENT DEMOLITION.
2. REMOVE ALL WIRING IN UNDERGROUND CONDUIT THAT IS TO BE ABANDONED. CAP ALL ABANDONED CONDUIT.

▨ - EQUIPMENT TO BE DEMOLISHED.



REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM GSPS SERVICE DEMO

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

STATUS: **ISSUED FOR BID**

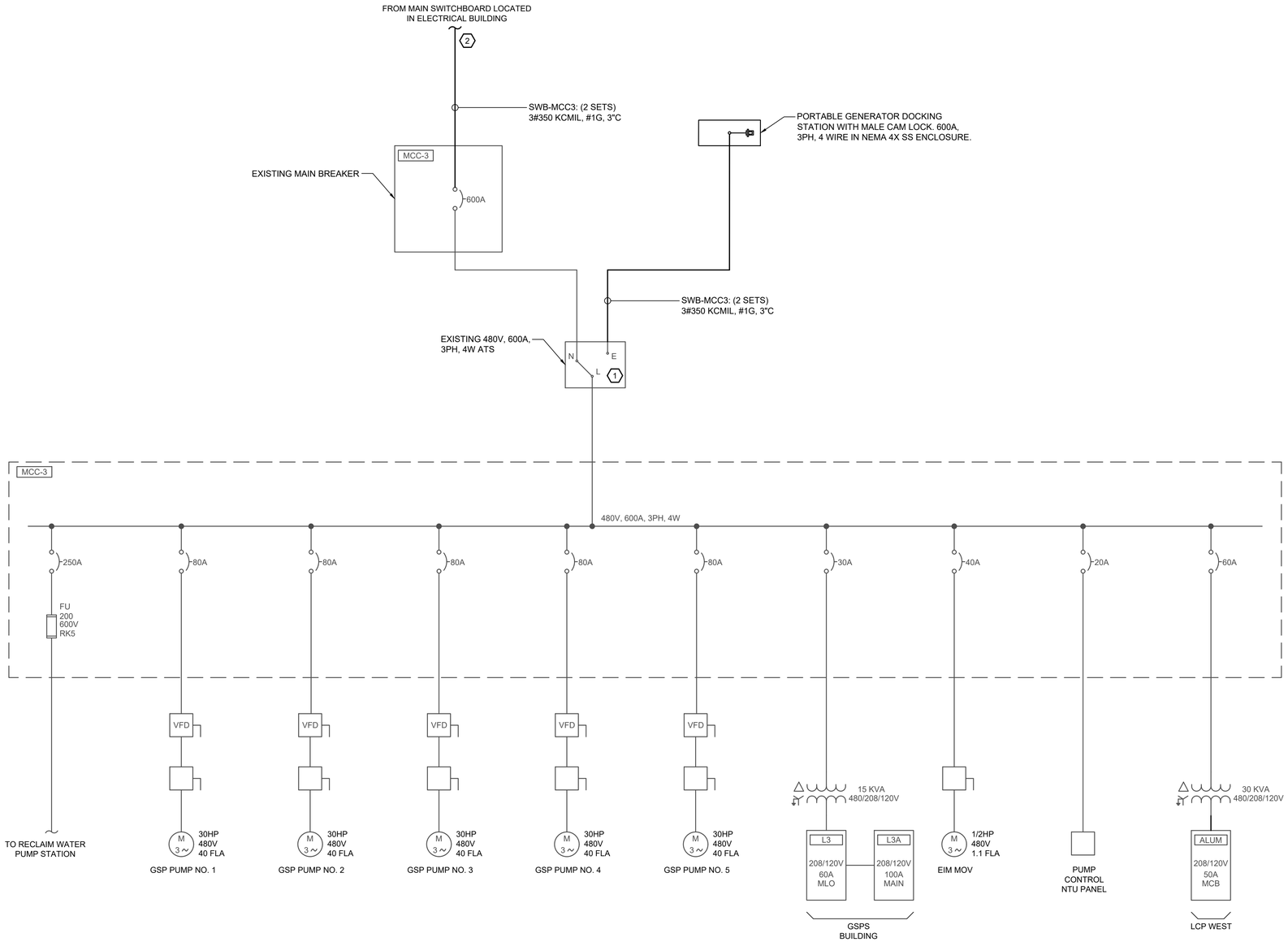
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.10
DRAWING NUMBER
A
REVISION

SEQUENCE OF CONSTRUCTION KEYNOTES:

KEYNOTES:

1. CONTRACTOR TO RECONFIGURE EXISTING ATS FOR MANUAL TRANSFER. MANUFACTURER: CUMMINS/ONAN, MODEL: 306-3490-07
2. IN THE EVENT OF NORMAL POWER FAILURE, THE ATS SHALL BE MANUALLY SWITCHED TO EMERGENCY. IN ADDTION, THE CIRCUIT BREAKER FEEDING EXITING MCC-3, LOCATED IN THE NEW ELECTRICAL BUILDING, MAIN SWITCH BOARD SHALL BE CLOSED.



REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SINGLE LINES

SINGLE LINE DIAGRAM GSPS SERVICE PROPOSED

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E1.11
DRAWING NUMBER

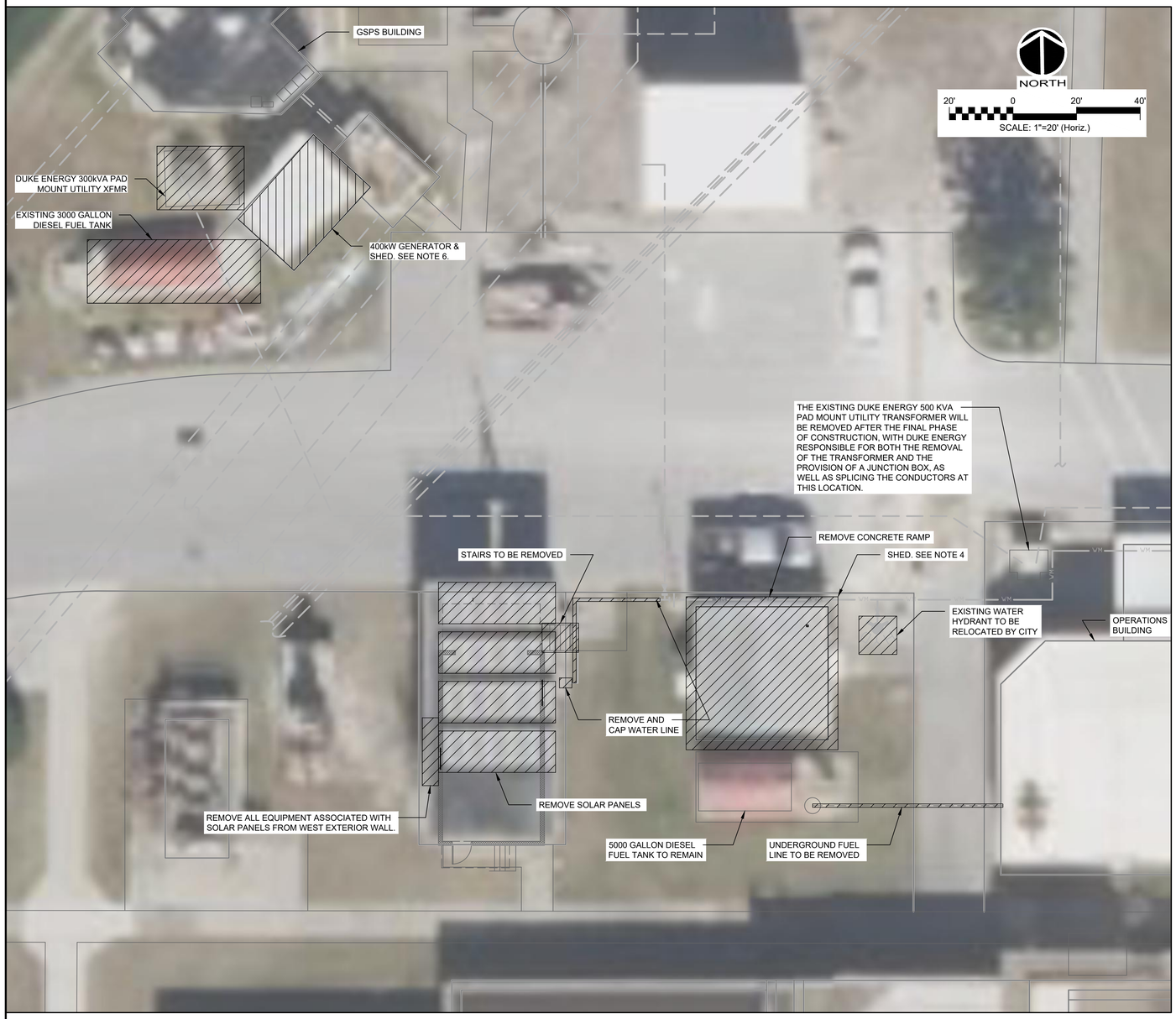
A
REVISION

STATUS: **ISSUED FOR BID**

DEMO NOTES:

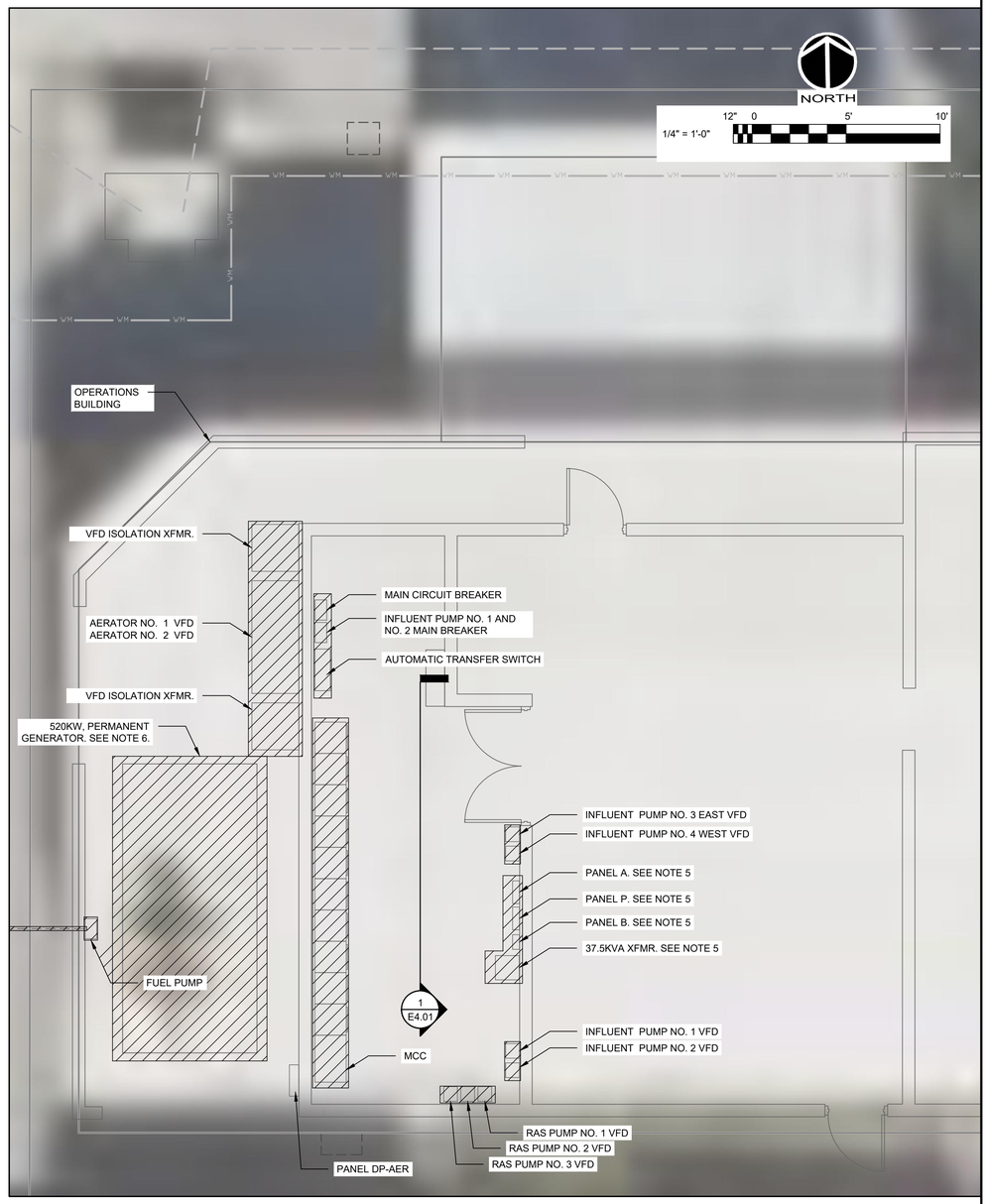
1. REMOVE EQUIPMENT AS NOTED.
2. GENERATORS, DIESEL FUEL TANK AND VFDS SHALL BE TURNED OVER TO THE CITY.
3. ALL ROOMS INVOLVING DEMOLITION SHALL BE PATCHED AND REPAINTED.
4. REMOVE CONCRETE RAMP IN FRONT OF SHED. COORDINATE WITH CITY TO DETERMINE RELOCATION OF SHED.
5. REPLACE THE PANELS, TRANSFORMER "IN KIND" AND REPLACE THE CONDUIT AND WIRE BETWEEN THEM. CONNECT THE PANELS TO THE EXISTING CIRCUITS THEY FEED WITHOUT REPLACEMENT"
6. CONTRACTOR TO COORDINATE WITH CITY TO REMOVE GENERATOR AND PLACE ALONG THE EAST SIDE OF THE DE-WATERING BUILDING FOR CITY DISPOSAL.

- EQUIPMENT TO BE REMOVED



SITE DEMOLITION PLAN

SCALE: 1"=20'



OPERATIONS BUILDING DEMOLITION PLAN

SCALE: 1/4"=1'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

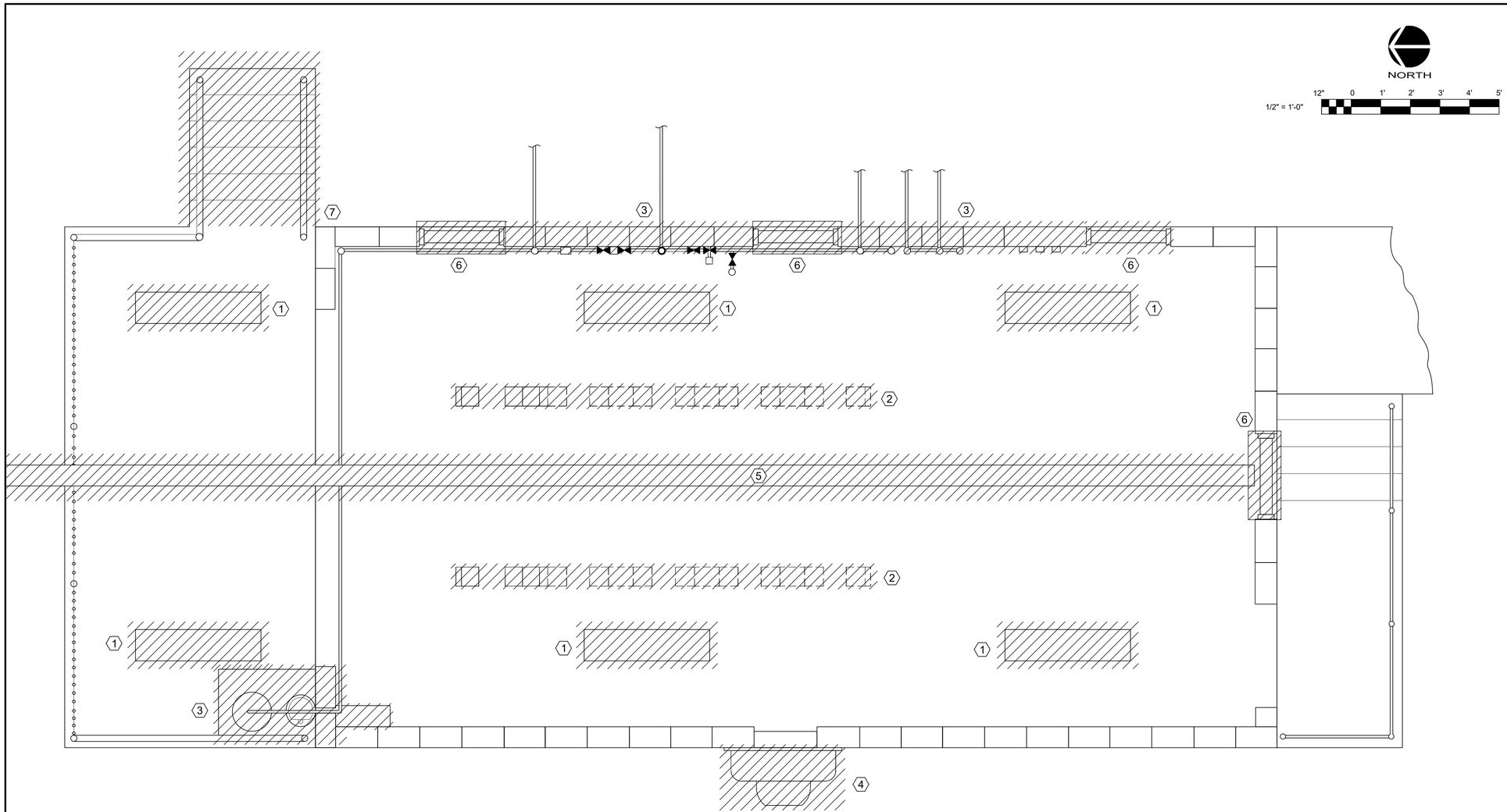
SITE DEMOLITION

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.00
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID



GENERAL NOTES:

1. REFER TO STRUCTURAL FOR ADDITIONAL DEMOLITION.

DEMO NOTES:

1. DEMO LIGHT FIXTURE. REMOVE ALL WIRE, REMOVE CONDUIT AS NECESSARY.
2. DEMO FLOOR ANCHORS.
3. REMOVE ALL PROCESS PIPING AND EQUIPMENT FROM THIS BUILDING.
4. REFER TO STRUCTURAL FOR DEMOLITION OF EXHAUST FAN.
5. REFER TO STRUCTURAL FOR DEMOLITION OF MONORAIL.
6. LOUVERS TO BE REMOVED & WALLS PATCHED. TYPICAL OF (4). SEE STRUCTURAL DRAWING FOR DETAILS (SHEET S1.00). PATCH AND REPAINT ROOM.
7. DEMO STAIRS.

- EQUIPMENT TO BE REMOVED

DEMOLITION OF CHLORINE BUILDING INTERIOR FOR CONVERSION FOR ELECTRICAL ROOM BUILDING

SCALE: 1"=20'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

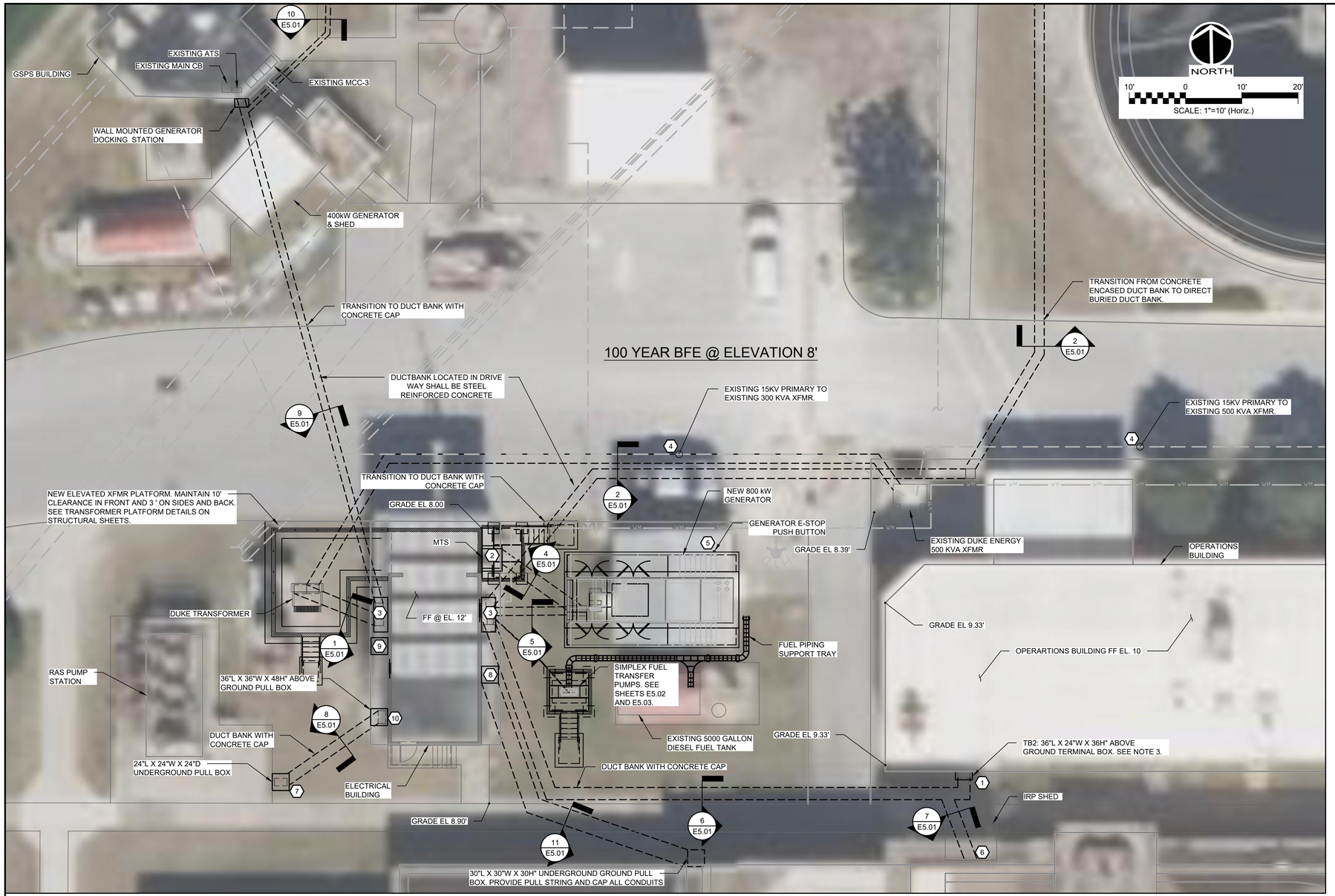
CHLORINE BUILDING - DEMO

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.01
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**



KEYED NOTES:

1. INTERCEPT ALL EXISTING CONDUITS AND ROUTE NEW WIRES TO EXISTING LOADS LOCATED IN THE MAIN PROCESS BASIN.
2. MANUAL TRANSFER SWITCH SHALL BE INSTALLED ON ELEVATED PLATFORM. ANCHOR TO EXTERIOR WALL AND PLATFORM. SEE STRUCTURAL DRAWINGS FOR PLATFORM DETAILS.
3. 72"L X 30"W X 48H" CUSTOM ABOVE GROUND ALUMINUM PULL BOX WITH HINGED DOOR. PULL BOX TO BE OPEN BOTTOM FOR CONDUIT ENTRY AND OPEN TO THE SIDE WHERE CONDUCTORS ENTER THE BUILDING. PULL BOX TO BE INSTALLED ABOVE GROUND ON CONCRETE PAD (CONCRETE PAD NOT SHOWN).
4. THE CONTRACTOR IS RESPONSIBLE FOR FIELD-LOCATING THE TRANSFORMER PRIMARY ROUTE. THE ROUTE SHOWN IS FOR REFERENCE ONLY AND DOES NOT REPRESENT THE ACTUAL ROUTE. ADDITIONAL INFORMATION MUST BE COLLECTED REGARDING THE POTENTIAL CROSSING OF THE 480V AND 15KV DUCT BANKS.
5. CONTRACTOR TO PROVIDE AND INSTALL AND WIRE LATCHING-TYPE PUSH BUTTON EXTERIOR OF GENERATOR ENCLOSURE. PUSH BUTTON SHALL BE HOUSED IN NEMA 4X RATED, STANCHION-MOUNTED 316 SS ENCLOSURE. PUSH BUTTON SHALL BE RED MUSHROOM HEAD TO INCLUDE (1) NORMALLY OPEN AND (1) NORMALLY CLOSED CONTACT, AND BE OF THE PULL-TO-RESET TYPE. PROVIDE SIGNAGE READING: "EMERGENCY GENERATOR STOP". SEE MOUNTING DETAILS.
6. CONTRACTOR TO PROVIDE AND INSTALL JUNCTION BOXES, AS NEEDED, TO CAPTURE EXISTING CONDUITS ROUTED FROM IRP SHED TO THE IRP DISCONNECTS LOCATED ON BASIN.
7. CONTRACTOR TO FIELD-VERIFY AND ESTABLISH THE LOCATION OF THE UNDERGROUND PULL BOX TO ENSURE OPTIMAL AND MOST ACCESSIBLE INTERCEPTION OF EXISTING CONDUITS.
8. DIFFUSER/MIXER PULL BOX: 36"L X 36"W X 48H" CUSTOM ABOVE GROUND ALUMINUM PULL BOX WITH HINGED DOOR. PULL BOX TO BE OPEN BOTTOM FOR CONDUIT ENTRY AND OPEN TO THE SIDE WHERE CONDUCTORS ENTER THE BUILDING. PULL BOX TO BE INSTALLED ABOVE GROUND ON CONCRETE PAD (CONCRETE PAD NOT SHOWN).
9. FIBER OPTIC PULL BOX: 36"L X 36"W X 48H" CUSTOM ABOVE GROUND ALUMINUM PULL BOX WITH HINGED DOOR. PULL BOX TO BE OPEN BOTTOM FOR CONDUIT ENTRY AND OPEN TO THE SIDE WHERE CONDUCTORS ENTER THE BUILDING. PULL BOX TO BE INSTALLED ABOVE GROUND ON CONCRETE PAD (CONCRETE PAD NOT SHOWN).
10. WEST PULL BOX: 36"L X 36"W X 48H" CUSTOM ABOVE GROUND ALUMINUM PULL BOX WITH HINGED DOOR. PULL BOX TO BE OPEN BOTTOM FOR CONDUIT ENTRY AND OPEN TO THE SIDE WHERE CONDUCTORS ENTER THE BUILDING. PULL BOX TO BE INSTALLED ABOVE GROUND ON CONCRETE PAD (CONCRETE PAD NOT SHOWN).

ELECTRICAL PARTIAL SITE PLAN

SCALE: 1"=20'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

MCKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

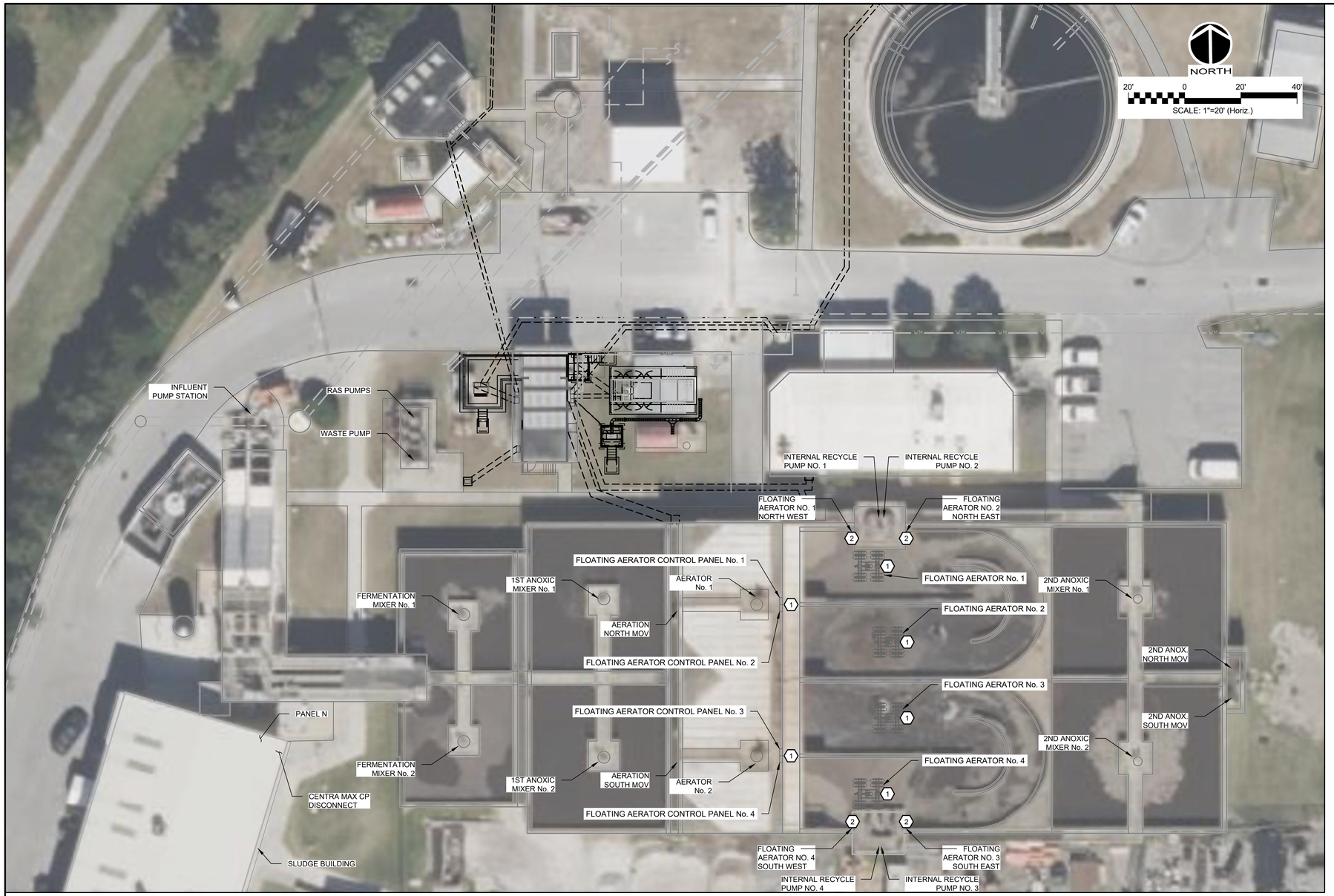
ELECTRICAL PARTIAL SITE PLAN

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.02
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**



KEYED NOTES:

1. THIS EQUIPMENT WILL BE INSTALLED DURING THE AERATION BASIN STRUCTURAL REPAIR PROJECT. THE EQUIPMENT WILL REMAIN IN PLACE AND OPERATIONAL AFTER THE REPAIRS ARE COMPLETE.
2. THIS EQUIPMENT WILL BE REMOVED DURING THE AERATION BASIN STRUCTURAL REPAIR PROJECT.

MAIN BASIN EQUIPMENT LOCATION

SCALE: 1"=20'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

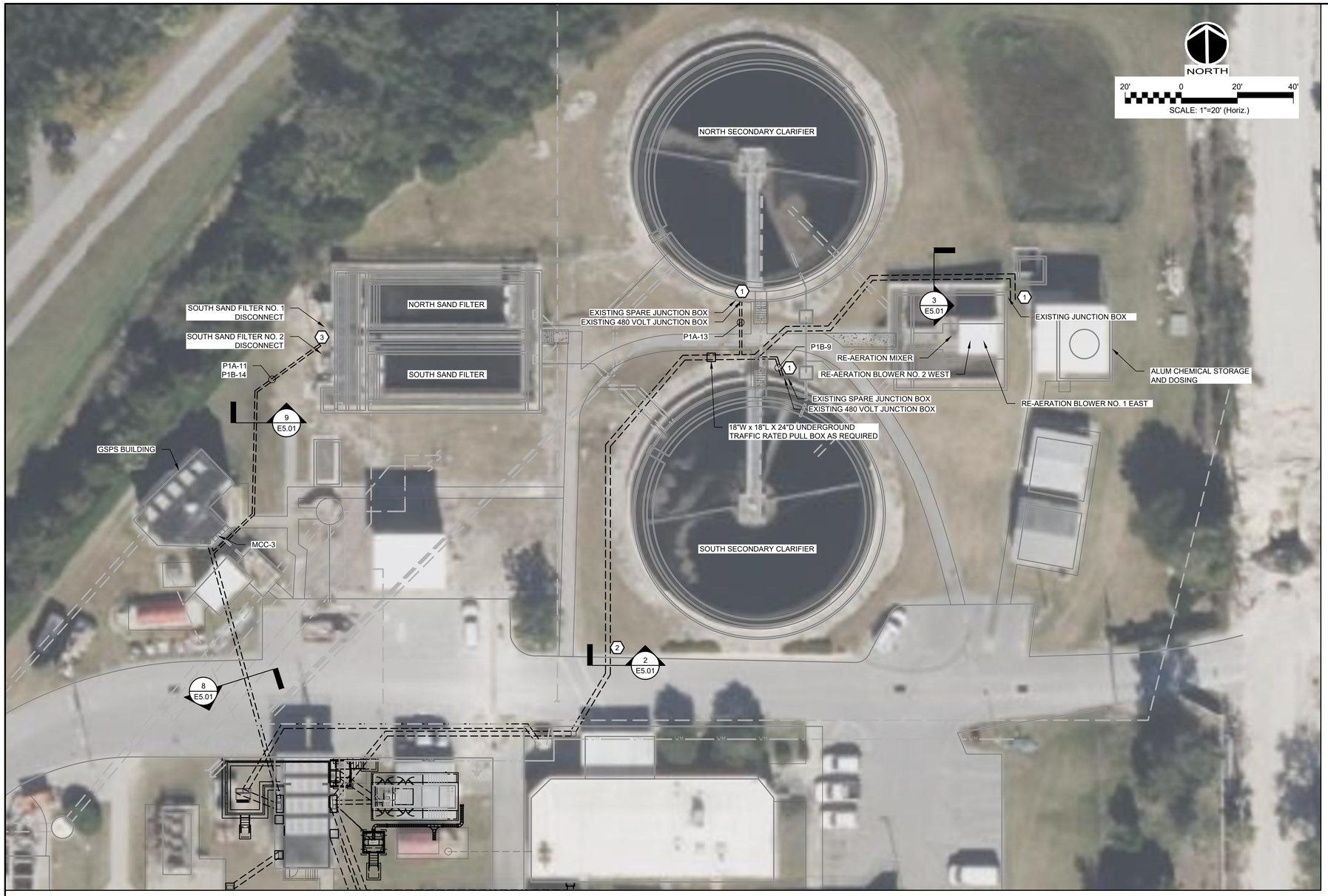
MAIN BASIN EQUIPMENT LOCATION

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.03
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**



KEYED NOTES:

1. ROUTE CONDUIT THROUGH BOTTOM OF EXISTING JUNCTION BOXES. ROUTE ALL NEW CONDUCTORS TO EXISTING LOADS. NO SPLICES ALLOWED.
2. COORDINATE WITH THE CITY TO ROUTE THE NEW DUCT BANK AS CLOSE TO THE CLARIFIER AS POSSIBLE TO ENSURE IT DOES NOT INTERFERE WITH THE FUTURE DRIVEWAY. DO NOT REUSE THE EXISTING CONDUITS WITHIN THE EXISTING DUCT BANK. INSTALL A NEW PULL BOX AS NEEDED TO ENSURE THAT CONDUIT BENDS DO NOT EXCEED A TOTAL OF 360 DEGREES.
3. INSTALL 12"L X 12W" UNDERGROUND POLY-CONCRETE PULL BOX. ROUTE CONDUIT TO THIS PULL BOX AND PULL ALL NEW WIRE TO SAND FILTER DISCONNECT No. 1 AND SAND DISCONNECT No. 2

ELECTRICAL PARTIAL SITE PLAN NORTH

SCALE: 1"=20'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

ELECTRICAL PARTIAL SITE PLAN NORTH

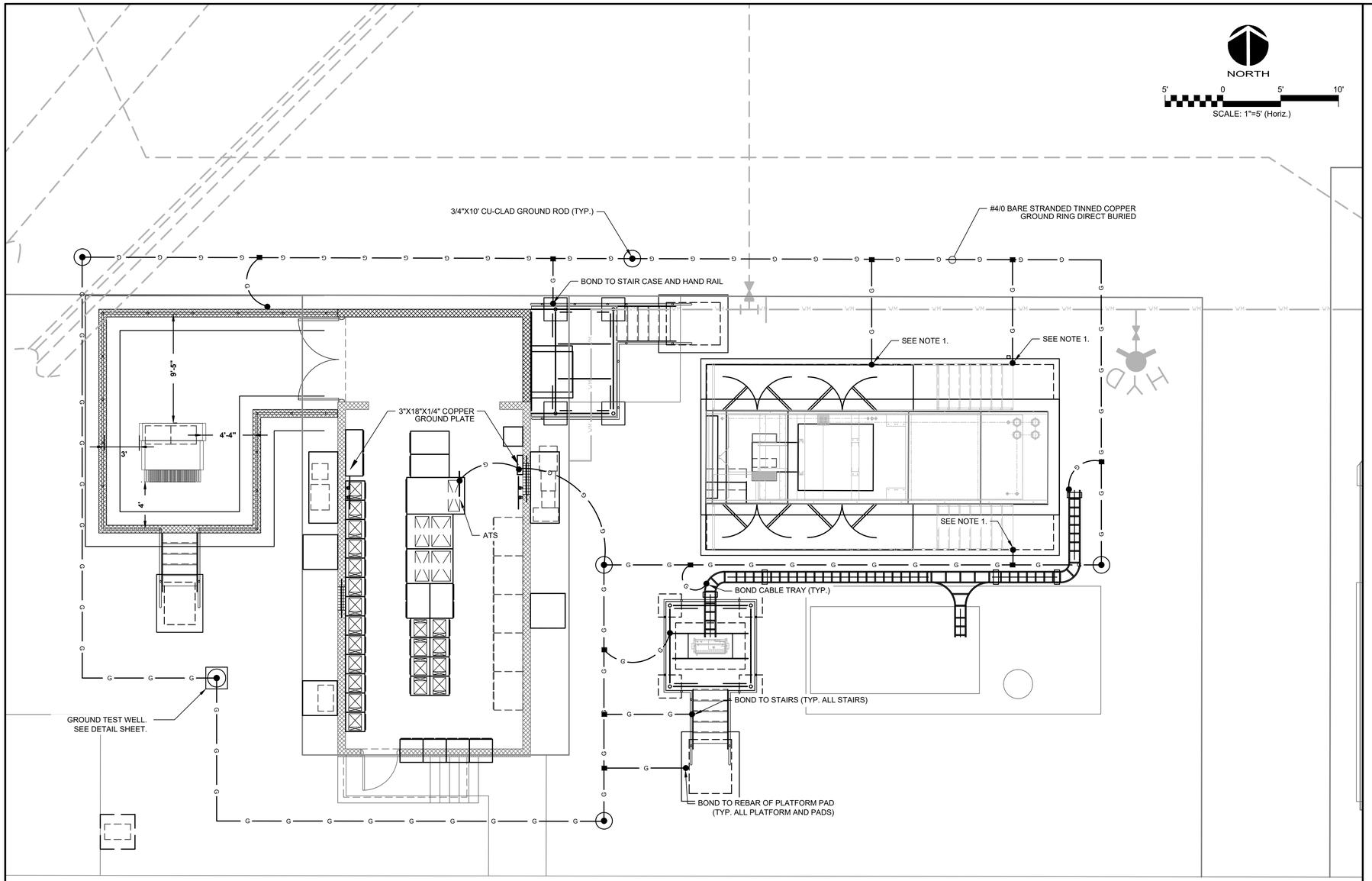
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.04
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EB100_01040-0015 SITE PLANS 1.DWG 04/10/2026 12:50:26 SUVATH SENG



NOTES:

1. BOND GENERATOR STAIRS AND PLATFORM, GENERATOR FRAME AND FUEL TANK ASSEMBLY TO GROUND RING WITH #4 BARE COPPER. CONDUCTOR WILL BE MECHANICALLY FASTENED TO PLATFORM SUPPORT WITH A DEVICE LISTED FOR BOTH COPPER AND ALUMINUM CONNECTIONS. CONDUCTOR WILL BE EXOTHERMICALLY WELDED TO GROUND RING.
2. BOND ALL ELECTRICAL ENCLOSURES. (TYP.)

GROUNDING PLAN

SCALE: 1"=5'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

GROUNDING PLAN

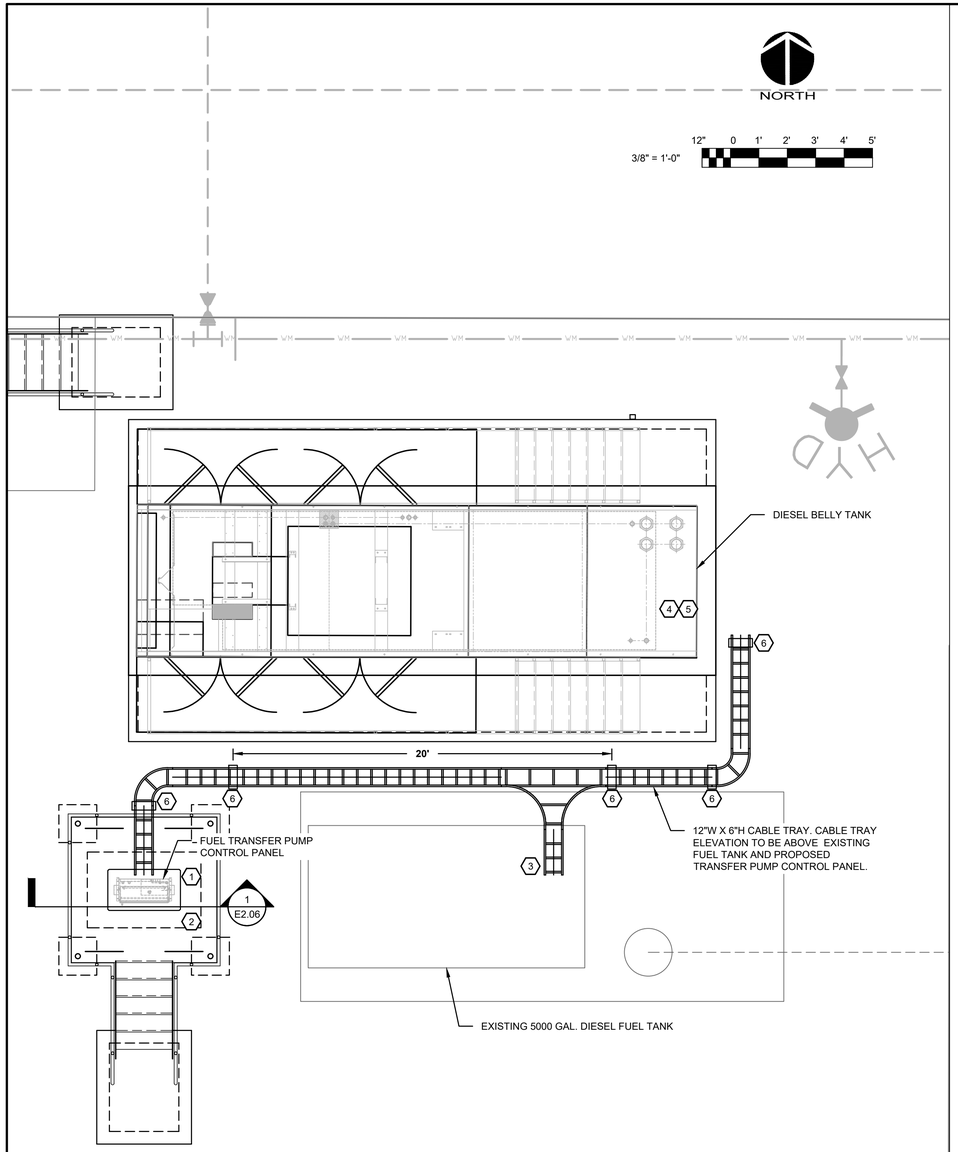
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.05
DRAWING NUMBER

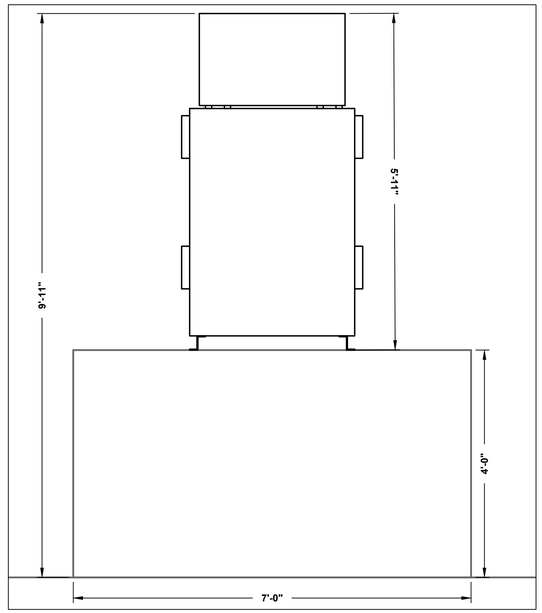
A
REVISION

STATUS: **ISSUED FOR BID**



FUEL TRANSFER PUMP PLAN

SCALE: 1"=5'

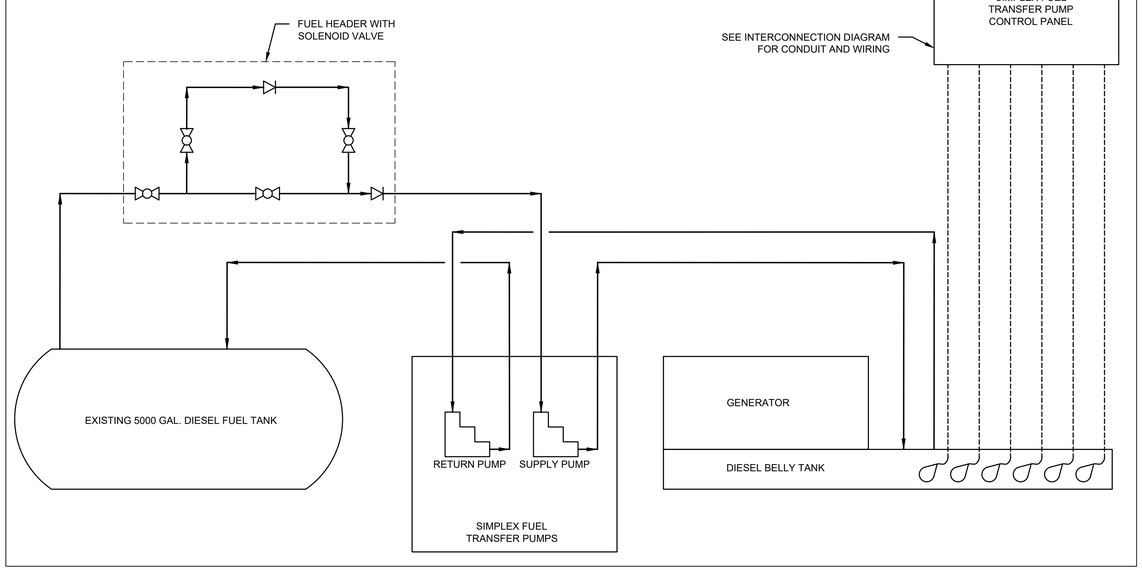


1 FUEL TRANSFER PUMP CONTROL PANEL ELEVATION

SCALE: 3/4" = 1'-0"

NOTES:

1. FUEL TRANSFER SYSTEM: SIMPLEX M/N SPS25-AF-S/RP OUTDOOR INSTALLATION WITH 7GPM-1/2HP 120VAC/1-PHASE/60HZ PUMP FOR FOS (FROM BULK TANK TO SUB-BASE TANK) AND 10GPM-3/4HP 120VAC/1-PHASE/60HZ PUMP FOR FOR (FROM SUB-BASE TANK TO BULK TANK). THIS PUMP SET TO INCLUDE SIMPLEX LC390 LEVEL CONTROLLER COMPLETE WITH FLOAT SWITCHES AND LEAK DETECTION PROBE. THE GENERATOR SUB-BASE TANK SHALL BE EQUIPPED WITH A SIMPLEX FUEL INLET MANIFOLD WITH 3/4" STRAINER AND SOLENOID VALVE WITH BYPASS TO CONTROL FILLING OF THE SUB-BASE TANK ONLY WHEN IT HAS SIGNALED A CALL FOR FUEL.
2. TOP OF ELEVATED CONCRETE PLATFORM TO BE AT ELEVATION. 12'.
3. INTERCEPT SUPPLY AND RETURN FUEL LINES LOCATED ON TOP OF FUEL TANK AND ROUTE FUEL LINES ABOVE GROUND TO TOP OF FUEL PUMP CONTROL PANEL. ROUTE FUEL LINES IN CABLE TRAY.
4. ROUTE SUPPLY AND RETURN FUEL LINES LOCATED FROM TOP OF FUEL PUMP CONTROL PANEL AND ROUTE FUEL LINES ABOVE GROUND TO TOP OF FUEL TANK. ROUTE FUEL LINES IN CABLE TRAY.
5. INSTALL FUEL HEADER WITH SOLENOID VALVE IN THIS LOCATION. FOLLOW MANUFACTURER RECOMMENDATIONS.
6. CABLE TRAY SUPPORT REQUIRED 20' MAX.



FUEL TRANSFER PUMP PIPING DIAGRAM

SCALE: N.T.S

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

FUEL TRANSFER PUMP PLAN

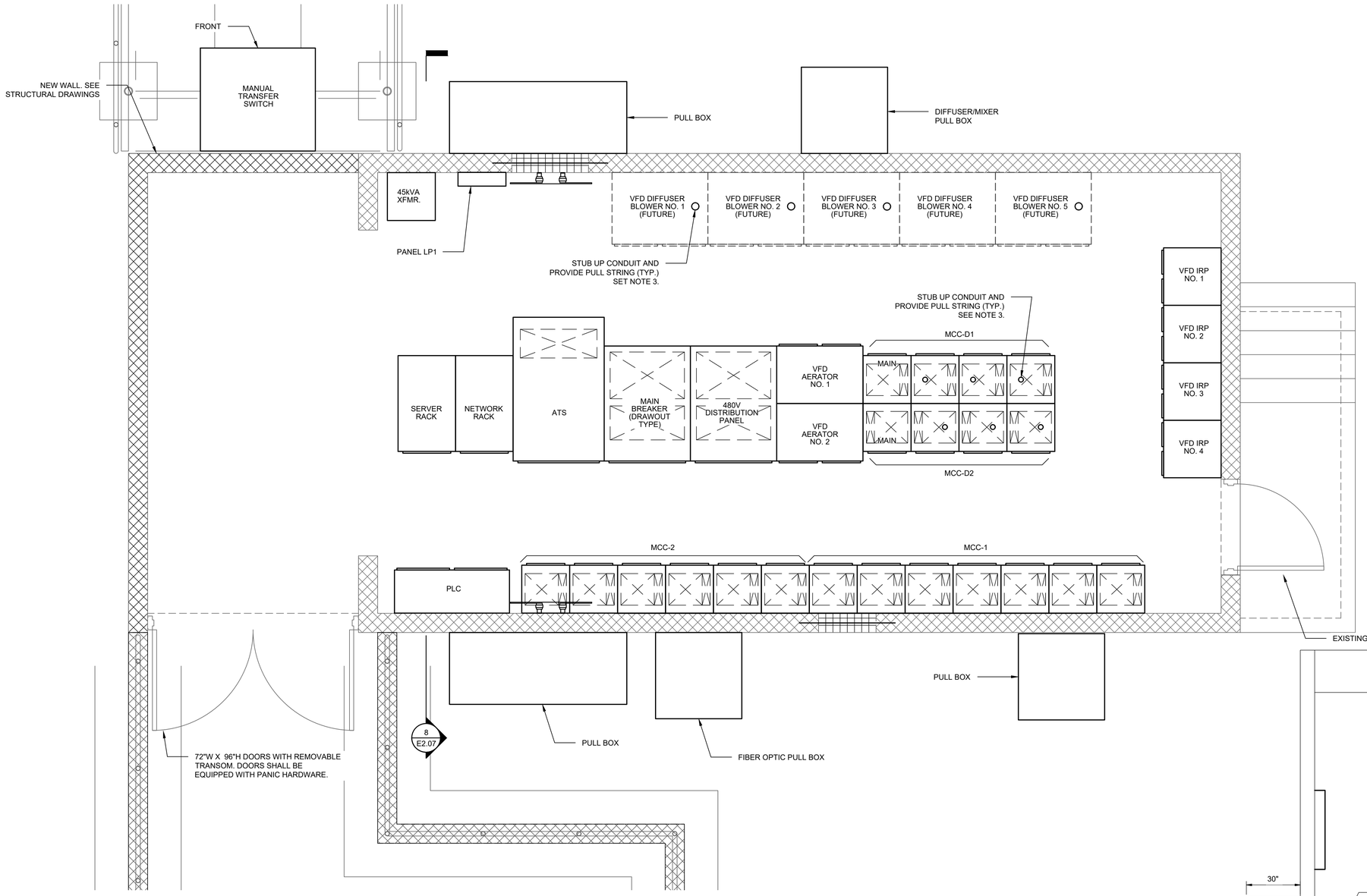
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.06
DRAWING NUMBER

A
REVISION

STATUS: **ISSUED FOR BID**



ELECTRICAL EQUIPMENT LAYOUT

SCALE: 1/2" = 1'-0"

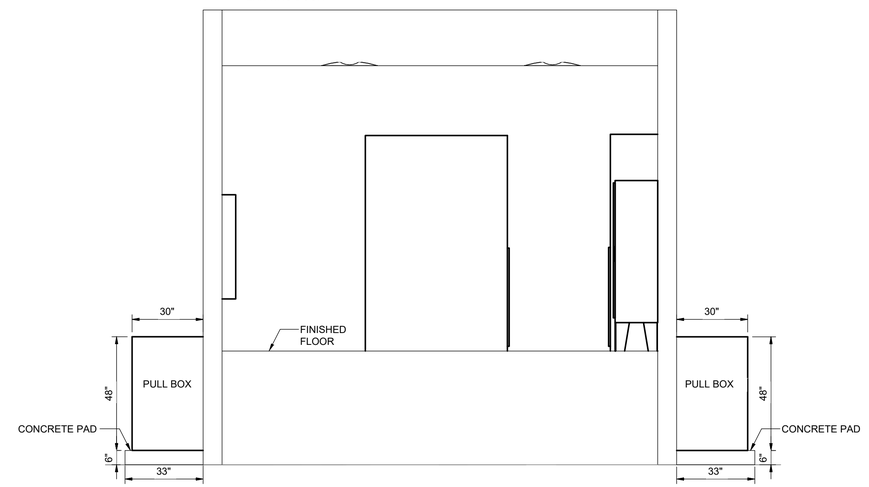
NORTH

12" 0 1' 2' 3' 4' 5'

1/2" = 1'-0"

NOTES:

1. CROSSED AREA REPRESENTS CONDUIT ENTRY AREA. COORDINATE WITH MANUFACTURE AFTER FINAL EQUIPMENT SELECTION.
2. FOR EQUIPMENT NOT SHOWN WITH CROSSED AREA, COORDINATE WITH MANUFACTURE AFTER FINAL EQUIPMENT SELECTION.
3. CONDUIT TO BE ROUTED TO DIFFUSER/MIXER PULL BOX. THE CONTRACTOR SHALL COORDINATE WITH THE VENDOR ON THE CONDUIT STUB UP LOCATIONS AND THEIR CORRESPONDING SECTIONS BASED ON THE FINAL EQUIPMENT SELECTION.
4. NOT ALL STUB UP LOCATIONS ARE SHOWN.



8 PULL BOX ELEVATION VIEW

SCALE:3/8" = 1'-0"

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

ELECTRICAL EQUIPMENT LAYOUT

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.07 DRAWING NUMBER

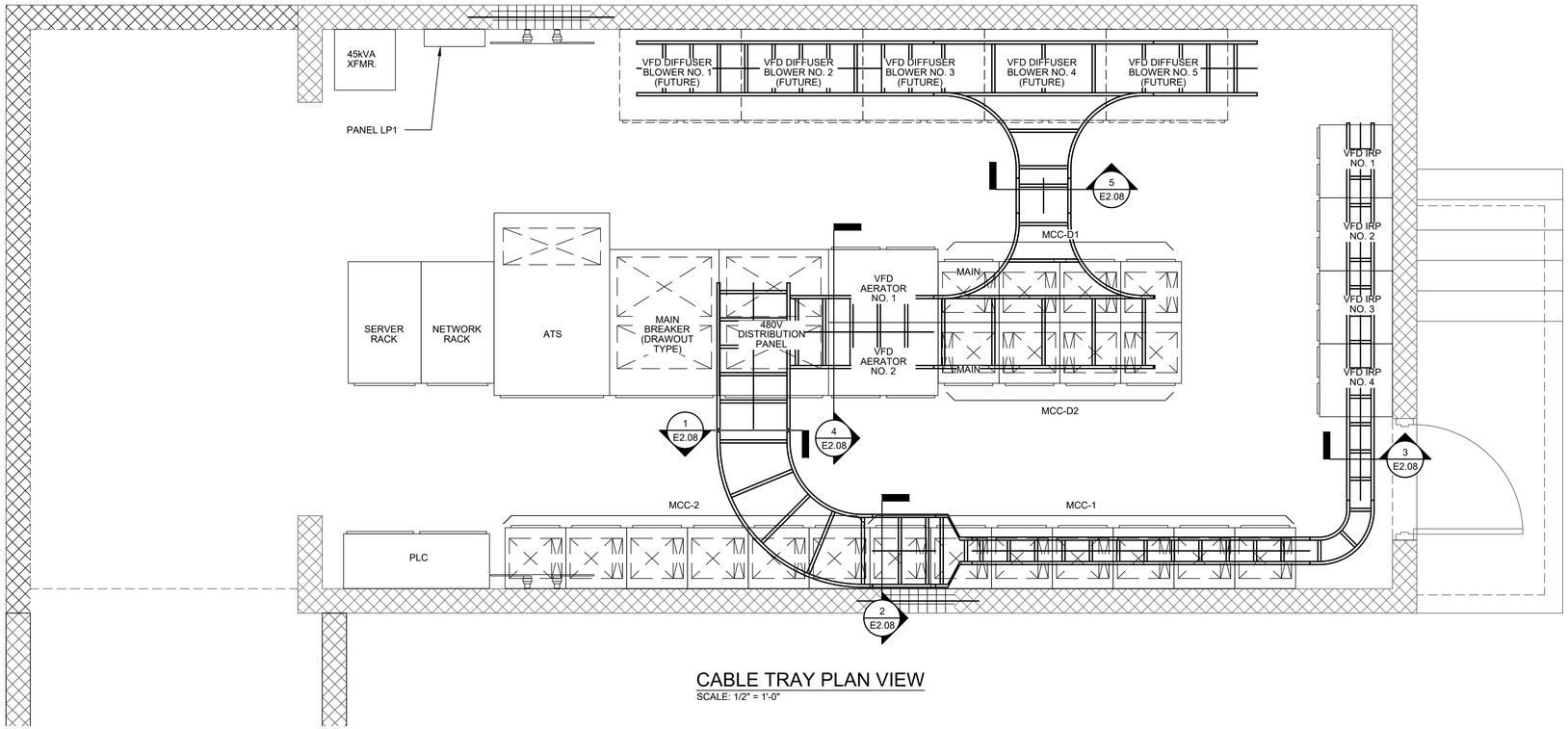
A REVISION

STATUS: **ISSUED FOR BID**

NORTH

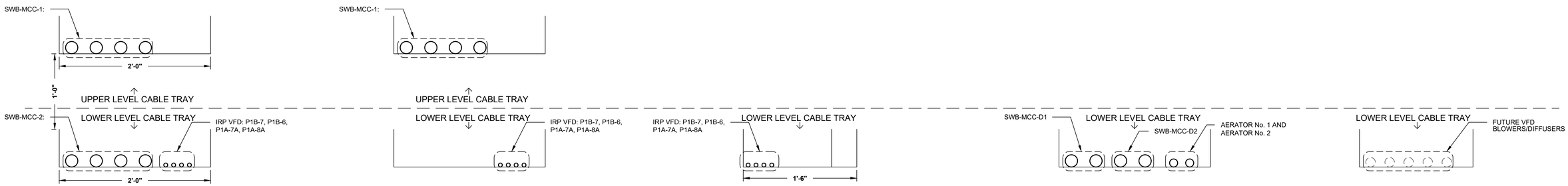
12" 0 1' 2' 3' 4' 5'

1/2" = 1'-0"



CABLE TRAY PLAN VIEW

SCALE: 1/2" = 1'-0"



1 CABLE TRAY DETAIL

SCALE: 1-1/2" = 1'-0"

2 CABLE TRAY DETAIL

SCALE: 1-1/2" = 1'-0"

3 CABLE TRAY DETAIL

SCALE: 1-1/2" = 1'-0"

4 CABLE TRAY DETAIL

SCALE: 1-1/2" = 1'-0"

5 CABLE TRAY DETAIL

SCALE: 1-1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

CABLE TRAY PLAN

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

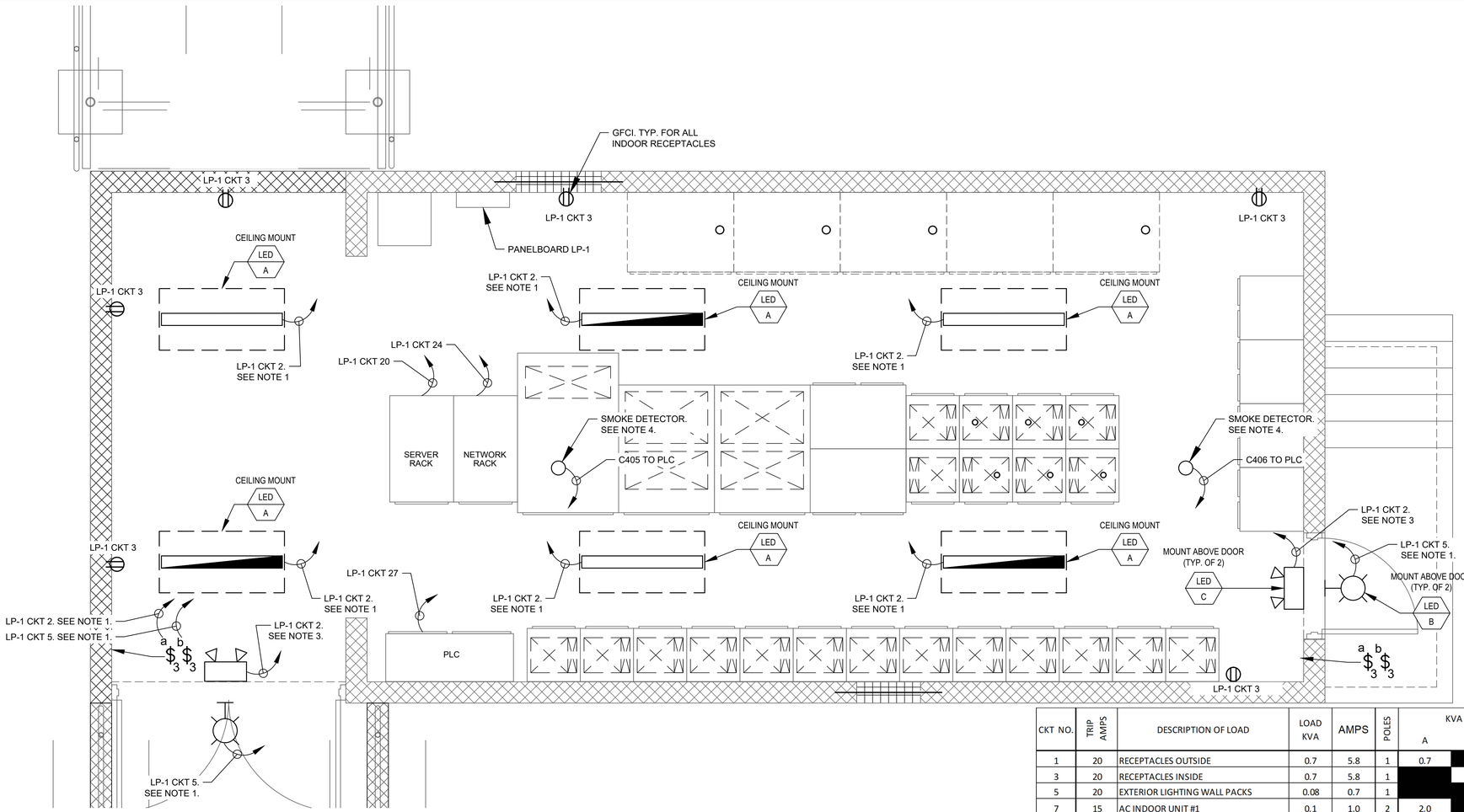
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.08 DRAWING NUMBER

A REVISION

STATUS: **ISSUED FOR BID**

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EB100_01040-0015 CABLE TRAY PLAN VIEWS.DWG 04/10/2026 12:50:39 SUVATH SENG



NOTES:

1. LIGHTING FIXTURE SHALL BE WIRED 3 WAY SWITCHABLE.
2. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL BE 2#12, #12G., 3/4" C.
3. EMERGENCY EXITING LIGHTING SHALL BE WIRED AHEAD OF SWITCH AND SHALL ONLY OPERATE WHEN THERE IS A LOSS OF POWER.
4. CONTRACTOR TO PROVIDE AND INSTALL SMOKE DETECTOR COMPLETE WITH PLUG IN BASE AND BOX. PART NUMBER

LIGHTING SCHEDULE

LETTER	DESCRIPTION	MANUFACTURE	CATALOG	SYMBOL
A	RECESSED CENTER ELEMENT LED LAY IN, 2FTX4FT, ADJUSTABLE LUMEN OUTPUT 4000LM/5000LM/6000LM, 3500K, LOW LUMEN	LITHONIA LIGHTING	STAKPAK 2x4 ALO6 35K LOW LUMEN	
	SAME AS FIXTURE LETTER "A" WITH EMERGENCY BATTERY BACK UP.	LITHONIA LIGHTING	STAKPAK 2x4 ALO6 35K LOW LUMEN	
B	LED OUTDOOR RATED WALL PACK. TYPE II MEDIUM DISTRIBUTION. INTEGRAL BALLAST & PHOTOCELL. FULL CUTOFF. DARK BRONZE.	LITHONIA LIGHTING	DSXW2 LED 30C 350 40K T3M MVOLT OR APPROVED EQUAL	
C	WALL MOUNT EMERGENCY EXIT LIGHT W/SIGN. INJECTION-MOLDED, FLAME-RETARDANT, HIGH-IMPACT, THERMOPLASTIC HOUSING. BATTERY BACKUP. TEST SWITCH FOR MANUAL ACTIVATION OF 30-SECOND DIAGNOSTIC TESTING. SELF DIAGNOSTIC TESTING EVERY 30 DAYS.	LITHONIA LIGHTING	LHQM LED OR APPROVED EQUAL	

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE A	KVA PER PHASE B	KVA PER PHASE C	POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	RECEPTACLES OUTSIDE	0.7	5.8	1	0.7			1	0.3	0.04	EMERG. EXIT AND INTERIOR LIGHT	20	2
3	20	RECEPTACLES INSIDE	0.7	5.8	1		3.3		1	21.6	2.59	FUEL TRANSFER CONTROL PANEL	30	4
5	20	EXTERIOR LIGHTING WALL PACKS	0.08	0.7	1			0.1	1			SPARE	20	6
7	15	AC INDOOR UNIT #1	0.1	1.0	2	2.0			2	18.3	1.9	AC OUTDOOR UNIT #1	25	8
			0.1				2.0				1.9			
11	15	AC INDOOR UNIT #2	0.1	1.0	2			2.0	2	18.3	1.9	AC OUTDOOR UNIT #2	25	12
			0.1			2.0					1.9			
15	15	AC INDOOR UNIT #3	0.1	1.0	2		2.0		2	18.3	1.9	AC OUTDOOR UNIT #3	25	16
			0.1					2.0			1.9			
19	60	GENERATOR JACKET WATER HEATER	4.4	42.3	2	5.2			2	7.2	1.5	SERVER RACK	20	20
	60		4.4				5.2		1					
23	60	GENERATOR BATTERY CHARGER	0.2	1.7	1			1.0	2	7.2	1.5	NETWORK RACK	20	24
25	20	GENERATOR RECEPTACLE	0.18	1.5	1	0.9			1					
27	20	PLC PANEL	0.1	0.8	1		0.1		2			SPARE	25	28
29	20	SPARE			1			0.0						
31	20	SPARE			1	0.0			1			SPARE	20	32
33	20	SPARE			1		0.0		1			SPARE	20	34
35	20	SPARE			1			0.0	1			SPARE	20	36
37	20	SURGE PROTECTION DEVICE	0.1	0.8	3	0.1			1			(PREPARED SPACE)	20	38
	20		0.1				0.1		1			(PREPARED SPACE)	20	40
	20		0.1					0.1	1			(PREPARED SPACE)	20	42
			TOTAL KVA			10.9	12.6	5.1						
			GRAND CONNECTED TOTAL KVA			28.7								

PANEL **LP1**
LOCATION ELEC. BUILDING
BUILDING
NOTES:

SERVICE CHARACTERISTICS
VOLTS: 208Y/120
PHASE: 3
WIRE: 4
22k MIN AIC SYMM, FULLY RATED ASSEMBLY
A MLO
175 A MCB

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

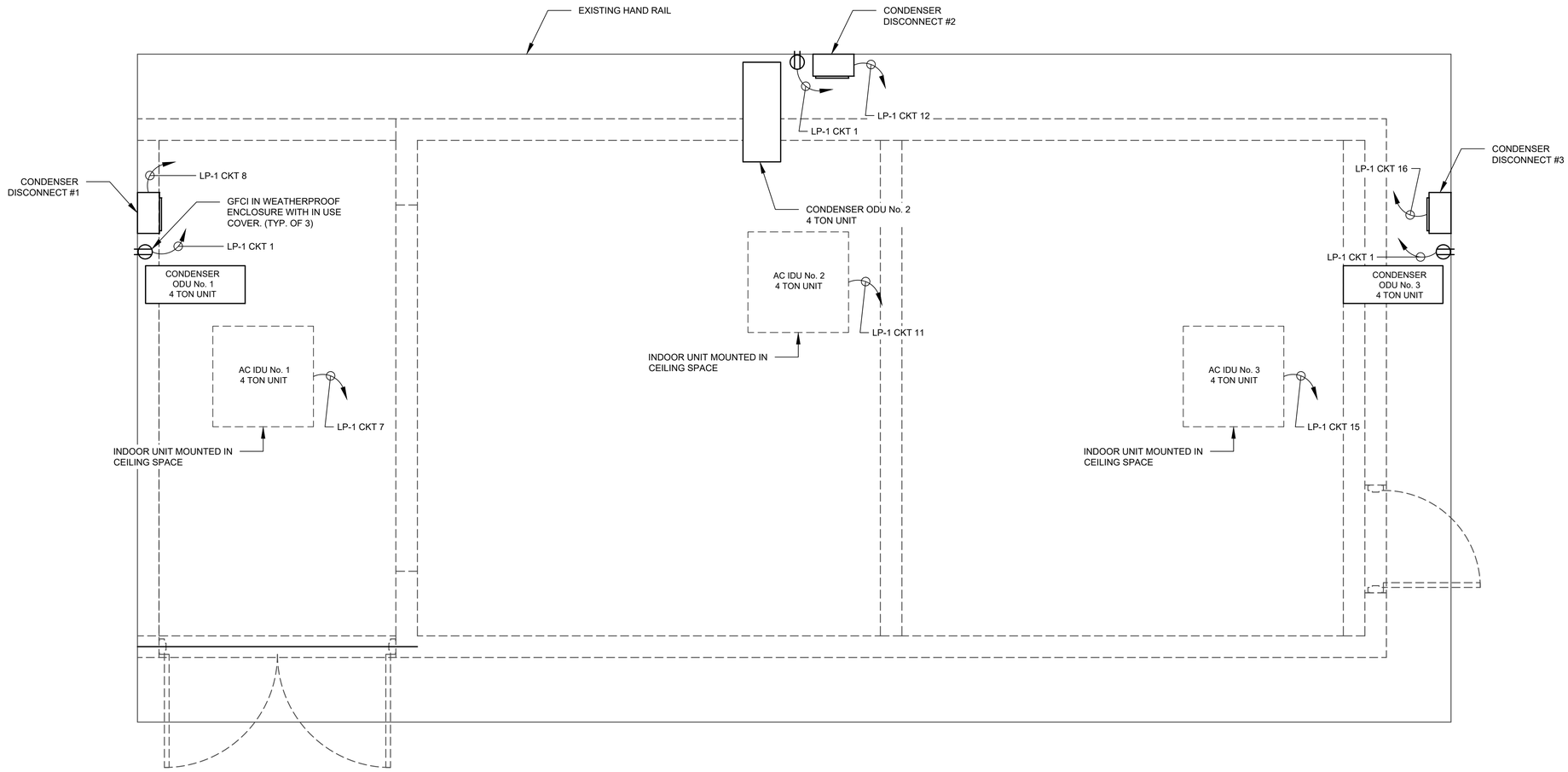
LIGHTING, RECEPTACLES AND PANELBOARD SCHEDULE

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.09
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID



NORTH

1/2" = 1'-0"

12" 0 1' 2' 3' 4' 5'

NOTES:

1. INSIDE AC UNIT AND OUTDOOR CONDENSER UNIT DESIGNED AROUND SPECIFIC MANUFACTURER.
2. ALL MECHANICAL PIPING AND ELECTRICAL CONDUITS ROUTED TO EQUIPMENT LOCATED ON THE ROOF SHALL ENTER/EXIT THROUGH THE SIDE OF THE BUILDING WALL. NO PENETRATIONS THROUGH ROOF/CEILING WILL BE ALLOWED.

ROOF CONDENSER UNIT PLAN

SCALE: 1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

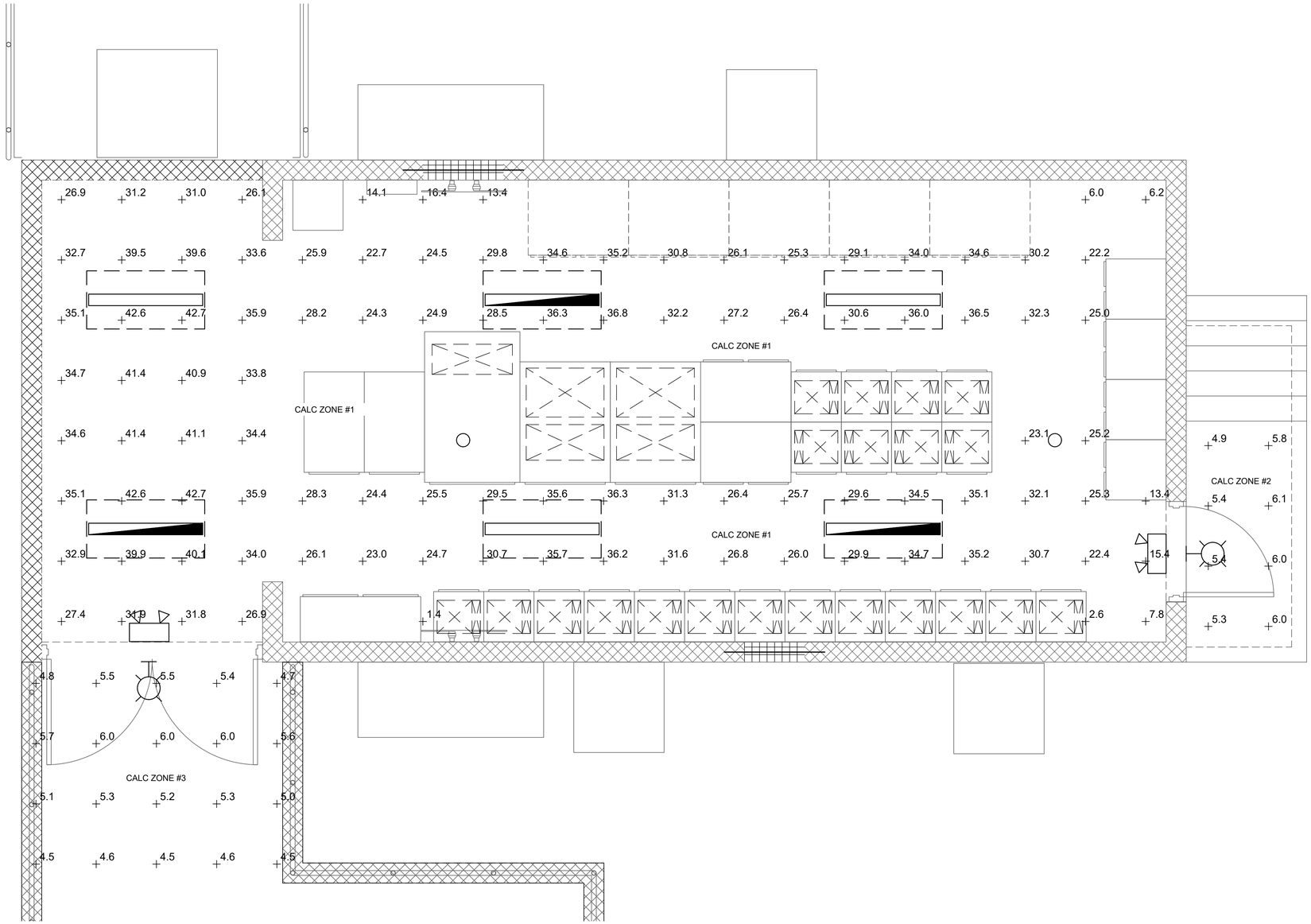
ROOF CONDENSER UNIT PLAN

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.10
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID



LIGHTING STATISTICS					
Description	**Avg**	**Max**	**Min**	**Max/Min**	**Avg/Min**
Calc Zone #1	28.9 fc	42.7 fc	1.4 fc	30.5:1	20.6:1
Calc Zone #2	5.2 fc	6.0 fc	4.5 fc	1.3:1	1.2:1
Calc Zone #3	5.6 fc	6.1 fc	4.9 fc	1.2:1	1.1:1

LIGHTING STATISTICS

SCALE: 1/2" = 1'-0"

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED

1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PLANS

LIGHTING STATISTICS

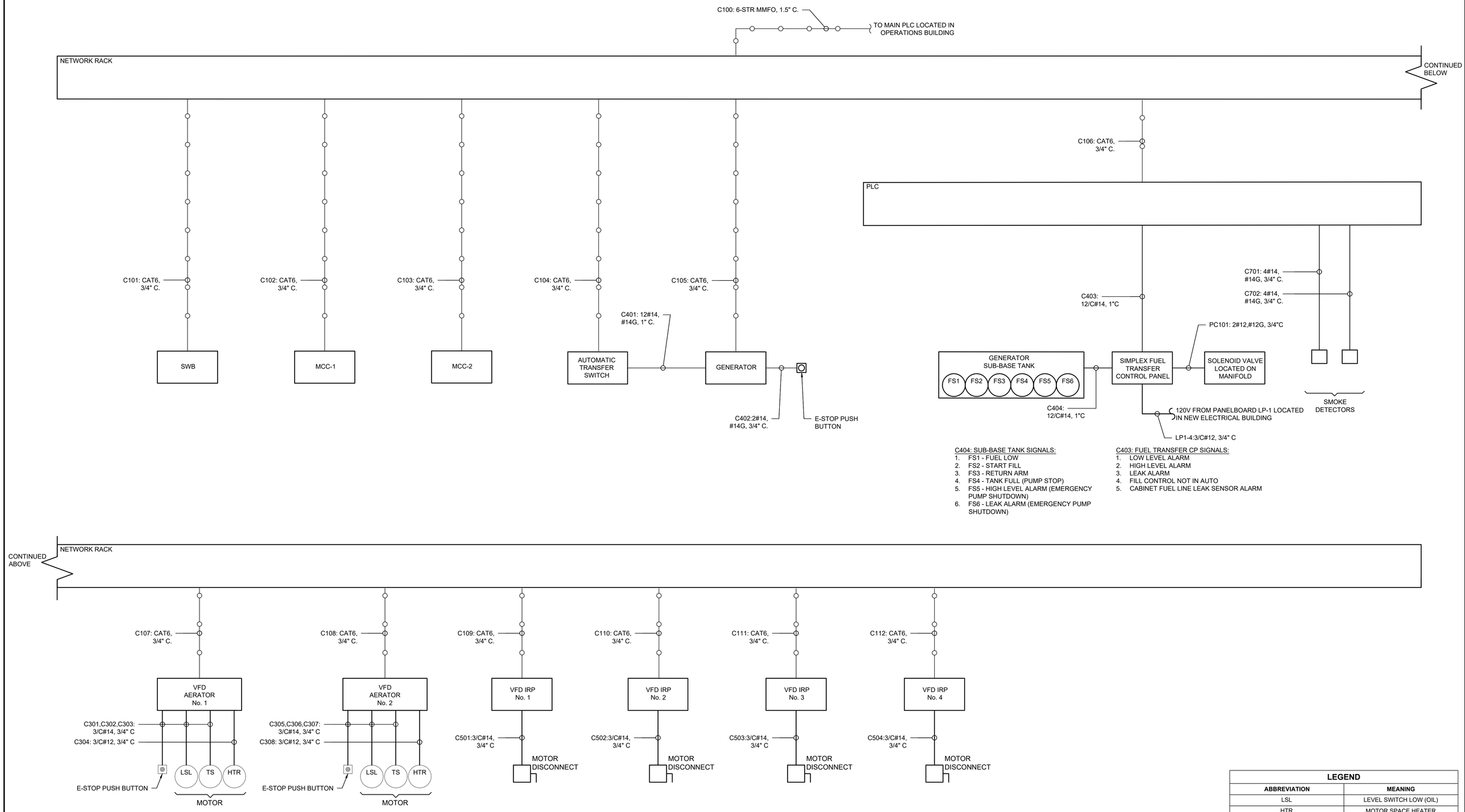
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E2.11
DRAWING NUMBER

A
REVISION

STATUS: **ISSUED FOR BID**



C404: SUB-BASE TANK SIGNALS:
1. FS1 - FUEL LOW
2. FS2 - START FILL
3. FS3 - RETURN ARM
4. FS4 - TANK FULL (PUMP STOP)
5. FS5 - HIGH LEVEL ALARM (EMERGENCY PUMP SHUTDOWN)
6. FS6 - LEAK ALARM (EMERGENCY PUMP SHUTDOWN)

C403: FUEL TRANSFER CP SIGNALS:
1. LOW LEVEL ALARM
2. HIGH LEVEL ALARM
3. LEAK ALARM
4. FILL CONTROL NOT IN AUTO
5. CABINET FUEL LINE LEAK SENSOR ALARM

LEGEND	
ABBREVIATION	**MEANING**
LSL	LEVEL SWITCH LOW (OIL)
HTR	MOTOR SPACE HEATER
TS	MOTOR TEMPERATURE SWITCH

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SCHEMATICS

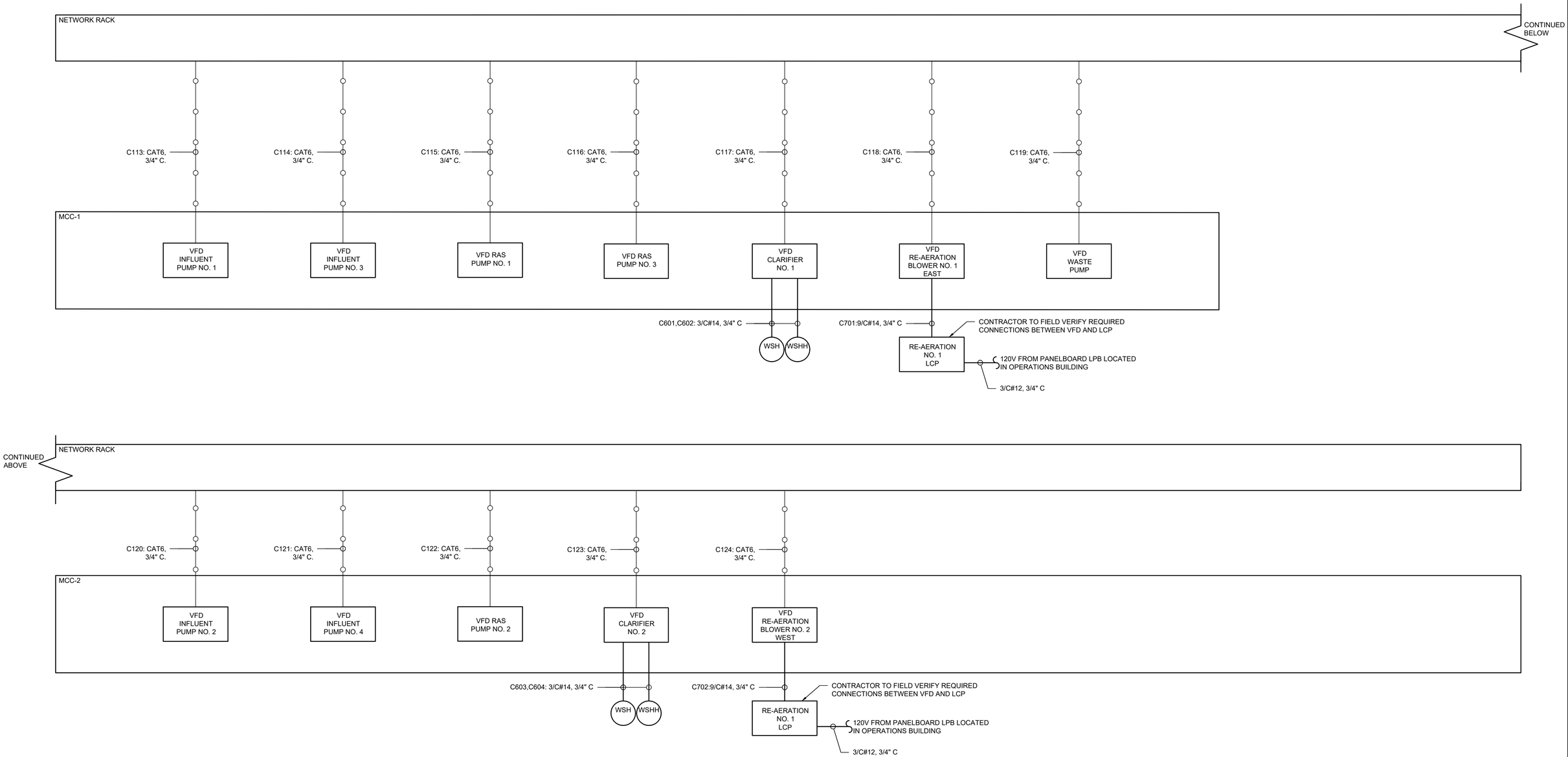
INTERCONNECTION DIAGRAM 1 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E3.01
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**



LEGEND	
ABBREVIATION	**MEANING**
WSH	TORQUE SWITCH HIGH
WSHH	TORQUE SWITCH HIGH HIGH

REV.NO.	DESCRIPTION	DATE
-	-----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SCHEMATICS

INTERCONNECTION DIAGRAM 2 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

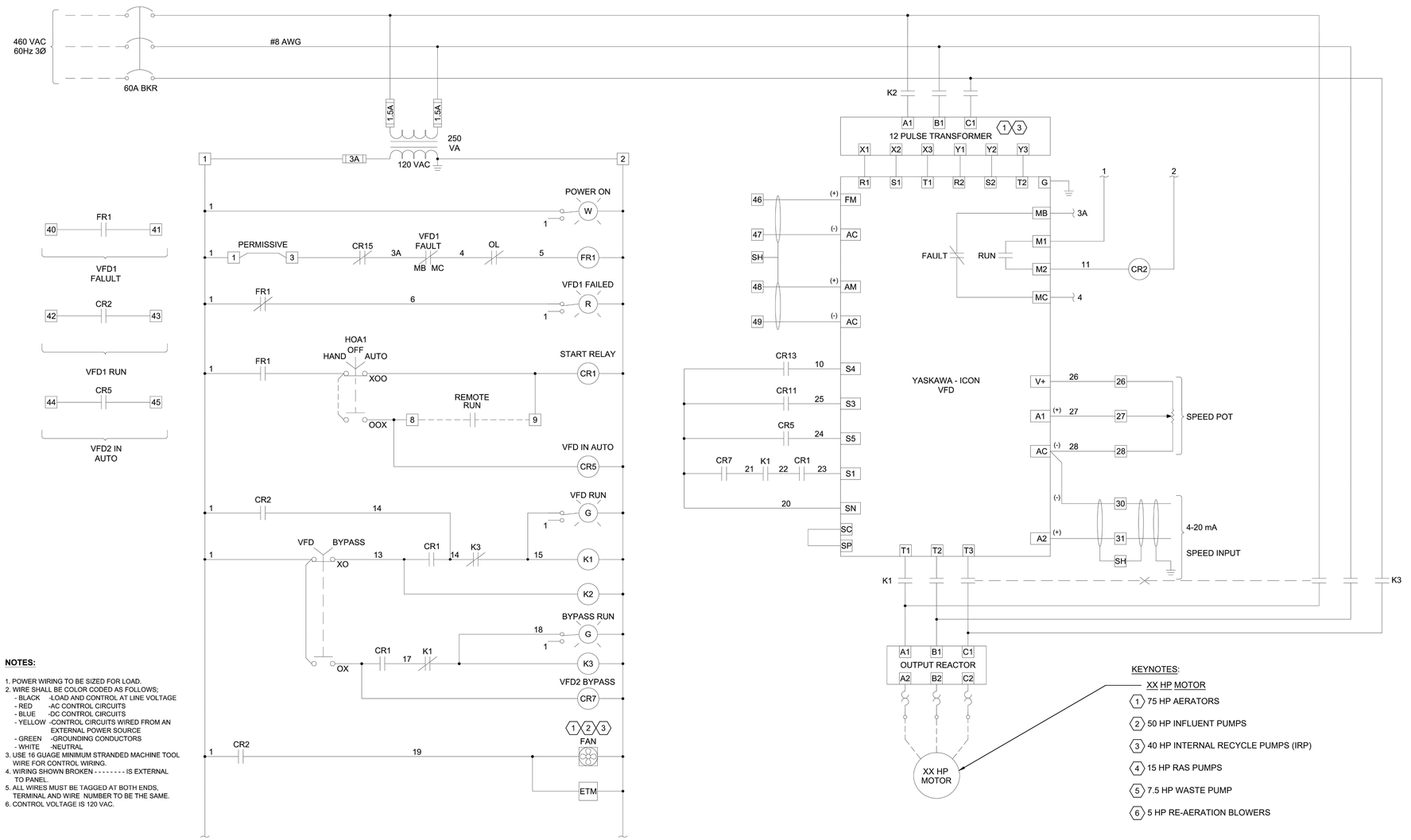
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E3.02
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EC100_01040-0015 INTERCONNECTION.DWG 04/10/2026 12:50:51 SUVATH SENG



NOTES:

1. POWER WIRING TO BE SIZED FOR LOAD.
2. WIRE SHALL BE COLOR CODED AS FOLLOWS;
   - BLACK -LOAD AND CONTROL AT LINE VOLTAGE
   - RED -AC CONTROL CIRCUITS
   - BLUE -DC CONTROL CIRCUITS
   - YELLOW -CONTROL CIRCUITS WIRED FROM AN EXTERNAL POWER SOURCE
   - GREEN -GROUNDING CONDUCTORS
   - WHITE -NEUTRAL
3. USE 16 GUAGE MINIMUM STRANDED MACHINE TOOL WIRE FOR CONTROL WIRING.
4. WIRING SHOWN BROKEN - - - - - - - IS EXTERNAL TO PANEL.
5. ALL WIRES MUST BE TAGGED AT BOTH ENDS, TERMINAL AND WIRE NUMBER TO BE THE SAME.
6. CONTROL VOLTAGE IS 120 VAC.

KEYNOTES:

XX HP MOTOR

1. 75 HP AERATORS
2. 50 HP INFLUENT PUMPS
3. 40 HP INTERNAL RECYCLE PUMPS (IRP)
4. 15 HP RAS PUMPS
5. 7.5 HP WASTE PUMP
6. 5 HP RE-AERATION BLOWERS

NOTES:

1. THE GENERAL FUNCTIONALITY AND REQUIREMENTS FOR MOTOR OPERATION ARE SHOWN IN THE SCHEMATIC FOR QTY. 2 VFD IN A SINGLE ENCLOSURE. THE INTENTION, HOWEVER, IS TO INSTALL SEPARATE VFDS IN THEIR OWN INDIVIDUAL ENCLOSURES.

VFD WIRING DIAGRAMS

SCALE:N.T.S

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SCHEMATICS

VFD WIRING DIAGRAM 1 OF 3

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

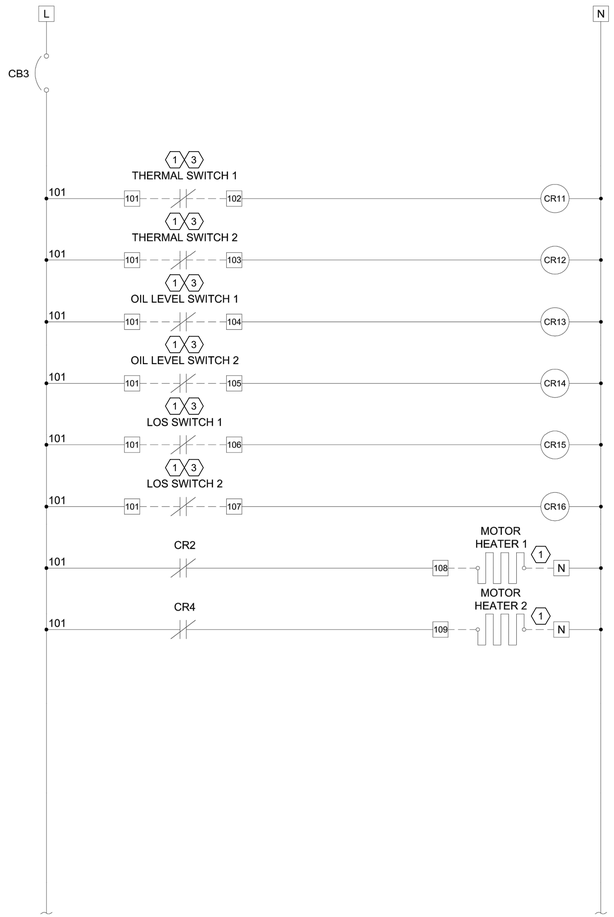
E3.03
DRAWING NUMBER

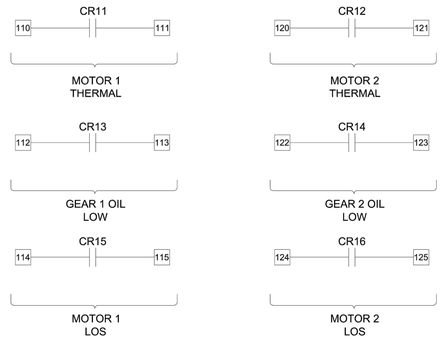
A
REVISION

STATUS: **ISSUED FOR BID**

NOTES:

1. THE GENERAL FUNCTIONALITY AND REQUIREMENTS FOR MOTOR OPERATION ARE SHOWN IN THE SCHEMATIC FOR QTY. 2 VFD IN A SINGLE ENCLOSURE. THE INTENTION, HOWEVER, IS TO INSTALL SEPARATE VFDS IN THEIR OWN INDIVIDUAL ENCLOSURES.





KEYNOTES:

1. 75 HP AERATORS
2. 50 HP INFLUENT PUMPS
3. 40 HP INTERNAL RECYCLE PUMPS (IRP)
4. 15 HP RAS PUMPS
5. 7.5 HP WASTE PUMP
6. 5 HP RE-AERATION BLOWERS

VFD WIRING DIAGRAMS

SCALE:N.T.S

REV.NO.	DESCRIPTION	DATE
-	---	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SCHEMATICS

VFD WIRING DIAGRAM 2 OF 3

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

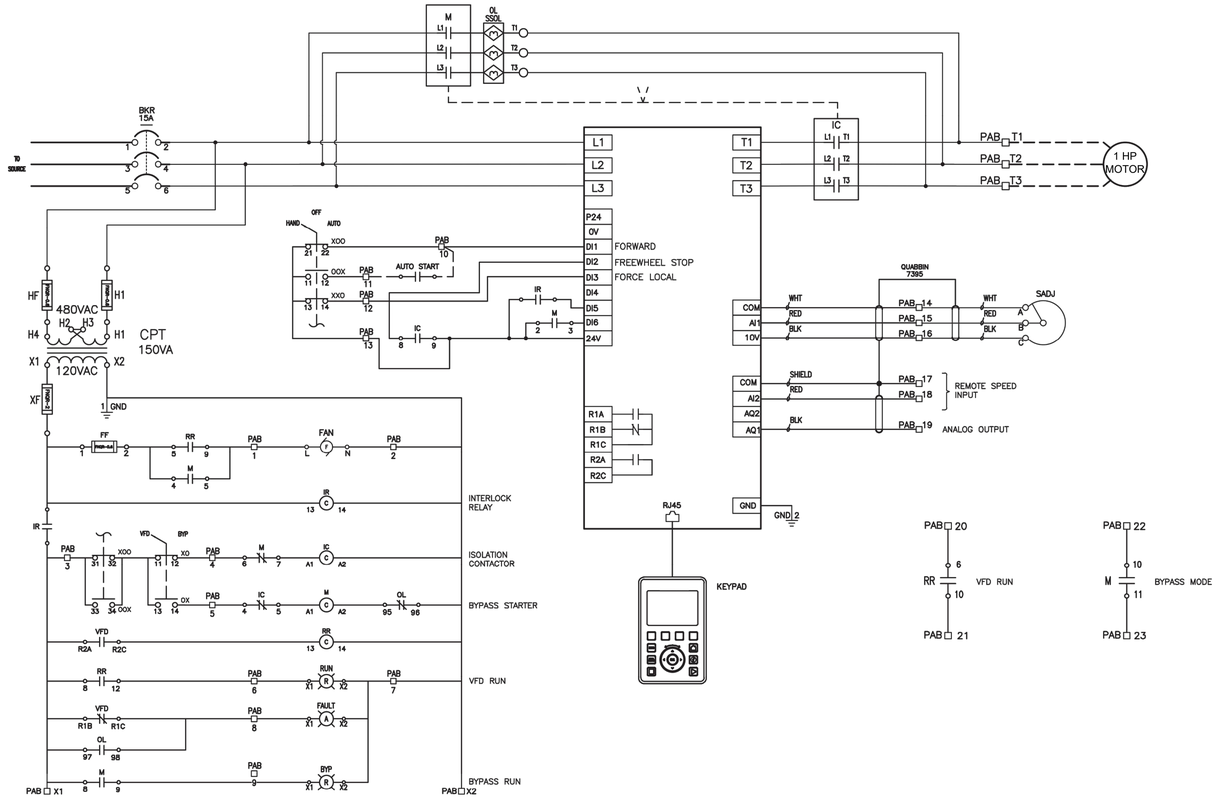
E3.04
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EC100_01040-0015 INTERCONNECTION.DWG 04/10/2026 12:50:57 SUVATH SENG

NOTES:

1. GENERAL FUNCTIONALITY AND REQUIREMENTS OF CLARIFIER IS SHOWN ON THE SCHEMATIC. MANUFACTURE TO INCLUDE TORQUE HIGH AND TORQUE HIGH HIGH INTERLOCK INTO MOTOR CONTROL SCHEMATIC.



NOTES:
1. HOOKUP CABLE TO BE MINIMUM OF #14 AWG
2. 120VAC CONTROL WIRE TO BE #16 AWG RED, 24VDC TO BE BLUE

VFD WIRING DIAGRAM CLARIFIERS

SCALE:N.T.S

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

SCHEMATICS

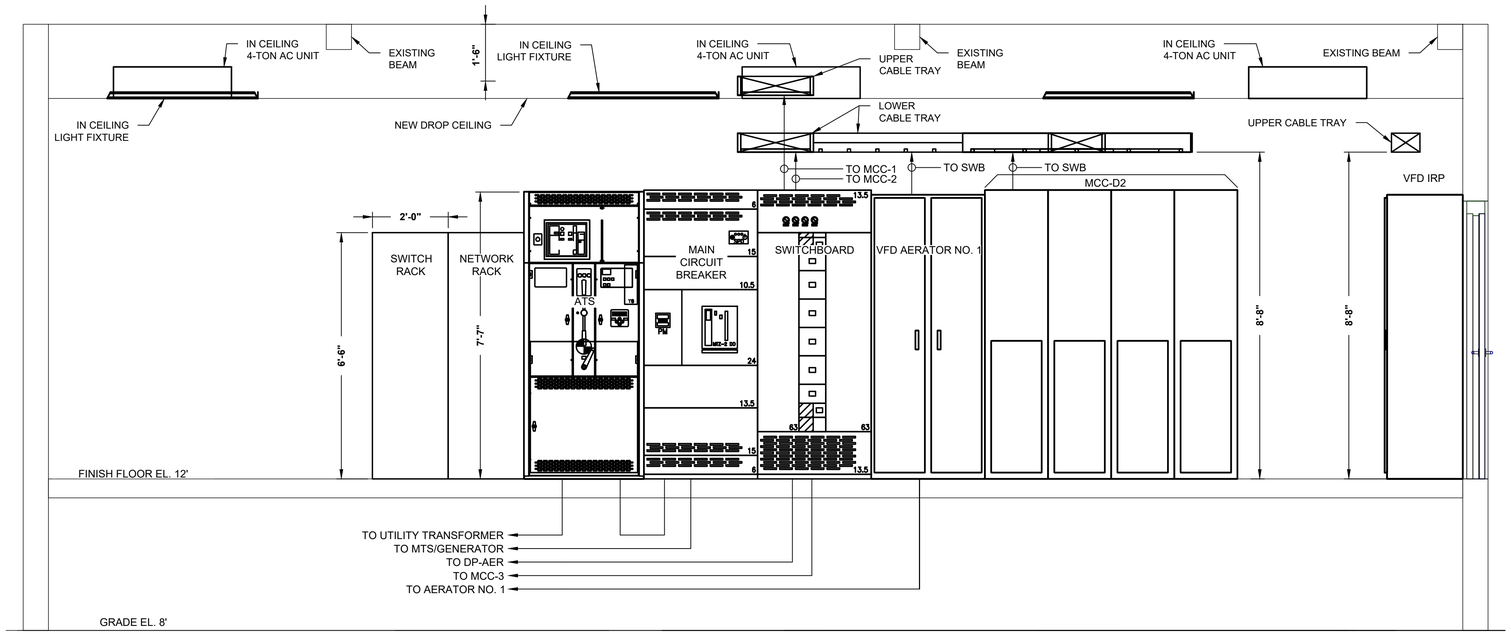
VFD WIRING DIAGRAM 3 OF 3

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E3.05
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**

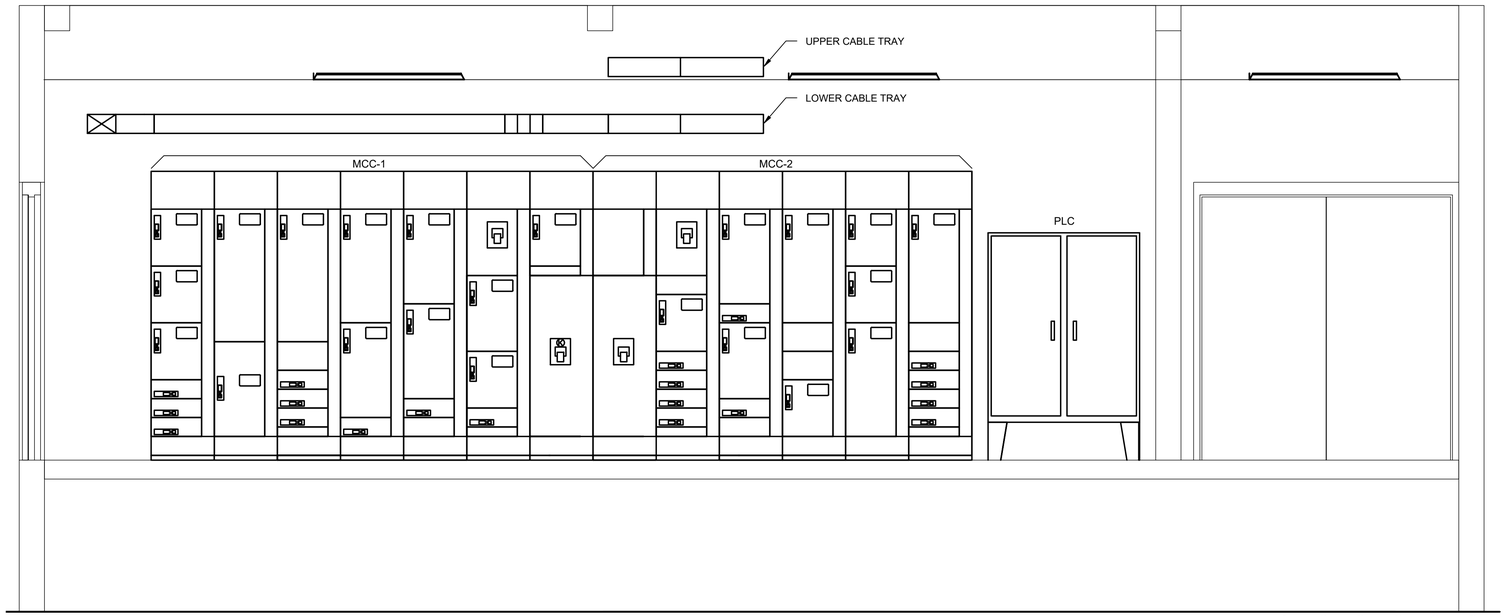


1 ELECTRICAL BUILDING ELEVATION MAIN CB, ATS AND SWITCHBOARD

SCALE: 1/2" = 1'-0"

12" 0 1' 2' 3' 4' 5'

1/2" = 1'-0"



2 ELECTRICAL BUILDING ELEVATION WEST WALL

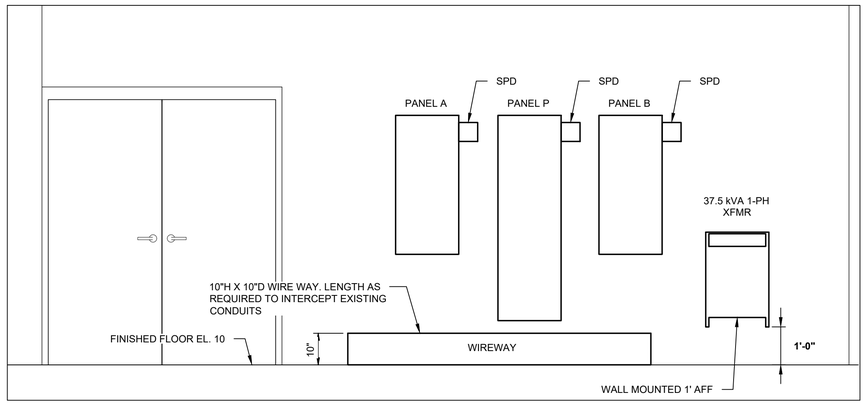
SCALE: 1/2" = 1'-0"

12" 0 1' 2' 3' 4' 5'

1/2" = 1'-0"

NOTES:

1. ELEVATIONS ARE SHOWN FOR LAYOUT PURPOSES ONLY. THE CONTRACTOR SHALL COORDINATE WITH THE VENDOR FOR FINAL EQUIPMENT SELECTION, AS WELL AS THE PLACEMENT OF CIRCUIT BREAKERS, MOTOR STARTERS AND THEIR CORRESPONDING SECTIONS.



3 OPERATIONS BUILDING PANEL ELEVATIONS

SCALE: N.T.S

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

EQUIPMENT ELEVATIONS

EQUIPMENT ELEVATIONS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E4.01
DRAWING NUMBER

A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EK100_01040-0015 EQUIPMENT ELEVATIONS.DWG 04/10/2026 12:50:59 SUVATH SENG

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE A	KVA PER PHASE B	KVA PER PHASE C	POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	RECEPTACLES OUTSIDE	0.7	5.8	1	0.7			1	0.3	0.04	EMERG. EXIT AND INTERIOR LIGHT	20	2
3	20	RECEPTACLES INSIDE	0.7	5.8	1		3.3		1	21.6	2.59	FUEL TRANSFER CONTROL PANEL	30	4
5	20	EXTERIOR LIGHTING WALL PACKS	0.08	0.7	1			0.1	1			SPARE	20	6
7	15	AC INDOOR UNIT #1	0.1	1.0	2	2.0			2	18.3	1.9	AC OUTDOOR UNIT #1	25	8
			0.1				2.0				1.9			
11	15	AC INDOOR UNIT #2	0.1	1.0	2			2.0	2	18.3	1.9	AC OUTDOOR UNIT #2	25	12
			0.1			2.0					1.9			
15	15	AC INDOOR UNIT #3	0.1	1.0	2		2.0		2	18.3	1.9	AC OUTDOOR UNIT #3	25	16
			0.1					2.0			1.9			
19	60	GENERATOR JACKET WATER HEATER	4.4	42.3	2	5.2			2	7.2	1.5	SERVER RACK	20	20
	60		4.4				5.2		1					
23	60	GENERATOR BATTERY CHARGER	0.2	1.7	1			1.0	2	7.2	1.5	NETWORK RACK	20	24
25	20	GENERATOR RECEPTACLE	0.18	1.5	1	0.9			1					
27	20	PLC PANEL	0.1	0.8	1		0.1		2			SPARE	25	28
29	20	SPARE			1			0.0						
31	20	SPARE			1	0.0			1			SPARE	20	32
33	20	SPARE			1		0.0		1			SPARE	20	34
35	20	SPARE			1			0.0	1			SPARE	20	36
37	20	SURGE PROTECTION DEVICE	0.1	0.8	3	0.1			1			(PREPARED SPACE)	20	38
	20		0.1				0.1		1			(PREPARED SPACE)	20	40
	20		0.1					0.1	1			(PREPARED SPACE)	20	42
			TOTAL KVA			10.9	12.6	5.1						
			GRAND CONNECTED TOTAL KVA				28.7							

PANEL **LP1**
LOCATION ELEC. BUILDING
BUILDING
NOTES:

SERVICE CHARACTERISTICS
VOLTS: 208Y/120
PHASE: 3
WIRE: 4
22k MIN AIC SYMM, FULLY RATED ASSEMBLY

175 A MCB
A MLO

PANELBOARD SCHEDULE LP1
SCALE:N.T.S

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE A	KVA PER PHASE B	POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	LTS. OFFICE	0.23	1.92	1	0.410		1	1.50	0.18	INFLUENT FLOW METER	20	2
3	20	PLC2	0.23	1.92	1		1.730	1	12.50	1.5	SERVER UPS 1	30	4
5	20	IR VFD	0.18	1.50	1	1.680		1	12.50	1.5	SERVER UPS 2	30	6
7	20	PLC 8 & 9	0.18	1.50	1		1.180	1	8.33	1	REFRIDGERATOR	20	8
9	20	LTS CONTROL ROOM	0.18	1.50	1	1.680		1	12.50	1.5	PANEL A #14 EAST BLOCK HEATER	50	10
11	20	RECEPTACLE	0.18	1.50	1		0.360	1	1.50	0.18	DO METER	20	12
13	20	RECEPTACLE	0.18	1.50	1	0.270		2	0.75	0.18	SURGE PROTECTECTION DEVICE	30	14
15	20	RECEPTACLE	0.18	1.50	1		0.270						16
17	20	RECEPTACLE	0.18	1.50	1	0.516		2	2.80	0.672	AC ELECTRICAL ROOM	30	18
19	20	RECEPTACLE	0.18	1.50	1		0.516	1					
21	60	MAG PAC. PANEL	0.46	1.92	2	0.410		1	1.50	0.18	POWER ROOM LIGHTS	20	22
							0.460	1	1.9	0.23	1ST ANOXIC MIX NO. 2 HEATER	20	24
25	20	COKE MACHINE	0.18	1.50	1	0.360		1	1.5	0.18	AMPLE AMP FAN	20	26
27	20	INFLUENT FLOW METER RECEPT.	0.18	1.50	1		0.4	1	1.9	0.23	2ND ANOXIC MIX NO. 2 HEATER	20	28
29	20	PANEL A #21 WEST BLOCK HEATER	0.18	1.50	1	0.4		1	1.9	0.23	FERMENTATION MIX. NO.1 HEATER	20	30
31	20	SPARE			1		0.0	1			RAS FLOW METER/HEADWORKS FL LTS.	20	32
33	20	EXTERN. RECEPT. INFLUENT PUMP WEST	0.18	1.50	1	0.2		1			RAS MLSS METER	20	34
35	20	RECEPTACLE GENERATOR ROOM	0.18	1.50	1		0.5	2	2.8	0.672	AC POWER ROOM	15	36
37	30	HOT WATER HEATER	3.4	14.17	2	2.0							38
							1.9	1	1.9	0.23	1ST ANOXIC MIX NO. 1 HEATER	20	40
41	20	2ND ANOXIC MIX NO. 1 HEATER	0.23	1.92	1	0.2		1			SPARE	20	42
			TOTAL KVA			8.182	7.372						
			GRAND CONNECTED TOTAL KVA				15.554						

PANEL **A**
LOCATION ELECTRICAL ROOM
BUILDING OPERATIONS BUILDING
NOTES: PANEL TO INCLUDE FEED THROUGH LUGS TO POWER PANEL B

SERVICE CHARACTERISTICS
VOLTS: 240/120
PHASE: 3
WIRE: 3
10k MIN AIC SYMM, FULLY RATED ASSEMBLY

200 A MCB
A MLO

PANELBOARD SCHEDULE A
SCALE:N.T.S

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE A	KVA PER PHASE B	KVA PER PHASE C	POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	SPARE			2	1.0			2	4.2	2	SITE LIGHTING	20	2
5	175	37.5 KVA 1-PHASE XFMR	37.5	78.1	2		1.0		3	7.6	6.319	ROOF TOP AC	20	6
						20.9		20.9						
9	50	ODOR BLOWER MOTOR	6.319	7.6	3		4.2		2			SPARE	20	12
						2.1		2.1						
15		PREPARED SPACE			2		0.1		3	0.4	0.3	SURGE PROTECTIVE DEVICE	30	16
								0.1						
19		PREPARED SPACE			3	0.1								
							0.0		3			PREPARED SPACE		22
								0.0						
25		PREPARED SPACE			3	0.0								
							0.0		2			PREPARED SPACE		28
								0.0						
			TOTAL KVA			24.1	5.3	23.1						
			GRAND CONNECTED TOTAL KVA				52.4							

PANEL **P**
LOCATION ELECTRICAL ROOM
BUILDING OPERATIONS BUILDING
NOTES:

SERVICE CHARACTERISTICS
VOLTS: 480Y/277
PHASE: 3
WIRE: 4
22k MIN AIC SYMM, FULLY RATED ASSEMBLY

175 A MCB
A MLO

PANELBOARD SCHEDULE P
SCALE:N.T.S

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	AMPS	POLES	KVA PER PHASE A	KVA PER PHASE B	POLES	AMPS	LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	RETURN PUMP TANK RECEPTACLE	0.18	1.50	1	0.360		1	1.50	0.18	FLOOD LIGHTS	20	2
3	20	CL2 BUILDING EYEWASH	0.18	1.50	1		0.410	1	1.92	0.23	NO. 1 SCREW HEATER	20	4
5	20	EF-4 COMP. CAB.	0.18	1.50	1	0.410		1	1.92	0.23	NO. 2 SCREW HEATER	20	6
7	20	LAB	0.18	1.50	1		0.360	1	1.50	0.18	TIME CLOCK & TV	20	8
9	50	TRAINING OFFICE			2	0.180		1	1.50	0.18	RAIN BIRD SPRINKLER	20	10
							0.180	1	1.50	0.18	WELL RECEPTACLE	20	12
13	20	CL2 ALARM	0.18	1.50	1	0.270		2	0.75	0.18	SURGE SUPRESSION DEVICE	30	14
15	20	HYRDROGEN PEROXIDE OUTSIDE RECEPT.	0.18	1.50	1		0.270						
17	20	SPARE			1	0.180		1	1.50	0.18	REPT HEADWORKS/ALUM PUMPS	20	18
19	20	SLUDGE PROCESS BUILDING	0.75	6.25	1		0.930	1	1.50	0.18	REPT PRETREATMENT	20	20
21	20	RE-AERATION NO. 1 HEATER	0.23	1.92	1	0.410		1	1.50	0.18	SLUDGE FLOAT CONT.	20	22
23	20	RE-AERATION NO. 2 HEATER	0.23	1.92	1		0.410	1	1.5	0.18	CL2 CAMERAS/RAS Q	20	24
25	30	AIR HANDLER OPS INSIDE	0.12	0.50	2	0.060		1			SPARE	20	26
							0.4	2	2.8	0.672	AIR CONDENSER UNIT OPS OUTSIDE	30	28
29	20	SPARE			1	0.0							
31	20	SPARE			1		0.0	1			SPARE	20	32
33	20	SPARE			1	0.0		1			SPARE	20	34
35	20	SPARE			1		0.0	1			SPARE	20	36
37		PREPARED SPACE			1	0.0		1			SPARE	20	38
39		PREPARED SPACE			1		0.0	1			PREPARED SPACE		40
41		PREPARED SPACE			1	0.0		1			PREPARED SPACE		42
			TOTAL KVA			1.870	2.956						
			GRAND CONNECTED TOTAL KVA				4.826						

PANEL **B**
LOCATION ELECTRICAL ROOM
BUILDING OPERATIONS BUILDING
NOTES:

SERVICE CHARACTERISTICS
VOLTS: 240/120
PHASE: 3
WIRE: 3
10k MIN AIC SYMM, FULLY RATED ASSEMBLY

100 A MCB
A MLO

PANELBOARD SCHEDULE B
SCALE:N.T.S

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

PANELBOARD SCHEDULES

PANELBOARD SCHEDULES

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

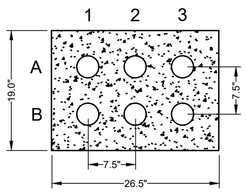
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E4.02
DRAWING NUMBER

A
REVISION

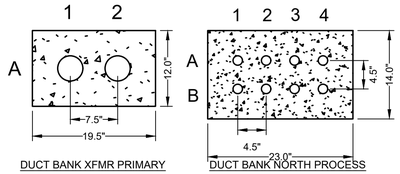
STATUS: **ISSUED FOR BID**

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\EK100_01040-0015 EQUIPMENT ELEVATIONS.DWG 04/10/2026 12:51:00 SUVATH SENG



1 DUCT BANK - XFMR SECONDARY
SCALE: 1" = 1'-0"

DUCT BANK MAIN		
ADDRESS	CABLE TAGS	SIZE
A1	XFMR-ATS	3.5"C
A2	XFMR-ATS	3.5"C
A3	XFMR-ATS	3.5"C
B1	XFMR-ATS	3.5"C
B2	SPARE	3.5"C
B3	SPARE	3.5"C



DUCT BANK XFMR PRIMARY

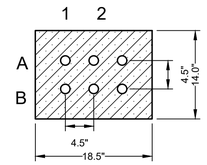
DUCT BANK NORTH PROCESS

NOTES:
DUCT BANK SERVES CLARIFIERS, RE-AERATION MIXER AND BLOWERS.

2 DUCT BANK - XFMR PRIMARY AND NORTH PROCESS
SCALE: 1" = 1'-0"

DUCT BANK XFMR PRIMARY		
ADDRESS	CABLE TAGS	SIZE
A1	CABLES BY DUKE	4"C
A2	SPARE	4"C

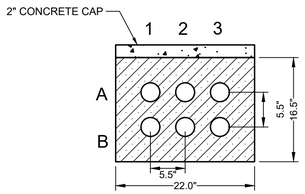
DUCT BANK NORTH		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-13	1.5"C
A2	P1A-19 P1B-14	1.5"C
A3	P1A-5	1.5"C
A4	P1B-10	1.5"C
B1	SPARE CLARIFIER 1	1.5"C
B2	SPARE CLARIFIER 2	1.5"C
B3	SPARE RE-AERATION	1.5"C
B4	SPARE RE-AERATION	1.5"C



NOTES:
DUCT BANK SERVES RE-AERATION MIXER AND BLOWERS.

3 DUCT BANK - RE-AERATION
SCALE: 1" = 1'-0"

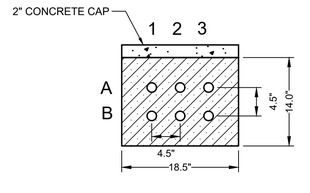
DUCT BANK RE-AERATION		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-19 P1B-14	1.5"C
A2	P1A--5	1.5"C
B1	SPARE	1.5"C
B2	SPARE	1.5"C



DUCT BANK GENERATOR POWER

4 DUCT BANK GENERATOR POWER
SCALE: 1" = 1'-0"

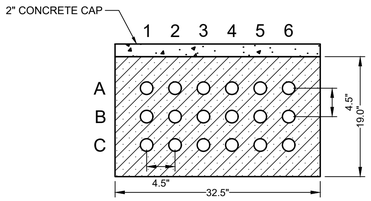
DUCT BANK GENERATOR POWER		
ADDRESS	CABLE TAGS	SIZE
A1	GEN-ATS	3"C
A2	GEN-ATS	3"C
B1	GEN-ATS	3"C
B2	GEN-ATS	3"C
C1	SPARE	3"C
C2	SPARE	3"C



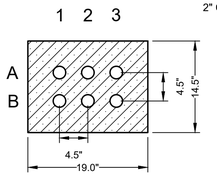
DUCT BANK GENERATOR CONTROLS

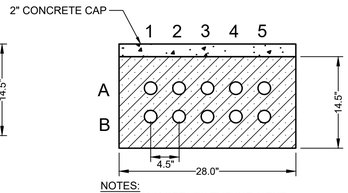
5 DUCT BANK GENERATOR CONTROLS
SCALE: 1" = 1'-0"

DUCT BANK GENERATOR CONTROLS		
ADDRESS	CABLE TAGS	SIZE
A1	LP1-CKT 19	1.5"C
A2	C105	1.5"C
A3	C401	1.5"C
B1	LP1-CKT 23	1.5"C
B2	LP1-CKT 25	1.5"C
B3	SPARE	1.5"C

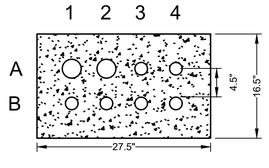


NOTES:
DUCT BANK SERVES THE MAIN PROCESS BASIN AND OPERATIONS BUILDING.

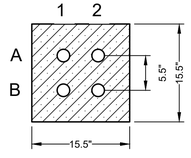


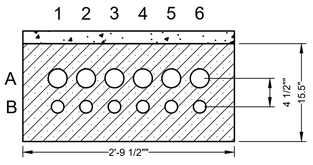


NOTES:
DUCT BANK SERVES THE INFLUENT PUMP STATION, SLUDGE DEWATERING BUILDING AND RAS PUMPS



NOTES:
DUCT BANK SERVES MCC-3 LOCATED AT THE GSPS BUILDING.





6 DUCT BANK MAIN BASIN & OPS BUILDING
SCALE: 1" = 1'-0"

DUCT BANK BASIN/OPS		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-4 P1A-6 P1A-9	2"C
A2	P1B-4 P1B-5 P1B-8	2"C
A3	P1B-19	2"C
A4	P1A-7B P1A-8B	2"C
A5	P1B-6B P1B-7B	2"C
A6	P1A-17 P1A-18 P1B-12 P1B-13	2"C
B1	SPARE	2"C
B2	SPARE	2"C
B3	P1A-15A	2"C
B4	C100	2"C
B5	C501 C502 C503 C504	2"C
B6	SPARE OPS BLDG	2"C
C1	SPARE OPS BLDG	2"C
C2	SPARE OPS BLDG	2"C
C3	SPARE OPS BLDG	2"C
C4	SPARE IRP SHED	2"C
C5	SPARE IRP SHED	2"C
C6	SPARE IRP SHED	2"C

7 DUCT BANK - IRP SHED
SCALE: 1" = 1'-0"

DUCT BANK IRP SHED		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-7B P1A-8B	2"C
A2	C501 C502 C503 C504	2"C
A3	P1B-19	2"C
B1	SPARE IRP SHED	2"C
B2	SPARE IRP SHED	2"C
B3	SPARE IRP SHED	2"C

8 DUCT BANK - WEST
SCALE: 1" = 1'-0"

DUCT BANK WEST		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-2 P1A-3	2"C
A2	P1A-10 P1A-11 P1B-9	2"C
A3	P1B-2 P1B-3	2"C
A4	P1B-15	2"C
A5	P1B-16	2"C
B1	SPARE INFLUENT PS	2"C
B2	SPARE INFLUENT PS	2"C
B3	SPARE RAS PS	2"C
B4	SPARE DEWATERING	2"C
B5	SPARE DEWATERING	2"C

9 DUCT BANK - XFMR PRIMARY AND MCC-3
SCALE: 1" = 1'-0"

DUCT BANK MCC-3 & SAND FILTERS		
ADDRESS	CABLE TAGS	SIZE
A1	SWB-MCC-3	3"C
A2	SWB-MCC-3	3"C
A3	P1A-14 P1B-11	2"C
A4	SPARE MCC3	2"C
B1	SPARE MCC3	2"C
B2	SPARE MCC3	2"C
B3	SPARE SAND FILTERS	2"C
B4	SPARE SAND FILTERS	2"C

10 DUCT BANK - SAND FILTERS
SCALE: 1" = 1'-0"

DUCT BANK SAND FILTERS		
ADDRESS	CABLE TAGS	SIZE
A1	P1A-14	2"C
A2	P1B-11	2"C
B1	SPARE	2"C
B2	SPARE	2"C

11 DUCT BANK - FUTURE DIFFUSERS
SCALE: 1" = 1'-0"

DUCT BANK WEST		
ADDRESS	CABLE TAGS	SIZE
A1	FUTURE	3"C
A2	FUTURE	3"C
A3	FUTURE	3"C
A4	FUTURE	3"C
A6	FUTURE	3"C
B1	FUTURE	2"C
B2	FUTURE	2"C
B3	FUTURE	2"C
B4	FUTURE	2"C
B5	FUTURE	2"C
B6	FUTURE	2"C

NOTES:
1. PROVIDE PULL STRING AND CAP ALL SPARE AND FUTURE CONDUITS.

1" = 1'-0" 12" 6" 0 1' 2'

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

DETAILS

DUCT BANK DETAILS

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E5.01
DRAWING NUMBER

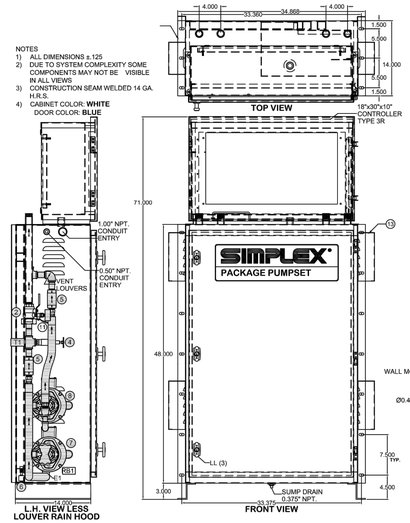
A
REVISION

STATUS: ISSUED FOR BID

NOTES:

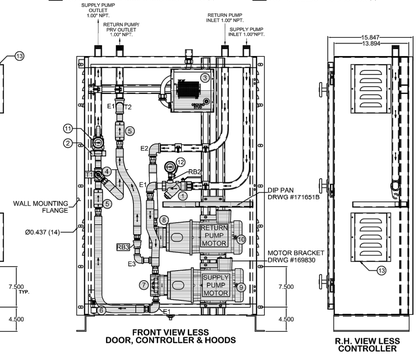
1. SIMPLEX PACKAGED PUMP DRAWINGS PROVIDED FOR REFERENCE ONLY. REFER TO MANUFACTURER DRAWINGS AFTER THE FINAL SELECTION OF BELLY TANK.

NOTES
1) ALL DIMENSIONS ± 125
2) DUE TO SYSTEM COMPLEXITY SOME COMPONENTS MAY NOT BE VISIBLE IN ALL VIEWS
3) CONSTRUCTION SEAM WELDED 14 GA. H.R.S.
4) CABINET COLOR: **WHITE**
DOOR COLOR: **BLUE**



ITEM	PUMP SET STANDARD PARTS (F/S ASS'Y)	QTY.
①	**BV/FSR-** BALL VALVE/FUEL STRAINER COMBO, 1.00" NPT, FEMALE BODY 0.75" NPT, MALE TAILPIECE	1
②	**BV1-** BALL VALVE W/ UNION END & SHORT HANDLE, 1.00" NPT, FEMALE BODY 0.75" NPT, FEMALE TAILPIECE	1
③	**JB-** JUNCTION BOX 8"x8"x4" W/ SCREW COVER, TYPE 1 TERMINAL BLOCK, 4-WIRE, 20A, 600V, GRAY TERMINAL BLOCK, 4-WIRE, END PLATE	1 / 20 / 1
④	**PRV-** PRESSURE RELIEF VALVE, 0.75" NPT, 0-300 PSI RANGE, SET @ 65 PSI	1
⑤	**CV-** CHECK VALVE, 0.75" NPT, SPRING TYPE, BRONZE BODY, VITON O-RING	2
⑥	**LS-** CABINET FUEL LINE LEAK SENSOR, BUNA-N FLOAT	1

T1 0.75" NPT. TEE, 304 S.S. (1)
T2 1.00"x0.75"x0.75" NPT. REDUCING TEE, BLK. (1)
RB1 0.75"x0.50" NPT. REDUCER BUSHING 304 S.S. (1)
RB2 0.50"x0.25" NPT. REDUCER BUSHING 304 S.S. (1)
RB3 0.75"x0.50" NPT. REDUCING BELL 304 S.S. (2)
E1 0.75" NPT. ELBOW 90°D 304 S.S. (3)
E2 1.00"x0.75" NPT. REDUCING ELBOW 90°D BLK (1)
E3 0.50" NPT. ELBOW 90°D 304 S.S. (1)



ITEM	PUMP/MOTOR PARTS (PUMP/MOTOR ASS'Y)	QTY.
⑦	**407-** 7 G.P.M. PUMP,0.75" NPT, INLET/0.50" OUTLET, CAST ALUM.	1
	0.75" PUMP SHAFT COUPLER HUB (L090)	1
	SHAFT COUPLER SPIDER (L090)	1
	7-17 G.P.M. PUMP/MOTOR ADAPTER, SAE-A, 2-BOLT	1
⑧	**410-** 10 G.P.M. PUMP,0.75" NPT, INLET/0.50" OUTLET, CAST ALUM.	1
	0.75" PUMP SHAFT COUPLER HUB (L090)	1
	SHAFT COUPLER SPIDER (L090)	1
	7-17 G.P.M. PUMP/MOTOR ADAPTER, SAE-A, 2-BOLT	1
⑨	**700-** 0.50HP MOTOR,115VAC,1PH,60HZ,1750RPM, ODP, 9.2FLA.	1
	0.625" MOTOR SHAFT COUPLER HUB (L090)	1
⑩	**845-** 0.75HP MOTOR,115/208/230VAC,1PH,60HZ,1750RPM,TEFC 8.4/5.4/4.2FLA.	1
	0.625" MOTOR SHAFT COUPLER HUB (L090)	1

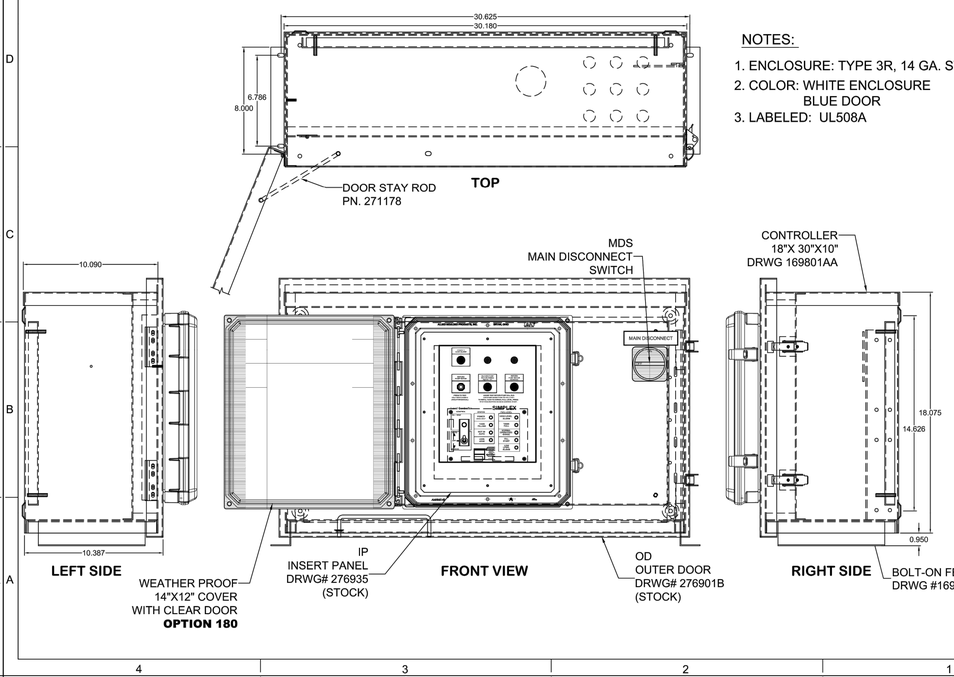
ITEM	F/S ASSEMBLY PARTS	QTY.
⑪	**100-** PRESSURE GAUGE 0-200PSI, 2" S.S. DIA. 0.25" NPT. CENTER BACK CONNECTION W/ 0.25" NPT. ISOLATION VALVE	1
⑫	**101-** VACUUM GAUGE 0-30HG, 2" S.S. DIA. 0.25" NPT. CENTER BACK CONNECTION W/ 0.25" NPT. ISOLATION VALVE	1
⑬	**181-** WEATHERPROOF MODIFICATION, LOUVER RAIN HOOD DRWG #2006950	4

THIRD ANGLE PROJECTION

REVISIONS & UPDATES				
REV.	DATE	DESCRIPTION	ORIGINAL DESIGN	MAT'L APPR.
A	08/04/2022		JLT	A.T.

TOLERANCES
X.XXX ± 0.005"
X.XX ± 0.010"
X.X ± 0.020"
FRACTIONAL ± 1/32"
ANGLES ± 1°
SURFACES 125√

APPROVED BY:	JLT
DRAWN BY:	JLT
SCALE:	1:12.0088
SHEET SIZE:	ANSI B
JOB NUMBER	109302-1-1
DESCRIPTION	SPS25-AF-S/PP PACKAGED PUMP SET PICTORAL
Approved 08/04/2022	
DRAWING NUMBER	ACD-00100725
SHEET NUMBER	1/1
REVISION	A



NOTES:

1. ENCLOSURE: TYPE 3R, 14 GA. STEEL
2. COLOR: WHITE ENCLOSURE
BLUE DOOR
3. LABELED: UL508A

THIRD ANGLE PROJECTION

REVISIONS & UPDATES				
REV.	DATE	DESCRIPTION	ORIGINAL DESIGN	MAT'L APPR.
A	08/04/2022		JLT	A.T.

TOLERANCES
X.XXX ± 0.005"
X.XX ± 0.010"
X.X ± 0.020"
FRACTIONAL ± 1/32"
ANGLES ± 1°
SURFACES 125√

APPROVED BY:	JLT
DRAWN BY:	JLT
SCALE:	1:4.846
SHEET SIZE:	ANSI B
JOB NUMBER	109302-1-1
DESCRIPTION	SPS25-AF-S/PP PACKAGED PUMP SET CONTROL PANEL
Approved 08/04/2022	
DRAWING NUMBER	ACD-00100726
SHEET NUMBER	1/1
REVISION	A

DEVICES OUTSIDE 508A PANEL

NOTES:
1. UNIT MUST BE GROUNDED FOR OPERATORS SAFETY.
2. DASHED LINES - - - - - - - - INDICATE WIRING NOT SUPPLIED BY SIMPLEX.
3. SOLID LINES ———— INDICATE WIRING BY SIMPLEX.
4. COMPONENTS MOUNTED ON PRINTED CIRCUIT BOARDS ARE ENCLOSED BY PHANTOM LINES — — — — — —
5. ALL WIRES ARE #18 AWG, 105°C UNLESS OTHERWISE NOTED.
6. LABELED: UL508A
7. WIRE NUMBERS 40-99 ARE NOT USED.

THIRD ANGLE PROJECTION

REVISIONS & UPDATES				
REV.	DATE	DESCRIPTION	ORIGINAL DESIGN	MAT'L APPR.
A	08/04/2022		JLT	A.T.

TOLERANCES
X.XXX ± 0.005"
X.XX ± 0.010"
X.X ± 0.020"
FRACTIONAL ± 1/32"
ANGLES ± 1°
SURFACES 125√

APPROVED BY:	JLT
DRAWN BY:	JLT
SCALE:	1:11.706
SHEET SIZE:	ANSI B
JOB NUMBER	109302-1-1
DESCRIPTION	SPS25-AF-S/PP PACKAGED PUMP SET WIRING DIAGRAM 1
Approved 08/04/2022	
DRAWING NUMBER	ACD-00100729
SHEET NUMBER	1/1
REVISION	A

PCB #1
LEVEL CONTROLLER PCB

CONTROL FUNCTIONS
- "AUTO-OFF-MANUAL" FILL CONTROL MODE SWITCH
- "PRESS TO TEST" LIGHTS AND PUMP PUSH-BUTTON
- FILL START-STOP AUTOMATIC LEVEL CONTROL
- HIGH LEVEL CONTROL BACKUP

INDICATION FUNCTIONS
- POWER AVAILABLE - GREEN LED
- TANK FILLING - AMBER LED
- NOT IN AUTO - RED FLASHING LED
- TANK LEAK ALARM - RED LED
- HIGH LEVEL ALARM - RED LED
- FULL LEVEL - AMBER LED
- FILL START LEVEL - ORANGE - GREEN LED
- FILL START LEVEL - AMBER LED
- LOW LEVEL ALARM - RED LED

OUTPUTS
- NOT IN AUTO
- TANK LEAK ALARM
- HIGH LEVEL ALARM
- LOW LEVEL ALARM

STANDARD FEATURES
OPTION 340 – TANK FILLING AMBER LIGHT
OPTION 325 – HIGH LEVEL EMERGENCY PUMP STOP SWITCH
OPTION 312 – LOCAL/REMOTE HIGH LEVEL ALARM
OPTION 311 – LOCAL/REMOTE LOW LEVEL ALARM
OPTION 280 – TANK FILL RUN-OFF-AUTO SELECTOR SWITCH
OPTION 270 – POWER AVAILABLE GREEN PILOT LIGHT
OPTION 191 – TANK LEAK EMERGENCY PUMP STOP SWITCH

NOTES:
1. UNIT MUST BE GROUNDED FOR OPERATORS SAFETY.
2. DASHED LINES - - - - - - - - INDICATE WIRING NOT SUPPLIED BY SIMPLEX.
3. SOLID LINES ———— INDICATE WIRING BY SIMPLEX.
4. COMPONENTS MOUNTED ON PRINTED CIRCUIT BOARDS ARE ENCLOSED BY PHANTOM LINES — — — — — —
5. FAILURE OPTIONS TO STOP TANK FILLING (AUTO MODE ONLY) TO USE, REMOVE JUMPER, ADD CONTACTS WHICH CLOSE, TO ENABLE FILLING AND OPEN TO DISABLE FILLING.
6. FAILURE OPTIONS TO STOP TANK FILLING, REQUIRE WIRING THE FAILURE CONTACTS IN SERIES WITH THE PCRX COIL AT THIS JUMPER.
7. IF TANK LEAK OCCURS, FILL CAPABILITY IS DEACTIVATED UNTIL THE UNIT HAS BEEN RESET BY PLACING THE AUTO-OFF-MANUAL SWITCH IN THE OFF POSITION,
8. SWITCH #1, THE PRESS TO TEST' PUSH-BUTTON, INDICATORS FOR HIGH LEVEL, LOW LEVEL, TANK LEAK, NOT IN AUTO, AND POWER AVAILABLE, AS WELL AS DRY CONTACTS FOR NOT IN AUTO, TANK LEAK, HIGH LEVEL, LOW LEVEL, ARE MOUNTED ON P.C.B.1.
9. FLOATSWITCHES ARE SHOWN WITH TANK EMPTY.
10. ALL WIRES ARE #18 AWG, 105°C UNLESS OTHERWISE NOTED.
11. LABELED: UL508A
12. WIRE NUMBER 140 IS LAST NUMBER USED.

THIRD ANGLE PROJECTION

REVISIONS & UPDATES				
REV.	DATE	DESCRIPTION	ORIGINAL DESIGN	MAT'L APPR.
A	08/04/2022		JLT	A.T.

TOLERANCES
X.XXX ± 0.005"
X.XX ± 0.010"
X.X ± 0.020"
FRACTIONAL ± 1/32"
ANGLES ± 1°
SURFACES 125√

APPROVED BY:	JLT
DRAWN BY:	JLT
SCALE:	1:1.7157
SHEET SIZE:	ANSI B
JOB NUMBER	109302-1-1
DESCRIPTION	SPS25-AF-S/PP PACKAGED PUMP SET WIRING DIAGRAM 2
Approved 08/04/2022	
DRAWING NUMBER	ACD-00100730
SHEET NUMBER	1/1
REVISION	A

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827
CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

DETAILS

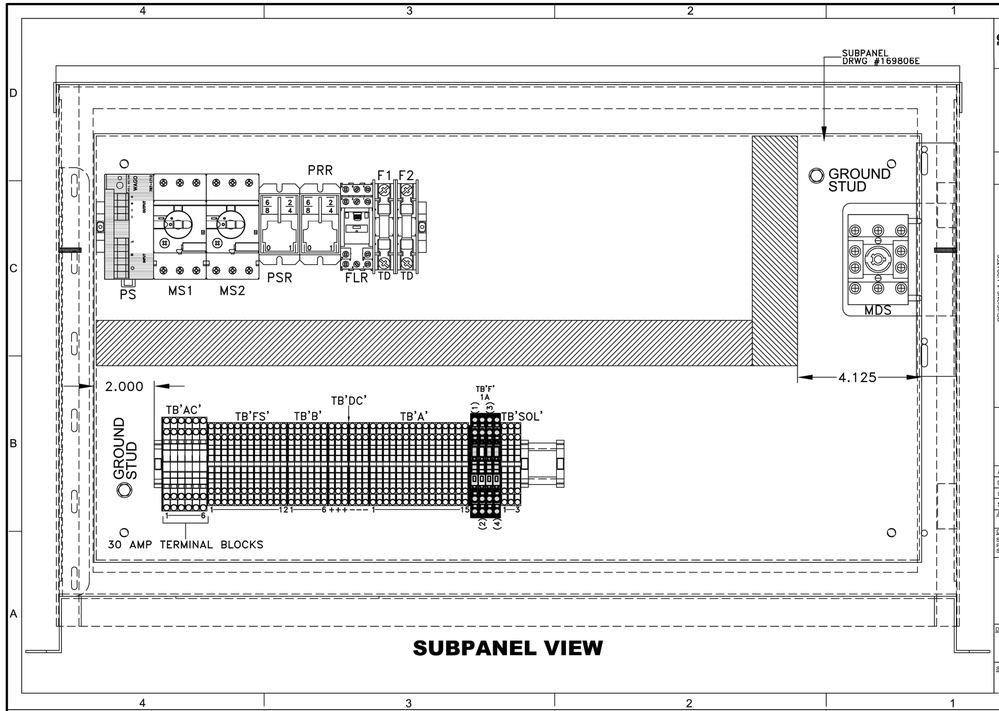
FUEL TRANSFER PUMP DETAILS 1 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

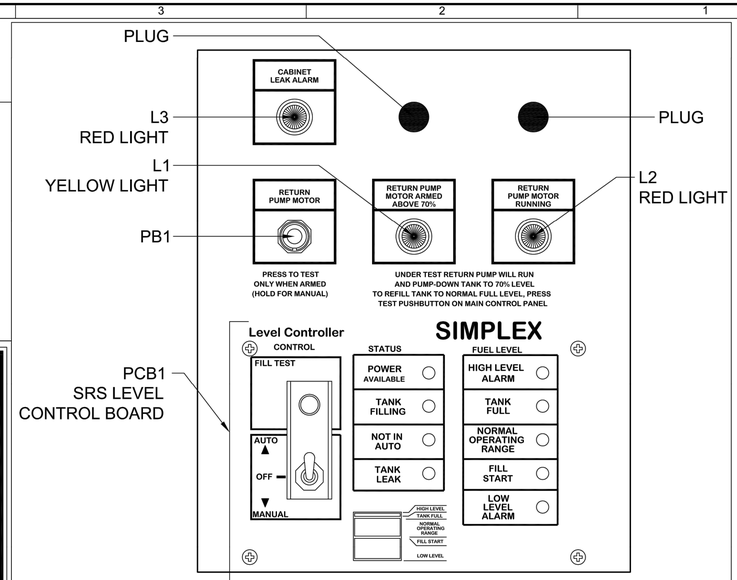
SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E5.02
DRAWING NUMBER
A
REVISION

STATUS: **ISSUED FOR BID**



SUBPANEL VIEW



CONTROLLER NAMEPLATE (NON-STOCK)

SIMPLEX
FUSE REPLACEMENT CHART
F1: 2AMP, 600VAC, TD
F2: 2AMP, 600VAC, TD
FUSES IN TERMINAL BLOCKS
TB'F'-1: 1AMP, 250VAC
TB'F'-2: 1AMP, 250VAC
TB'F'-3: 1AMP, 250VAC
TB'F'-4: 1AMP, 250VAC
FOR FIELD WIRING USE
COPPER WIRE 60 DEGREE
CENTIGRADE OR BETTER

FUSE CHART NAMEPLATE

SIMPLEX
SIMPLEX, INC.
800-637-8603
www.simplexdirect.com
JOB# 109302-1-1
MODEL SPS25-AF-S/RP
SHORT CIRCUIT CURRENT: 5 kA RMS SYMMETRICAL, 600V MAXIMUM
ENCLOSURE TYPE: 3R
LARGEST MOTOR FLA: 9.2
PUMP MOTOR/CONTROL POWER:
VOLTAGE 115 VAC 1 -PH 60 HZ
FULL LOAD AMPS: 21.6 A-SYSTEM TOTAL
SUPPLY PUMP CAPACITY 7 GPM
SUPPLY PUMP MOTOR HP: 0.50
RETURN PUMP CAPACITY 10 GPM
RETURN PUMP MOTOR HP: 0.75
PUMP LIFT 20 FEET MAXIMUM
FLUID VISCOSITY 32-100 SSU

MAN'F BY NAMEPLATE

NOTES:

1. SIMPLEX PACKAGED PUMP DRAWINGS PROVIDED FOR REFERENCE ONLY. REFER TO MANUFACTURER DRAWINGS AFTER THE FINAL SELECTION OF BELLY TANK.

FUEL ASSEMBLY PARTS (FS Assy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	BV/FSR	BALL VAVLE/FUEL STRAINER COMBO, 1.00" NPT. FEMALE BODY	1	24010020	
2	BV/FSR1	TAILPIECE, MALE, 0.75" NPT.	1	24010100	
3	PRV	0.75" PRESSURE RELIEF 0-300 PSI BRASS BODY S.S SEAT, DISC, SPRING,	1	22938501	
4	LS	CABINET FUEL LINE LEAK SENSOR, BUNA-N FLOAT	1	25242140A	
5	BV	BALL VALVE W/ UNION END & SHORT HANDLE, 1.00" NPT. FEMALE BODY	1	24010040	
6	BV1	TAILPIECE, FEMALE, 0.75" NPT.	1	24010104	
7	PG	PRESSURE GAUGE 0-200PSI, 2" S.S. DIA. 0.25" NPT. CENTER BACK CONNECTION W/ 0.25" NPT. ISOLATION VALVE	1	15050500	100
8	VG	VACUUM GAUGE 0-30HG, 2" S.S. DIA. 0.25" NPT. CENTER BACK CONNECTION W/ 0.25" NPT. ISOLATION VALVE	1	15050410	101

FUEL ASSEMBLY PARTS (FLOOR STOCK)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	CV	CHECK VALVE, 0.75" NPT, SPRING TYPE, BRONZE BODY, VITON O-RINGS	2	22923501	
2	T1	0.75" NPT TEE 304 S.S.	1	22531045	
3	T2	1.00" X 0.75" X 0.75" NPT. REDUCING TEE, BLK	1	22531053	
4	RB1	0.75" X 0.50" NPT. REDUCER BUSHING 304 S.S	1	60000111	-
5	RB2	0.50" X 0.25" NPT. REDUCER BUSHING 304 S.S.	1	22403100	
6	RB1	0.75" X 0.50" NPT. REDUCING BELL 304 S.S.	2	40010000	
7	E1	0.75" NPT. ELBOW 90 DEG 304 S.S.	3	22463000	
8	E2	1.00" X 0.75" NPT REDUCING ELBOW 90 DEGREE BLACK	1	22468503	
9	E3	ELBOW, 90DEG, 0.50" NPT, S.S.	1	22463350	
10		0.75" HOSE MALE CRIMP FITTING	5	22482002	
11		0.75" HOSE CRIMP FITTING SWIVEL	5	22482011	

JUNCTION BOX PARTS (SubAssy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	JB	JUNCTION BOX, 8"x8"x4", W/ SCREW COVER, TYPE 1	1	13819100	
	[JB]	TERMINAL BLOCK, 4-WIRE, 20A, 600V, GRAY	20	25675536	
	[JB]	TERMINAL BLOCK, 4-WIRE, END PLATE	1	25675538	

PUMP/MOTOR PARTS (PM Assy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	[SC]	SPIDER SOX SOLID TYPE L065/L095	2	24650010	
2	SC	MOTOR SHAFT COUPLER, 5/8" SHAFT, L090 HUB	2	24649525	
3	SC	PUMP SHAFT COUPLER HUB 0.75" (L090)	2	24649530	
4	[PM]	7-1/ 2 G.P.M. PUMP/MOTOR ADAPTER, SAE A 2-BOLT	2	24745000	
5	PUMP1	PARKER PUMP, 7 G.P.M. CAST ALUMINUM W/ 0.75" INLET / 0.50" OUTLET	1	24743100	407
6	MOTOR1	MOTOR 0.50HP 1PH 115VAC, 60HZ, ODP, 1750RPM	1	24630000A	700
7	PUMP2	PARKER PUMP, 10 G.P.M. CAST ALUMINUM W/ 0.75" INLET / 0.50" OUTLET	1	24747250	410/390
8	MOTOR2	MOTOR 0.75HP 1PH 115VAC/230VAC, 60HZ, TEFC, 1750RPM	1	24630500B	845/390

SUBPANEL PARTS (SubAssy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	PS	POWER SUPPLY, 90-264VAC, 24V, 60W, 50/60HZ.	1	25457905	
2	PSR,PRR	CONTACTOR MOTOR STARTER 24VDC COIL, 2-POLE, 30AMP, 277VAC MAX.	2	24831100	
3	[F1-2]	FUSE BLOCK, 1-POLE, 30A, 600VAC, LARGE STYLE	2	15011100	
4	MDS	MAIN DISCONNECT SWITCH, 3-POLE, 63 AMP, 480VAC	1	25316950A	
5	MS1-2	MANUAL MOTOR STARTER, 3-POLE 6.3-10.0 AMPS	2	12608205	

WIRING PARTS (FS SW-OPERATION 20)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	F1-2	FUSE, 2.0 AMP, 600VAC, TIME DELAY, LARGE STYLE	2	14012000	
2	LT	LED INDICATOR, YELLOW, 24VACVDC, 13MM	1	24249762	
3	L2-3	LED INDICATOR, RED, 24VACVDC, 13MM	2	24249760	
4	PB1	PUSH BUTTON, BLACK, 13MM, 0.50" 1 N.O. & 1 N.C.	1	25254000	
5	PCB1	SRS LEVEL CONTROLLER PCB	1	60001601	2010

SUBPANEL PARTS (FLOOR STOCK)

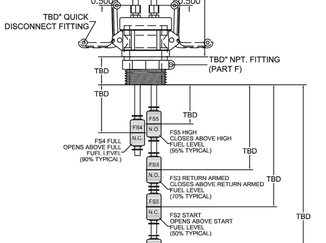
ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
	TB'AC'	TERMINAL BLOCK, 4-WIRE, 30A, 600VAC, GRAY	6	25678558	
	[TB'AC']	TERMINAL BLOCK, 4-WIRE, END PLATE, 30A ORANGE	1	25678570	
	TB'FS'-TB'SOL'	TERMINAL BLOCK, 4-WIRE, 20A, 600VAC, GRAY	42	25678536	
	[TB']	TERMINAL BLOCK, 4-WIRE, END PLATE, 20A, ORANGE	6	25678538	
	TB-F1-4	TERMINAL BLOCK, 4-WIRE, 20A, 600V, GRAY, FUSE HOLDER STYLE	4	25678544	
		FUSE HOLDER STYLE TERMINAL BLOCK END PLATE	1	25678545	
	FLR	RELAY BASE, 3-POLE	1	24882100	

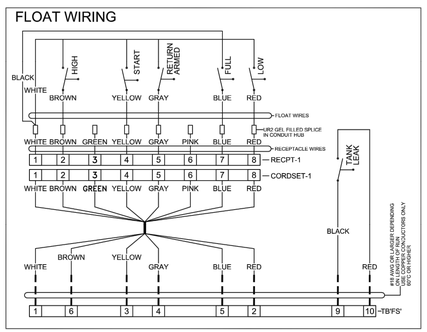
WIRING PARTS (FLOOR STOCK)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
	TB-F1-4	FUSE, 1.0 AMP, 250VAC, FAST ACTING, SMALL STYLE	4	14001001	
	FLR	RELAY, 3-POLE 24VDC COIL, 10A	1	24827045	

UNIT: SPS25-AF-S/RP
FLOAT LEVELS: 95(S),90(S),70(S),50(S),25(S)
TANK STYLE: TBD
TANK INSIDE DIMENSION: TBD"
GALLON CAPACITY: TBD
DEAD AREA: TBD"

**(S)=STANDARD FLOAT LEVEL





FUEL ASSEMBLY PARTS (FLOOR STOCK)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1		GEL FILLED WIRE CONNECTIONS, 19-26AWG	8	25783000	
2		0.50" NPT. CABLE GRIP, 90DEG. LIQUID TIGHT	1	15195025	

FLOAT SWITCH PARTS (Fit Assy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
3	CDH	CONDUIT HUB, 0.50" NPT, PORTS, TYPE 4 & 3/PROOF RATED W/ O-RING	1	15166000A	
4	REC1	RECEPTACLE FOR CORDSET, 8-POLE, 0.50" NPT. MALE FITTING W/24GA. WIRE	1	25550250	
5	CS	CORDSET, 8-POLE, FEMALE FITTING W/24GA. WIRE & 2M CABLE, UV RATED	1	25550200	
6	PF	2.00" PART F ADAPTER W/ MALE NPT. END, ALUMINUM BODY (20F)	1	22443010	
7	FS1-5	FLOAT ASSEMBLY W/ 1" S.S. NARROW FLOATS ON DUAL 5/16" S.S. STEMS & 2" QUICK DISCONNECT STYLE FITTING	1	ACD-00100733A	FSOP-060

FLOAT SWITCH PARTS (Fit Assy-OPERATION 10)

ITEM	COMP.	DESCRIPTION	QTY.	PART NUMBER	OPTION
1	QDC	2.00" QUICK DISCONNECT STYLE CAP W/ NPT. FEMALE PORT	1	22108050	
2	LS1	TANK LEAK SENSOR W/ 15FT CABLE, N.O. S.S. FLOAT, 50W, SPST W/ 0.25" NPT. CORDGRIP (FLORIDA EQ COMPLIANT)	1	25242170B	051EQ
3		0.50" NPT. CABLE GRIP, STRAIGHT, LIQUID TIGHT	1	15195020	
4	PF	2.00" PART F ADAPTER W/ MALE NPT. END, ALUMINUM BODY (20F)	1	22443010	

SAMPLE DRAWING ONLY

NO TANK DATA SUBMITTED - DESIGN WILL CHANGE BASED ON TANK DESIGN AND PORT AVAILABILITY

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

DETAILS

FUEL TRANSFER PUMP DETAILS 2 OF 2

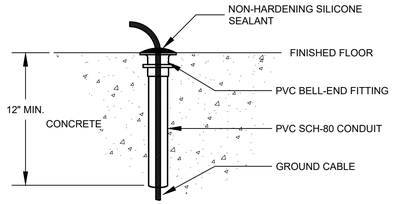
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

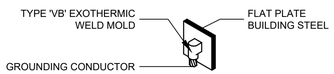
DRAWING NUMBER: E5.03
REVISION: A

STATUS: ISSUED FOR BID

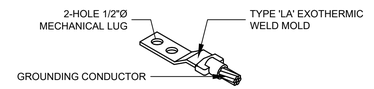
\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\DUCT BANK DETAILS.DWG 04/10/2026 12:51:09 SUVATH SENG



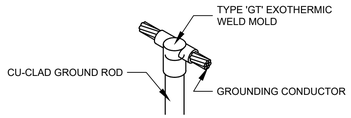
GROUND CABLE SLEEVE DETAIL
SCALE: N.T.S.



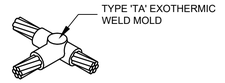
EXOTHERMIC WELD 'VB' CONNECTION
SCALE: N.T.S.



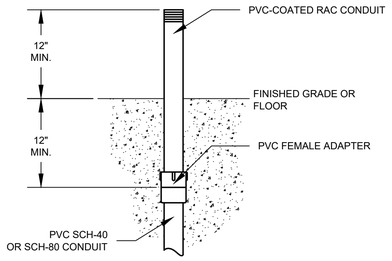
EXOTHERMIC WELD 'LA' CONNECTION
SCALE: N.T.S.



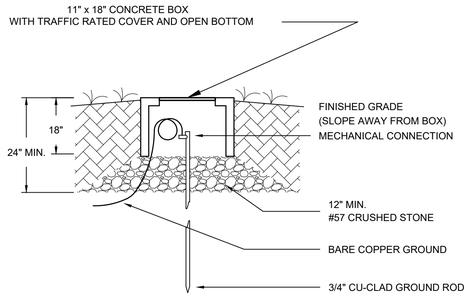
EXOTHERMIC WELD 'GT' CONNECTION
SCALE: N.T.S.



EXOTHERMIC WELD 'TA' CONNECTION
SCALE: N.T.S.



TYPICAL CONDUIT STUB-UP DETAIL
SCALE: N.T.S.



GROUND ROD TEST WELL
SCALE: N.T.S.

REV.NO.	DESCRIPTION	DATE
-	----	----

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E.
No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

DETAILS

ELECTRICAL DETAILS 1 OF 2

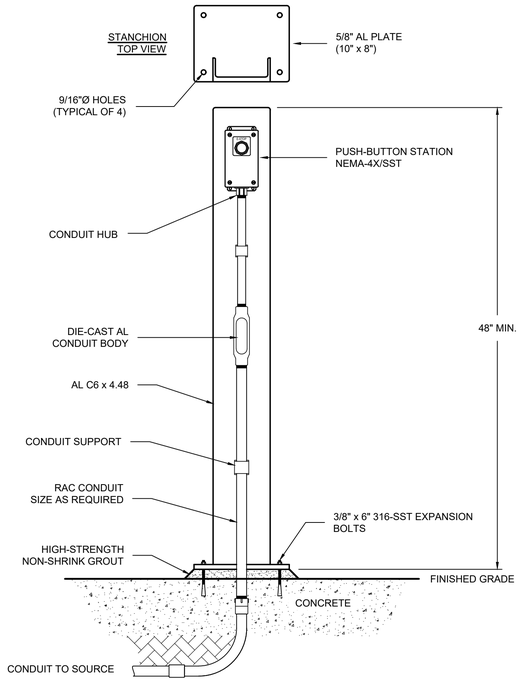
PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E5.04
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\WELECT-DETAILS_.DWG 04/10/2026 12:51:11 SUVATH SENG

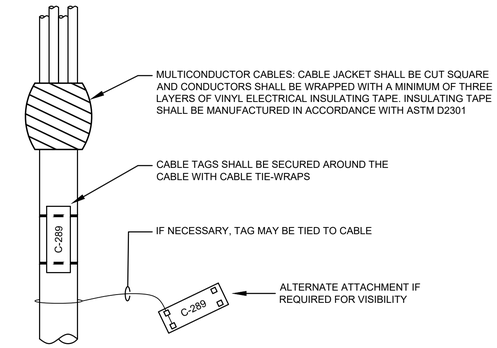


DETAIL NOTES:

1. COAT ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. FILE AND ROUND ALL CORNERS SMOOTH, REAM ALL HOLES AND REMOVE ALL SLAG.
3. USE 316-SST FASTENERS AND HARDWARE.
4. PROVIDE AND INSTALL 18"Ø X 30" DEEP REBAR ENFORCED CONCRETE FOUNDATION WHERE MOUNTING SURFACE IS NOT AVAILABLE.

TYPICAL PUSH-BUTTON OR DEVICE BOX STANCHION DETAIL

SCALE: N.T.S.

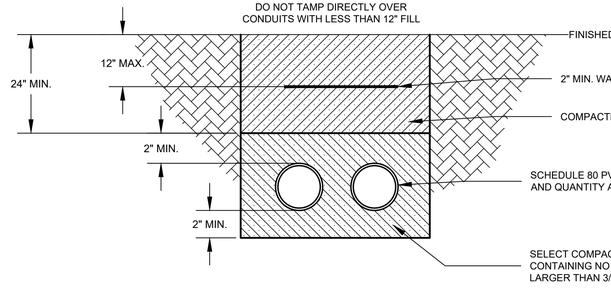


DETAIL NOTES:

1. CABLE TAGS SHALL BE AFFIXED TO CABLE AT EACH END IN AN EASILY VIEWABLE LOCATION.
2. CABLE TAGS SHALL BE AFFIXED TO CABLES AS THEY PASS THROUGH EACH MANHOLE OR PULL BOX.
3. CABLE TAGS SHALL BE INSTALLED IMMEDIATELY AFTER THE CABLE IS INSTALLED.

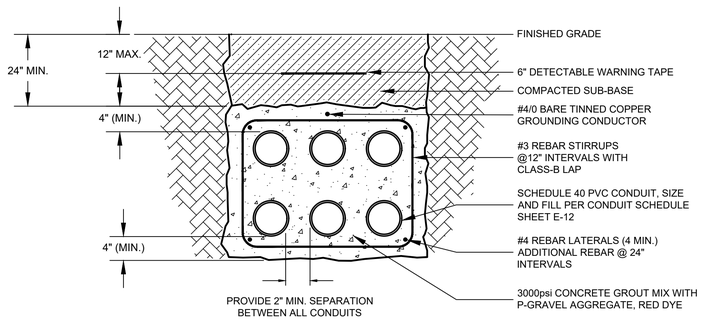
TYPICAL CABLE IDENTIFICATION INSTALLATION DETAIL

SCALE: N.T.S.



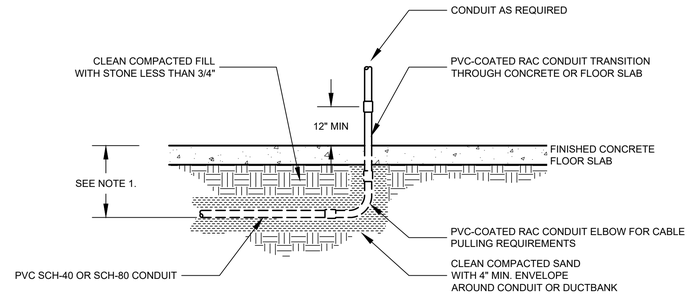
DIRECT BURIED DUCTBANK

SCALE: N.T.S.



REINFORCED CONCRETE DUCTBANK

SCALE: N.T.S.



DETAIL NOTES:

1. BURIAL DEPTH OF CONDUIT OR DUCTBANK SHALL BE BASED ON THE LARGEST CONDUIT RADII SUCH THAT THE THREADED CONNECTION TO THE PVC-COATED RAC CONDUIT TRANSITION IS 6" MINIMUM BELOW BOTTOM OF CONCRETE FLOOR SLAB

TYPICAL UNDERSLAB CONDUIT STUB-UP INSTALLATION

SCALE: N.T.S.

REV.NO.	DESCRIPTION	DATE
-	----	---

REVISIONS

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY AUBREY A. HAUDRICOURT, P.E. ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

AUBREY A. HAUDRICOURT, P.E. No. 66861

McKIM&CREED
1365 Hamlet Avenue
Clearwater, Florida 33756-3331
Phone: (727) 442-7196, Fax: (727) 461-3827

CA Lic. No. 29588
www.mckimcreed.com

Tarpon Springs

CITY OF TARPON SPRINGS WASTEWATER TREATMENT PLANT ELECTRICAL UPGRADES

DETAILS

ELECTRICAL DETAILS 2 OF 2

PROJ. START DATE:	MAY 2023
MCE PROJ. #	01040-0015
DRAWN	SS
DESIGNED	SS
CHECKED	MFF
PROJ. MGR.	AAH

SCALE
HORIZONTAL: TBD
VERTICAL: TBD

E5.05
DRAWING NUMBER
A
REVISION

STATUS: ISSUED FOR BID

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\01040\0015\ENG\80-DRAWINGS\ELECTRICAL\WELECT-DETAILS_.DWG 04/10/2026 12:51:13 SUVATH SENG

From: Rachael Cappolla
To: Trish Hickey
Cc: Rachael Cappolla; Keyri Rivas
Subject: Appointment on PSTA Board
Date: Tuesday, July 14, 2026 10:04:15 AM
Attachments: image001.png

Warning: Unusual sender <rcappolla@psta.net>
You don't usually receive emails from this address. Make sure you trust this sender before taking any actions.

Good morning,

Lori Weaver's term on PSTA expires September 30, 2026. She is eligible to be re-appointed for the term that begins October 1, 2026 and ends September 30, 2029. If you would like her to continue serving, please have your council take action at an upcoming meeting.

Thanks,

Rachael Cappolla, CAP, FCRM
Executive Assistant to the CEO & Certified Records Manager
Pinellas Suncoast Transit Authority
St. Petersburg, Florida
o 727.540.1806

If you need records, please email records@psta.net

PSTA is Subject to the Florida Public Records laws. All information contained in an email sent to a PSTA employee or official, unless specifically exempt from disclosure by law, is subject to disclosure. If you do not want your email address or other information contained in your email released in response to a public records request, please do not send electronic mail to a PSTA employee or official. WARNING! Fraud and email hacking/phishing attacks are on the increase. PSTA never gives out banking information to anyone via email or text message. If you receive such an email, DO NOT RESPOND TO THE EMAIL and only contact PSTA employees using the previously known contact information and NOT information provided in the email.

Tip: Add [Encrypt] or [Secure] in the subject line to send securely outside the organization.