



Automatic Transfer Switch Replacement at Holly Lake and Academic Village

Invitation for Bids # PSUT-23-07

General Information		
Project Cost Estimate	\$275,000.00	See Section 1.4
Project Timeline	12 months from issuance of Notice to Proceed	See Section 1.4
Evaluation of Proposals	Staff	See Section 1.7
Non-Mandatory Pre-Bid Meeting	10:00 a.m. on October 4, 2023 at Holly Lake, located at 21800 NW 8th Pl in the City of Pembroke Pines, Florida	See Section 1.8
Question Due Date	October 17, 2023	See Section 1.8
Proposals will be accepted until	2:00 p.m. on October 31, 2023	See Section 1.8
5% Proposal Security / Bid Bond	<input type="checkbox"/> Not required. <input type="checkbox"/> Required, regardless of proposal cost. <input checked="" type="checkbox"/> Required in the event that the proposal exceeds \$200,000.	See Section 4.1
100% Payment and Performance Bonds	<input type="checkbox"/> Not required. <input type="checkbox"/> Required, regardless of proposal cost. <input checked="" type="checkbox"/> Required in the event that the proposal exceeds \$200,000.	See Section 4.2
Grant or Federal Funding Information	Not Applicable	Not Applicable

THE CITY OF PEMBROKE PINES
 PROCUREMENT DEPARTMENT
 8300 SOUTH PALM DRIVE
 PEMBROKE PINES, FLORIDA 33025
 (954) 518-9020



Table of Contents

SECTION 1 - INSTRUCTIONS	5
1.1 NOTICE.....	5
1.1.1 VIRTUAL BID OPENING.....	5
1.2 PURPOSE	6
1.3 SCOPE OF WORK.....	7
1.4 PROJECT COST ESTIMATE & TIMELINE.....	7
1.5 PROPOSAL REQUIREMENTS	7
1.5.1 Pricing Sheet / Bid Tables.....	8
1.5.2 Questionnaires.....	9
1.5.3 Other Completed Documents.....	10
1.5.4 Optional Documentation	10
1.6 VENDOR REGISTRATION DOCUMENTS.....	12
1.6.1 Vendor Information Form.....	13
1.6.2 Form W-9 (Rev. October 2018).....	13
1.6.3 Company Profile Form	13
1.6.4 Sworn Statement on Public Entity Crimes Form.....	13
1.6.5 Equal Benefits Certification Form	13
1.6.6 Vendor Drug-Free Workplace Certification Form	13
1.6.7 Scrutinized Company Certification.....	13
1.6.8 E-Verify System Certification Statement	13
1.6.9 Veteran Owned Small Business Preference Certification	13
1.6.10 Local Business Tax Receipts	14
1.6.11 Local Vendor Preference Certification	14
1.7 EVALUATION OF PROPOSALS & PROCESS OF SELECTION	14
1.8 TENTATIVE SCHEDULE OF EVENTS	14
1.8.1 NON-MANDATORY PRE-BID MEETING / SITE VISIT	14
1.9 SUBMISSION REQUIREMENTS	15
SECTION 2 - INSURANCE REQUIREMENTS	16
SECTION 3 - GENERAL TERMS & CONDITIONS.....	23
3.1 EXAMINATION OF CONTRACT DOCUMENTS.....	23
3.2 CONFLICT OF INSTRUCTIONS	23
3.3 ADDENDA or ADDENDUM	23



3.4	INTERPRETATIONS AND QUESTIONS	23
3.5	RULES, REGULATIONS, LAWS, ORDINANCES and LICENSES	23
3.6	WARRANTIES FOR USAGE	24
3.7	BRAND NAMES.....	24
3.8	QUALITY	24
3.9	SAMPLES.....	24
3.11	DEVELOPMENT COSTS.....	24
3.12	PRICING.....	24
3.13	DELIVERY POINT.....	25
3.14	TAX EXEMPT STATUS	25
3.15	CONTRACT TIME	25
3.16	COPYRIGHT OR PATENT RIGHTS	25
3.17	PUBLIC ENTITY CRIMES	25
3.18	CONFLICT OF INTEREST	25
3.19	FACILITIES	25
3.20	ENVIRONMENTAL REGULATIONS.....	26
3.21	SIGNATURE REQUIRED.....	26
3.22	MANUFACTURER'S CERTIFICATION.....	26
3.23	MODIFICATION OR WITHDRAWAL OF PROPOSAL	26
3.24	PUBLIC BID; BID OPENING AND GENERAL EXEMPTIONS	26
3.25	RESERVATIONS FOR REJECTION AND AWARD.....	27
3.26	BID PROTEST	27
3.27	INDEMNIFICATION.....	27
3.28	DEFAULT PROVISION	28
3.29	ACCEPTANCE OF MATERIAL.....	28
3.30	LOCAL GOVERNMENT PROMPT PAYMENT ACT	29
3.31	SCRUTINIZED COMPANIES LIST.....	29
3.32	PUBLIC RECORDS; TRADE SECRET, PROPRIETARY AND CONFIDENTIAL SUBMITTALS	29
3.33	PURCHASING AGREEMENTS WITH OTHER GOVERNMENT AGENCIES....	30
3.34	CONE OF SILENCE	30
3.35	E-VERIFY	31
3.36	JESSICA LUNSFORD ACT	32
	SECTION 4 - SPECIAL TERMS & CONDITIONS.....	33



4.1	PROPOSAL SECURITY.....	33
4.2	PAYMENT AND PERFORMANCE BONDS	33
4.3	OWNER'S CONTINGENCY	34
4.4	TAX SAVER PROGRAM	34
4.5	RELEASE OF LIEN.....	34
4.6	SOLID WASTE CONSTRUCTION AND DEMOLITION DEBRIS COLLECTION AND DISPOSAL REQUIREMENTS.....	34

ATTACHMENTS

Attachment A: Non-Collusive Affidavit

Attachment B: Sample Insurance Certificate

Attachment C: Specimen Contract: **Construction Agreement**

Attachment D: Standard Release of Lien Form

Attachment E: Automatic Transfer Switch (ATS) Replacement Technical Specifications

Attachment F: Holly Lake Academic Village ATS Replacement Drawings



SECTION 1 - INSTRUCTIONS

1.1 NOTICE

Notice is hereby given that the City Commission of the City of Pembroke Pines is seeking sealed proposals for:

IFB # PSUT-23-07 Automatic Transfer Switch Replacement at Holly Lake and Academic Village

Solicitations may be obtained from the City of Pembroke Pines website at <http://www.ppines.com/index.aspx?NID=667> and on the <https://ppines.bonfirehub.com/> website.

If you have any problems downloading the solicitation, please contact the Bonfire Support at Support@GoBonfire.com.

If additional information help is needed with downloading the solicitation package please contact the Procurement Department at (954) 518-9020 or by email at purchasing@ppines.com. The Procurement Department hours are between 7:00 a.m. - 6:00 p.m. on Monday through Thursday and is located at 8300 South Palm Drive, Pembroke Pines, Florida 33025.

The City requires all questions relating to the solicitation be entered through the "Messages" section for the specific project on the <https://ppines.bonfirehub.com/> website. Under the "Messages" section, vendors will find the "Opportunity Q&A" tab in which they can ask their specific question(s). Responses to the questions will be provided online at <https://ppines.bonfirehub.com>. Such request must be received by the "Question Due Date" stated in the solicitation. The issuance of a response via Bonfire is considered an Addendum and shall be the only official method whereby such an interpretation or clarification will be made.

Proposals will be accepted until 2:00 p.m., Tuesday, October 31, 2023. Proposals must be submitted electronically at <https://ppines.bonfirehub.com/>. The sealed electronic proposals will be publicly opened at 2:30 p.m. by the City Clerk's Office, in the City Hall Administration Building, 4th Floor Conference Room located at 601 City Center Way, Pembroke Pines, Florida, 33025.

1.1.1 VIRTUAL BID OPENING

The City may not be opening up the physical location for public access.

As a result, meetings may be a combination of in-person and virtual, all as provided by law. **In any event, the public is encouraged to attend the bid opening process virtually in lieu of attending the meeting in person.**



Bid openings for this project will be live-streamed from the City Clerk's Office, in the City Hall Administration Building, 4th Floor Conference Room located at 601 City Center Way, Pembroke Pines, Florida, 33025 at **2:30 PM on the bid due date**.

While recognizing the importance of public accessibility to the bid openings, and considering public health concerns, in the abundance of caution, the City is requesting that interested parties utilize live streaming as a safe way for vendors and the public to view the bid opening process in lieu of attending the meeting in person.

The public is invited to attend the meeting virtually via the Cisco Webex Meetings platform.

- WebEx Meeting Link: <https://ppines.webex.com/meet/purchasing>
- Cisco Webex Meeting Number: 717 019 586
- Join by Phone Number: +1-408-418-9388

The public may download the **Cisco Webex Meetings app** from <https://www.webex.com/downloads.html>, to view and listen to the meeting, however please make sure to mute your phone/microphone/device's audio and camera as the **public may attend the meeting but will not be allowed to comment or participate in the proceedings**.

If any member of the public requires additional information about this meeting or has any questions about how to access the meeting, please contact:

Danny Benedict, Procurement Department
City of Pembroke Pines
8300 South Palm Drive,
Pembroke Pines, FL 33025
954-518-9022
purchasing@ppines.com

1.2 PURPOSE

The City of Pembroke Pines is seeking proposals from qualified firms, hereinafter referred to as the Contractor, to furnish all labor, materials, equipment, services and incidentals for the “Pembroke Pines Water Utilities – Holly Lake and Academic Village Automatic Transfer Switch (ATS) Replacement” project.

The project consists of two (2) ATS replacements; one ATS replacement is at the Holly Lake Booster Pump Station and another ATS replacement is at the Academic Village site. At Academic Village, the existing ATS is located at the Pembroke Pine Charter High School Main Electrical Room and not at the Academic Village Booster Pump Station Building. The Contractor shall provide temporary power for these facilities during the time that FPL power is disabled. The temporary power shall include temporary generators, temporary conduits, and temporary conductors as per specifications and plans.



1.3 SCOPE OF WORK

Below is a general list of the services required for the conditions assessment. It is not intended to be complete. Refer to Attachment F – Automatic Transfer Switch (ATS) Replacement Technical Specifications for all requirements, in conjunction to the requirements outline in this bid package.

The project involves the following generalized descriptions of work:

1. Mobilization and Demobilization
2. ATS Replacement at Academic Village
3. ATS Replacement at Holly Lake
4. Temporary Generator and Connection
5. Startup and Testing

1.4 PROJECT COST ESTIMATE & TIMELINE

Staff estimates this project to cost approximately \$275,000.00, which does not include permit costs.

Please note that the City will waive all City related permit, license, impact or inspection fees (including the Building Department and Engineering Department Permit Fees) related to this project. Any related State or County fees, for the aforementioned permits, will be paid by the City.

In addition, the City shall cover the cost for any other permit fees related to external entities through the City's Owner's Contingency for this project, **therefore proposers should not include permit costs in their total proposal price.**

The work shall be completed within 12 months from issuance of CITY's Notice to Proceed.

In addition, please note the city's average time for a contractor to apply for and receive an approved permit is 30 days; delays in this timeline caused by the contractor's failure to actively monitor the permit process and submit all required documentation in a timely manner, will count against the project's contractual completion period.

1.5 PROPOSAL REQUIREMENTS

The <https://ppines.bonfirehub.com> website allows for vendors to complete, scan and upload their documents as part of the proposer's submittal on the website.



Prospective proposers interested in responding to this solicitation are requested to provide all of the information listed in this section. Submittals that do not respond completely to all of requirements specified herein may be considered non-responsive and eliminated from the process. Brevity and clarity are encouraged.

The Bonfire system utilizes “Questionnaires” to request the following information from prospective proposers.

1.5.1 Pricing Sheet / Bid Tables

1. **Bid Table:** The vendor must provide their pricing through the designated lines items listed on the Excel Sheet that is available for download on the Bonfire website under the “**Pricing Sheet / Bid Table**” section. Please follow the instructions given in this package and on the Excel Sheet to complete and upload the information back onto the Bonfire website.
2. **Primary Responses:** This tab of the Bid Table includes a “**Vendor Notes**” column for any additional comments regarding the requested line item(s). A comment is required in the “**Vendor Notes**” column. If the vendor does not need to submit any comments, please enter N/A or similar.
 - a. Below is a sample of the “**Primary Responses**” tab of the Bid Table:

Primary Responses				Numeric	Text	
#	Item	QTY	Unit of Measure	Price per Unit	Vendor Notes	Total Cost
Base Bid						
#1-1	Mobilization and Demobilization	1	Lump Sum			
#1-2	ATS Replacement at Academic Village	1	Lump Sum			
#1-3	ATS Replacement at Holly Lakes	1	Lump Sum			
#1-4	Temporary Generator and Connection	1	Lump Sum			
#1-5	Startup and Testing	1	Lump Sum			
#1-6	Payment and Performance Bond	1	Lump Sum			

3. **Additional Responses:** This tab of the Bid Table allows for bidders to submit alternative options. Substitutions of brands or products must be submitted as an alternative for the City’s review and approval.
 - a. To submit an alternative, the vendor must copy the information for the corresponding line item from the “#” column in the “**Primary Responses**” tab and paste it into the “**Additional Responses**” tab to identify which item they are providing an alternative option for.
 - b. Vendors are required to identify the substitution of brands or products in the “**Vendor Notes**” column.
 - c. For additional information on uploading supporting documentation for the proposed alternative(s), please refer to **Section 1.5.4(3)**.



d. Below is a sample of the “Additional Responses” tab of the Bid Table:

Additional Responses			Numeric	Text		
#	Item	QTY	Unit	Price per Unit	Vendor Notes	Total Cost
						-
						-
						-
						-
						-

1.5.2 Questionnaires

1. Contact Information Form
2. Proposer’s Background Information
3. Vendor Registration Checklist
4. **References Form:** Provide specific examples of similar contracts delivered by the proposed team members. Provide details on related projects (preferably where the team was the same). A minimum of 3 references should be from the last five years and should be capable of explaining and confirming your firm’s capacity to successfully complete the scope of work outlined herein. As part of the proposal evaluation process, the City may conduct an investigation of references, including a record check or consumer affairs complaints. Proposers’ submission of a proposal constitutes acknowledgment of the process and consent to investigate. The City is the sole judge in determining Proposers qualifications. In this section you will have the ability to enter information for 5 different references including the Reference Contact Information and the specific Project Information.

In addition, **do not provide City of Pembroke Pines projects as any of your references and do not utilize any current City of Pembroke Pines employees as reference contacts.**

- A) References Contact Information
 - a. Name of Firm, City, County or Agency
 - b. Address
 - c. Contact Name
 - d. Contact Title
 - e. Contact E-mail Address
 - f. Contact Telephone #
- B) Project Information
 - a. Name of Contractor Performing the work



- b. Name and location of the project
- c. Nature of the firm's responsibility on the project
- d. Project duration
- e. Completion (Anticipated) Date
- f. Size of project
- g. Cost of project
- h. Work for which staff was responsible

1.5.3 Other Completed Documents

1. Attachment A: Non-Collusive Affidavit
2. Proposal Security (Bid Bond Form or Cashier's Check)
 - a. Each Proposal should be accompanied by a certified or cashier's check or by a Bid Bond made payable to the City of Pembroke Pines on an approved form, duly executed by the Proposer as principal and having as surety thereon a surety company acceptable to CITY and authorized to write such Bond under the laws of the State of Florida, in an amount not less than five percent (5%) of the amount of the base Proposal price.
 - b. Contingency is not to be counted in the total amount the proposal security is based on.
 - c. Proposers must submit a scanned copy of their bid security (bid bond form or cashier's check) with their bid submittal through Bonfire.
 - d. Proposers should also submit their original bid security (bid bond form or cashier's check) at time of the bid due date, or they may be deemed as non-responsive.
 - e. The original Bid Bond or Cashier's Check should be in a sealed envelope, plainly marked **"BID SECURITY - IFB # PSUT-23-07 "Automatic Transfer Switch Replacement at Holly Lake and Academic Village"** and sent to the City of Pembroke Pines, City Clerk's Office, 4th Floor, 601 City Center Way, Pembroke Pines, Florida, 33025.
 - f. Please see SECTION 4 - SPECIAL TERMS & CONDITIONS of this document for additional information.

1.5.4 Optional Documentation

1. **Trade Secrets:**
 - a. The Proposer's response to this solicitation is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of



Florida Public Records Law, Florida Statutes Chapter 119.07 (“Public Records Law”). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this solicitation and the Contract to be executed for this solicitation, subject to the provisions of Chapter 119.07 of the Florida Statutes.

- b. Any language contained in the Proposer’s response to the solicitation purporting to require confidentiality of any portion of the Proposer’s response to the solicitation, except to the extent that certain information is in the City’s opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 (“Public Records Laws”), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer’s response to the solicitation constitutes a Trade Secret.
- c. EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED. ALL DOCUMENTS THAT THE FIRM PURPORTS TO BE CONFIDENTIAL, PROPRIETARY OR A TRADE SECRET SHALL BE UPLOADED TO THE BONFIRE WEBSITE AS A SEPARATE ATTACHMENT, IN THIS SECTION, CLEARLY IDENTIFYING THE EXEMPTION BEING CLAIMED UNDER FLORIDA STATUTES 119.07.
- d. The city’s determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the city and the city’s officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the city’s treatment of records as public records.

2. Financial Statements:

- a. The City is not requesting the vendor to submit any financial statements for this project and prefers if the vendor does not submit financial statements. In addition, if the City needs a copy of the vendor’s financial statements, the City can contact the vendor after the bid due date to request those documents. However, if the vendor does submit the financial statements, they should be uploaded in this section.



-
- b. Any claim of confidentiality on financial statements must be asserted at the time of submittal. The firm must identify the specific statute that authorizes the exemption from the Public Records Law. Please note that the financial statement exemption provided for in Section 119.071(1)c, Florida Statutes only applies to submittals in response to a solicitation for a “public works” project.

3. Alternatives:

- a. If you are submitting an alternative product, please upload any related information in this section (such as specification sheets, etc.).
- b. In addition, pursuant to **Section 3.7 “Brand Names,”** if and wherever in the specifications a brand name, make, name of manufacturer, trade name, or vendor catalog number is mentioned, it is for the purpose of establishing a grade or quality of material only. Since the City does not wish to rule out other competition and equal brands or makes, the phrase “OR EQUAL” is added. However, if a product other than that specified is bid, Proposers shall indicate on their proposal and clearly state the proposed substitution and deviation. It is the vendor’s responsibility to provide any necessary documentation and samples within their bid submittal to prove that the product is equal to that specified. Such samples are to be furnished before the date of bid opening, unless otherwise specified. Additional evidence in the form of documentation and samples may be requested if the proposed brand is other than that specified. The City retains the right to determine if the proposed brand shall be considered as an approved equivalent or not.

4. Additional Information:

- a. Please provide any additional information that you deem necessary to complete your proposal in this section, if it has not been requested in another section.

1.6 VENDOR REGISTRATION DOCUMENTS

The <https://ppines.bonfirehub.com/> website will allow vendors to update their information and documents on an as-needed basis. This process is intended to make the bidding process easier for vendors that bid on multiple City projects. This process will allow vendors to complete and submit the following standard forms and documents at any time prior to bidding on a project. In addition, the vendors will be able to utilize these same forms without the need to re-fill and re-submit the forms each time they bid on a City project. In the event that the City does not have one of the forms or documents listed below for your company, the City may reach out to your company after the bid has closed to obtain the document(s).



Furthermore, please make sure to update this information on an as-needed basis so that all pertinent information is accurate, such as local business tax receipts, and any other relevant information.

The following documents can be completed prior to the bidding process through the <https://ppines.bonfirehub.com/> website and do not need to be attached to your submittal as the Bonfire website will automatically include it.

1.6.1 Vendor Information Form

1.6.2 Form W-9 (Rev. October 2018)

- a. Previously dated versions of this form will delay the processing of any payments to the selected vendor.

1.6.3 Company Profile Form

1.6.4 Sworn Statement on Public Entity Crimes Form

1.6.5 Equal Benefits Certification Form

1.6.6 Vendor Drug-Free Workplace Certification Form

1.6.7 Scrutinized Company Certification

1.6.8 E-Verify System Certification Statement

- a. Effective January 1, 2021, pursuant to Section 448.095. Florida Statues, the City may not enter into a contract with a vendor/contractor/subcontractor unless that vendor/contractor/subcontractor is registered with and uses the E-Verify system administered by the U.S. Department of Homeland Security (“DHS”).
- b. Contractor shall also require all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the contract.

1.6.9 Veteran Owned Small Business Preference Certification

- a. If claiming Veteran Owned Small Business Preference Certification, business must attach the “Determination Letter” from the United States Department of Veteran Affairs Center for Verification and Evaluation notifying the business that they have been approved as a Veteran Owned Small Business (VOSB).
- b. The Veteran Owned Small Business Preference Certification form must be completed by/for the proposer; the proposer **WILL NOT** qualify for Veteran



Owned Small Business Preference based on their sub-contractors' qualifications.

1.6.10 Local Business Tax Receipts

1.6.11 Local Vendor Preference Certification

1.7 EVALUATION OF PROPOSALS & PROCESS OF SELECTION

- A. Staff will evaluate all responsive proposals received from proposers who meet or exceed the bid requirements contained in the solicitation. Evaluations shall be based upon the information contained in the proposals as submitted.
- B. Staff will make a recommendation to the City Commission for award of contract.

1.8 TENTATIVE SCHEDULE OF EVENTS

Event	Time &/or Date
Issuance of Solicitation (Posting Date)	September 26, 2023
Non-Mandatory Pre-Bid Meeting	10:00 a.m. on October 4, 2023
Question Due Date	October 17, 2023
Anticipated Date of Issuance for the Addenda with Questions and Answers	October 23, 2023
Proposals will be accepted until	2:00 p.m. on October 31, 2023
Proposals will be opened at	2:30 p.m. on October 31, 2023
Evaluation of Proposals by Staff	November 2023
Recommendation of Contractor to City Commission award	December 2023
Issuance of Notice to Proceed	December 2023
Project Commencement	Not later than 10 days after NTP
Project Completion	12 months after NTP

1.8.1 NON-MANDATORY PRE-BID MEETING / SITE VISIT

There will be a non-mandatory scheduled pre-bid meeting on **October 4, 2023 at 10:00 a.m.** Meeting location will be at Holly Lake, located at 21800 NW 8th Pl in the City of Pembroke Pines, Florida.

In the event that a contractor cannot attend the scheduled pre-bid meeting, or if a contractor would like a follow up visit to the site, they may request a site visit by contacting Jose Vettaparambil at 954-743-1383. We urge all contractors to attend the scheduled meeting, as a separate or follow-up meeting may not be afforded to the requester due to scheduling and availability of staff to assist with any additional



meetings. In addition, if making a request for a separate or follow-up meeting, contractors are urged to make these requests as early as possible.

Contractors may be required to sign in at any of the meetings to show proof of attendance. It is the vendor's responsibility to make sure that they sign in at the meeting.

1.9 SUBMISSION REQUIREMENTS

Bids/proposals **must be submitted electronically** at <https://ppines.bonfirehub.com/> on or before 2:00 p.m. on October 31, 2023.

Please note vendors should be registered on Bonfire under the name of the organization that they are operating as and it should match the organization name on the documents that they are submitting and utilizing when responding to the solicitation.

In addition, the vendor must complete any questionnaires on the <https://ppines.bonfirehub.com/> website and provide any additional information requested throughout this solicitation. Any additional information requested in the solicitation should be scanned and uploaded.

The City recommends for proposers to submit their proposals as soon as they are ready to do so. Please allow ample time to submit your proposals on the <https://ppines.bonfirehub.com/> website. Proposals may be modified or withdrawn prior to the deadline for submitting Proposals. Bonfire Support is happy to help you with submitting your proposal and to ensure that you are submitting your proposals correctly, but we ask that you contact Support@GoBonfire.com with ample time before the bid closing date and time.

PLEASE DO NOT SUBMIT ANY PROPOSALS VIA MAIL, E-MAIL OR FAX.

However, please note that any required Bid Bond or Cashier's Check should be in a sealed envelope, plainly marked **“BID SECURITY - IFB # PSUT-23-07 “Automatic Transfer Switch Replacement at Holly Lake and Academic Village”** and sent to the City of Pembroke Pines, City Clerk's Office, 4th Floor, 601 City Center Way, Pembroke Pines, Florida, 33025.

TABLE OF CONTENTS

CITY OF PEMBROKE PINES
ATS REPLACEMENT AT HOLLY LAKE AND ACADEMIC VILLAGE
PROJECT NO. PSUT-23-07

PART 1 - TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

- 01010 Summary of Work
- 01015 General Requirements
- 01021 Owner Contingency Allowances
- 01025 Measurement for Payment
- 01152 Applications for Payment
- 01200 Project Meetings
- 01310 Construction Schedules
- 01340 Shop Drawings, Working Drawings, and Samples
- 01370 Schedule of Values
- 01380 Construction Photographs
- 01381 Audio Video Preconstruction Record
- 01510 Temporary Utilities
- 01531 Protection of Existing Property
- 01550 Site Access and Storage
- 01590 Field Offices
- 01600 Material and Equipment
- 01630 Substitutions
- 01700 Contract Closeout
- 01710 Cleaning
- 01720 Project Record Documents
- 01730 Operating and Maintenance Data
- 01740 Warranties and Bonds

DIVISION 2 - SITE WORK (NOT USED)

DIVISION 3 - CONCRETE (NOT USED)

DIVISION 4 - MASONRY (NOT USED)

DIVISION 5 - METALS (NOT USED)

DIVISION 6 - WOOD AND PLASTICS (NOT USED)

DIVISION 7 - THERMAL AND MOISTURE PROTECTION (NOT USED)

DIVISION 8 - DOORS AND WINDOWS (NOT USED)

DIVISION 9 - FINISHES (NOT USED)

DIVISION 10 - SPECIALTIES (NOT USED)

DIVISION 11 - EQUIPMENT (NOT USED)

DIVISION 12 - FURNISHING (NOT USED)

DIVISION 13 - SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 - CONVEYING SYSTEM (NOT USED)

DIVISION 15 - MECHANICAL (NOT USED)

DIVISION 16 - ELECTRICAL (NOT USED)

16001 General Electrical

16260 Automatic Transfer Switch

SECTION 01010

SUMMARY OF WORK

PART 2 - PART 1 - GENERAL

2.01 DESCRIPTION

- A. This section includes general descriptions of the Contractor use of site, location of work, description of work, work sequence, owner occupancy and work by others.

2.02 RELATED SECTIONS

- A. Section 01015 - General Requirements
- B. Section 01025 - Measurement and Payment
- C. Section 01030 - Special Project Procedures
- D. Section 01505 - Control of Work

2.03 REFERENCES (NOT USED)

2.04 CONTRACTOR USE OF SITE

- A. The Contractor shall limit his area of work to remain within those properties and easements as depicted in the Drawings or as approved in writing by the Owner.
- B. Contractors' use of lands other than those depicted in the Drawings shall require written approval from the land owner and be at the Contractors risk and cost.

2.05 LOCATION OF WORK

- A. The work is located at Holly Lake, located at 21800 NW 8th Pl in the City of Pembroke Pines, Florida and Academic village , located at the Pembroke Pine Charter High School, 17189 Sheridan St in the City of Pembroke Pines

2.06 DESCRIPTION OF WORK.

- A. The work includes the furnishing of all labor, materials, equipment, services and incidentals for the "Pembroke Pines Water Utilities – Holly Lake and Academic Village ATS Replacement" project.
- B. The project consists of, but is not limited to two (2) automatic transfer switches (ATS's) replacement.
- C. The temporary power shall include temporary generators, temporary conduits and temporary conductors as per specifications and plans

2.07 WORK SEQUENCE

- A. Incorporate sequence of the Work into the Progress Schedule.
- B. Demolition of existing ATS.
- C. Set up the temporary sound attenuated generator.
- D. Install new ATS.
- E. Restore all work areas and test, start-up and train personnel on new system modifications.

2.08 OWNER OCCUPANCY

- A. Cooperate with Owner to minimize conflict, and to facilitate Residences and Owner's operations.
- B. Schedule the Work to accommodate this requirement.

2.09 WORK BY OTHERS

- A. The Contractor is advised that work by others may take place during the duration of the contract time. It shall be the Contractor's responsibility to coordinate and schedule all Work as not to delay or hinder his work or the work by others.

PART 3 - PRODUCTS (NOT USED)

PART 4 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01015

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section provides for miscellaneous provisions applicable to the Work.

1.02 RELATED SECTIONS

- A. Section 01090 - References
- B. Section 01310 - Construction Schedules
- C. Section 01340 - Shop Drawings, Working Drawings and Samples
- D. Section 01531 - Protection of Existing Property
- E. Section 01720 - Project Record Documents
- F. Other Sections as applicable.

1.03 TERMINOLOGY

- A. Throughout the Contract Documents, the following definitions apply:
 - 1. Owner- The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
 - 2. Work- The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services and documentation necessary to produce such construction, and furnishing, installing and incorporating all materials and equipment into such construction, all as required by the Contract documents.

1.04 SAFETY

- A. All work shall be done in a safe manner and in strict compliance with all requirements of the Federal Occupational Safety and Health Act (OSHA), The Florida Trench Safety Act and all other State and local safety and health regulations.
- B. The Contractor shall comply promptly with such safety regulations as may be prescribed by the Owner or the local authorities having jurisdiction and shall, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of, his employees. In the event of the Contractor's failure to comply, the Owner may take the necessary measures to correct the conditions or practices complained of, and all costs thereof will be deducted from any monies due. Failure of the Owner to direct the correction of unsafe conditions or practices shall not relieve the Contractor of his responsibilities.
- C. The Contractor shall provide, erect and maintain as necessary, strong and suitable barricades, danger signs and warning lights for the protection of the public.

1.05 APPLICABLE CODES

- A. The Contractor shall comply with the applicable standards codes and specifications governing the Contract Documents whether City, County, State or Federal. The Contractor is obligated to notify the Owner and Engineer of any deficiency contained in the Contract Documents immediately upon discovery. Where conflicts exist in such, the more stringent shall govern.

1.06 APPLICABLE PERMITS AND LICENSES

- A. The Contractor shall abide by all permit conditions, whether, general, specific, limited or otherwise. A copy of all applicable permits and licenses, with the exception of City permits obtained by the Contractor, are attached hereto and made a part of the Contract Documents.

1.07 PUBLIC BID DISCLOSURE ACT 218.80 FS

- A. All the local governmental entity permits or fees are to be disclosed, including, but not limited to, all license fees, permit fees, impact fees, or inspection fees, payable by the contractor to the unit of government that issued the bidding documents or other governmental agency,

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION RESPONSIBILITIES

- A. Upon receipt of the Notice To Proceed, the Contractor shall arrange for a Pre-Construction meeting. The meeting shall be held with a minimum of one weeks' notice and shall include the Engineer, the Owner, and Representatives for all affected utility companies.

3.02 TEMPORARY UTILITIES

- A. The Contractor shall be responsible to arrange for and supply all temporary utilities including, but not limited to, water, sewer, and electricity.
- B. The cost of temporary utilities shall be considered incidental to the cost of the Work and is therefore included in the Bid.

3.03 UNDERGROUND LOCATING SERVICE

- A. Prior to underground construction, the Contractor is required by the Underground Facility Damage Prevention and Safety Act, Chapter 556 FS to contact Sunshine 811, for the location of underground utilities.

3.04 HURRICANE PREPAREDNESS PLAN

- A. Should the Performance of the work occur during Hurricane Season, within thirty days of the date of Notice to Proceed, the Contractor shall submit to the Engineer and Owner a Hurricane Preparedness Plan. The Plan should outline the necessary measures that the contractor proposes to perform at no additional cost to the owner in case of a hurricane warning. The plan shall detail these measures with specific action items defining responsible personnel.

3.05 INCLEMENT WEATHER

- A. In the event of inclement weather, or whenever Engineer shall direct; Contractor will cause Subcontractors to carefully protect the work and materials against damage or injury from the weather. If in the opinion of the Engineer, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of Contractor or any Subcontractor to so protect the Work, such Work and materials shall be removed and replaced at the expense of the Contractor.

3.06 ADVANCE INVESTIGATIONS

- A. The Contractor shall be responsible for uncovering and exposing existing utilities sufficiently in advance of pipe laying operations to confirm elevation, size, material and clearance separation(s). If, upon excavation, an existing utility is found to be in conflict with the proposed construction or be of a size or material different from what is shown on the plans, the Contractor shall immediately notify the Engineer, who will in turn prepare a recommendation. Failure of the Contractor to perform advance investigations shall not relieve it of any claims for delay or damages.

3.07 PRESERVATION AND RESTORATION

- A. Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this project. Any damage or injury occurring on account of any act, omission or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.

3.08 PROTECTION OF WORK AND MATERIAL

- A. During the progress of the work and up to the date of final payment, the Contractor shall be solely responsible for the care and protection of all work and materials covered by the Contract.
- B. All work and materials shall be protected against damage, injury or loss from any cause whatsoever, and the Contractor shall make good any such damage or loss at his own expense. Protection measures shall be subject to the approval of the CITY.

3.09 CONTRACTOR USE OF PREMISES

- A. Contractor shall have limited use of the premises for construction operations, including limited use of the site. The Contractor's use of the premises is further limited to the Owner's right to perform construction operations with its own forces or to employ separate Contractors on portions of the project.
- B. The Contractor shall be responsible for coordinating his daily activities in conjunction with any Contractors presently working within the vicinity of this project.
- C. Confine operations to areas within rights-of-way and easements.
- D. Keep existing driveways and entrances serving the premises clear and available to the Owner, Residents and the Owner's employees at all times.
 - 1. Do not use these areas for parking or storage of materials.

2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

3.10 DISPOSAL

- A. Do not dispose of any unsuitable fill, hazardous or organic material onsite. All such material shall be disposed of in a legal manner by the Contractor, the cost of which shall be included in the Bid.

3.11 ENVIRONMENTAL PROTECTION

- A. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

3.12 MATERIAL AND EQUIPMENT

- A. Substitutions: After Bidding period, up to 30 days after date of Notice to Proceed, the Engineer will consider written requests from Contractor for proposed substitutions of products. Subsequent requests will be considered only in case of product unavailability or other condition beyond control of the Contractor. Submit a separate request for each proposed substitution:
 1. Do not order or install substitute products without written acceptance from the Engineer of Record.
 2. Do not imply or indicate substitutions on shop drawings or product data submittals without a separate formal request.
 3. Engineer will determine acceptability of substitution in accordance with the bid documents.
 4. Only one request for substitution for each product will be considered. If not accepted, Contractor shall provide specified product.
- B. Product selection is governed by the Contract Documents and governing regulations, not by previous project experience.
 1. Where a single or multiple products or manufacturers are named, provide one of the products indicated or submit a request for substitution for any product or manufacturer not named unless no substitution is permitted.
 2. Where the Specifications only require compliance with performance requirements, an imposed code, standard or regulation, select a product that complies with the requirements, standards, codes or regulations specified.
 3. Manufacturers named in a Specification section are those manufacturers considered capable of manufacturing products conforming to the specified requirements. The naming of a particular manufacturer does not imply acceptance or approval of just any standard product of that manufacturer.

3.13 ADJUSTMENT OF EXISTING UTILITIES

A. The Contractor shall raise or lower all manholes, valve boxes, etc. to finished grade. The cost of these adjustments shall be considered incidental to the cost of the Work and is therefore included in the Bid.

3.14 EXISTING IRRIGATION

A. All existing irrigation systems within the area of the Work shall be restored to original condition or better and adjusted to finished grade. The cost of repairs and/or adjustment to existing irrigation shall be considered incidental to the cost of the Work and is therefore included in the Bid.

3.15 DEWATERING

A. In accordance with SFWMD criteria contained in 40E-2.061 F.A.C., a dewatering permit is not required provided the following provisions are met:

1. Maximum daily pumpage is less than 5 million gallons (MG) and a maximum total project pumpage of less than 100 MG over a one year period;
2. All discharge shall remain on the project site;
3. No dewatering shall occur to a depth below elevation 0.0 feet NGVD within 1,000 feet of saline water, except when dewatering water with a chloride concentration of greater than 1,000 milligrams per liter;
4. No dewatering shall occur within 100 feet of a wastewater treatment plant rapid-rate land application system permitted under Part IV of Chapter 62-610, F.A.C.;
5. No dewatering shall occur within 1,000 feet of a known landfill or contamination; and,
6. No dewatering shall occur within 1,000 feet of a freshwater wetland unless dewatering activities are completed within 60 days.
7. All dewatering operations are subject to the Permit Conditions in Section 5.0 of the SFWMD APPLICANT'S HANDBOOK FOR WATER USE PERMIT APPLICATIONS (07-16-2014), including responsibility for mitigating any harm that may occur as a result of the dewatering to existing legal uses, off-site land uses, or natural resources.

B. The Contractor shall apply for a dewatering permit through the SFWMD if any of the above conditions cannot be met.

3.16 DEMOLITION

A. Limits of demolition which may be shown in the Contract Documents are general in nature. Actual limits of demolition shall be as determined by the field conditions in conformance with the requirements of the Work.

B. All sidewalks within the limits of construction which are not ADA compliant (cross-slopes which exceed 2% and/or running slopes which exceed 5% and/or changes in level of $\frac{1}{4}$ " or greater) shall be demolished and reconstructed to meet these requirements.

- C. When sidewalk tie-ins exist outside the limits of construction which are not ADA compliant, the Contractor shall replace those sections as directed by the Owner.

END OF SECTION

SECTION 01021

OWNER CONTINGENCY ALLOWANCES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section provides for administrative procedures for the Contractors utilization of monetary amounts for Owner contingency allowances when contained in the Contract Sum or Total Base Bid.
- B. The Contractor has included in the Contract Price all Allowances so named in the Contract Documents and Shall cause the Works so covered to be performed for such sums and by such person or entities as may be acceptable to Owner and Engineer.
- C. The contractor agrees that an Allowance, if any, is for the sole use of Owner to cover unanticipated or undetermined costs.
- D. All owner Allowances which remain unused, in whole or in part, remain the property of the Owner.

1.02 RELATED SECTIONS

- A. Section 00310 - Bid Form.
- B. Section 01025 – Measurement and Payment.
- C. Section 01152 – Application for Payment
- D. Section 01310 - Construction Schedules.
- E. Section 01340 – Shop Drawings, Working Drawings and Samples
- F. Other Sections as Applicable.

1.03 SCHEDULE OF ALLOWANCES

- A. Refer to Bid Form.

1.04 PROCEDURES FOR ADMINISTRATION OF ALLOWANCES.

- A. Funds will only be drawn from Owner contingency allowances by Change Order.
- B. Costs shall be as represented in the Unit Price Schedule or Unit Price Bid Form.
- C. Payment shall be as represented in Section 01025 – Measurement for Payment.

1.05 COST INCLUDED IN PERMITTING ALLOWANCES

- A. Cost of the permit application fee determined by the agency at the time of the Contractor's submittal. All other costs associated with obtaining the required permits shall be the responsibility of the Contractor.

1.06 COSTS INCLUDED IN ALLOWANCES

- A. Cost of product to Contractor, less applicable trade discounts.
- B. Delivery to site, products handling at site, including unloading, uncrating, and storage.

- C. Applicable taxes unless covered by Owner Furnished Equipment clause.
- D. Protection of products from elements and from damage.
- E. Labor, insurance, payroll, bonding, equipment rental and installation and finishing, except when installation is specified as part of allowance.
- F. Other expenses required to complete installation.
- G. Contractor field and home office overhead and profit.

1.07 CONTRACTOR RESPONSIBILITIES

- A. Promptly notify Engineer of any reasonable objections from supplier.
- B. On notification of selection, execute purchase agreement with designated supplier.
- C. Arrange for process shop drawings, product data, and samples.
- D. Arrange for delivery. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- E. Install, adjust, and finish products.
- F. Provide warranties for products and installation.

1.08 CORRELATION WITH CONTRACTOR SUBMITTALS

- A. Schedule shop drawings, product data, samples, and delivery dates, in Progress Schedule for products selected under allowances.

1.09 PRODUCTS (NOT USED)

1.10 EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section includes administrative and procedural requirements for determining Work completed under the unit price contract.

1.02 RELATED SECTIONS

- A. Section 00300 – Bid Form
- B. Section 01030 – Special Project Procedures
- C. Section 01152 – Applications for Payment
- D. Section 01370 – Schedule of Values
- E. Other Sections as applicable.

1.03 REFERENCE STANDARDS

- A. Manual of Uniform Traffic Control Devices (MUTCD)
- B. FDOT Standard Specification for Road and Bridge Construction (Standard Specifications)
- C. FDOT Design Standards for Design, Construction, Maintenance and Utility Operations in the State Highway System (Standard Indexes)
- D. Broward County Public Works and Transportation Department, Highway Construction and Engineering Division Minimum Standards

1.04 GENERAL REQUIREMENTS

- A. Prices shall include all costs required for the completed, in-place construction of the specified unit of work. This may include but not be limited to, materials and delivery; cost of installation; incidentals; labor including social security, insurance, and other required fringe benefits; workman's compensation insurance; bond premiums; rental of equipment and machinery; taxes; testing; surveys; incidental expenses; and supervision.
- B. Installation, acceptance and payment shall be in accordance with the REFERENCE STANDARDS.
- C. The Owner reserves the right to reject the Contractor's measurement of completed work that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.
- D. Contract Sum adjustments will be by Change Order on basis of net accumulative change for each unit price category.
- E. Except as otherwise specified, unit prices shall apply to both deductive and additive variations of quantities.

- F. Lump sum and unit prices in the Agreement shall remain in effect until date of final completion of the entire Work.
- G. Partial payment for material and equipment properly stored and protected will be made in accordance with requirements of the General Conditions.
- H. No separate payment will be made for Record Drawings.
- I. Abbreviations:
 - 1. Acre - AC
 - 2. Allowance - AL
 - 3. Cubic Yard - CY
 - 4. Each - EA
 - 5. Furnish and Install - F & I
 - 6. Gallons - GA
 - 7. Gross Mile - GM
 - 8. Linear Feet - LF
 - 9. Lump Sum - LS
 - 10. Million Gallons - MG
 - 11. Net Mile - NM
 - 12. Square Foot - SF
 - 13. Square Yard - SY
 - 14. Ton - TN

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

- A. Payment shall constitute full compensation and will be made as indicated in the RELATED SECTIONS.
- B. The Contractor shall submit a Schedule of Values for Engineer approval in accordance with Section 01370 prior to the first Application for Payment.
- C. The quantity approved for payment shall be either:
 - 1. Percentage of the Lump Sum price - A percentage of the lump sum price equivalent to the percentage of the project completion as determined by the Engineer as of the date of the pay request submitted. The percent completion of the project shall be based on the percent of the total project actually constructed and not on the percent of the Contract price completed.

2. Measured Quantities - The actual quantities in-place and accepted as measured by the Engineer on the date of the pay request submitted in the units specified in the bid form or schedule of values.

3.02 PROTECTION

- A. Where pavement, pipes, valves, appurtenances, trees, shrubbery, fences, other property, or structures are in proximity to the WORK, adequate protection shall be provided. Such protection is considered incidental to construction and shall not be assigned to any pay item.

3.03 RESTORATION

- A. Where pavement, pipes, valves, structures, appurtenances, trees, shrubbery, fences, other property or structures not designated as pay items, have been damaged, removed or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the Contract Documents, state laws, municipal ordinances or the specific direction of the Engineer, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired at the expense of the Contractor to a condition equal to that before work began within a time frame approved by the Engineer. Such restoration is considered incidental to construction and shall not be assigned to any pay item.

3.04 BID ITEM NO.1: MOBILIZATION AND DEMOBILIZATION

- A. Payment shall be made as percentage of the Lump Sum Price.
- B. The Lump sum Price shall include compensation for all labor, materials, equipment, and all other incidents required for all temporary facilities, transportation, communications, office, maintenance and other pre- or post- construction expenses necessary for the start or cessation of the work at Academic Village and Holly Lake.
- C. The lump sum price shall exclude the cost for construction material and installation.
- D. No further payment shall be made for remobilization unless all of the work is suspended by the Engineer for a period in excess of three months and through no fault to the Contractor.
- E. The lump sum price shall not exceed five percent (5%) of the contract price.

3.05 BID ITEM NO.2: ATS REPLACEMENT AT ACADEMIC VILLAGE

- A. The Lump Sum price shall include all work for a demolition, installation, successful testing, and operation associated with the Replacement of ATS at Academic Village. This item shall include but not limited to permitting, site preparation, demolition, installation, electrical control, coordination with Owner's Operations, Startup and commissioning, submittals and manufacturer's services for the connection of ATS at Academic Village.

3.06 BID ITEM NO.3: ATS REPLACEMENT AT HOLLY LAKE

- A. The Lump Sum price shall include all work for the demolition, installation, successful testing, and operation associated with the Replacement of ATS at Holly Lake. This item shall include but not limited to permitting, site preparation, inspections, approvals, repair or replace all defective work, electrical control, coordination with

Owner's Operations, Startup and commissioning, submittals and manufacturer's services for the connection of ATS at Holly Lake.

3.07 BID ITEM NO.4: TEMPORARY GENERATOR AND CONNECTION

- A. The Lump sum Price shall include, the installation, operation, and maintenance of a temporary sound attenuated generator at each location (Academic Village and Holly Lake), which will be operational all time. Minimum requirements are shown and specified in accordance with the requirements of the plans and specifications.

3.08 BID ITEM NO.5: STARTUP AND TESTING

- A. The Lump sum Price shall include but not be limited to providing startup, training, and testing of the ATS after the installation at Academic Village and Holly Lake.
- B. Contractor shall be responsible for ensuring replacement equipment meets or exceeds the design standards set by the previous equipment.

END OF SECTION

SECTION 01090

REFERENCES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Applicable Publications: Whenever in these specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- B. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These assignments shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. The final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.
- B. References herein to "Building Code" or "Code" shall mean the Florida Building Code. The latest edition of the code as approved and used at the local agency having jurisdiction, shall apply to the WORK herein, including, all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflicts between codes, reference standards, drawings and other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarifications and directions prior to ordering or providing any materials or labor. The CONTRACTOR shall bid the most stringent requirements.
- D. Applicable Standard Specifications: The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and

the referenced portion of those referenced codes, standards, and specifications listed herein; except, that wherever references to "Standard Specifications" are made, the provisions therein for measurement and payment shall not apply.

- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations, including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

1.03 TRADE NAMES AND ALTERNATIVES

- A. For convenience in designation in the Contract Documents, materials to be incorporated in the WORK may be designated under a trade name or the name of a manufacturer and its catalog information. The use of alternative material which is equal in quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:
 1. The burden of proof as to the quality and suitability of such alternative equipment, products, or other materials shall be upon the CONTRACTOR.
 2. The ENGINEER will be the sole judge as to the comparative quality and suitability of such alternative equipment, products, or other materials and its decisions shall be final.
 3. Base Bid requirements outlined in the Supplement to Bid Form, shall supersede any language contained hereinafter.
- B. Whenever in the Contract Documents the name or the name and address of the manufacturer or distributor is given for a product or other material, or if any other source of a product or material is indicated therefore, such information is given for the convenience of the CONTRACTOR only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the CONTRACTOR to determine the accurate identity and location of any such manufacturer, distributor, or other source of any product or material called for in the Contract Documents.
- C. The CONTRACTOR may offer any material, process, or equipment which it considers equivalent to that indicated. Unless otherwise authorized in writing by the ENGINEER, the substantiation of offers of equivalency must be submitted within 30 days after execution of the Agreement. The CONTRACTOR, at its sole expense, shall furnish data concerning items it has offered as equivalent to those specified. The CONTRACTOR shall have the material as required by the ENGINEER to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the items will fulfill its intended function. Installation and use of a substitute item shall not be made until accepted by the ENGINEER. If a substitute offered by the CONTRACTOR is found to be not equal to the specified material, the CONTRACTOR shall furnish and install the specified material.

D. The CONTRACTOR'S attention is further directed to the requirement that failure to submit data substantiating a request for the substitution of an "or equal" item within said 30-day period after the execution of the Agreement, shall be deemed to mean that the CONTRACTOR intends to furnish one of the specific brand-named products named in the specification, and the CONTRACTOR does hereby waive all rights to offer or use substitute products in each such case. Wherever a proposed substitute product has not been submitted within said 30-day period, or wherever the submission of a proposed substitute product fails to meet the requirements of the specifications and an acceptable resubmittal is not received by the ENGINEER within said 30-day period, the CONTRACTOR shall furnish only one of the products originally-named in the Contract Documents.

1.04 ABBREVIATION

A. Wherever in these specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronyms or abbreviation only. As a guide to the user of these specifications, the following acronyms and abbreviations which may appear in these specifications shall have the meanings indicated herein.

1.05 ABBREVIATIONS AND ACRONYMS

A. Abbreviations and acronyms contained in the Contract Documents may include, but not be limited to, the following:

AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of the State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ACPPA	American Concrete Pressure Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGC	Associated General Contractors
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturers

AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association

AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturers Association
CBM	Certified Ballast Manufacturers
CEMA	Conveyors Equipment Manufacturers Association
CGA	Compressed Gas Association
CLPCA	California Lathing and Plastering Contractors Association
CLFMI	Chain Link Fence Manufacturers Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DCDMA	Diamond Core Drill Manufacturers Association
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
HI	Hydraulic Institute
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IP	Institute of Petroleum (London)

IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturers Association
MPTA	Mechanical Power Transmission Association
MTI	Marine Testing Institute
NAAM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NGLI	National Grease Lubricating Institute
NMA	National Microfilm Association
NRCA	National Roofing Contractors Association
NWMA	National Woodwork Manufacturers Association
NWWA	National Water Well Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast Concrete Institute

PDI	Plumbing and Drainage Institute
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturers Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SBC	Southern Building Code Congress International, Inc. (SBCCI)
SIS	Swedish Standards Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPR	Simplified Practice Recommendation
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USGS	United States Geological Survey
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WIC	Woodwork Institute of California
WPCF	Water Pollution Control Federation

WRI Wire Reinforcement Institute, Inc.

WWPA Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Agreement between Owner and Contractor and the Contract Documents.

1.02 RELATED SECTIONS

- A. Section 01050 - Field Engineering
- B. Section 01310 - Construction Schedules
- C. Section 01370 - Schedule of Values
- D. Section 01380 - Construction Photographs
- E. Section 01700 - Contract Close Out
- F. Section 01720 - Project Record Documents

1.03 FORMAT AND DATA REQUIRED

- A. Submit applications typed on forms provided by the Owner (or forms provided by Contractor and agreed to by Owner), Application for Payment, with itemized data typed on 8 1/2 inch x 14 inch white paper and continuation sheets.
- B. Payment forms shall show significant detail to substantiate request. Additional detail may be required by the Engineer.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

- 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
- 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
- 3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets:

- 1. Fill in total list of scheduled component items of work, with item number and scheduled dollar value for each item.
- 2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
 - a. Round off values to nearest dollar, or as specified.

3. List each Change Order Number, and description, as for an original component item or work.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:
 1. Project
 2. Application number and date
 3. Detailed list of enclosures
 4. For stored products:
 - a. Item number and identification as shown on application.
 - b. Description of specific material.
 - c. Copy of material invoice.
 - d. Address of location where item is stored
 - e. Photographs of item (if requested)
- B. Submit one copy of data cover letter for each copy of application.
- C. As a prerequisite for payment, Contractor is to submit the following:
 1. a "Surety Acknowledgment of Payment Request" letter showing amount of progress payment which the Contractor is requesting,
 2. updated record drawings for review by the Engineer,
 3. updated construction schedule for review by the Engineer,
 4. construction photographs.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application form as specified for progress payments.
- B. Provide FINAL COMPLETION documentation for the final statement of accounting as specified in Section 01700 - Contract Closeout.
- C. Submit final record drawings.

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to the Engineer at the times stipulated in the Agreement.
- B. Number: Five copies of each Application.
- C. When the Engineer finds Application properly completed and correct, he will transmit certificate of payment to Owner, with copy to Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Engineer shall schedule and administer preconstruction meetings, periodic progress meetings, and specially called meetings throughout the progress of work. The Engineer shall:
 - 1. Prepare agenda for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record in writing the minutes; include significant proceedings and decisions.
 - 5. Record the meeting with an audio recording device.
 - 6. Reproduce and distribute copies of minutes within five working days after each meeting:
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- 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 executed consistent with Contract Documents and construction schedules.

1.02 RELATED SECTIONS

- A. Document 00100 - Instructions to Bidders.
- B. Section 01310 - Construction Schedules.
- C. Section 01340 - Shop Drawings, Working Drawings, and Samples.
- D. Section 01720 - Project Record Documents.
- E. Other Sections as applicable.

1.03 PRECONSTRUCTION MEETING

- A. Schedule a preconstruction meeting no later than 15 days after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties designated by the Owner.
- C. Attendance:
 - 1. Owner's Representative.

2. Engineer and his Professional Consultants.
3. Resident Project Representative.
4. Contractor's Superintendent.
5. Major Subcontractors.
6. Major Suppliers.
7. Utilities.
8. Others as appropriate.

D. Suggested Agenda:

1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedule.
2. Critical work sequencing/critical path scheduling.
3. Major equipment deliveries and priorities.
4. Project Coordination.
 - a. Designation of responsible personnel.
5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Applications for Payments.
6. Adequacy of Distribution of Contract Documents.
7. Procedures for maintaining Record Documents.
8. Use of Premises:
 - a. Office, Work and Storage Areas.
 - b. Owner's Requirements.
9. Construction facilities, controls and construction aids.
10. Temporary Utilities.

1.04 PROGRESS MEETINGS

- A. Schedule regular periodic meetings. The progress meetings will be held as required by progress of the work.
- B. Hold called meetings as required by progress of the work.

- C. Location of the meetings: Project field office of the Contractor or Engineer.
- D. Attendance:
 - 1. Engineer, and his professional consultants as needed.
 - 2. Subcontractors as appropriate to the agenda.
 - 3. Suppliers as appropriate to the agenda.
 - 4. Others as appropriate.
- E. Suggested Agenda:
 - 1. Review, approval of minutes of previous meeting.
 - 2. Review of work progress since previous meeting.
 - 3. Field observations, problems and conflicts.
 - 4. Problems which impede Construction Schedule.
 - 5. Review of off site fabrication, delivery schedule.
 - 6. Corrective measures and procedures to regain projected schedule.
 - 7. Revisions to Construction Schedule.
 - 8. Progress, schedule, during succeeding work period.
 - 9. Coordination of schedules.
 - 10. Review submittal schedules; expedite as required.
 - 11. Maintenance of quality standards.
 - 12. Pending changes and substitutions.
 - 13. Review proposed changes for:
 - a. Effect on Construction Schedule and on a completion date.
 - b. Effect on other contracts of the Project.
 - 14. Other business.
 - 15. Construction schedule.
 - 16. Critical/long lead items.
- F. The Contractor is to attend progress meetings and is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of work, etc.
- G. The Contractor is to provide a current submittal log at each progress meeting in accordance with Section 01340.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Promptly after Award of the Contract and within ten days after the effective date of the Agreement, prepare and submit to the Engineer an estimated construction progress schedules for the work, with sub-schedules of related activities which are essential to its progress.
- B. Submit revised progress schedules on a monthly basis.
- C. No partial payments shall be approved by the Engineer until there is an approved up to date construction progress schedule on hand.
- D. 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's schedule.

1.02 RELATED SECTIONS

- A. Document 00700 – General Conditions of the Construction Contract
- B. Section 01010 - Summary of Work
- C. Section 01152 - Applications for Payment
- D. Section 01200 - Project Meetings
- E. Section 01340 - Shop Drawings, Working Drawings and Samples
- F. Other Sections as applicable.

1.03 FORM OF SCHEDULES

- A. Prepare schedules for submittal each month with pay request. The form of the schedule is to be Microsoft Project or approved equal. The Schedule is to indicate work completed to date and additions to or deletions from the schedule.
 - 1. Provide separate horizontal bar for each trade or operation within each structure or item.
 - 2. Horizontal time scale: In weeks from start of construction and identify the first work day of each month.
 - 3. Scale and spacing: To allow space for notations and future revisions.
- B. Format of listings: The chronological order of the start of each item of work for each structure.
- C. Identification of listings: By major specification section numbers as applicable and structure.

1.04 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity.
2. Show the dates for the beginning of, and completion of, each major element of construction in no more than a two week increment scale. Specifically list, but not limited to:
 - a. Receiving Materials
 - b. Pipeline Installations
 - c. Testing
 - d. Restoration
 - e. Startup
 - f. Record Drawings
 - g. Permit Close-out
 - h. Punch List
 - i. Owner Activities, Including Inspections
1. Show projected percentage of completion for each item, as of the first of each month.
2. Show projected dollar cash flow requirements for each month of construction.
3. Use of float suppression techniques such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity times are prohibited, and use of float time disclosed or implied by use of alternate float-suppression techniques shall be shared to proportionate benefit of the Owner and Contractor.
4. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs which (i) impacts Project's critical path, (ii) consumes available float or contingency time, and (iii) extends work beyond contract completion date.
5. If the Contractor provides an accepted schedule with an early completion date, the Owner reserves the right to reduce the duration of the work to match

the early completion date by issuing a deductive Change Order at no change in Contract Price.

- B. Submittal Schedule for Shop Drawings and Samples in accordance with Section 01340. Must show:
 - 1. The dates for Contractor's submittals.
 - 2. The dates submittals will be required for owner furnished products, if applicable.
 - 3. The dates approved submittals will be required from the Engineer.
 - 4. A list of all long lead items (equipment, materials, etc).

1.05 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.
 - 3. Revised projections of progress and completion.
 - 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
 - 1. Problem areas, anticipated delays, and the impact on the schedule.
 - 2. Corrective action recommended, and its effect.
 - 3. The effect of changes on schedules of other prime contractors.

1.06 SUBMISSIONS

- A. Submit initial schedules to the Engineer within 10 days after the effective date of the Agreement.
 - 1. The Engineer will review schedules and return review copy within 21 days after receipt.
 - 2. If required, resubmit within 7 days after return of review copy.
- B. Submit a minimum of five (5) copies of revised monthly progress schedules with that month's application for payment.

1.07 DISTRIBUTION

- A. Distribute copies of reviewed schedules to:
 - 1. Owner (Two copies)
 - 2. Engineer (Two copies)
 - 3. Job Site File (One copy)

4. Subcontractors (As needed)
5. Other Concerned Parties (As needed)

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01340

SHOP DRAWINGS, WORKING DRAWINGS AND SAMPLES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The contractor shall submit to the Engineer for review, such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this article called data), and material samples (hereinafter in this article 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.
- B. The Contractor shall submit five (5) copies of shop drawings or other data to the Engineer.
- C. Within thirty (30) calendar days after the effective date of the Agreement, the Contractor shall submit to the Engineer a complete list of preliminary data for which Shop Drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specific items. Review of this list by the Engineer shall in no way expressed or implied relieve the Contractor from submitting complete Shop Drawings and providing materials, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.
- D. The contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and Engineer. This log should include the following items:
 - 1. Submittal-Description and Number assigned.
 - 2. Date to Engineer.
 - 3. Date returned to Contractor (from Engineer).
 - 4. Status of Submittal (Approved/Resubmit/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. Status of O & M submittal.

1.02 RELATED SECTIONS

- A. Section 01310 - Construction Schedules
- B. Section 01720 - Project Record Documents

- C. Section 01730 - Operating and Maintenance Data
- D. Other Sections as applicable.

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 Engineer for review. Each and every copy of the Drawings and data shall bear 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. Determine and verify:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
 - 4. Conformance and Specifications
- C. The Contractor shall furnish the Engineer 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.
- D. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed Shop Drawings, Working Drawings and Samples will be needed.
- 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, approved by the Engineer.
- F. The Contractor shall submit to the Engineer all shop drawings, working drawings and samples sufficiently in advance of construction requirements and shall account for Engineers Shop Drawing review time accordingly.
- G. The Contractor shall submit two (2) copies of descriptive or product data submittals to complement shop drawings for the Engineer plus the number of copies which the Contractor requires. The Engineer will retain two (2) sets. All blueprint shop drawings shall be submitted with one (1) set of reproducible and four (4) sets of print. The Engineer will review the drawings and return to the Contractor the set of marked-up drawings with appropriate review comments.
- H. 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 review and Approval by Engineer of the necessary Shop Drawings.

1.04 ENGINEER'S REVIEW OF SHOP DRAWINGS

- A. The Engineer's review of drawings, data and samples submitted by the Contractor will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation. The Engineer's review and exception if any, will not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown.
- B. The review of drawings and schedules will 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 Engineer, except as otherwise provided herein.
- C. If the drawings or schedule as submitted describe variations and/or show a departure from the Contract requirements which Engineers finds to be in the interest of the Owner and to be minor as not to involve a change in the Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.
- D. When reviewed by the Engineer, each of the Shop Drawings will be identified as having received such review being so stamped and dated. Shop Drawings stamped "REJECTED" and with required corrections shown will be returned to the Contractor for correction and resubmittal.
- E. Resubmittals will be handled in the same manner as the 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 Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.
- 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 Engineer.
- G. The Engineer will review one submittal and one re-submittal after which cost of review will be borne by the Contractor. The cost of engineering shall be equal to the Engineer's charges to the Owner under the terms of the Engineer's agreement with the Owner.
- H. When the Shop Drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- I. No partial submittals will be reviewed. Submittals not complete will be returned to the Contractor, and will not be considered "Rejected" until resubmitted.
- J. The Engineer shall return Shop Drawing submittals to the Contractor within twenty-one (21) days calendar days from the date the Engineer receives them.

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, erection and setting drawings and 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 work of all trades involved, before they are submitted for review by the Engineer and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval 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 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 for executing the work in accordance with the Contract, even though such drawings have been reviewed.
- E. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data 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, address and telephone number of the manufacturer's representative and service company so that service and spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted along with each shop drawing submittal.
- G. All manufacturers or equipment supplier who proposes to furnish equipment or products under Divisions 11, 12, 13, 14, 15 and 16 shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include

at least five installations where identical equipment has been installed and has been in operation for a period of at least five (5) years.

- H. Only the Engineer will utilize the color "red" in marking Shop Drawing submittals.
- I. Before final payment is made, the Contractor shall furnish to Engineer two (2) sets of record shop drawings all clearly revised, complete and up to date showing the permanent construction as actually made for all reinforcing and structural steel, miscellaneous metals, process and mechanical equipment, piping, electrical system and instrumentation system.

1.06 WORKING DRAWINGS

- A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's plans for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false-work; for underpinning; and for such other work as may be required for construction, but does not become an integral part of the project.
- B. Copies of working drawings as noted in subparagraph 1.06A above, shall be submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the Engineer) 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 Engineer, 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. The Contractor assumes all risks of error; the Owner and Engineer shall have no responsibility therefore.

1.07 SAMPLES

- A. The Contractor shall furnish, for the approval of the Engineer, samples required by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer 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 approved by the Engineer.
- 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 Project
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 marking that will identify them under the finished schedules.)

- D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in subparagraph 1.07B above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the Engineer. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.
- E. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the work. Approved 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 approved samples. Samples which failed testing or were not approved will be returned to the Contractor at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within 14 days after the effective date of the Agreement.
- B. Upon request of the Engineer, support the values with data which will substantiate their correctness.
- C. The Schedule of Values shall be used as the basis for the Contractor's Applications for Payment.

1.02 RELATED SECTIONS

- A. Section 01152 - Applications for Payment
- B. Other Sections as applicable.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. Present schedule on an 8-1/2 inch x 11 inch white paper; Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
 1. Title of Project and location
 2. Engineer and Project number
 3. Name and Address of Contractor
 4. Contract designation
 5. Date of submission
- B. Schedule shall list the installed value of the component parts to include individual equipment, piping, electrical, paving, of the Work (as required) in sufficient detail to serve as a basis for computing values for progress payments during construction and for additions and deletions to the Work.
- C. For the various portions of the Work:
 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
- D. The sum of all values listed in the schedule shall equal the total Contract Sum.
- E. Schedules are subject to Engineer's approval wherein additional line item detail may be required.

1.04 ENGINEERS APPROVAL

- A. The schedule of Values is subjected to the Engineer's approval.
 1. Additional line item detail may be required.

2. Supporting information may be required.
3. Additional comparison trade bids may be required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - PRODUCTS (NOT USED)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall employ a professional photographer to take digital construction record photographs for preconstruction conditions, periodically during course of Work, and post-construction.

1.02 RELATED SECTIONS

- A. Section 01152: Application for Payment
- B. Section 01720: Project Record Documents
- C. Other Sections as applicable.

1.03 PHOTOGRAPHY REQUIRED

A. View and Quantities Required:

- 1. Take a minimum of 24 images of the site and adjacent property at the following intervals:
 - a. Preconstruction
 - b. Monthly or other interval, at the cut -off date in accordance with Applications for Payment
 - c. At construction events or discoveries as directed by the Owner or Engineer.
 - d. At post-construction.
- 2. Aerial photography shall be acceptable in addition to ground level exposures for items out of sight of aerial photography.

B. Aerial photography shall be required in addition to ground level images for items out of sight of ground level photography.

C. Photograph from locations to adequately illustrate condition of construction and state of progress.

D. At successive periods of photography, take at least one photograph from the same overall view as previously.

E. Consult with the Owner and Engineer at each period of photography for instructions concerning views required.

PART 2 - PRODUCTS

2.01 CAMERA REQUIREMENT

- A. A Digital Single Lens Reflex (DSLR) is required.
- B. Point and shoot, mobile phones and disposal cameras are not acceptable.

2.02 PHOTOGRAPHS

- A. The minimum file size is 6.0 megapixels per image.

- B. All images shall be color and in RGB format.

- C. Acceptable file formats include:

- 1. Tagged Information File Format (TIFF)
- 2. Joint Photographic Experts Group 2000 (JPEG2000)
- 3. Digital Negative (DGN)

- D. Unacceptable file formats include:

- 1. Bitmap (BMP)
- 2. Graphics Interchange Format (GIF)
- 3. Portable Network Graphic (PNG)
- 4. Raw format

2.03 METADATA

- A. Each image must contain descriptive metadata as follows:

- 1. Name of Project
- 2. Orientation of View
- 3. Date and time of image
- 4. Name and address of Photographer

5. Photographer's numbered identification of image
6. Meaningful and descriptive filenames unique to each image.

2.04 COPYRIGHT

- A. No copyrighted photographs will be accepted.

2.05 EDITING

- A. Images shall not be edited in any way.

2.06 TECHNIQUE

- A. Factual presentation
- B. Magnification commensurate with the level of detail required.
- C. Correct image and focus
 1. High resolution and sharpness
 2. Maximum depth of field
 3. Minimum distortion

2.07 DELIVERY OF IMAGES

- A. Deliver electronic image file to the Owner and Engineer to accompany each Application for Payment or as directed.
- B. Electronic file storage media shall be a durable, commercial quality USB memory device of sufficient capacity to store the intended contents.
- C. Electronic file storage media shall be labeled and identified by project title and project number.
- D. The photographer shall keep electronic copies for a minimum of two years from Owner acceptance.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01381

AUDIO/VIDEO PRE-CONSTRUCTION RECORD

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide a continuous color video with audio of the entire length of the proposed project prior to construction and at Owner acceptance.

1.02 RELATED SECTIONS

- A. Section 01380 – Construction Photographs

1.03 SCHEDULE REQUIRED

- A. Video recordings shall not be made more than 30 days prior to construction. No construction shall begin prior to review and approval of the CD's by the Engineer and the Owner.

1.04 PROFESSIONAL VIDEOGRAPHERS

- A. The Contractor shall engage the services of a professional videographer. The color audio-visual tapes shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of pre-construction color audio-visual documentation.

PART 2 - PRODUCTS

- A. The finished product shall be a bright, sharp, clear picture free of distortion and show in sufficient detail acceptable to the Engineer.
- B. The video shall be color and in RGB format.
- C. The contractor shall furnish to the Engineer and the Owner two (2) copies each of the electronic file, which becomes a project record document.
- D. Electronic file storage media shall be a durable, commercial quality USB memory device or compact disc of sufficient capacity to store the intended contents.
- E. Electronic file storage media shall be labeled and identified by project title and project number.
- F. The videographer shall keep electronic copies for a minimum of two years from Owner acceptance.

2.02 METADATA

- A. Each video must contain descriptive metadata as follows:

1. Name of Project
2. Direction and road names
3. Date and time of image
4. Name and address of videographer
5. Meaningful and descriptive filenames unique to each image.

2.03 COPYRIGHT

- A. No copyrighted videos will be accepted.

2.04 EDITING

- A. Videos shall not be edited in any way.

PART 3 - EXECUTION

- A. The video recording shall show all surface features located within the construction zone. These features shall include, but not be limited to, roadways, sidewalks, outside of houses (front and sides), driveways, culverts, walls, fences and landscaping.
- B. Where station numbering is used, coverage shall begin at the lowest station number and be continuous until the highest station number is reached. Otherwise, the entire length of the project shall be documented including each plan sheet.
- C. Provide magnification (zoom) where appropriate to properly display details germane to the subject matter.
- D. Maintain camera speed slow enough to achieve detail acceptable to the Owner and Engineer.
 1. Videos with unacceptable camera speed will not be accepted.
 2. Videographer shall be responsible to meet all traffic laws at the time of video including all necessary and appropriate safety measures.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish, install, and maintain temporary utilities required for construction, remove on completion of work.
- B. Pay all fees associated with temporary utilities including water consumption charges.

1.02 RELATED SECTIONS

- A. Section 01010: Summary of Work
- B. Other Sections as applicable.

1.03 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 County Health Department and Environmental Regulations.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials may be new or used but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the Owner.
- B. Install circuit and branch wiring, with the area distribution boxes located so that power and lighting is available throughout the construction by the use of construction type power cords.
- C. Provide adequate artificial lighting for all areas of work when natural light is not adequate to work, and all areas accessible to the public.

2.03 TEMPORARY WATER

- A. Arrange with the CITY to provide water for construction purposes.
- B. Install branch piping with taps located so that water is available throughout the construction by the use of hoses.

- C. C. Install at each and every connection to the Owner water supply a backflow preventer meeting the requirements of ANSI A40.6 and AWWA C511. Contractor shall be required to meter and pay for all water used.

2.04 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.

PART 3 - EXECUTION

3.01 GENERAL

- A. Maintain and operate systems to assure continuous service.
- B. Modify and extend systems as work progress requires.

3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore permanent facilities used for temporary services to specified condition.

END OF SECTION

SECTION 01531

PROTECTION OF EXISTING PROPERTY

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this project. Any damage or injury occurring on account of any act, omission or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.
- B. In the event of any claims for damage or alleged damage to property as a result of work, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencement of work in the vicinity of property adjacent to the work site, the Contractor, at his own expense, shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

1.02 RELATED SECTIONS

- A. Section 01015 – General Requirements
- B. Other Sections as applicable.

1.03 PRESERVATION AND RESTORATION

- A. Contractor shall be responsible for the preservation and protection of property adjacent to the Work site against damage or injury as a result of this project. Any damage or injury occurring on account of any act, omission or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.

1.04 ADJACENT PROPERTY OWNER NOTIFICATION

- A. The Contractor shall prepare a written Notice to Property owners adjacent to the project Work site notifying them of the schedule of work affecting them and anticipated inconveniences they may expect. The notice shall meet the approval of the Engineer and be delivered to property owners at least 72 hours prior to construction adjacent to their property. This notice shall indicate the work to be performed, the time it will take to perform the work, the time when the water service to the property owner will be disrupted.

1.05 BARRICADES, WARNING SIGNS AND LIGHTS

- A. In addition to the requirements of Section 01570 – Traffic Regulation, the Contractor shall provide, erect and maintain as necessary, strong and suitable barricades, danger

signs and warning lights for the preservation and protection of property adjacent to the work site. All barricades and obstructions along public roads shall be illuminated at night and all lights for this purpose shall be kept burning from sunset to sunrise.

1.06 TREES AND LANDSCAPING PROTECTION

- A. General: The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or landscaping in or near the project site, and shall not trim or remove any trees or landscaping unless such trees or landscaping have been approved for trimming or removal by the jurisdictional agency or owner. All existing trees or landscaping which are damaged during construction shall be replaced by the Contractor or a certified tree/landscaping company to the satisfaction of the owner.
- B. Replacement: The Contractor shall immediately notify the jurisdictional agency or owner if any tree or landscaping is damaged by the Contractor's operations. If, in the opinion of the jurisdictional agency or owner, the damage is such that replacement is necessary, the Contractor shall replace the tree or landscaping at its own expense. The tree or landscaping shall be of a like size and variety as the tree or landscaping damaged, or, if of a smaller size, the Contractor shall pay any compensatory payment.
- C. All permit fees associated with the removal and replacement of trees and landscaping damaged or destroyed shall be the responsibility of the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01550

SITE ACCESS AND STORAGE

PART 1 - GENERAL

1.01 GENERAL

- A. This section provides general specifications for the contractors' access to the site and limitations on storage or lay-down area.

1.02 RELATED SECTIONS

- A. Section 01015 – General Requirements
- B. Other Sections as applicable.

1.03 HIGHWAY LIMITATIONS

- A. The Contractor shall make his own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the work.

1.04 TEMPORARY ACCESS RESTORATION

- A. All areas disturbed by the construction activities shall be restored to proper grade, cleaned up, including the removal of debris, trash, and deleterious materials..
- B. Temporary restoration shall include all driveways, sidewalks and roadways. They shall be swept clean and be maintained free of dirt and dust
- C. All construction materials, supplies, or equipment, including piles of debris shall be removed from the area.
- D. All temporarily restored areas shall be maintained by the Contractor. These areas shall be kept clean and neat, free of dust and dirt, until final restoration operations are completed.
- E. Temporary restoration shall be completed within five days of pipe installation or as specified.
- F. The Contractor is responsible to utilize dust abatement operations in the temporarily restored areas as required, to the satisfaction of the Engineer.
- G. Final restoration shall be completed within thirty days of pipe acceptance. Final restoration shall include the completion of all required pavement replacement of roadways, driveways, curbs, gutters, sidewalks and other existing improvements disturbed by the construction; final grading, placement of sod, pavement marking, etc., all complete and finished, acceptable to the Engineer.
- H. In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw

cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with the adjacent undisturbed pavement.

1.05 CONTRACTOR'S WORK AND STORAGE AREA

- A. Contractors on-site work and storage area plan shall be submitted for Owners approval no later than 30 days after NTP.
 - 1. Owner approval of the work are and storage plan is required prior to commencement.
- B. The Contractor shall make his own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01590

FIELD OFFICES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish, install and maintain temporary field offices for the Engineer and the Contractor during entire construction period.
- B. Furnish, install and maintain storage and work sheds needed for construction.
- C. At completion of work, remove field offices, sheds and contents.

1.02 RELATED SECTIONS

- A. Section 01010: Summary of Work
- B. Section 01510: Temporary Utilities
- C. Section 01600: Material and Equipment
- D. Other Sections as applicable.

1.03 OTHER REQUIREMENTS

- A. Prior to installation of offices, consult with the Engineer and Owner regarding the location, access and related facilities.

1.04 REQUIREMENTS FOR FACILITIES

- A. Construction:
 - 1. Structurally sound, weathertight, with floors raised above ground.
 - 2. Temperature transmission resistance: Compatible with occupancy and storage requirements.
 - 3. At Contractor's option, portable or mobile buildings may be used.
 - a. Mobile trailers, when used, shall be modified for office use.
 - b. Do not use mobile trailers for living quarters.
- B. Office for the Engineer:
 - 1. A separate space for the sole use of designated occupants, with secure entrance doors and one key per occupant.
 - 2. Area: 150 sq. ft. minimum, with minimum dimension 8 feet.
 - 3. Air Conditioned
 - 4. 120V, electric outlet
 - 5. Desk & Chair - reference table
 - 6. Plan rack
 - 7. Telephone
- C. Contractor's Office and Facilities:

1. Size: As required for general use and to provide space for project meetings.
2. Lighting and temperature control: As specified for the Engineer's office.
3. Telephone: One direct line instrument.
4. Racks and files for Project Record Documents.
5. Other furnishings: Contractor's option.
6. Sanitary Facilities
7. FAX Machine
8. Copier Machine (not FAX Machine)

D. The Contractor shall make all provisions and pay all installations and other costs for the Engineer's construction office in order to provide telephone service, power service, exterior lights, and any local code and OSHA requirements. With the exception of charges for long distance and toll calls, the Contractor shall pay all monthly charges for the various services provided to the Engineer's office throughout the construction period.

1.05 USE OF PERMANENT FACILITIES

- A. Permanent facilities shall not be used for field offices or for storage.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

- A. May be new or used, but must be serviceable, adequate for required purpose, and must not violate applicable codes or regulations.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Fill and grade sites for temporary structures to provide surface drainage.

3.02 INSTALLATION

- A. Construct temporary field offices on proper foundations, provide connections for utility service.
 1. Secure portable or mobile buildings when used.
 2. Provide steps and landings at entrance doors.
- B. Locate construction office facilities at the location approved by the Owner within the Project.

3.03 MAINTENANCE AND CLEANING

- A. Provide periodic maintenance and cleaning for temporary structures, furnishings, equipment and services.

3.04 REMOVAL

- A. Remove temporary field offices, contents and services at a time when no longer needed.
- B. Remove foundations and debris; grade site to required elevations and clean the area.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Material and equipment incorporated into the Work.
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, and type and qualify specified, or as specifically approved in writing by the Engineer.
 - 3. Manufactured and Fabricated Products.
 - a. Design, fabricate, and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like part of duplicate units to standard sizes and gauges, to be interchangeable.
 - c. Two or more items of the same kind shall be identical, 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 designed or is specified.

1.02 RELATED SECTIONS

- A. Section 01340: Shop Drawings, Product Data, and Samples
- B. Section 01720: Project Record Documents
- C. Other Sections as applicable.

1.03 APPROVAL OF MATERIALS

- A. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work without prior approval of the Engineer.
- B. Within 30 days after the effective date of the Agreement, the Contractor shall submit to the Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications. The data shall comply with Paragraph 1.07 of this Section.
- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during progress of the work, the Contractor shall submit samples of materials for such

special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests.

- D. The Contractor shall submit data and samples sufficiently early to permit work. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or the Engineer.
- E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the work shall correspond to the approved samples or other data.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instruction, obtain, and distribute copies of such instructions to parties involved in the installation, including copies to the Engineer.
 - 1. 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 accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 - 2. Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of Products in accord 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 upon 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.

1.06 STORAGE AND PROTECTION

- A. The Contractor shall furnish a covered, weather-protected storage structure, providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be performed to allow easy

access and be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including weather/humidity protection, connection of heaters, placing of storage lubricants in equipment, blocking, or skid storage, etc. Corroded, damaged, or deteriorated equipment and parts shall be replaced before acceptance of the project.

- B. Store Products in accord with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather-tight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store fabricated products above the ground, on blocking or skids, to prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
 - 4. Store loose granular materials in a well drained area on solid surfaces to prevent mixing with foreign matter.
- C. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D. Cement, sand, and lime shall be stored under a roof, off the ground, and shall be kept completely dry at all times. All structural and miscellaneous steel and reinforcing steel shall be stored off the ground, or otherwise, to prevent accumulations of dirt or grease, and to minimize rusting. Brick, block, and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spalling to a minimum.
- E. Moving parts shall be rotated a minimum of once weekly to insure proper lubrications, 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.
- F. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified, shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.
- G. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specific conditions, and free from damage or deterioration.
- H. Contractor shall be responsible for protection after installation by providing substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.

- I. The Contractor shall be responsible for all materials, equipment, and supplies sold and delivered to the Owner under this Contract, until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.
- J. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

1.07 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Products List
 - 1. Within 30 days after the effective date of the Agreement, submit to the Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.
- B. Contractor's Options
 - 1. For Products specified only by reference standard, select any product meeting that standard.
 - 2. For Products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications, subject to the base bid procedures outlined under Document 00400 – Supplemental Bid Form.
 - 3. For products specified by naming one or more Products or Manufacturers and an "or equal", the Contractor must submit a request for substitutions of any Product or Manufacturer not specifically named.
- C. Substitutions
 - 1. For a period of 30 days after the effective date of the Agreement, the Engineer will consider written requests from Contractor for substitution of Products.
 - 2. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified
 - b. Changes required in other elements of the work because of the substitution
 - c. Effect on the construction schedule
 - d. Cost data comparing the proposed substitution with the Product specified
 - e. Any required license fees or royalties

- f. Availability of maintenance service, and source of replacement materials
 - 3. The Engineer shall be the judge of the acceptability of the proposed substitution.
 - 4. No substitutions will be considered by the Engineer after 30 days from the Contract Date.
- D. Contractor's Representation
 - 1. A request for a substitution constitutes a representation that Contractor:
 - a. Has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified
 - b. Will provide the same warranties or bonds for the substitution as for the Product specified
 - c. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects
 - d. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
- E. The Engineer will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.08 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the Owner these tools and instructions in good order no later than upon completion of the Contract.

1.09 STORAGE AND HANDLING OF EQUIPMENT ON SITE

- A. Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed.
 - 1. Equipment shall not be shipped until approved by the Engineer. 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 Engineer, unless upon arrival it is to be stored as specified in Paragraph 1.06. Operation and maintenance data, as described in Paragraph 1.08 of Section 01730 shall be submitted to the Engineer for review prior to shipment of equipment.
 - 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 Engineer, 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. Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed with the Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
5. 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.
6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed, and lubricated prior to testing and start up, at no extra cost to the Owner.
7. 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 guarantee 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.

1.10 WARRANTY

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 01740.

1.11 SPARE PARTS

- A. Spare parts for certain equipment provided under Division 11 through 16 have been specified in the pertinent sections of the Specifications. The Contractor shall collect and store all spare parts so required in an area to be designated by the Engineer. In addition, the Contractor shall furnish to the Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

1.12 LUBRICANTS

- A. During testing and prior to acceptance, the Contractor shall furnish all lubricants necessary for the proper lubrication of all equipment furnished under this Contract.

1.13 GREASE, OIL AND FUEL

- A. All grease, oil, and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of the equipment supplied under Division 11 through 16.
- B. The Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

1.14 PROTECTION AGAINST ELECTROLYSIS

- A. Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

1.15 FASTENERS

- A. All necessary bolts, anchor bolts, nuts, washers, plates and bolt sleeves shall be furnished by the Contractor. Bolts shall have suitable washers and, where so required, their nuts shall be hexagonal.
- B. All bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be Type 316 stainless steel unless otherwise specifically indicated or specified.
- C. Unless otherwise specified, stud, tap, and machine bolts shall be of the best quality refined bar iron. Hexagonal nuts of the same quality of metal as the bolts shall be used.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EQUIPMENT, TESTING, AND INSPECTION

- A. Regardless of the number of days specified in the individual sections for the manufacturer's representative to be present on the site for inspection and testing, if the equipment fails to perform as specified, then the representative shall remain on site until the malfunction is corrected.
- B. The cost for the additional days shall not be added to the cost for the Owner, but shall be to the account of the contractor.

END OF SECTION

SECTION 01630

SUBSTITUTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install products specified and named in their respective Specifications or on the Drawings unless substitution is allowed by the requirements stated in this Section.
- B. For products specified only by reference standard, select product meeting that standard, by any manufacturer.
- C. For products specified by naming several products or manufacturers, select any one of those products and manufacturers names which complies with their respective Specifications.
- D. For products specified by naming only one or more products or manufacturers and stating "or equal", submit a request as for substitutions, for any product or manufacturer which is not specifically named.
- E. Requests for any substitutions not submitted in accordance with the instructions herein will be denied.

1.02 RELATED SECTIONS

- A. Section 01340 – Shop Drawings, Working Drawings and Samples
- B. The technical specifications related to the proposed substitution.

1.03 PRODUCTS LIST

- A. Within 30 days after award of Contract, submit to Engineer five copies of complete list of major Products which are proposed for installation.
- B. Tabulate Products by specification section number and title.
- C. For products specified only by reference standards, list for each such Product:
 - 1. Name and address of manufacturer.
 - 2. Trade Name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data:
 - 5. Reference standards.
 - 6. Performance test data.

1.04 SUBSTITUTION SUBMITTAL REQUIREMENTS – "OR APPROVED EQUAL"

- A. Within a period of 30 days after award of Contract, Engineer will consider formal requests from the Contractor for substitution of products in place of those specified.

- B. After the end of that period, the request will be considered only in case of product unavailability or other conditions beyond the control of the Contractor.
- C. Submit a separate request for each substitution. Support each request with:
 - 1. Complete data substantiating compliance of the proposed substitution with requirements stated in the Contract Documents:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature; identify:
 - 1) Product description.
 - 2) Reference standards.
 - 3) Performance and test data.
 - c. Samples, as applicable.
 - d. Name and address of similar projects on which product has been used, and the date of each installation
 - 2. Itemized comparison of the proposed substitution with product specified; List significant variations.
 - 3. Data relating to changes in the construction schedule.
 - 4. Any effect of the substitution on separate contracts.
 - 5. List of changes required in other work or products.
 - 6. Accurate cost data comparing proposed substitution with product specified.
 - 7. Designation of required license fees or royalties.
 - 8. Designation of availability of maintenance services, and sources of replacement materials.
- D. Substitute products shall not be ordered or installed without written acceptance of Engineer.
- E. Engineer will determine the acceptability of proposed substitutions.

1.05 SUBSTITUTIONS WILL NOT BE CONSIDERED FOR ACCEPTANCE WHEN:

- A. They are indicated or implied on Shop Drawings or product data submittals without a formal request from Contractor.
- B. The manufacture of the product substitution does not meet the Qualifications as stated in the specifications.
- C. They are requested directly by a subcontractor or supplier.
- D. No data is provided relating to changes in construction schedule.
- E. There is any effect of substitution on separate contracts.
- F. Changes are required in other work or products.

- G. There is no accurate cost data comparing proposed substitution with product specified.
- H. There are required license fees or royalties above and beyond the specified vendor.
- I. Availability of maintenance services, sources of replacement materials does not equal that provided by the specified vendor.
- J. Acceptance will require substantial revision of Contract Documents.

1.06 CONTRACTOR'S REPRESENTATION

- A. In making formal request for substitution Contractor represents that:
 - 1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
 - 2. He will provide the same warranties or bonds for substitution as for product specified.
 - 3. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 - 4. He waives claims for additional costs caused by substitution which may subsequently become apparent.
 - 5. Cost data is complete and includes related costs under his Contract, but not:
 - a. Costs under separate contracts.
 - b. Engineer's costs of redesign or revision of Contract Documents.

1.07 ENGINEER DUTIES

- A. Review Contractor's requests for substitutions in accordance the Shop Drawing review requirements.
- B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

1.08 SUBSTITUTION SUBMITTAL REQUIREMENTS – “NO SUBSTITUTIONS PERMITTED”

- A. Contractor may not request a substitute item or vendor/manufacturer for which the specifications indicate “No Substitutions Permitted”.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Administrative and procedural requirements for project closeout.
 - 1. Inspection procedures.
 - 2. Project Record Document submittal.
 - 3. Final cleaning.
- B. Warranty and bond submittal.
- C. Closeout submittals, warranties and bonds required for specific products of work.

1.02 RELATED SECTIONS

- A. Section 00800 – Supplementary Conditions
- B. Section 01310 - Construction Schedules
- C. Section 01370 - Schedule of Values
- D. Section 01380 - Construction Photographs
- E. Section 01710 - Cleaning
- F. Section 01720 - Project Record Documents
- G. Section 01740 – Warranties and Bonds
- H. Other Sections as applicable.

1.03 SUBSTANTIAL COMPLETION

- A. Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

5. Submit record drawings, maintenance manuals, and similar final record information.
6. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

B. When the Contractor considers the Work to be substantially complete, he shall submit a written notice to the Engineer that the Work, or designated portion of the Work, is complete and ready for inspection.

C. Within a reasonable time of receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfulfilled requirements. When the Engineer and Owner concur that the Work, or designated portion of the Work, is substantially complete, the Engineer will prepare the Certificate of Substantial Completion following inspection.

D. Should the Engineer determine that the Work is not substantially complete, he will advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.04 FINAL COMPLETION

A. When Contractor considers the Work to be complete, he shall submit written certification to the Engineer that the Work is completed and ready for final inspection. Include the following:

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, the list has been endorsed and dated by the Engineer.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.

6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. The Engineer will inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the - Engineer.
 1. Upon completion of inspection, the Engineer will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete, or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, re-inspection process will be repeated.

1.05 RECORD DOCUMENT SUBMITTALS (REFER TO SECTION 01720 – RECORD DRAWINGS.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

1.02 RELATED SECTIONS

- A. Section 01010 – Summary of Work
- B. Section 01550 – Site Access and Storage
- C. Other Sections as applicable.

1.03 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with applicable codes, ordinances, regulations, and anti-pollution laws.
- B. Do not dispose of any unsuitable fill, hazardous or organic material onsite. All such material shall be disposed of in a legal manner by the Contractor, the cost of which shall be included in the Bid.

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. The Contractor shall keep the area of the Work and other areas utilized or impacted by construction in a neat and clean condition, free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Work site and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations.
- B. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of

disposal, and in conformance with all applicable safety laws, and to the requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

- C. Provide on-site containers for the collection of waste materials, debris, and rubbish as required.

3.02 DUST ABATEMENT

- A. The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. Means for the control of dust shall include, but not be limited to, sweeping and water trucks. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the Engineer.

3.03 FINAL CLEANING

- A. Remove temporary protection and facilities installed for protection of the Work during construction.
- B. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
- C. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

DOCUMENT 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section includes the requirements for maintaining, recording, and submitting Project Record Documents including, but not limited to,
 - 1. Record Drawings or As-Built Drawings
 - 2. Record Specifications and other Contract Documents
 - 3. Record Samples, Shop Drawings or Record Product Data

1.02 RELATED SECTIONS

- A. Section 01152 – Applications for Payment
- B. Section 01340 - Shop Drawings, Working Drawings and Samples
- C. Section 01700 – Project Closeout
- D. Other Sections as applicable.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain at the site for the Owner and Engineers review one record copy of:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Engineer's Field Orders or Written Instructions
 - 6. Approved Shop Drawings, Working Drawings, and Samples
 - 7. Field Test Reports
 - 8. Construction Photographs
- B. Store Record Documents in the Contractor's field office apart from documents used for construction.
- C. File Record Documents in accordance with the CSI format number system utilized in the Contract Documents.
- D. Maintain Record Documents in a clean, dry, legible condition and in good order. Do not use Record Documents for construction purposes.
- E. Make Record Documents available at all times for inspection by the Engineer.
- F. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated Record Documents for review by the Engineer and the Owner.

1.04 RECORDING

A. Record Drawings:

1. Maintain a clean, undamaged set of prints of Contract Drawings to serve as the project Record Drawings.
2. Label each sheet "RECORD DRAWING" in neat large printed letters with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
3. The Record Drawings shall be presented at the same scale as the Contract Drawings.
4. The Record Drawings shall correctly and accurately show all changes from the Contract Drawings made during construction.
5. All information shall be verified and certified by an independent Professional Surveyor and Mapper registered in the State of Florida.
6. All vertical information shall be provided in the datum indicated in the Contract Drawings.
7. Horizontal and vertical locations referenced to base-line or permanent surface improvements.
8. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross reference at the corresponding location on the Record Drawings.
9. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
10. Mark new information that was not shown on Contract Drawings or Shop Drawings.
11. Note related Change Order numbers where applicable.
12. Organize Record Drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
13. Do not use Record Drawings for construction purposes.
14. Record information concurrently with construction progress.

B. The Record Drawings shall be neat and legible including the following:

1. Above ground piping and equipment:
 - a. All equipment locations, dimensions and elevations as indicated in the Contract Drawings.
 - b. All building and tank locations, dimensions and elevations as indicated in the Contract Drawings.
 - c. All above ground piping size, material, class, lengths, dimensions, and elevations as indicated in the Contract Drawings.
 - d. Horizontal locations of piping, fittings, valves and appurtenances.

- e. Elevations of the top of pipe, fittings, valves and appurtenances as indicated in the Contract Drawings and at 50' maximum increments
- f. All changes from the original design.
2. Underground pressure pipe including potable water mains sanitary sewer force mains, drainage force mains and the like:
 - a. All piping size, material, class, lengths, dimensions, bury depth and elevations as indicated in the Contract Drawings.
 - b. Horizontal locations of piping, fittings, valves and appurtenances.
 - c. Elevations of the top of pipe, fittings, valves and appurtenances.
 - d. Elevations as indicated in the Contract Drawings and at 50' maximum increments
 - e. Lengths of restrained pipe.
 - f. Water service locations.
 - g. Meter sizes.
 - h. All changes from the original design.
3. Gravity sanitary sewer:
 - a. All piping size, material, class, lengths, slopes, dimensions, and elevations as indicated in the Contract Drawings.
 - b. Horizontal locations of manholes.
 - c. Rim, invert, and size of all manholes.
 - d. Service terminal end locations.
 - e. Wet well construction including diameter, bottom, invert and float elevations.
 - f. All changes to piping from the original design.
4. Stormwater Drainage:
 - a. All piping size, material, class, lengths, dimensions and elevations as indicated in the Contract Drawings.
 - b. Horizontal locations of manholes and catch basins.
 - c. Rim, invert, bottom elevations and size of all manholes and catch basins.
 - d. All surface elevations indicated on the Contract Drawings including, but not limited to, swales, berms, yards, sidewalks, and the like.
 - e. Horizontal location and elevation of all storm water retention or detention areas.
 - f. All changes from the original design.
5. Limerock base:

- a. Upon completion of all underground utilities and limerock base, and before placement of asphalt, provide the following for Engineer review:
 - 1) Finished limerock base elevations taken at the location of finished asphalt elevations as indicated in the Contract Drawings.
 - 2) Additional elevations as required by the Engineer, including, but not limited to:
 - (a) Finished limerock base at centerline, edge of median and edge of pavement.
 - (b) Back of sidewalk or right of way.
 - (c) Bottom of swale or flow line of gutter.
 - (d) Top of curb.
 - (e) High points, low points and grade breaks.
 - (f) Intersections.
6. Electrical, instrumentation and controls
 - a. Horizontal location of all electrical equipment and control cabinetry.
 - b. Elevations of the bottom of all electrical and control panels.
 - c. Horizontal location and elevation of all conduits including conduit size, route and wire size.
 - d. Horizontal location of all light poles and junction boxes.
7. Miscellaneous:
 - a. Horizontal location and elevation of all concrete slabs.
 - b. Horizontal location, size and material of all fencing.
 - c. Location size and material of all existing utilities whether indicated on the Contract Drawings or not.
 - d. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - e. Depths of various elements of foundation in relation to finish first floor datum.
 - f. Field changes of dimensions and details.
 - g. Details not on original contract drawings.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction.
 1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
5. Changes made by field order or by Change Order.

D. Record Product Data (Shop Drawings): Maintain one copy of each Product Data submittal.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation.
3. Note related Change Orders and mark-up of record drawings and Specifications.

E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Engineer and the Owner to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work.

1.05 SUBMITTAL

- A. Project Record Documents, demonstrating construction progress, shall be submitted with each Application for Payment.
- B. Interim Project Record Drawings shall be submitted at significant project milestones including:
 1. Construction of wet well or other structures.
 2. Construction of catch basins, manholes, pipes and appurtenances.
 3. As required by the Engineer.
- C. Project Record Documents, demonstrating construction completion shall be submitted with the balance of Closeout documents at the conclusion of construction including:
 1. Three sets of signed and sealed sets of prints.
 2. One compact disc copy of record drawings in Autocad format.
- D. Accompany submittals with transmittal letter in duplicate, 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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01730

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
 - 1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- B. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

1.02 RELATED SECTIONS

- A. Section 01340 – Shop Drawings, Working Drawings and Samples
- B. Section 01700 – Contract Closeout
- C. Section 01720 – Project Record Documents
- D. Section 01740 – Warranties & Bonds
- E. Other Sections as applicable.

1.03 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this Section.
 - 3. Skilled as technical writers to the extent required to communicate essential data.
 - 4. Skilled as draftsman competent to prepare required drawings.

1.04 FORM OF SUBMITTALS

- A. Prepare data in form of an instructional manual for use by Owner's personnel.
- B. Format
 - 1. Size: 8 1/2 inches x 11 inches
 - 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. Reduce larger drawings and fold to size of text pages, but not larger than 11 inches x 17 inches.
5. Provide fly-leaf for each separate product, or each piece of operating equipment.
 - a. Provide types 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 structure as applicable.
 - c. Identity of general subject matter covered in this manual.

C. Binders

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Maximum ring diameter shall be 2 inches.
3. When multiple binders are used, correlate the data into related consistent groupings.

1.05 CONTENT OF MANUAL

- A. Neatly typewritten Table of Contents for each volume, arranged in systematic order.
 1. Contractor, name of responsible principal, address, and telephone number.
 2. A list of each product required to be included, indexed to content of the volume.
 3. List, with each product, name, address, and telephone number of:
 - a. Subcontractor of installer
 - b. Maintenance contractor, as appropriate
 - c. Identify area of responsibility of each
 - d. Local source of supply for parts and replacement.
 4. Identify each product name and other identifying symbols as set forth in Contract Documents.
- B. Product Data
 1. Include only those sheets which are pertinent to the specific product.
 2. Annotate each sheet to:
 - a. Clearly identify specific product or part installed.
 - b. Clearly identify data applicable to installation.

- c. Delete references to inapplicable information.
- C. Drawings
 - 1. Supplement product date with drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 - 3. Do not use Project Record Documents as maintenance drawing.
- D. Written text, as required to supplement product date for the particular installation:
 - 1. Organize in consistent format under separate headings for different procedures.
 - 2. Provide logical sequence of instructions of each procedure.
- E. Copy of each warranty, bond and service contract issued:
 - 1. Provide information sheet for Owner's personnel, give:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of warranties or bonds

1.06 MANUAL FOR MATERIALS AND FINISHES

- A. Submit five copies of complete manual in final form.
- B. Content for architectural products, applied materials and finishes
 - 1. Manufacturer's data, giving full information on products.
 - a. Catalog number, size, composition.
 - b. Color and texture designations.
 - c. Information required for re-ordering special-manufactured products.
 - 2. Instructions for care and maintenance.
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods which are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.
- C. Content for moisture-protection and weather-exposed products
 - 1. Manufacturer's data, giving full information on products
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.

- 2. Instructions for inspection, maintenance, and repair.
- D. Additional requirements for maintenance data: Respective sections of Specifications.
- E. Provide complete information for products specified.

1.07 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit five 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 lubrication 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. Predicted list of 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. Contents, 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 panel-boards
 - a. Electrical service
 - b. Controls
 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 manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 8. Other data as required under pertinent sections of specifications
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.
- E. Additional requirements for operating and maintenance data: Respective sections of Specifications.
- F. Provide complete information for product specified.

1.08 SUBMITTAL SCHEDULE

- A. Submit two copies of preliminary draft of proposed formats and outlines of contents of Operation and Maintenance Manuals within 30 days after Notice to Proceed.
 1. The Engineer will review the preliminary draft and return one copy with comments.

- B. Submit two copies of completed data in final form no later than 30 days following the Engineer's review of the last shop drawing and submittal specified under Section 01340.
 - 1. One copy will be returned with comments to be incorporated into final copies.
- C. Submit specified number of copies of approved data in final form directly to the offices of the Engineer, Calvin, Giordano & Associates, within 30 calendar days of product shipment to the project site and preferably within 30 days after the reviewed copy is received.
- D. Submit six copies of addendum to the operation and maintenance manuals as applicable and certificates as specified in paragraph 1.01B of Section 01030 within 30 days after final inspection and plant start-up test.
- E. Final Operation and Maintenance submittals shall be in large three-ring binders organized by specification Section and plainly marked per paragraph 1.04Ca.

1.09 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner'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.

1.10 ENGINEER'S O & M CHECKLIST

- A. The Engineer will review Operation and Maintenance Manuals submittals on operating equipment for conformance with the requirements of this Section. The review will generally be based upon the O&M Review Checklist (presented on the pages at the end of this section for the benefit of the Contractor and his suppliers).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

O & M REVIEW CHECKLIST

EQUIPMENT
SUBMITTED

DATE OF
SUBMITTAL

MANUFACTURER

DEGREE OF
APPROVAL

SPECIFICATION
SECTION

DRAWING
NUMBER

Is the submittal correct for model/series/configuration originally submitted with shop drawings?

Is the binding correct with assigned color/printing etc.? (Pertains to final three volumes)

Is the submittal properly indexed?

Does the submittal pertain only to equipment being furnished?

Is the submittal easily understood and instructively arranged?

Does the submittal include start-up, shutdown and troubleshooting procedures?

Are sufficient drawings and schematics included to supplement written descriptions?

Is the listing of name plate data for each piece of supplied equipment provided and attached?

Are all submitted "C" and "D" size drawings printed on paper that is 11 inches high and folded to 8 1/2 inches wide?

Is proper and complete instruction for servicing included?

Is there a suggested operating log sheet for equipment?

Is schedule for lubrication provided?

Is there a recommended preventative maintenance schedule?

- Are necessary safety precautions clearly indicated where they relate to the equipment?
- Is the Area Representative information provided, i.e., Name, Address, Telephone Number?
- Are specified spare parts indicated and listed?

The following are the points of rejection requiring resubmittal by Contractor:

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Compile warranties and bonds as specified in the Contract Documents.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to the Engineer for review and transmittal to Owner.

1.02 RELATED SECTIONS

- A. Section 00100 - Instructions to Bidders
- B. Section 01700 - Contract Closeout
- C. Other Sections as applicable.

1.03 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bond, service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: two (2) 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 Owner'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

1.04 FORM OF SUBMITTALS

- A. Prepare in duplicate packets
- B. Format:
 - 1. Size 8 1/2 inches x 11 inches, punch sheets for standard 3-post binder
 - 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-post (3) binder, with durable and cleanable plastic covers and maximum post width of 2 inches.

1.05 WARRANTY SUBMITTAL REQUIREMENTS

A. For all equipment, submit a one-year warranty from the equipment manufacturer, unless otherwise specified. The manufacturer's warranty period shall be concurrent with the Contractor's for one year commencing at the time of acceptance by the Owner.

B. The Contractor shall be responsible for obtaining certificates for equipment warranty for all major equipment and which has a 1 HP motor or which lists for more than \$1,000. The Engineer reserves the right to request warranties for equipment not classified as major. The Contractor shall still warrant equipment not considered to be "major" in the Contractor's one-year warranty period even though certificates of warranty may not be required.

C. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty commencing at the time of equipment delivery to the job site. This two-year (2) warranty from the manufacturer shall not relieve the Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 16001

GENERAL ELECTRICAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section Covers the work necessary for the construction of the electrical system shown on the accompanying Drawings. The work included under this section includes providing all materials, furnishing all labor and except as provided under other sections of these Specifications, by others or by the owner, to install a complete functioning electrical system. This installation shall include all incidental items whether shown on the drawing, call for in these Specifications or not. It is not the intent for the Drawings or these Specifications to show or specify each and every required device, conduit, conductor, control device or other incidental items.

1.02 1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. C80.1, Rigid Steel Conduit-Zinc Coated.
2. C80.3, Electrical Metallic Tubing-Zinc Coated.
3. C80.5, Rigid Aluminum Conduit.
4. C80.6, Intermediate Metal Conduit (MC)-Zinc Coated.
5. Nema RN1, PVC Coated Rigid Steel.
6. Z55.1, Gray Finishes for Industrial Apparatus and Equipment.

B. Federal Specifications (FS):

1. W-C-596, Connector, Receptacle, Electrical.
2. W-S-896E, Switches, Toggle, Flush Mounted.

C. National Electrical Contractor's Association, Inc. (NECA): 5055, Standard of Installation.

D. National Electrical Manufacturers Association (NEMA):

1. AB1, Molded Case Circuit Breakers and Molded Case Switches.
2. ICS2, Standard for Industrial Control Devices, Controllers, and Assemblies.
3. PB1, Panelboards.
4. ST20, Dry-Type Transformers for General Applications.
5. TC2, Electrical Plastic Tubing (EB) and Conduit (EPC-40 and EPC-80).
6. TC3, PVC Fittings for Use with Rigid PVC Conduit and Tubing.
7. WD1, General Requirements for Wiring Devices.
8. 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).

- E. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).
- F. Underwriters Laboratories, Inc. (UL):
 - 1. Standard for Safety Flexible Metal Conduit.
 - 2. 651, Standard for Safety Schedule 40 and 80 PVC Conduit.
 - 3. 845, Standard for Safety Motor Control Centers.
 - 4. Standard for Dry-Type General Purpose and Power Transformers.

1.03 PROJECT DESCRIPTION

- A. Provide and install all new conduit and wiring as indicated on the drawings complete in place.
- B. Provide and install one new Automatic Transfer Switch (ATS) for Holly Lake booster pump station and one new ATS for Academic Village as shown on the drawings and as specified in Section 16260.
- C. Provide all miscellaneous electrical including junction boxes, terminations, fittings, mounting supports, wireway, concrete housekeeping pad, etc. not specified but obviously necessary for complete working systems in place.
- D. Contractor shall provide temporary power and associated temporary cables, connections, etc. as needed to keep the booster pump station in operation during the ATS replacement. Refer to drawings for additional information relating to the temporary power requirements.
- E. Contractor shall provide a detailed sequence of constructions as part of his/her submittal. The proposed sequence shall also include duration of each shutdown, temporary equipment locations, temporary equipment type and method of connections, and duration of each phase, if any. Corporate all comments by Engineer and Owner into the sequence of constructions until the proposed sequence of construction is approved. Coordinate with Owner for ATS replacement to be performed at Academic Village Charter School during non-school hours so that only temporary power is needed for the booster pump station.
- F. Contractor shall provide a generic arc flash labels for new ATS enclosures.
- G. Currently ATS is a long lead item and Contractor shall start the submittal process after receiving the notice to proceed. The current estimate lead time for the ATS is 26 to 28 weeks and may vary during the bid time of this project.

1.04 CODES AND PERMITS

- A. All work shall be performed in strict accordance with the current addition of Association, IEEE Standards, NECA Standards and shall comply with the Authority having jurisdiction over the project. Conflicts will be resolved at the discretion of the Engineer.
- B. Wherever the Specifications or Drawings exceed those of the applicable codes or authorities the requirements contained herein shall govern. Code compliance is mandatory. Nothing contained in these Contract Documents shall be construed as permitting work to be performed outside the requirements of the applicable codes or governing authorities.

- C. Obtain all required permits and pay all fees required by any agency having jurisdiction over this project. Upon completion of the work obtain from regulatory authorities signed permits indicating the work is acceptable to the authority having jurisdiction.

1.05 COMPLIANCE

- A. All the work executed under this section shall meet the General and Special Conditions sections of this Specification as if fully stated herein.

1.06 SUBMITTALS

- A. Furnish submittal and shop drawing information on all major electrical material and equipment.

1.07 INTENT OF DRAWINGS

- A. The electrical drawings show only general locations of equipment devices, and raceways, unless specifically dimensioned. The CONTRACTOR shall be responsible for the proper routing of raceways, final sizing of conductors, and location of equipment and connections. The control diagrams for the equipment are diagrammatic and intended to show the desired operation. The CONTRACTOR shall install the controls exactly as shown unless this operation will cause failure of the equipment due to unique operating characteristics of the supplied equipment not known to the ENGINEER. The CONTRACTOR shall notify the ENGINEER of such conflicts within 30 days of the Contract award and receive written resolution before proceeding with the Contract work. Any damages to CONTRACTOR-supplied equipment arising due to improper control shall be the responsibility of the CONTRACTOR.

1.08 PREBID SITE VISIT

- A. The CONTRACTOR shall familiarize himself with the site prior to bidding and verify that the specified new equipment and existing equipment modifications can be implemented within his proposed Bid price.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Use of new quality materials is required on this project.
- B. Only materials suitable for the space provided shall be used.
- C. Provide materials and equipment listed by Underwriter Laboratories (UL) wherever standards have been established by that agency.
- D. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of materials or equipment need not be products of the same manufacturer.

2.02 STANDARD PRODUCTS

- A. Unless otherwise indicated, provide materials and equipment which are the standard products of manufacturers regularly engaged in the production of such materials and

equipment. Provide the manufacturer's latest standard design that conforms to these Specifications.

2.03 EQUIPMENT FINISH

- A. Provide materials and equipment with manufacturer's standard finish system. Provide manufacturer's standard finish color, except where specific color or materials are indicated. If manufacturer has no standard color, finish equipment in accordance with ANSI No. 61, light gray color.

2.04 WIREWAYS

- A. Provide hinged-cover, steel-enclosed wireway and auxiliary gutters where shown on the drawings or required to meet maximum wire pulling tensions or raceway bending radii. Utilize wireways and fittings that are UL listed, have a cover that can be easily removed, and have a gray baked enamel finish. Utilize wireways suitable for the environment in which they are installed. Approved manufacturers will be Square D or equal.

2.05 RACEWAYS

- A. Rigid Aluminum conduit: Use rigid Aluminum conduit, including threaded type couplings, elbows, nipples, and other fittings meeting the requirements of ANSI C80.5 and UL 6, Type 6063, copper-free aluminum alloy.
- B. PVC Conduit: use rigid PVC conduit, Schedule 40, UL listed for concrete encased, underground direct burial, concealed and direct sunlight exposed use, and UL listed and marked for use with conductors having 90 degrees C insulation. Use conduits, couplings, elbows, nipples, and other fittings meeting the requirements of NEMA TC 2 and TC 3, Federal Specification W-C-1094, UL, NEC, and ASTM specified tests for the intended use.
- C. Use PVC coated conduit and all fittings consisting of galvanized rigid steel conduit meeting the requirements of NEMA RN 1, UL, and the NEC, and a PVC coating 40 mils nominal thickness bonded to the metal. Provide fittings with overlapping pressure sealing sleeves.
- D. Flexible Metal Conduit: Use UL listed liquid-tight flexible metal conduit consisting of galvanized steel flexible conduit covered with an extruded PVC jacket and terminated with nylon bushings or bushings with steel or malleable iron body and insulated throat and sealing O-ring.
- E. Detectable Electric Warning Tape: Red color, 6-inch minimum width, Polyethylene with solid aluminum foil core. Manufacturer, Blackburn or equal.

2.06 RACEWAY FITTINGS

- A. Fittings for Rigid Aluminum and PVC coated steel conduit:
 1. Fittings for PVC coated Rigid Steel conduit shall be of the same manufacturer as the conduit. Fittings shall contain a 40 mil coating nominal thickness bonded to the metal.
 2. Use insulated throat bushings of metal with integral plastic bushings rated for 105 degrees C. For insulated throat bushings for rigid Aluminum

conduit, use Thomas and Betts Nylon Insulated Metallic Bushings, or O.Z. Gedney Type B.

3. Use Myers Scru-Tite hubs for rigid Aluminum conduit.
4. Use conduit bodies for rigid Aluminum conduit of metal and sized as required by the NEC (NFPA 70-1984). Use Appleton Form 35 threaded Unilets; Crouse-Hinds Mark 9 or Form 7 threaded condulets; Killark Series 0 Electrolets; or equal, for normal conduit bodies for rigid Aluminum conduit. Where conduit bodies for rigid Aluminum conduit are required to be approved for hazardous (classified) locations, use conduit bodies manufactured by Appleton, Crouse-Hinds, or Killark.
5. Use only couplings for rigid Aluminum conduit supplied by the conduit manufacturer.
6. Use Appleton Type EYF, EYM, or ESU; Crouse-Hinds Type EYS or EZS; or Killark Type EY or EYS, sealing fittings for rigid Aluminum conduit. Where condensate may collect on top of a seal, provide a drain by using Appleton Type SF or Crouse-Hinds Type EYD or EZD Drain Seal.
7. Use Appleton Type ECDB or Crouse-Hinds ECD drain fittings for rigid Aluminum conduit.
8. Fittings for Liquid-Tight Flexible Metal Conduit: use insulated throat connectors for liquid-tight flexible metal conduit of metal with an integral plastic bushing rated for 105 degrees C, and of the long design type extending outside of the box or other device at least 2 inches. Use Thomas and Betts Super-Tite Nylon Insulated Connectors, or equal.
9. Fittings in Hazardous Areas: In hazardous areas, use only fittings approved for the atmosphere involved.
10. Use cable sealing fittings forming a watertight nonslip connection to pass cords and cables into conduit. Size cable sealing fitting for the conductor OD. For conductors with OD's of 1/2 inch or less, provide a neoprene bushing where the conductor enters the connector. Use Crouse-Hinds CGBS, Appleton CG Series, or equal, cable sealing fittings.

2.07 CONDUCTORS 600 VOLTS AND BELOW

- A. All conductors shall be annealed copper. Wire size No. 8 AWG and larger shall be stranded.
- B. Insulation: In raceway system use Type THHN/THWN thermoplastic jacketed 75 degrees C insulated wire through size No. 6 AWG. Larger sizes shall be Type XHHW insulation. Conductors with higher temperature rated insulation may be used if the **Contractor** desires, but the capacity must be limited to that allowed by UL and the NEC for use with devices rated at 75 degrees C (e.g., standard circuit breakers are rated at 75 degrees C).
- C. Sizes: No wire smaller than size No. 12 AWG shall be installed for lighting, receptacles, or other circuits unless otherwise noted.

- D. Wire Color Identification: Neutral wire white; live wire black, red, blue on 120/208-volt system; live wire brown, orange, yellow on 277/480-volt system. Ground wire green.
- E. Fixture Connection: Circuit wiring connections to fixture wire shall be made with pressure type solderless connectors. Buchanan, Scotch-lock, Wing Nut, or approved equal, complete with insulator and security ring.
- F. Type B Cable: Twisted Shielded Pairs (TSP) shall be 16 AWG, 45 mil PVC jacket, 100 percent shield coverage. Internal conductors shall be red and black.

2.08 BOXES

- A. Provide boxes not less than 2 inches deep, unless shallower boxes are required by structural conditions. Do not use box extensions to provide wiring space required by the NEC. For hollow masonry construction, provide boxes of sufficient depth so that conduit knockouts or hubs are in the masonry void space.

2.09 COVER PLATES

- A. Provide plates fitting closely and tightly to the box on which they are to be installed. On surface-mounted boxes, provide plates which do not extend beyond the sides of the box unless the plates do not have sharp corners or edges.
- B. Provide stainless steel one-piece with smooth exterior faces and with oval head stainless steel metal mounting screws of a color matching that of the plate.
- C. Where weatherproof devices are indicated, provide a gasketed, weatherproof, cast metal, stainless steel or fiberglass reinforced plastic (FRP) cover plate with individual cap over each opening, and stainless steel mounting screws. Plates shall have caps held by stainless steel springs.

2.10 NAMEPLATES

- A. Provide laminated nameplates with inscription as shown. Nameplates shall be engraved laminated plastic with white lettering on a black background. Attach nameplate with stainless steel panhead screws.

2.11 BACKFILL MATERIAL FOR CONDUIT ZONE

- A. The conduit zone shall include full trench width from a point 4 inches below the bottom of the conduit to a point 4 inches above the top of the conduit.
- B. Backfill material for the conduit zone shall be natural material from the trench excavation, structural excavation, or site grading, with a maximum particle size of 1/4-inch and free from organic matter, roots, construction debris, and excessive fines. Tamp and compact the conduit zone material to 90 percent relative compaction.

2.12 BACKFILL MATERIAL FOR CONDUIT ZONE OR FOR ABOVE DUCTBANKS

- A. Provide backfill material meeting all regulatory requirements of direct burial conduit.

PART 3 - EXECUTION

3.01 GENERAL

- A. Craftsmanship is the essence of the work in this project.

- B. Install materials and equipment in a workmanlike manner utilizing craftsmen skilled in the particular trade. Provide work which has a neat and finished appearance.
- C. Coordinate electrical work with Engineer and work of other trades to avoid conflicts, errors, delays, and unnecessary interference with operation of the plant during construction.
- D. Check the approximate locations of light fixtures, electrical outlets, equipment, and other electrical system components shown on Drawings for conflicts with openings, structural members, and components of other systems and equipment having fixed locations. In the event of conflicts, consult the Engineer. The Engineer's decision shall govern. Make modifications and changes required.

3.02 PROTECTION DURING CONSTRUCTION

- A. Throughout this Contract, Provide protection for materials and equipment against loss or damage in accordance with provisions elsewhere in these Contract Documents. Protect everything from the effects of weather. Prior to installation, store items in clean, dry, indoor locations. Store in clean, dry, indoor, heated location items subject to corrosion under damp conditions, and items containing electrical insulation, such as transformers, conductors, motors, and controls. Energize all space heaters furnished with equipment.
- B. Following installation, protect materials and equipment from corrosion, physical damage, and the effects of moisture on insulation. Cap conduit runs during construction with manufactured seals. Keep openings in boxes or equipment closed during construction. Energize all space heaters furnished with equipment.

3.03 MATERIAL AND EQUIPMENT INSTALLATION

- A. Follow manufacturer's installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturer's instructions, codes and regulations, and these Contract Documents, follow Engineer's decision. Keep copy of manufacturer's installation instructions on the jobsite available for review at all times.

3.04 CUTTING AND PATCHING

- A. Lay out work carefully in advance. Do not cut or notch any structural member or building surface without specific approval of Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical materials and equipment. Following such work, restore surfaces neatly to original condition. Use skilled craftsmen of the trades involved.

3.05 LOAD BALANCE

- A. The Drawings and Specifications indicate circuiting to electrical loads and distribution equipment; however, after installation, if necessary, balance electrical load between phases as nearly as possible on switchboards, panelboards, motor control centers, etc.

3.06 MOTOR ROTATION

- A. After final service connections are made, check and correct, if necessary, the rotation of all motors.
- B. Coordinate rotation checks with the Engineer and the Contractor responsible for the driven equipment. Submit a written report to the Engineer for each motor verifying that rotation has been checked and corrected.

3.07 CLEANING AND TOUCH-UP PAINTING

- A. Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, consistency, and type of surface of the original finish.

3.08 CONDUIT

- A. Use rigid Aluminum conduit for all exposed conduit and use PVC schedule 40 for all underground conduit.
- B. Conduits must be kept within the furring lines of building unless specifically noted to be exposed.
- C. Provide all necessary sleeves and chases required where conduits pass through floors or walls seal all openings and finish to match adjacent surfaces. Where exposes, conduits pass through walls, floors or ceilings, provide fill of same materials as the penetrated surface.
- D. Conduits entering cabinets, pull boxes or outlet boxes shall be secured with double galvanized locknuts, one on inside and outside of box, and bushings.
- E. Conduit shall be sized in accordance with the NEC and shall be of such size and so installed that conductors may be drawn in without injury or excessive strain.
- F. Make final connection to motors and wall or ceiling-mounted fans where flexible connection is required to minimize vibration or where required to facilitate removal or adjustment of equipment, with 18-inch minimum, 60-inch maximum length of liquid-tight, PVC jacketed, flexible steel conduit where the required conduit size is 4 inches or less. For larger sizes, use nonflexible conduit as specified.
- G. Flash and counterflash all conduits penetrating membrane. All roof penetration shall be sealed unless directed otherwise by the Engineer.
- H. Exposed Raceways: Exposed raceways shall be installed parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings.
- I. Changes in Direction of runs: Changes in direction of runs shall be made with symmetrical bends or cast metal fittings. Field made bends and offsets shall be made with an approved hickey or conduit bending machine. Crushed or deformed raceways shall not be installed. Trapped raceways in damp and wet locations shall be avoided where possible. Care shall be taken to prevent the lodgment of plaster, dirt, or trash in raceways, boxes fittings, and equipment during the course of

construction. Clogged raceways shall be entirely freed of obstructions or shall be replaced.

- J. Supports: Raceways shall be securely and rigidly fastened in place at intervals of not more than 10 feet with approved pipe straps, wall brackets, conduit clamps, conduit hangers, threaded C-clamps with retainers, or ceiling trapeze. All conduit fasteners shall be 316 stainless steel.
- K. Provide rigid Aluminum elbows where conduit changes from direct buried to exposed. Paint Aluminum conduit with two coats of Bitumastic paint where conduits contact with concrete.
- L. Detectable Electric Warning Tape: Install approximately 12 inches above underground or concrete-encased raceways. Align parallel to, and within 12 inches of, centerline of runs

3.09 GROUNDING

- A. All equipment and enclosures, and the complete conduit system shall be grounded securely in accordance with pertinent sections of Article 250 of NEC. All electrically operated equipment shall be bonded to the grounding conduit system via bonding jumpers, grounding busses, and grounding bushings. Grounding shall include the grounding conductors shown on Drawings and additional grounding as required above. All enclosures shall contain a grounding buss tied to the conduit system and enclosure utilizing bonding jumpers #4 minimum.

3.10 OUTLET AND JUNCTION BOXES

- A. Provide a box suitable for the conditions encountered at each outlet in the wiring or raceway system and sized in accordance with the NEC.
- B. Install boxes in a secure, substantial manner, supported independently of conduit attachment to the structure. Boxes embedded in concrete or masonry need not be additionally supported. Use stainless steel hardware in all areas.
- C. Install boxes for conduits below grade flush with finished grade. Boxes in paved areas, roadways, or walkways shall be boxes and covers suitable for the weights to which they may be subjected.
- D. All boxes shall be rated for use in the environment for which they are installed.

3.11 CONDUCTORS

- A. No conductor shall be drawn into conduit until conduit system is complete. Lubricant shall be approved by wire manufacturer.

3.12 COLOR MARKINGS

- A. Where two or more conduits run to a single outlet box, each circuit shall be color coded as a guide in making connections. Colors shall be carried continuously throughout the system if more than one multiwire branch circuit is carried through a single raceway. All circuit conductors of the same color shall be connected to the same underground feeder conductor throughout the installation.

3.13 CIRCUITS

- A. Deviations from conduit runs will be permitted with the Engineer's approval. Combining circuits in single conduit is permitted with proper identification and wire size increase required by NEC.

3.14 CONNECTIONS TO EQUIPMENT

- A. Provide all conduit, wiring, and connections for equipment furnished by the **OWNER** or under other sections, including line and low voltage wiring for all equipment. Connections to motors shall be with flexible liquid-tight conduit in accordance with NEC. Obtain required information from the other trades and rough-in to meet requirements of said equipment. No allowance will be made for failure to comply with obtaining complete information from other trades.

3.15 NAMEPLATES

- A. Provide and install nameplate for each electrical equipment, including junction boxes, device boxes, etc.

3.16 TOUCH UP

- A. After the equipment is installed, touch up any scratches, marks, etc., incurred during shipment or installation of equipment.

3.17 TESTS

- A. General: Carry out tests specified hereinafter and as indicated under individual items of materials and equipment specified in other sections.
- B. Operations: After the electrical system installation is completed and at such time as the Engineer may indicate, conduct an operating test for approval. Demonstrate that the equipment operates in accordance with the requirements of these Specifications and Drawings. Perform the test in the presence of the Engineer or his authorized representative. Furnish all instruments and personnel required for the tests.
- C. Voltage:
 1. When the installation is essentially complete and the plant is in operation, check the voltage at the point of termination of the power company supply system to the project. check voltage amplitude and balance between phases for loaded and unloaded conditions.
- D. At the request of the Engineer, record the supply voltage for 24 hours during a normal working day.
- E. Equipment Line Current: Check the line current in each phase for each piece of equipment. If the power company makes adjustments to the supply voltage magnitude or balance, make the line current check after the adjustments are made. If any phase current in any piece of equipment is above the rated nameplate current, determine and submit in writing to the Engineer the cause of the problem.

END OF SECTION

SECTION 16260

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall furnish and install an Automatic Transfer Switch (ATS) having the ratings, features/accessories and enclosures as specified herein and as shown on the contract drawings. Refer to electrical drawings for size and style.
- B. Note: The term "ATS" in this section shall refer to "Automatic Transfer Switch".
- C. New ATS enclosure shall be provided with a generic arc flash label.

1.02 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American National Standards Institute (ANSI):
 - a. C37.90.1, Surge Withstand Capacity (SWC) Tests for Protective Relays and Relay Systems.
 - b. Z55.1, Gray Finishes for Industrial Apparatus and Equipment.
 - National Electrical Manufacturers Association (NEMA):
 - c. ICS 1, General Standards for Industrial Control and Systems.
 - d. ICS 2, Standards for Industrial Control Devices, Controllers, and Assemblies.
 - e. ICS 6, Enclosures for Industrial Control and Systems.
 - f. 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).
 - 2. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).
 - 3. Underwriters Laboratories, Inc. (UL): 1008, Automatic Transfer Switches.
 - 4. Uniform Building Code (UBC): Section 2312, Earthquake Requirements.

1.03 SUBMITTALS-FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:
 - 1. Master drawing index
 - 2. Dimensioned outline drawing
 - 3. Schematic diagram
 - 4. Component list
 - 5. Conduit entry/exit locations

Assembly ratings including:

- a. Short-circuit rating
- b. Voltage
- c. Continuous current.

B. Submit five (5) copies of the above information.

1.04 SUBMITTALS-FOR INFORMATION

When requested by the Engineer the following product information shall be submitted:

- 1. Descriptive bulletins
- 2. Product data sheets.

1.05 SUBMITTALS-FOR CLOSEOUT

The following information shall be submitted for record purposes:

- 1. Final (as-built) drawings and information for items listed in section 1.3
- 2. Wiring diagrams
- 3. Certified production test reports
- 4. Installation information
- 5. Seismic certification and equipment anchorage details.

1.06 QUALITY ASSURANCE

- A. The manufacturer of the automatic transfer switch shall be the manufacturer of the major components within the assembly.
- B. For the equipment specified herein, the manufacturer shall be ISO 9000, 9001 or 9002 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

1.07 REGULATORY REQUIREMENTS

- A. A certificate of compliance with UL 1008 must be submitted for the transfer switches to be supplied. The certificate is not required if the manufacturer's published data submitted and approved reflect a UL 1008 listing. Proof of UL 1008 listing does not, however, relieve the Contractor of compliance with other provisions of this specification.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.09 OPERATION AND MAINTENANCE MANUALS

- A. Five (5) copies of the equipment and maintenance manuals shall be provided.

Operation and maintenance manuals shall include the following information:

1. Instruction books and/or leaflets
2. Recommended renewal parts list
3. Drawings and information required by section 1.06.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. ASCO
- B. Eaton/Cutler-Hammer
- C. Lakeshore
- D. Cummins-Onan
- E. Or Engineer Approved Equal.

2.02 RATINGS

Refer to electrical drawing for ATS interrupting rating and number of poles requirements.

The voltage rating of the transfer switch shall be no less than the system voltage rating. The continuous current rating of the transfer switch shall be no less than the maximum continuous current requirements of the system.

The transfer switch shall be 100% equipment rated for continuous duty as shown on the drawings and shall conform to the applicable requirements of UL 1008 for emergency system total load.

- A. All pilot devices and relays shall be of the industrial type with self-cleaning contacts and rated 10-amperes.

The automatic transfer switches shall be fully rated to protect all types of loads, inductive and resistive, from loss of continuity of power, without derating, either open or enclosed.

2.03 CONSTRUCTION

- A. The transfer switches shall consist of completely enclosed contact assemblies and a separate control logic panel. The contact assemblies shall be operated by a non-fused motor operator or stored energy mechanism and be energized only momentarily during transfer, providing inherently double throw switching action. Control power for all transfer operations shall be derived from the line side of the source to which the load is being transferred.
- B. Transfer switches shall be capable of being operated manually under full load conditions. Manual operation shall be accomplished via a permanently affixed manual operator or integrally mounted pushbutton operators located on the face of the contact assemblies. Removable manual operating handles and handles which move in the event that electrical operators should suddenly become energized while performing a manual transfer operation are not acceptable. The manual operator

shall provide the same contact-to-contact transfer time as provided under normal automatic operation to prevent possible flashovers from switching the main contacts slowly. In addition, provisions shall be made to allow disengagement of the electrical operator during manual operation.

- C. Each transfer switch shall be positively interlocked both mechanically and electrically to prevent simultaneous closing of both sources under either automatic or manual operation. Main contacts shall be mechanically locked in position in both normal and emergency positions. A neutral position shall not be possible under normal electrical operation unless a delayed transition accessory is required for switching highly inductive loads. Each transfer switch shall have a manual neutral position for load circuit maintenance. A transfer switch position indicator shall be visible from the front of the switch to show to which source the transfer switch is connected.
- D. All three-phase four-pole transfer switches shall be true four-pole switched neutral type with all four poles for each source being fully rated and connected to a common shaft. The fourth (neutral) pole contacts shall be of identical construction as, and operate simultaneously with, the main power contacts. Add-on or overlapping neutral contacts are not acceptable. Refer to drawings for number of poles.
- E. Inspection and replacement of all separate arcing contacts (moving and stationary) shall be possible from the front of the transfer switch.
- F. An electronic sensing and control logic panel shall be separately mounted from the power switching portion of the transfer switch. The two sections shall be connected by control cables with plug-in connectors. The control section shall be capable of being disconnected from the power section for maintenance purposes.
- G. The logic circuit shall utilize electronic components mounted on printed circuit boards to accomplish functions such as timing, time delays, and voltage and frequency monitoring. LEDs shall be furnished to indicate the operation of each solid-state function. Modifications shall be available for field installation without voiding the UL label.
- H. The transfer switch shall be equipped with a voltage selection plug making it suitable for operation on standard voltages from 208 through 600 volts AC, 50 or 60 hertz, by placing the voltage selection plug in the proper voltage receptacle.
- I. Transfer switches applied as service entrance switches shall be provided with overcurrent trip units and a service entrance label. An external key-operated selector switch shall be provided to disconnect the power supplies. Indicators shall be provided to show the availability of each source as well as breakers in a tripped or disconnected position. Provide a neutral disconnect link for three-pole solid neutral switches, and a neutral-to-ground main bonding jumper for all switches to meet UL service entrance requirements. Ground fault protection shall be provided for all switches rated 1000 amperes or more applied on 480Y/277-volts AC systems in accordance with NEC Article 230-95.

2.04 DRAWOUT DESIGN

- A. Where indicated on the drawings, the transfer switches shall be provided with a drawout mechanism to allow easy access to the molded case switches (insulated case breakers) for preventive maintenance, testing or inspection. The drawout mechanism

shall provide visual indicators as to position of the switch/breaker during the drawout operation.

- B. Inspection and replacement of all separate arcing contacts (moving and stationary) shall be possible from the front of the transfer switch.

2.05 WIRING/TERMINATIONS

- A. Terminal blocks shall conform to NEMA ICS 4. Terminal facilities shall be arranged for entrance of external conductors from the top or bottom of the enclosure. The main transfer switch terminals shall be suitable for the termination of conductors shown on the plans.

2.06 SEQUENCE OF OPERATION

- A. The transfer switch shall automatically transfer its load circuit to an emergency or alternate power supply upon failure of its normal or preferred source.
- B. Upon loss of phase-to-phase voltage of the normal source to 80% of nominal, and after a time delay, adjustable from 0.5 to 15 seconds, to override momentary dips and/or outages, a 10-ampere, 30-Vdc contact shall close to initiate starting of the emergency or standby source power plant. Transfer to the alternate source shall take place immediately upon attainment of 90% of rated voltage and frequency of that source. For switches not involving engine generator sets as power plants, transfer shall occur after an adjustable time delay of 1 to 60 seconds to override momentary dips and outages.
- C. When the normal source has been restored to 90% of rated voltage, and after a time delay, adjustable from 0.5 to 32 minutes (to ensure the integrity of the normal power source), the load shall be retransferred to the normal source.
- D. A time delay, adjustable from 0.5 to 32 minutes, shall delay shutdown of the emergency or standby power source after retransfer to allow the generator to run unloaded for cool-down, after which the generator shall be automatically shut down.
- E. If the emergency or standby power should fail while carrying the load, transfer to the normal power supply shall be made instantaneously upon restoration of the normal source to satisfactory conditions.

2.07 ENCLOSURE

- A. Each transfer switch shall be provided in enclosures suitable for locations as indicated on the drawings and as described below.
 - 1. NEMA 1 surface or flush mounted general purpose enclosures primarily intended for indoor use.
 - 2. NEMA 12 dust-tight enclosures intended for indoor use primarily to provide protection against circulating dust, falling dirt and dripping noncorrosive liquids.
 - 3. NEMA 3R raintight enclosures intended for outdoor use primarily to provide protection against rain, sleet and damage from external ice formation.

NEMA 4 and NEMA 4X (stainless steel) watertight enclosures intended for indoor or outdoor use primarily to provide protection against windblown

dust and rain, splashing rain, hose-directed water, and damage from external ice formation.

B. Refer to the electrical drawing for type of enclosure.

2.08 FINISH

A. NEMA 1, 12 or 3R enclosures shall be painted with the manufacturer's standard painting procedures to ensure suitability for environmental conditions as referenced in the plans. Color shall be light gray ANSI 61. NEMA 4 or 4X shall be stainless steel, non-painted.

2.09 ACCESSORIES

A. The following logic and options shall be supplied:

1. The logic of the transfer switch shall function via a microprocessor. Where shown on the drawings provide electronic transfer device equal to Cutler-Hammer type IQ Transfer. The set points shall be field adjustable without the use of special tools. The switch shall have a multi-tap voltage selection plug for ease of voltage adjustment in the field. LED lights shall be included on the exterior of the switch to show:

Normal	Source	Available
Emergency	Source	Available
Normal	Source	Connected
Emergency	Source	Connected
Load Energized.		

A digital readout shall display each option as it is functioning. Readouts shall display actual line-to-line voltage, line frequency and timers. When timers are functioning, the microprocessor shall display the timer counting down. All set points can be re-programmed from the front of the switch when the switch is in the program mode. A test pushbutton shall be included as part of the microprocessor.

- a. Provide a time delay transfer from the normal power source to the emergency power source (0 seconds to 30 minutes). This option does not effect the engine start circuit.
- b. Provide a timer to override a momentary power outage or voltage fluctuation (0 seconds to 120 seconds).
- c. Provide a time delay transfer from the emergency power source to the normal power source (0 seconds to 30 minutes).
- d. Provide a timer to allow the generator to run unloaded after re-transfer to the normal power supply (1 second to 30 minutes).
- e. Provide single-phase under voltage and under frequency sensing on the emergency power source. Voltage shall be factory set at 90% pickup and 80% dropout. Frequency sensing shall be set at 58-hertz pickup and 56-hertz dropout.

- f. Provide a pilot light to indicate that the switch is in the normal position as an integral part of the microprocessor.
- g. Provide a pilot light to indicate that the switch is in the emergency position as an integral part of the microprocessor.
- h. Provide a pilot light to indicate that the normal power is available as an integral part of the microprocessor.
- i. Provide a pilot light to indicate that the emergency power is available as an integral part of the microprocessor.
- j. Provide auxiliary relay contacts that are energized when the power is available on the normal source.
- k. Provide auxiliary relay contacts that are energized when the power is available on the emergency source.

B. The following features shall be provided:

- 1. Time delay normal to emergency, adjustable
- 2. Time delay emergency to normal, adjustable
- 3. Green pilot light to indicate switch in normal position and red pilot light to indicate switch in emergency position
- 4. White pilot lights marked "Normal Source" and "Emergency Source" to indicate that respective source voltages are available
- 5. Tripped position indicating lights for both sources
- 6. Relay auxiliary contacts (2 NO and 2 NC) to indicate transfer switch position and the availability of each source.

C. When the alternate source is an engine generator, the following features shall also be provided:

- 1. Time delay engine start, adjustable
- 2. Time delay engine cool off, adjustable
- 3. Engine start contact
- 4. Frequency/voltage relay for emergency source, frequency adjustable from 45 to 60 Hz and voltage fixed at 90% pickup, 70% dropout
- 5. Delayed transition time delay, adjustable from 0 to 120 seconds, to allow disconnection of the load during transfer in either direction to prevent excessive inrush currents due to out-of-phase switching of large inductive loads
- 6. Four-position selector switch permitting four (4) modes of transfer switch operation: TEST (simulates normal power outage), AUTO (standard automatic operation), OFF (de-energizes control relays and opens the engine start circuit for maintenance purposes), ENGINE START (retains transfer switch in normal position and initiates a testing of the engine start circuit). Furnish white pilot light for OFF indication.

- D. A transfer switch position indicator shall be visible from the front of the switch.
- E. Provide preferred source selector (source 1 or source 2, or none).

2.10 COMMUNICATIONS

- A. Where shown on the drawings, provide in the transfer switch a microprocessor-based unit capable of communicating phase and ground current, peak demand, present demand, energy consumption, contact status, and mode of trip.
- B. Provide communications capability to monitor the normal and emergency switch position and normal and emergency source availability. Additional communications capability shall be provided to bypass time delays during transfer or retransfer, and to initiate engine start for no-load or load testing of the transfer switch from a remote master computer.

PART 3 - EXECUTION

3.01 FACTORY TESTING

- A. The following standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of UL and NEMA standards.
 - 1. Insulation check to ensure the integrity of insulation and continuity of the entire system
 - 2. Visual inspection to ensure that the switch matches the specification requirements and to verify that the fit and finish meet quality standards
 - 3. Mechanical tests to verify that the switch's power sections are free of mechanical hindrances
 - 4. Electrical tests to verify the complete electrical operation of the switch and to set up time delays and voltage sensing settings of the logic

- B. The manufacturer shall provide three (3) certified copies of factory test reports.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 TRAINING

- A. Provide training for the new ATS units at each site.

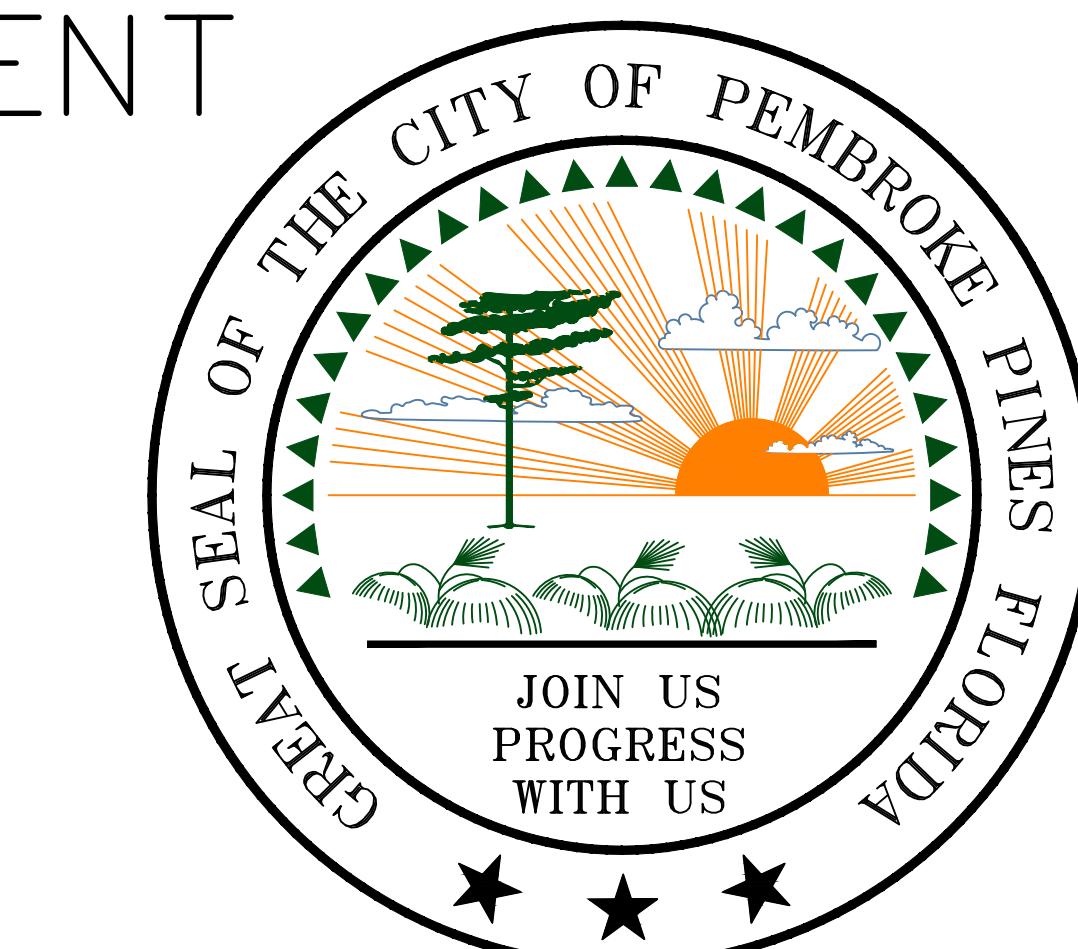
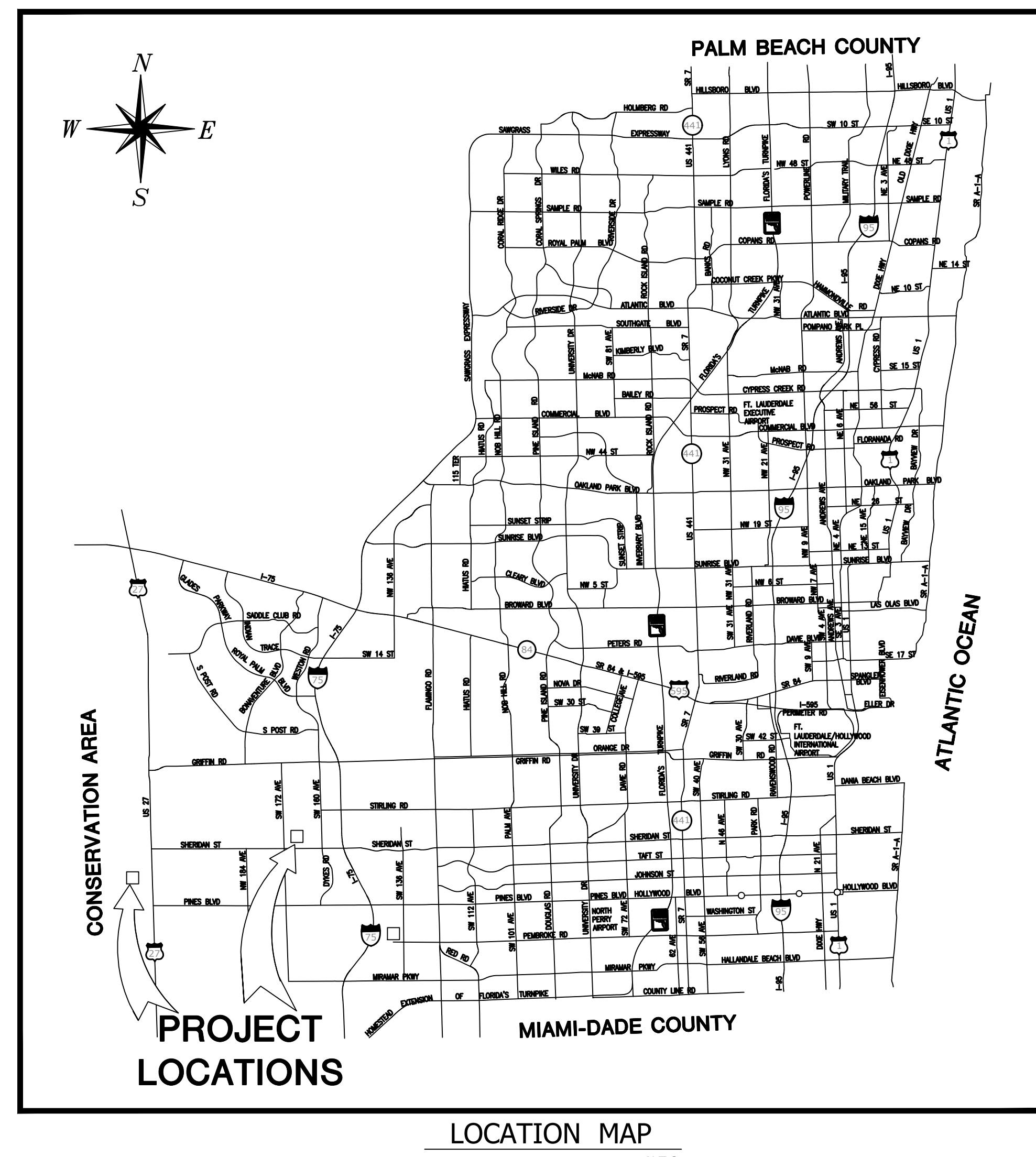
END OF SECTION

PEMBROKE PINES WATER UTILITIES

HOLLY LAKES AND ACADEMIC VILLAGE ATS REPLACEMENT

PEMBROKE PINES, FLORIDA

DRAWING INDEX	
NO.	SHEET TITLE
G-01	COVER
E-01	ELECTRICAL LEGEND
E-02	ELECTRICAL GENERAL NOTES
E-03	ELECTRICAL DETAILS
E-100	HOLLY LAKES BOOSTER PUMP STATION SITE PLAN
E-101	HOLLY LAKES BOOSTER PUMP STATION DEMOLITION PLAN
E-102	HOLLY LAKES BOOSTER PUMP STATION ONE LINE AND RISER - DEMOLITION
E-103	HOLLY LAKES BOOSTER PUMP STATION MODIFICATION PLAN
E-104	HOLLY LAKES BOOSTER PUMP STATION ONE LINE AND RISER - PROPOSED
E-200	ACADEMIC VILLAGE SITE PLAN
E-201	ACADEMIC VILLAGE MAIN ELECTRICAL ROOM PLAN - DEMOLITION
E-202	ACADEMIC VILLAGE ONE LINE AND RISER - DEMOLITION
E-203	ACADEMIC VILLAGE MAIN ELECTRICAL ROOM PLAN - MODIFIED
E-204	ACADEMIC VILLAGE ONE LINE AND RISER DIAGRAMS - PROPOSED



CITY OFFICIALS

MAYOR:	FRANK C. ORTIS
VICE MAYOR:	JAY D. SCHWARTZ
COMMISSIONERS:	THOMAS GOOD, JR. ANGELO CASTILLO IRIS A. SIPLE
CITY MANAGER:	CHARLES F. DODGE

NOTES:

1. RESPONSIBILITY FOR THE USE OF THESE PLANS FOR ANY PURPOSE PRIOR TO SECURING PERMITS FROM ALL AGENCIES HAVING JURISDICTION OVER THIS PROJECT WILL FALL SOLELY UPON THE USER.

HILLERS ELECTRICAL ENGINEER, INC.

22257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
PHONE: (561) 451-9165
FAX: (561) 451-4886
LICENSE NO: EB00006877



BID SET

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

G-1

SHEET:1

DATE: 12/2022

DRAFT DOCUMENT FOR COMMISSION REVIEW

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
▲	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN DIVISION 16, COORDINATE FINAL CONNECTION WITH EQUIPMENT SUPPLIER.	●	GROUND ROD	□	FUSE	○	CLOSES ON RISING FLOW, OPENS ON FALLING FLOW
11C,2#12,1#12G 11C,1-25/C TYPE 1	INDICATES RACEWAY AND CIRCUIT CONDUCTORS. FIRST NUMBER IS RACEWAY SIZE, THE FOLLOWING NUMBERS ARE THE CONDUCTOR QUANTITIES, SIZES, AND TYPES	S	WALL SWITCH: 2- DOUBLE POLE 3- THREE WAY 4- FOUR WAY WP-WEATHERPROOF	P- PILOT LIGHT K- KEY OPERATED D- DIMMER CRE-CORROSION RESISTANT EP- NEMA 7, EXPLOSION PROOF	— C — CAPACITOR OR SURGE CAPACITOR	— C — TEMPERATURE	— C — LINE WEIGHTS
25MCC1	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.	S M	MANUAL MOTOR STARTER SWITCH	SW 0-600V	METER WITH SWITCH - SCALE RANGE SHOWN	— C — OPENS ON RISING TEMPERATURE, CLOSES ON FALLING TEMPERATURE	— C — PROPOSED
— UH1 5KW TTC	PANELBOARD	— C — CONVENIENCE RECEPTACLE - DUPLEX UNLESS SPECIFIED OTHERWISE WP-WEATHERPROOF C- CLOCK HANGER TL-TWIST LOCK CRE-CORROSION RESISTANT	— C — GROUND	— C — CLOSSES ON RISING TEMPERATURE, OPENS ON FALLING TEMPERATURE	— C — EXISTING		
— UH1 5KW TTC	UNIT HEATER NO.1 SEE SCHEDULE	— C — CONVENIENCE RECEPTACLE - QUADRUPLEX UNLESS SPECIFIED OTHERWISE WP-WEATHERPROOF C- CLOCK HANGER TL-TWIST LOCK CRE-CORROSION RESISTANT	— C — TRANSFORMER, VOLTAGES, PHASE AND 120V 120/240V 15 KVA 1 PH	— C — LIMIT SWITCH	— C — DEMOLITION		
—	TELEPHONE TERMINAL CABINET	— C — CONVENIENCE RECEPTACLE - DUPLEX UNLESS SPECIFIED OTHERWISE - FLUSH IN FLOOR	GFR	— C — GROUND FAULT RELAY WITH C.T.			
—	TERMINAL JUNCTION BOX	— C — CONVENIENCE RECEPTACLE, PEDESTAL OR ABOVE COUNTER DUPLEX, UNLESS INDICATED OTHERWISE	— C — PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN				
—	WOUND-ROTOR MOTOR, HORSEPOWER INDICATED	— C — MULTI-OUTLET ASSEMBLY RECEPTACLES	— C — PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED				
—	MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED	30 □	RECEPTACLE, SPECIAL PURPOSE - AMPERAGE AS INDICATED	— C — PUSH-BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK			
—	DC MOTOR, HORSEPOWER INDICATED	— C — TELEPHONE/DATA RECEPTACLE (OUTLET BOX ONLY) WITH 1" CONDUIT TO TELEPHONE TERMINAL CABINET (TTC)	— C — REMOTE DEVICE				
—	LUMINAIRE - SEE SCHEDULE	— C — TELEPHONE/DATA RECEPTACLE (FLUSH IN FLOOR OUTLET BOX ONLY) WITH 1" CONDUIT TO TELEPHONE TERMINAL CABINET (TTC)	H O A	SELECTOR SWITCH: MAINTAINED CONTACT WITH CONTACT POSITION INDICATED, CHART IDENTIFIES OPERATION			
—	LUMINAIRE - SEE SCHEDULE	— C — TELEPHONE RECEPTACLE (OUTLET BOX 48" AFF ONLY) WITH 3/4" CONDUIT TO TELEPHONE TERMINAL CABINET (TTC)	— C — POSITION				
—	LUMINAIRE AND POLE - SEE SCHEDULE	— C — COAXIAL CABLE RECEPTACLE (OUTLET BOX INSTALLED 18" AFF ONLY) WITH 1" CONDUIT TO TELEPHONE TERMINAL CABINET (TTC)	CKT. 1 X OFF AUTO 2 O O O X	X - CLOSED CONTACT O - OPEN CONTACT			
—	WALL MOUNTED LUMINAIRE - SEE SCHEDULE	— C — GENERAL CONTROL OR WIRING DEVICE. NEMA 4X ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.	200/5 (3)	CURRENT TRANSFORMER, NUMBER AND RATIO INDICATED			
—	FLOOD LIGHTS - AIM IN THE DIRECTION SHOWN	— C — 30 □ NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 1 ENCLOSURE, 4X = WEATHERPROOF (NEMA 4X)	— C — A	PUSH-TO-TEST AND CONNECT, INDICATING LIGHT			
—	EXIT LIGHTS - SEE SCHEDULE	— C — 60/40 F FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING; 40 = FUSE RATING)	A — AMBER B — BLUE C — CLEAR — C — LETTER INDICATES COLOR	A - AMBER B - BLUE C - CLEAR W - WHITE			
—	EMERGENCY LIGHTING FIXTURE	— C — 60/40 F FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING; 40 = FUSE RATING)	— C — XX	PUSH-TO-TEST AND CONNECT, INDICATING LIGHT			
S _a or S _a 17	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING, SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT IN PANELBOARD.	— C — 2 □ STARTER MAGNETIC NEMA SIZE INDICATED, NEMA 1 ENCLOSURE, UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.	XX = 47 PHASE FAILURE/PHASE REVERSE 50 INSTANTANEOUS 51 TIME OVERCURRENT 51GS GROUND FAULT/GROUND SENSOR	XX = 47 PHASE FAILURE/PHASE REVERSE 50 INSTANTANEOUS 51 TIME OVERCURRENT 51GS GROUND FAULT/GROUND SENSOR			
— 5LP1-3	HOME RUN - DESTINATION SHOWN	— C — 2 □ COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED), MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL SCHEMATIC DIAGRAM.	— C — KK	KIRK KEY INTERLOCK			
— or #/G	EXPOSED CONDUIT AND CONDUCTORS*	— C — 1 □ CONTACT - NORMALLY OPEN WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	— C — SOL	SOLENOID	— C — ELECTRIC RESISTANCE HEATER		
— or #/G	CONCEALED CONDUIT AND CONDUCTORS*	— C — 1 □ CONTACT - NORMALLY CLOSED WITH NEMA SIZE INDICATED OR COIL IDENTIFICATION AS APPLICABLE	— C — DCR	CONTROL RELAY, 24V DC COIL	— C — L	LATCHING RELAY	
—	NOTE: * ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO.12 CONDUCTORS W/GROUND IN CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO.12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.	— C — 1 □ OVERLOAD RELAY HEATER	— C — CR	120V CONTROL RELAY	— C — U		
—	YCX = YARD CONDUIT NO.	— C — 1 □ MAGNETIC STARTER WITH NEMA SIZE INDICATED	— C — TIME DELAY CONTACTS				
—	CONDUIT DOWN, X IS CONDUIT NO.	— C — 100/M CIRCUIT BREAKER, MAGNETIC, TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE	— C — NORMALLY OPEN, TIMED OPEN				
—	CONDUIT UP	— C — 400 CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.	— C — NORMALLY OPEN, TIMED CLOSED				
—	CONDUIT, STUBBED AND CAPPED AS SHOWN	— C — 400 400 CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	— C — NORMALLY CLOSED, TIMED OPEN				
—	UNDERGROUND CONDUIT	— C — 400 225 FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	— C — NORMALLY CLOSED, TIMED CLOSED				
—	EXPOSED CONDUIT	— C — 100 XXX 4X = WEATHERPROOF (NEMA 4X)	— C — LIQUID LEVEL				
—	FPL & SERVICE DUCTBANK	— C — XXX YYY DRAWOUT CIRCUIT BREAKER, LOW VOLTAGE, XXX = TRIP RATING RATING, YYY = FRAME	— C — OPENS ON RISING LEVEL, CLOSES ON FALLING LEVEL				
—	TE & TELEPHONE DUCTBANK	— C — XXX DRAWOUT CIRCUIT BREAKER, MEDIUM VOLTAGE	— C — CLOSES ON RISING LEVEL, OPENS ON FALLING LEVEL				
—	G GROUND WIRE, 4/0 UNLESS OTHERWISE NOTED	— C — XXX DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE	— C — PRESSURE				
—	METERING FACILITIES	— C — LIGHTNING ARRESTERS	— C — OPENS ON RISING PRESSURE, CLOSES ON FALLING PRESSURE				
—	CARBON MONOXIDE DETECTOR	— C — LIGHTNING ARRESTERS	— C — CLOSES ON RISING PRESSURE, OPENS ON FALLING PRESSURE				
—	18-PULSE VARIABLE FREQUENCY DRIVE	— C — LIGHTNING ARRESTERS	— C — FLOW				
—	6-PULSE VARIABLE FREQUENCY DRIVE	— C — LIGHTNING ARRESTERS	— C — OPENS ON RISING FLOW, CLOSES ON FALLING FLOW				
—	FIRE ALARM SMOKE DETECTOR	— C — LIGHTNING ARRESTERS					
—	CONCRETE MANHOLE	— C — LIGHTNING ARRESTERS					
NOTE: THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT BE UTILIZED ON PROJECT.							
ABBREVIATIONS							
ABBREVIATIONS				ABBREVIATIONS			
4XSS	NEMA 4X 316 STAINLESS STEEL	MD5	MAIN SERVICE	A	AMMETER, AMPERE, AMBER	MDP	DISCONNECT SWITCH
A	ALTERNATING CURRENT	MH	MAIN DISTRIBUTION PANEL	AC	ABOVE FINISHED FLOOR	MIN	MANHOLE
AFF	ALUMINUM	MS	MOTOR STARTER	AL	MINIMUM	MTS	MANUAL TRANSFER SWITCH
ALT	ALTERNATE	N	NEUTRAL	AM	AUTO-MANUAL	NC	NORMALLY CLOSED
AMS	ALTERNATE MAINTENANCE SWITCH	NCA	NORMALLY CLOSED	AS	AMMETER SWITCH, AUTOMATIC TRANSFER SWITCH	NCA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
ATS	SWITCH	NO	NORMALLY OPEN	BRKR	BREAKER	NP	NAMENPLATE
BRKR	CONDUIT, CONTACTOR	NTS	NOT TO SCALE	C	CIRCUIT BREAKER	OC	OPEN-CLOSE (D)
C	CIRCUIT	OCR	OPEN-CLOSE-AUTO	CB	CONTROL POWER	OL	OVERLOAD RELAY
CB	CENTRAL MONITORING PNL	OO	ON-OFF	CPT	TRANSFORMER	OOA	ON-OFF-AUTO
CPT	CONTROL RELAY	OOB	ON-OFF-BUS	CR	CONTROL RELAY	OR	ON-OFF-REMOTE
CR	CURRENT TRANSFORMER	EF	OPEN-STOP-CLOSE	CT	CURRENT TRANSFORMER	OSC	OPEN-STOP-CLOSE
CT	CONTROL RELAY	EG	OPEN	EHD	ELECTRIC HAND DRYER	P	POLE
EHD	EQUIPMENT GROUND	EMH	NAMEPLATE	EPB	ELECTRICAL MAHOLE	PB	PULL BOX
EPB	ELECTRICAL PULL BOX	ETM	NOT TO SCALE	F	FLOW METER	PE	PHOTOCELL
ETM	ELAPSED TIME METER	DISC	OPEN-CLOSE-REMOTE	FM	FLOW TRANSMITTER	PH	PHASE
DISC	DISCONNECT	DODE	OPEN-STOP-CLOSE	FS	FUTURE	PLC	PROGRAMMABLE LOGIC CONTROLLER
DODE	DELAY UPON DE-ENERGIZATION	DOE	OPEN-STOP-CLOSE	FUT	FUTURE	PM	PHASE MONITOR
DOE	DELAY UPON ENERGIZATION	FC	OPEN-STOP-CLOSE	FVN	FULL VOLTAGE	PNL	PANELBOARD
FC	FULLY CLOSED	FDR	OPEN-STOP-CLOSE	G	GREEN, GROUND	PR	POTENTIAL TRANSFORMER
FDR	FEEDER	FM	OPEN-STOP-CLOSE	GALV	GALVANIZED	PVC	POLYVINYL CHLORIDE CONDUIT
FM	FLOW METER	FS	OPEN-STOP-CLOSE	GFI	GROUND FAULT INTERRUPTER	QNTY	QUANTITY
FS	FLOAT SWITCH	FT	OPEN-STOP-CLOSE	GEN	GENERATOR	RPC	REMOTE POWER CENTER
FT	FLOW TRANSMITTER	FUT	OPEN-STOP-CLOSE	GND	GROUND	R	RED
FUT	FUTURE	FVN	OPEN-STOP-CLOSE	GRS	GALVANIZED RIGID STEEL	RCPT	RECEPTACLE
FVN	NON-REVERSING STARTER	G	OPEN-STOP-CLOSE	HID	HANDHOLE	R/I	RESISTANCE TO CURRENT CONVERTER
G	GREEN, GROUND	HOR	OPEN-STOP-CLOSE	HOA	HAND-OFF-AUTO	RMS	ROOT MEAN SQUARE
HOR	GALVANIZED	HOA	OPEN-STOP-CLOSE	HTD	HAND-OFF-REMOTE	RS	RIGID STEEL CONDUIT
IC	GROUND FAULT INTERRUPTER	HTD	OPEN-STOP-CLOSE	RTU	REMOTE TELEMETRY UNIT	SC	SCURGE CAPACITOR
I & C	INSTANTANEOUS CLOSE	IC	OPEN-STOP-CLOSE	SC	SURGE CAPACITOR	SF	SUPPLY FAN
IC	INSTRUMENTATION AND CONTROL	IC	OPEN-STOP-CLOSE	SMH	SIGNAL MAINTENANCE ACCESS HOLE	SPB	SIGNAL PULL BOX
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	SS	STAINLESS STEEL, SELECTOR SWITCH	SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	SYM	SWITCH	TDAE	TIME DELAY AFTER DE-ENERGIZATION
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TC	SYMMETRICAL	TDAE	TIME DELAY AFTER ENERGIZATION
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TDR	TIME DELAY RELAY	TDAE	TIME DELAY AFTER ENERGIZATION
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TJB	TERMINAL JUNCTION BOX	TJB	TERMINAL JUNCTION BOX
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TO	TIME OPEN	TO	TIME OPEN
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TR	TRIPLE, TIMING RELAY	TR	TRIPLE, TIMING RELAY
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TS	TERMAL SWITCH	TS	TERMAL SWITCH
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TSP	TWISTED SHIELDED PAIR	TSP	TWISTED SHIELDED PAIR
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TURB	TURBIDITY	TURB	TURBIDITY
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	TYP	TYPICAL	TYP	TYPICAL
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	UVR	UNDER VOLTAGE RELAY	UVR	UNDER VOLTAGE RELAY
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	VFD	VOLTmeter, VOLT	VFD	VARIABLE FREQUENCY DRIVE
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	VS	VOLTMETER SWITCH	VS	VARIABLE SPEED DRIVE
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	VSD	W	WEATHERPROOF	
IC	TIME DELAY RELAY	IC	OPEN-STOP-CLOSE	XFMR	TRANSFORMER	XFMR	TRANSFORMER

DRAFT DOCUMENT FOR COMMISSION REVIEW

ELECTRICAL GENERAL NOTES:

1. THE SCOPE OF WORK SHALL BE AS DESCRIBED IN SPECIFICATIONS AND SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO INSTALL THE ELECTRICAL SYSTEMS AS DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.
3. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA 70), NATIONAL ELECTRICAL SAFETY CODE (NFPA 70E), LIFE SAFETY CODE (NFPA 101), LOCAL CITY CODE, LOCAL COUNTY CODE AND FLORIDA BUILDING CODE WITH BROWARD COUNTY AMENDMENTS.
4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS AND TO INCLUDE ALL FEES AS PART OF THE BID IF NOT OTHERWISE NOTED.
5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER AND OWNER AS PER SPECIFICATION 16010.
6. THE CONTRACTOR SHALL VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.
7. ALL EQUIPMENT AND MATERIAL SHALL BE UNUSED AND U.L. LISTED. ALL REFERENCES TO A PARTICULAR MANUFACTURER ARE GIVEN ON AN "APPROVED EQUAL" BASIS.
8. THE CONTRACTOR IS RESPONSIBLE TO TEST ALL SYSTEMS INSTALLED OR MODIFIED UNDER THIS PROJECT AND REPAIR OR REPLACE ALL DEFECTIVE WORK TO THE SATISFACTION OF THE ENGINEER AND OWNER.
9. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIAL AND QUALITY FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE.
10. ALL CONDUCTORS SHALL BE COPPER. NO ALUMINUM ALLOWED UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
11. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ELECTRICAL & CONTROL EQUIPMENT AND MATERIAL.
12. ALL CONTROL PANELS SHALL BE CONSTRUCTED BY A UL 508A APPROVED PANEL VENDOR AND SHALL BEAR A UL 508A LABEL ON THE PANEL.
13. THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. THESE ARE TO BE COORDINATED WITH THE OTHER TRADES AND EXISTING CONDITIONS SO THAT CONFLICTS ARE AVOIDED PRIOR TO INSTALLATIONS.
14. ALL LOCATIONS OF EQUIPMENT, PANELS ETC. ARE SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL VERIFY AND COORDINATE EXACT LOCATION AND SIZE WITH ALL SUBCONTRACTORS, EQUIPMENT SUPPLIERS AND EXISTING CONDITIONS PRIOR TO ANY INSTALLATION AND THEN INSTALL AS SUCH WITH CORRESPONDING CONDUIT STUB-UPS.
15. REFER TO OTHER DISCIPLINE DRAWINGS FOR COORDINATION OF ALL DRAWINGS. ANY CONFLICTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION AND MOVEMENT OF CONDUITS OR OTHER ELECTRICAL EQUIPMENT SHALL BE ACCOMPLISHED WITHOUT ANY ADDITIONAL COST FOR THE OWNER.
16. LOCATIONS OF HANDHOLES AND IN-GROUND PULL BOXES ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH EXISTING AND/OR NEW PIPING AND/OR NEW AND EXISTING CONDUIT AND ADJUST ACCORDINGLY.
17. NOT ALL CONDUITS SHOWN ON RISER AND ONE-LINE DIAGRAMS ARE SHOWN ON BUILDING LAYOUT. CONTRACTOR SHALL SUPPLY ALL CONDUITS AND WIRE AS SHOWN ON RISER AND ONE-LINE DIAGRAMS IN ADDITION TO THOSE ON PLAN VIEWS.
18. ALL CIRCUITS SHALL BE IDENTIFIED IN JUNCTION BOXES, PULL BOXES, CONTROL PANELS, PANELBOARDS, LIGHTING POLES, CONTROLLERS AND SERVICE POINTS. IDENTIFICATION SHALL MATCH PANELBOARD SCHEDULES.
19. EXPOSED RUNS OF CONDUITS SHALL BE INSTALLED WITH RUNS PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS, WITH RIGHT ANGLE TURNS CONSISTING OF SYMMETRICAL BENDS OR PULL BOXES AS INDICATED ON THE DRAWINGS. BENDS AND OFFSETS SHALL BE AVOIDED WHERE POSSIBLE.
20. INSTRUMENTATION IS LOW VOLTAGE SIGNALS SUCH AS 4-20MA, TELEPHONE COMMUNICATION, FIRE ALARM COMMUNICATION. POWER CONDUIT SHALL ONLY CROSS INSTRUMENTATION CONDUIT PERPENDICULARLY AT RIGHT ANGLES WITH 6" SEPARATION.
21. CONDUCTOR PULLING TENSIONS SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATION. CONTRACTOR SHALL INSTALL PULL BOXES TO MEET MANUFACTURER'S REQUIREMENTS.
22. MINIMUM DISTANCE ALLOWED BETWEEN POWER CONDUITS AND INSTRUMENTATION CONDUITS SHALL BE:

VOLTAGE	DISTANCE
4160V	3 FT
480V	2 FT
120V	1 FT
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUIT AND WIRING INSTALLATION FOR ALL VENDOR PROVIDED EQUIPMENT (PACKAGE SYSTEMS). IF THE SHOP DRAWINGS DIFFER FROM THE DESIGNED FACILITIES, THE CONTRACTOR SHALL REDesign THE FACILITIES AND SUBMIT THE REVISED DESIGN FOR THE ENGINEER'S APPROVAL ALONG WITH THE SHOP DRAWINGS. THERE SHALL BE NO ADDITIONAL COST TO THE OWNER FOR THE REDESIGN NOR FOR ANY ADDITIONAL CONDUITS AND WIRING. DURING SUBMITTAL THE CONTRACTOR SHALL VERIFY ALL SUPPLIED BREAKER SIZES FOR ALL PACKAGED SYSTEMS SUCH AS HVAC, EXHAUST FANS, MIXERS, CHEMICAL PUMPS ETC. AND MODIFY ALL BREAKERS IN MCC'S AND PANELBOARDS ACCORDINGLY WITHOUT ANY ADDITIONAL COST TO THE OWNER.
24. ALL EXCAVATIONS FOR CONDUITS, HANDHOLES, AND IN-GROUND PULLBOXES NEAR EXISTING PIPING, CONDUIT AND EQUIPMENT SHALL BE HAND EXCAVATED AND COORDINATED WITH ENGINEER AND OWNER.
25. MINIMUM DEPTH FROM TOP OF DUCTBANKS OR CONDUITS TO FINISHED GRADE SHALL BE 24" UNLESS OTHERWISE NOTED.
26. COLORED WARNING TAPE 6" WIDE SHALL BE INSTALLED 8" BELOW FINISHED GRADE DIRECTLY ABOVE ALL UNDERGROUND YARD CONDUITS ACCORDING TO THE FOLLOWING SCHEDULE:

POWER: RED
ALL OTHER CONDUITS: GREEN
27. CONTRACTOR SHALL RESTORE SIDEWALKS, ROADWAYS, SOD AND SPRINKLER SYSTEM PIPING TO MATCH EXISTING, AFTER THE COMPLETION OF THE CONDUIT AND PULLBOX INSTALLATION.
28. GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH NEC, ARTICLE 250. THE GROUNDING SYSTEM TEST SHALL NOT EXCEED A 48 HOUR SPAN DRY RESISTANCE OF 10 OHMS. ADDITIONAL GROUNDING TO MEET THIS REQUIREMENT SHALL BE INSTALLED AT NO EXTRA COST TO THE OWNER. GROUNDING AND BONDING CONNECTIONS SHALL NOT BE PAINTED. ALL GROUNDING CONNECTIONS SHALL BE EXOTHERMIC UNLESS SPECIFICALLY INDICATED OTHERWISE.
29. AN EQUIPMENT GROUND WIRE SIZED PER NEC SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER AND CONTROL, WHETHER OR NOT INDICATED ON THE PLANS.
30. ALL ENCLOSURES, TJB, WIREWAY, PULL BOXES ETC. SHALL CONTAIN A GROUNDING BUS. CONNECT ALL RACEWAY BONDS TO THIS BUS VIA GROUNDING BUSHING AND EXTEND BONDING JUMPER FROM THIS BUS TO THE ENCLOSURE.

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

**HILLERS ELECTRICAL
ENGINEERING, INC.**
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FLORIDA 33428
(561) 451-9165
(561) 451-4886 FAX
LICENSE NO: EB 0006877

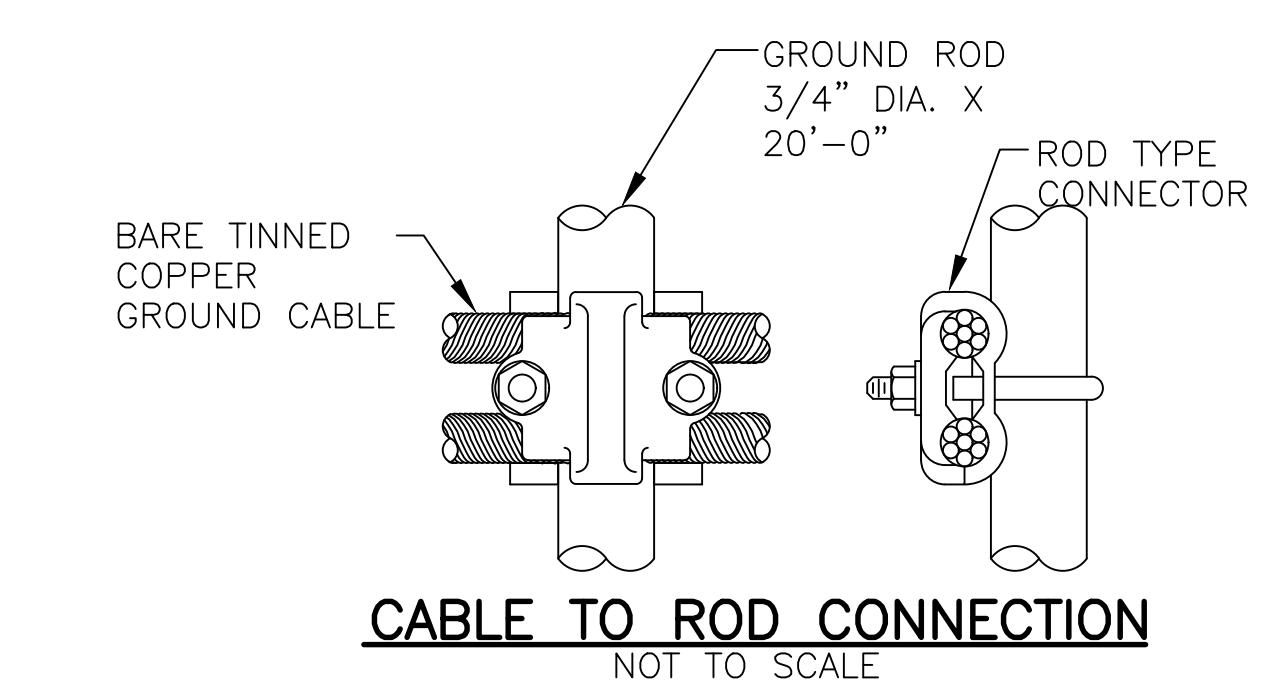
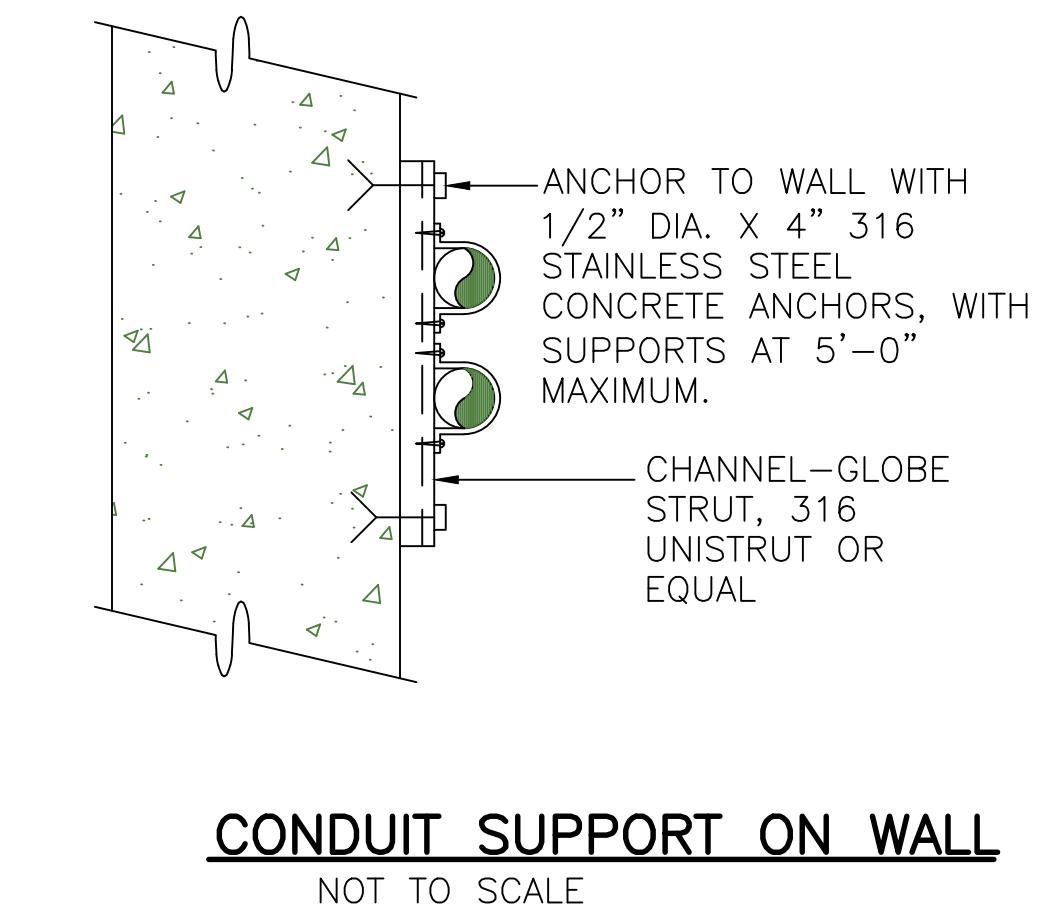
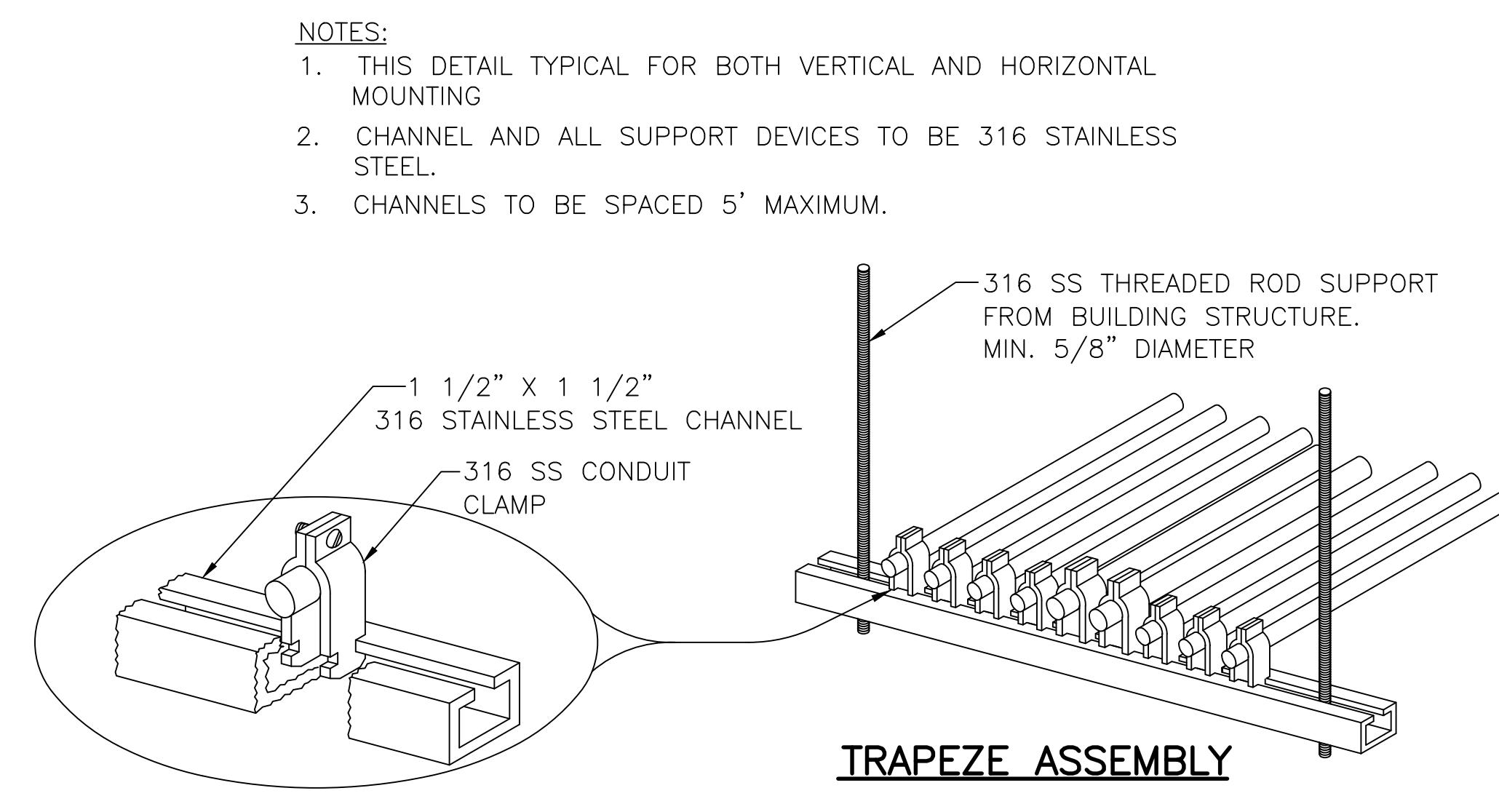
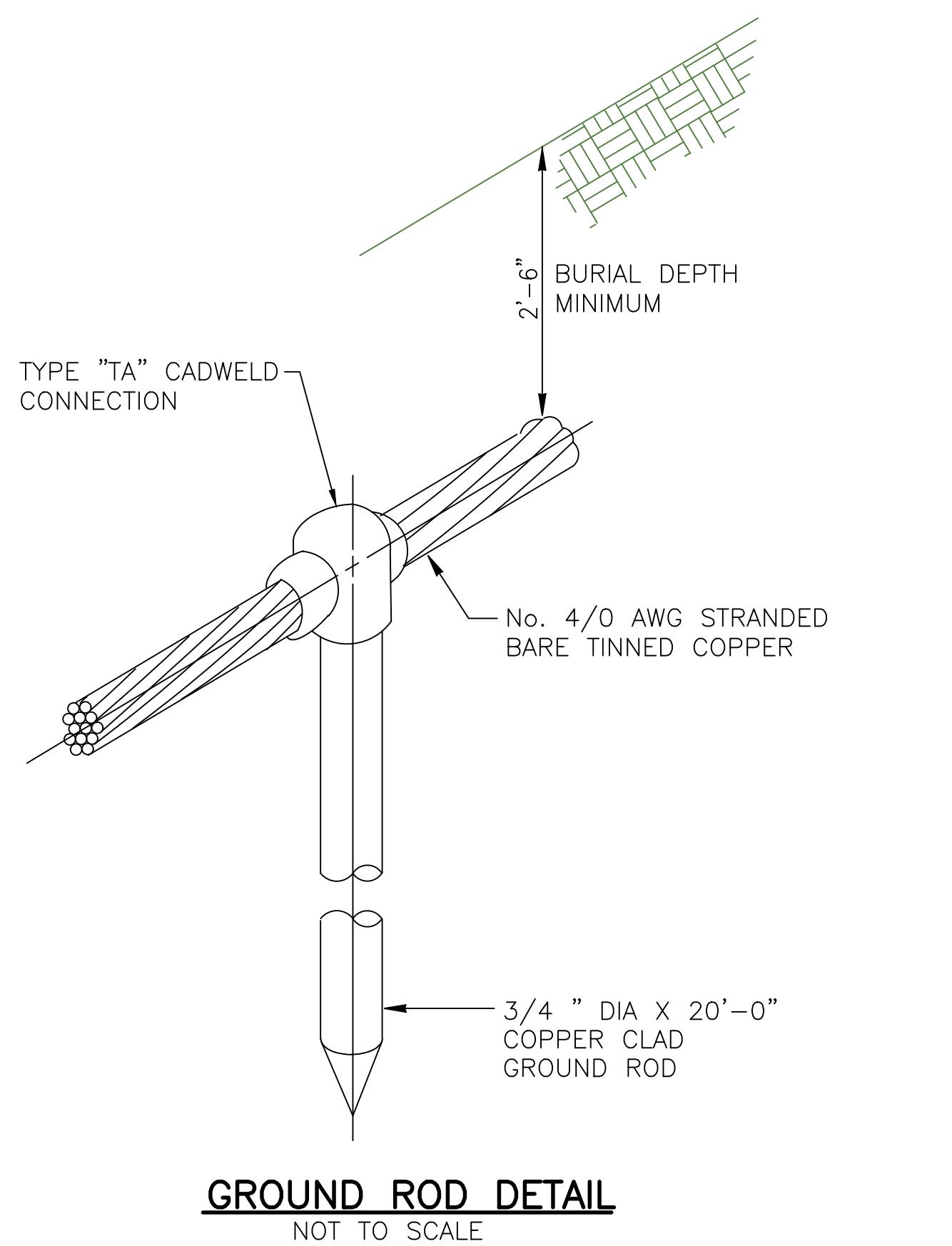
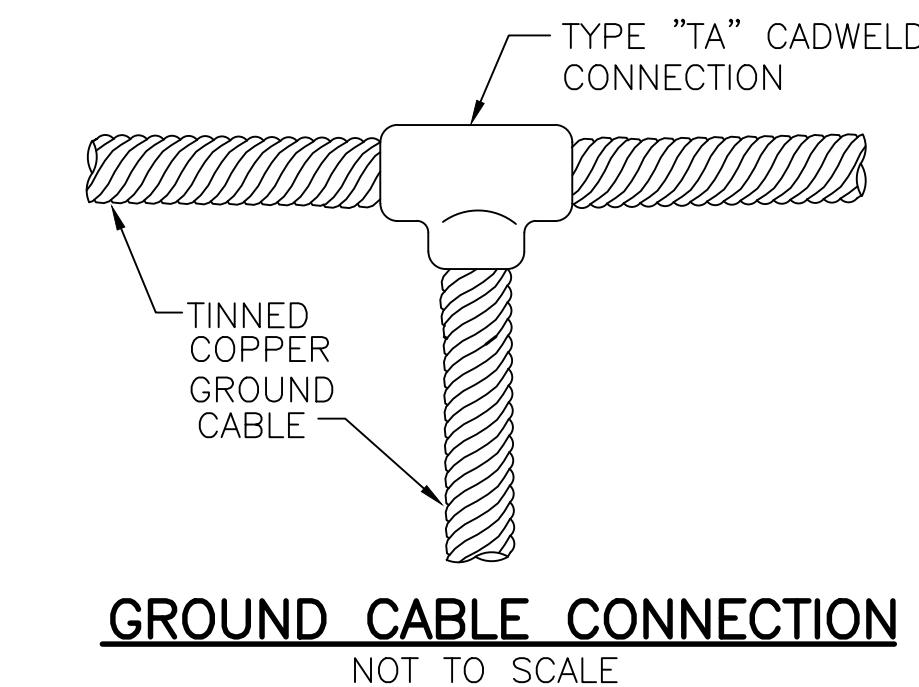
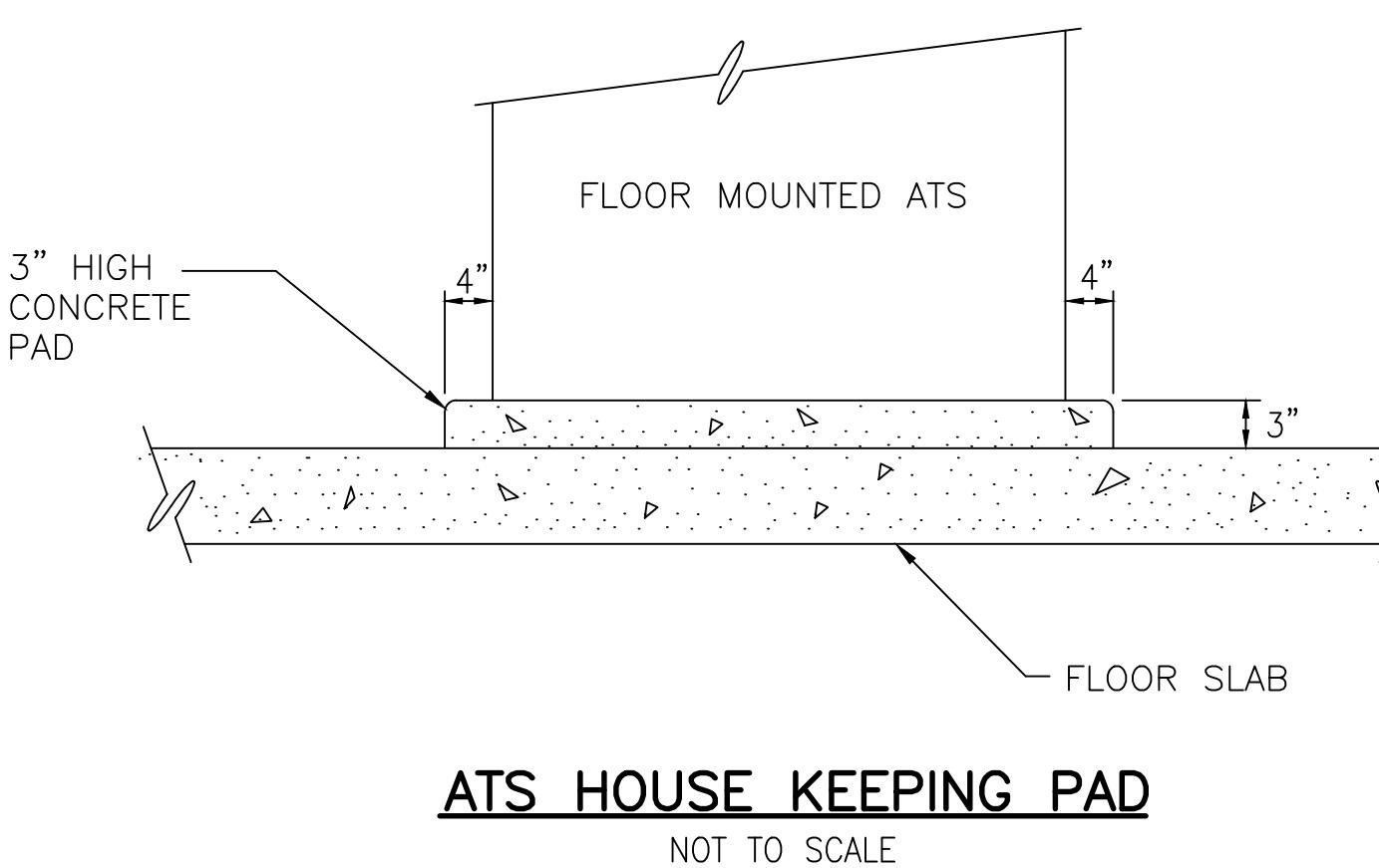
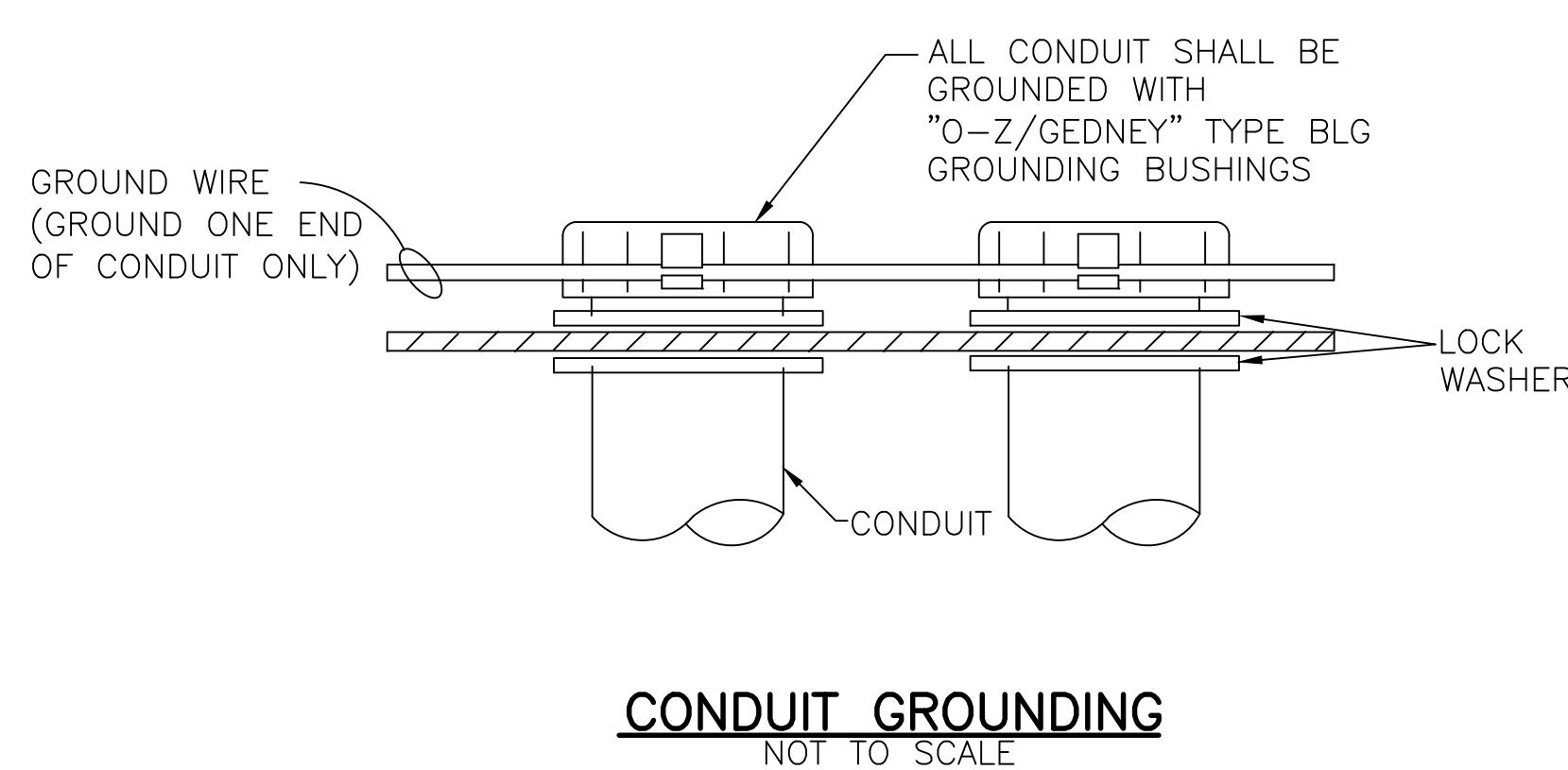
**HOLLY LAKES AND ACADEMIC VILLAGE ATS
REPLACEMENT**
13955 PEMBROKE ROAD, PEMBROKE PINES, FLORIDA 33029

ELECTRICAL GENERAL NOTES

THEIN WIN, P.E.
STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No.65722
DATE: DEC 2022
BID SET

SCALE
NONE
PROJECT No
PP20
SHEET
E-02

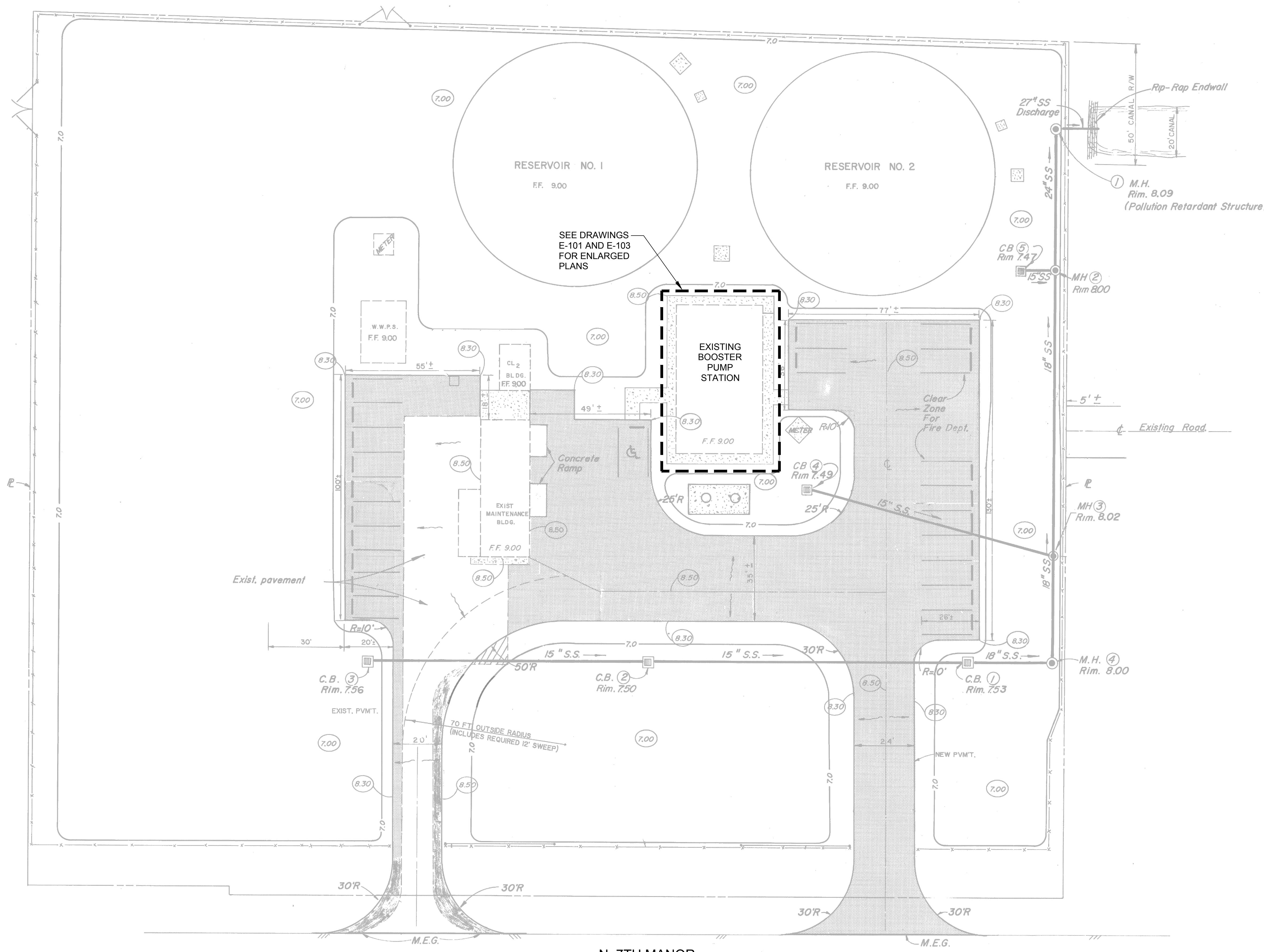
DRAFT DOCUMENT FOR COMMISSION REVIEW



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SECT. LINE 10-51S-39 E

JOHNSON ST.



HOLLY LAKES BOOSTER PUMP STATION SITE PLAN

NOT TO SCALE



NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

HILLERS ELECTRICAL
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23257 STATE ROAD 7, SUITE 100
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(561) 451-9165
(561) 451-4886 FAX
LICENSE NO: EB-0006877

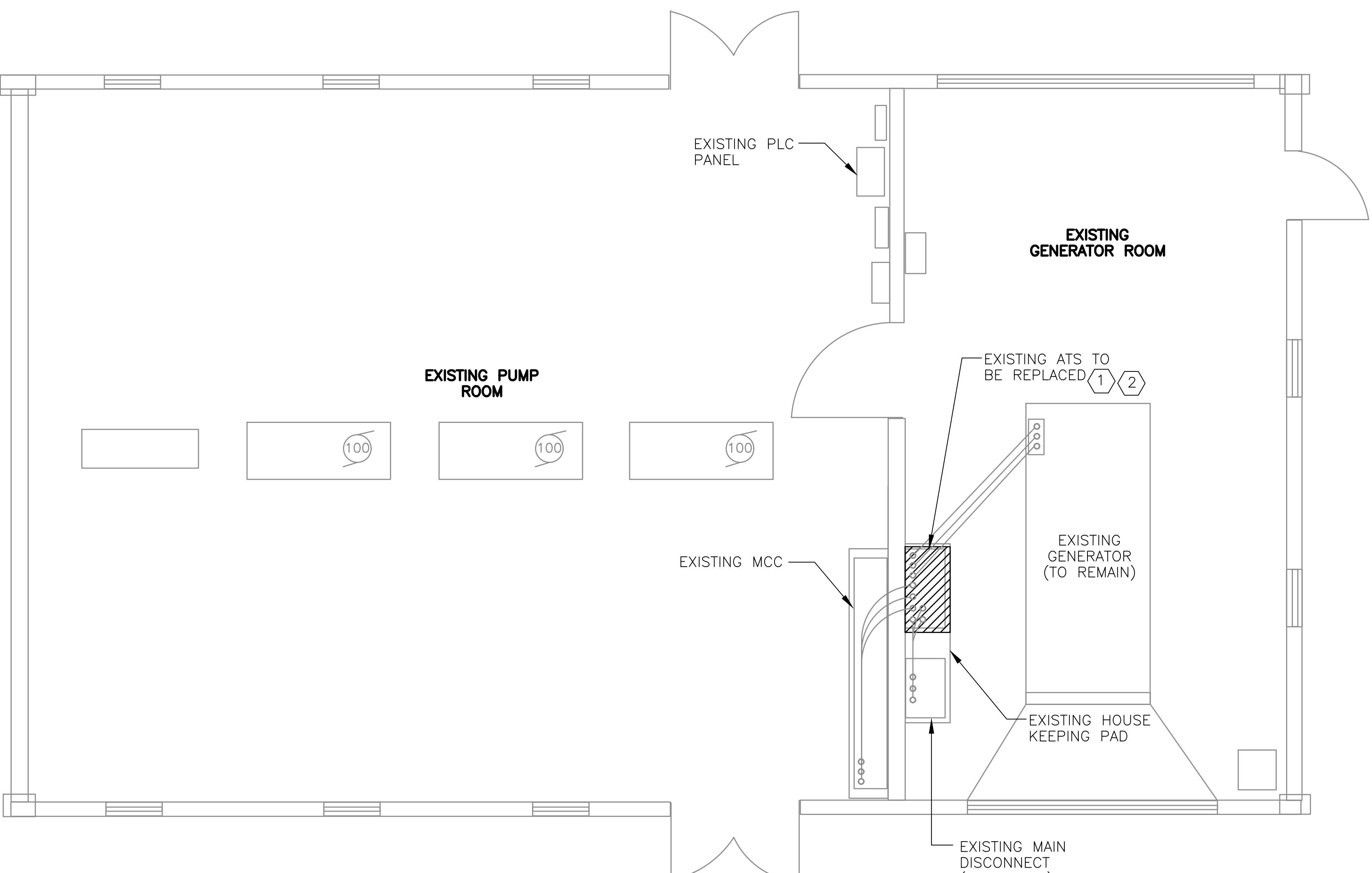
**HOLLY LAKES AND ACADEMIC VILLAGE ATS
REPLACEMENT**
13955 PEMBROKE ROAD, PEMBROKE PINES, FLORIDA 33029

**HOLLY LAKES BOOSTER PUMP
STATION SITE PLAN**

THEIN WIN, P.E.
STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No.65722
DATE: DEC. 2022
BID SET

SCALE
NONE
PROJECT No
PP20
SHEET
E-100

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KEYED NOTES:

- ① REPLACE THE EXISTING FLOOR MOUNTED ATS WITH NEW. THE EXISTING ATS IS MANUFACTURED BY CATERPILLAR AND ENCLOSURE DIMENSION IS 48"Wx24"Dx78"H. THE EXISTING ATS ENCLOSURE HAS 6" HIGH LEGS.
- ② REMOVE EXISTING POWER AND CONTROL CABLES TO ATS. PROTECT ALL EXISTING POWER AND CONTROL CONDUITS TO ATS TO BE RE-USED. ANY UN-USED CONDUITS SHALL BE CAPPED AS SPARE.
- ③ CONTRACTOR SHALL DISCONNECT AND REMOVE THE EXISTING SCI-TEXT PLC, RADIO AND ASSOCIATED COMPONENTS FROM THE EXISTING ATS AND DELIVER TO THE OWNER. DUE TO UL REQUIREMENTS, THE NEW ATS WILL NOT BE INSTALLED WITH SCI-TEXT PLC AND RADIO.



PHOTO 1: ATS DEMOLITION – FRONT VIEW
NOT TO SCALE

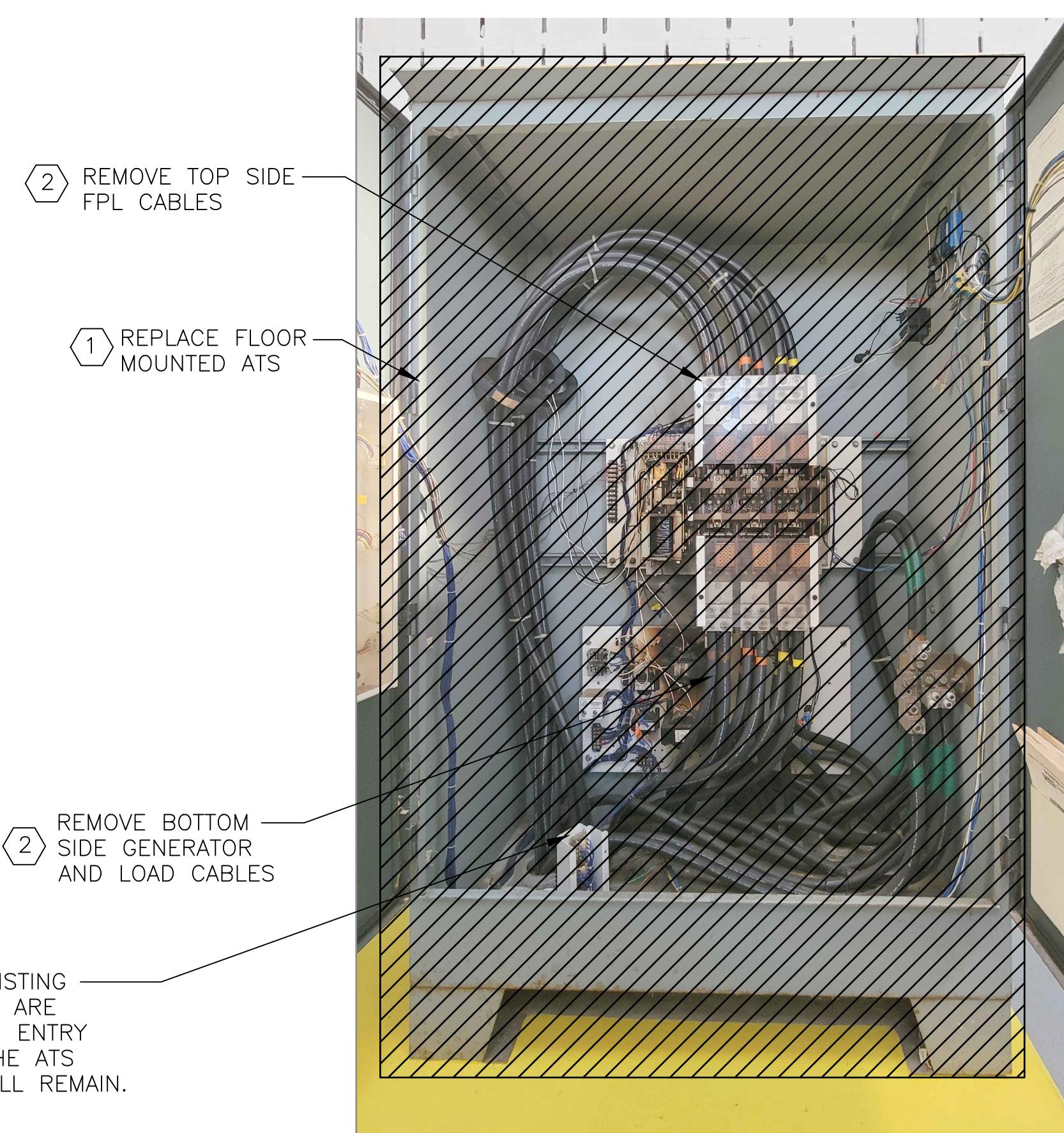
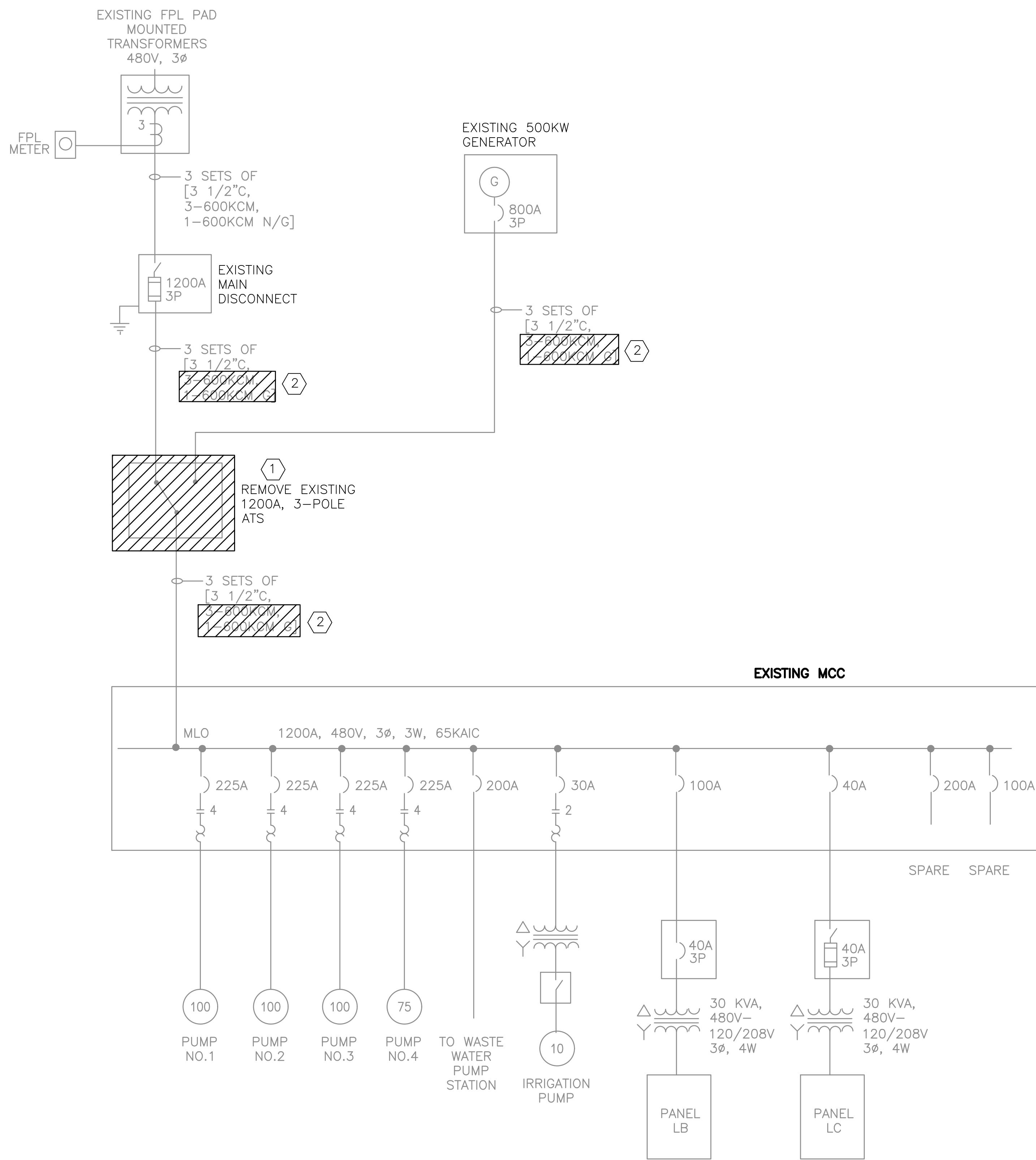


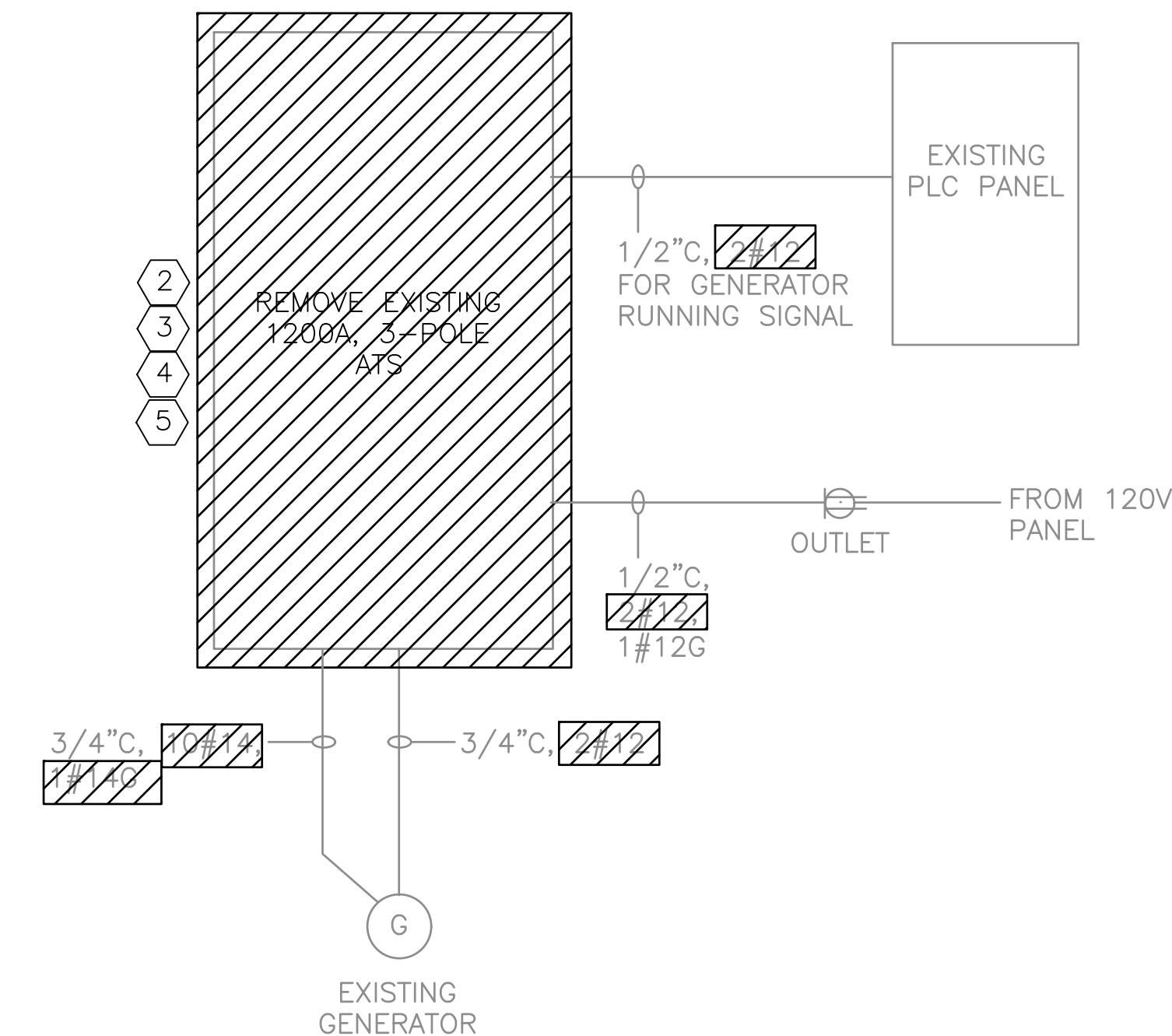
PHOTO 2: ATS DEMOLITION – INNER VIEW
NOT TO SCALE

DRAFT DOCUMENT FOR COMMISSION REVIEW



HOLLY LAKES BOOSTER PUMP STATION ONE LINE – DEMOLITION

File Name: E:\PROJECTS\PP\PP20 Holly Lakes ATS\DRAWINGS\E-102 HOLLY LAKES ONE LINE DIAGRAMS.PLAN.Dwg – (Plotted by: Win, Then on Tuesday, January 3, 2023 11:53:52 AM)



HOLLY LAKES BOOSTER PUMP STATION RISER – DEMOLITION

NOT TO SCALE

KEYED NOTES:

- ① REPLACE THE EXISTING FLOOR MOUNTED ATS WITH NEW. THE EXISTING ATS IS MANUFACTURED BY CATERPILLAR AND ENCLOSURE DIMENSION IS 48"Wx24"Dx78"H. THE EXISTING ATS ENCLOSURE HAS 6" HIGH LEGS.
- ② REMOVE EXISTING POWER AND CONTROL CABLES TO ATS. PROTECT ALL EXISTING POWER AND CONTROL CONDUITS TO ATS TO BE RE-USED. THE UN-USED CONDUITS SHALL BE CAPPED AS SPARE.
- ③ CONTRACTOR SHALL DISCONNECT AND REMOVE THE EXISTING SCI-TEXT PLC, RADIO AND ASSOCIATED COMPONENTS FROM THE EXISTING ATS AND DELIVER TO THE OWNER.
- ④ CONTRACTOR SHALL FIELD IDENTIFY ALL CONTROL CABLE CONNECTIONS FROM ATS TO GENERATOR AND PLC, IF ANY. LABEL ALL THE CONTROL TERMINALS TO RECONNECT WITH A NEW ATS.
- ⑤ SUGGESTED EXISTING ATS REMOVAL METHOD IS TO DISCONNECT ALL WIRES, REMOVE COMPONENTS, AND LIFT THE ENCLOSURE WITHOUT DAMAGING THE WIRES. PROTECT EXISTING WIRES AS NEEDED. THEN INSTALL NEW ATS AT THE SAME LOCATION. IT IS CONTRACTOR RESPONSIBLE TO PROVIDE ALL NECESSARY EQUIPMENT, LIFTING MACHINES, AND LABORS TO REMOVE AND TO INSTALL ATS WITHOUT DAMAGING THE WIRES. EXTEND WIRES AS NEEDED. MATCH QUANTITY AND WIRE SIZE WITH EXISTING.

NOTES FOR ALL E-100 SERIES:

1. HOLLY LAKES BOOSTER PUMP STATION SHALL BE IN OPERATION AT ALL TIME. PROVIDE A TEMPORARY SOUND ATTENUATED GENERATOR, CABLES, FUEL AND MAKE NECESSARY CONNECTION FOR A COMPLETE WORKING SYSTEM. MINIMUM 500kW GENERATOR SHALL BE PROVIDED. SUPPLY FUEL TO THE TEMPORARY GENERATOR DURING ATS REPLACEMENT. FOR BIDDING PURPOSE, INCLUDE A MINIMUM OF TWO DAYS TEMPORARY GENERATOR SERVICE WITH THE BID PRICE.
2. EXISTING CONDUIT ROUTING AND CONDUIT STUB-UP LOCATIONS ARE SHOWN FOR ILLUSTRATION PURPOSE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NEEDED WITHOUT ADDITIONAL COST.
3. NEW ATS DESIGN IS BASED ON ASCO FLOOR MOUNTED ATS (DIM. 38"W x 87"H x 23"D). IF OTHER APPROVED ATS WITH DIFFERENT ENCLOSURE DIMENSION IS USED, CONTRACTOR SHALL PROVIDE NECESSARY NEMA 1 WIREWAY TO CONNECT WITH THE EXISTING CONDUITS AND NEW ATS. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY ADJUSTMENTS, MODIFICATIONS, ETC. FOR A COMPLETE WORKING SYSTEM IN PLACE, WITHOUT ADDITIONAL COST TO THE OWNER.

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

**HILLERS ELECTRICAL
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(561) 451-9165
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**HOLLY LAKES AND ACADEMIC VILLAGE ATS
REPLACEMENT**
13955 PEMBROKE ROAD, PEMBROKE PINES, FLORIDA 33029

**HOLLY LAKES BOOSTER PUMP STATION
ONE LINE AND RISER - DEMOLITION**

THEIN WIN, P.E.
STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No.65722

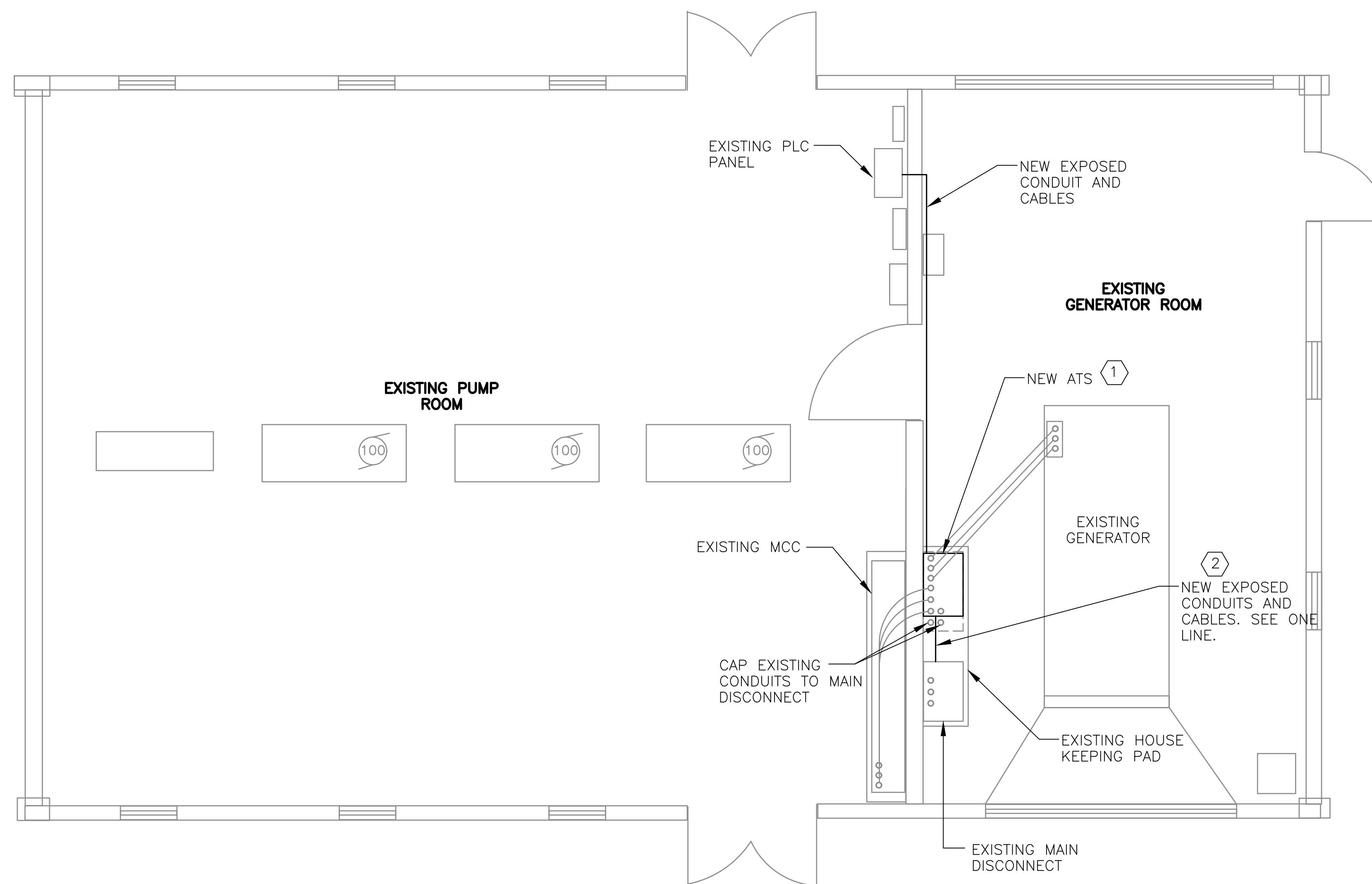
DATE: DEC 2022

BID SET

SCALE
NONE
PROJECT No
PP20

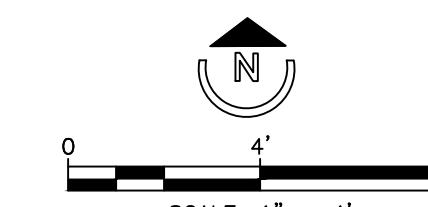
E-102

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HOLLY LAKES BOOSTER PUMP STATION ELECTRICAL PLAN – MODIFICATION

SCALE: 1" = 4'-0"



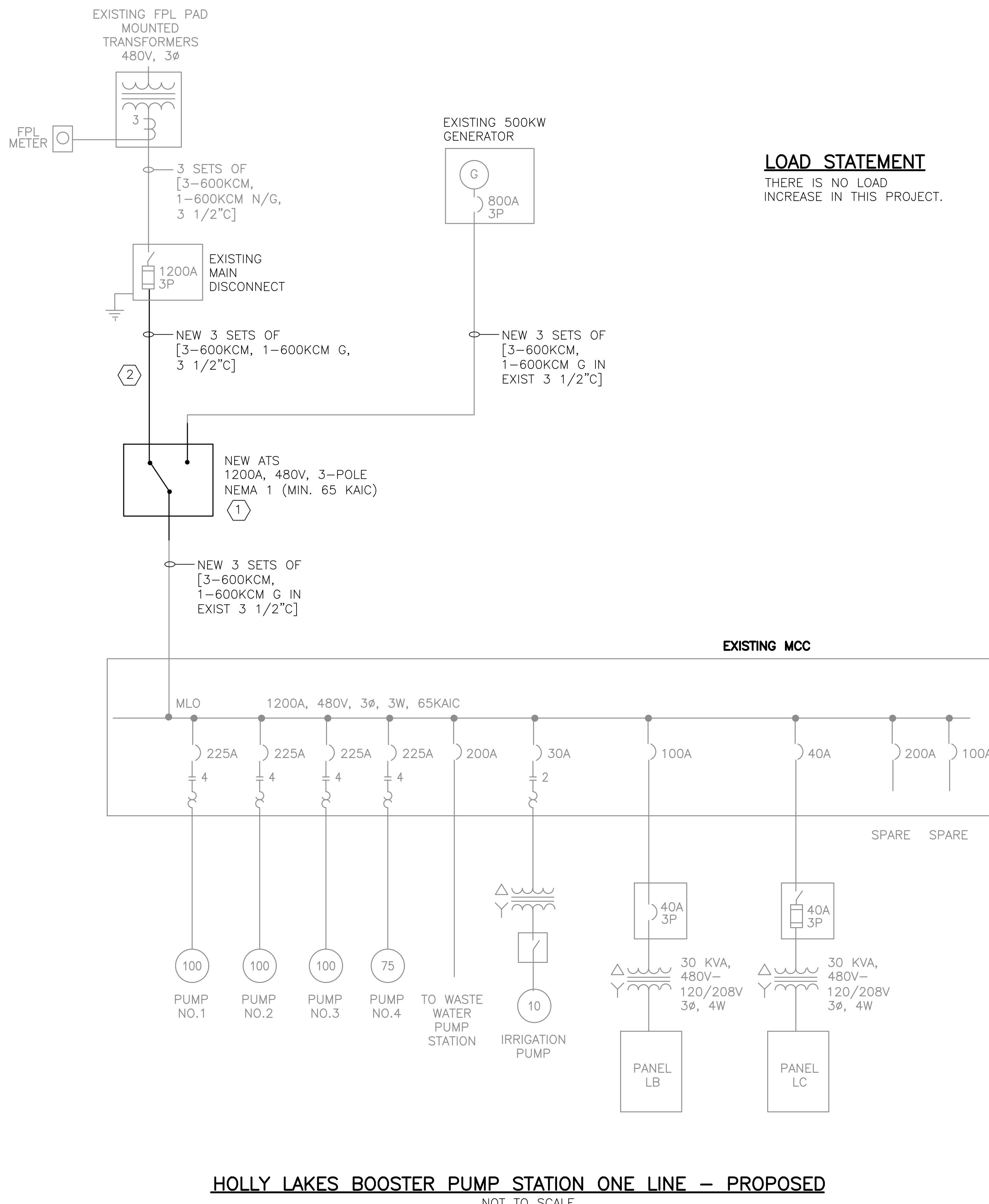
KEYED NOTES:

① CONTRACTOR SHALL MODIFY EXISTING POWER AND CONTROL CONDUITS AS REQUIRED TO MAKE CONNECTION WITH A NEW ATS.

② INSTALL NEW CONDUITS BETWEEN THE NEW ATS AND THE EXISTING MAIN DISCONNECT. EXISTING CONDUIT STUB-UPS FROM MAIN DISCONNECT SHALL BE CAPPED AS SPARE.

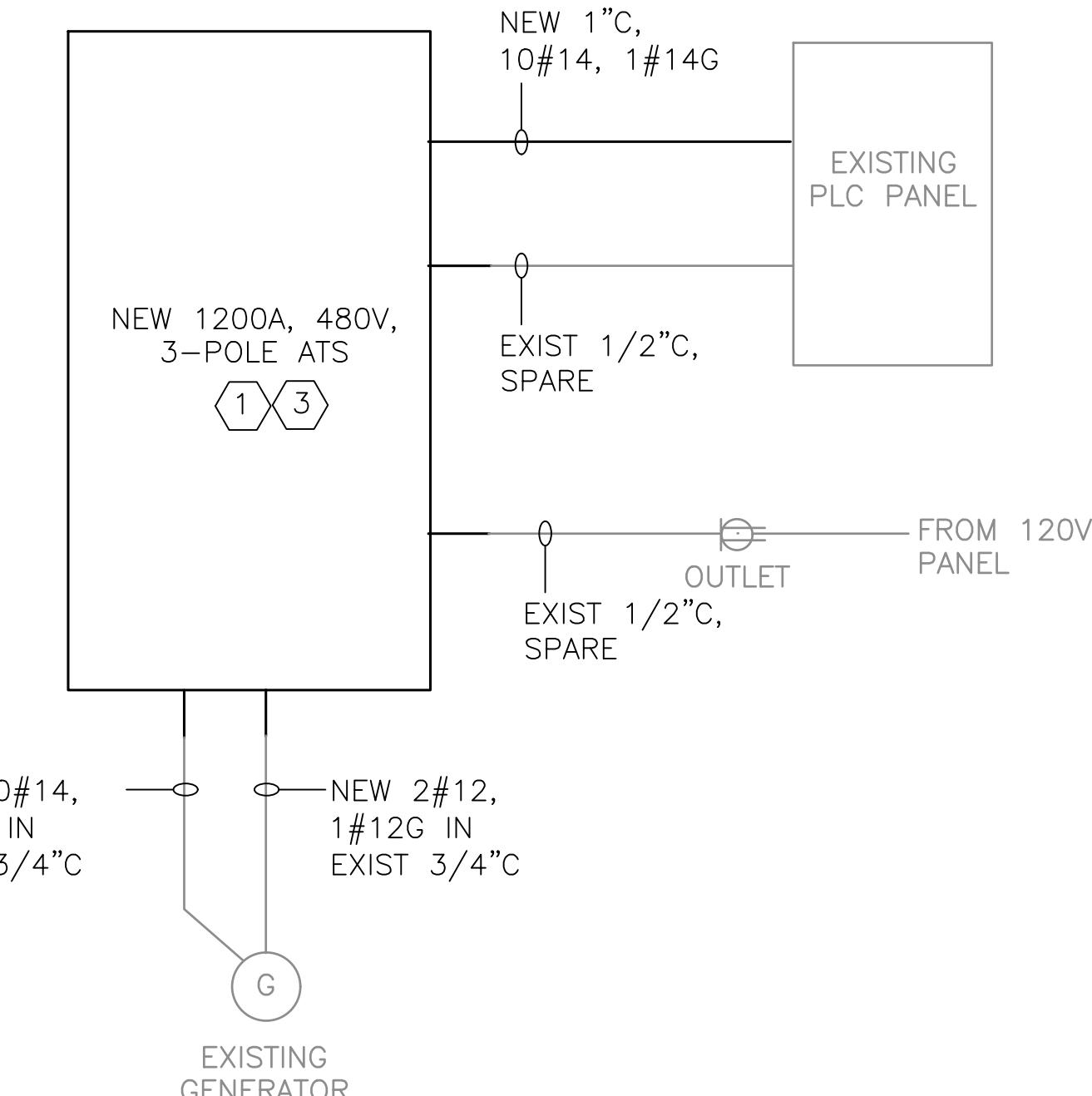
NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

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LOAD STATEMENT

THERE IS NO LOAD INCREASE IN THIS PROJECT.



HOLLY LAKES BOOSTER PUMP STATION RISER – PROPOSED

NOT TO SCALE

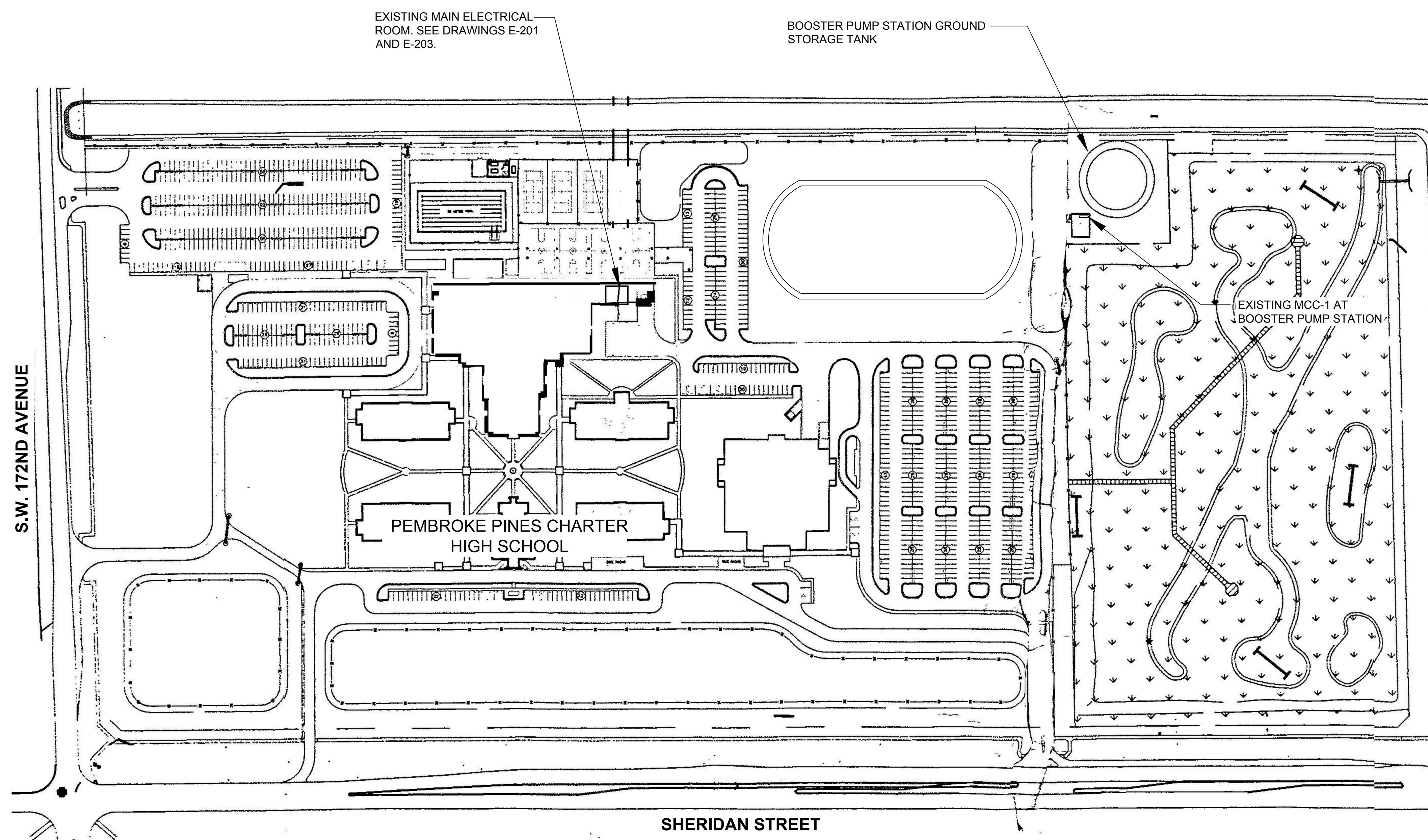
KEYED NOTES:

- ① CONTRACTOR SHALL MODIFY EXISTING POWER AND CONTROL CONDUITS AS REQUIRED TO MAKE CONNECTION WITH A NEW ATS.
- ② INSTALL NEW CONDUITS BETWEEN THE NEW ATS AND THE EXISTING MAIN DISCONNECT. EXISTING CONDUIT STUB-UPS FROM MAIN DISCONNECT SHALL BE CAPPED AS SPARE.
- ③ CONTRACTOR SHALL FIELD VERIFY AND LABEL ALL EXISTING SIGNALS WIRES BEFORE REMOVAL OF THE ATS. CONTRACTOR SHALL RECONNECT CONTROL WIRES TO ATS, GENERATOR AND PLC SIMILAR TO THE EXISTING CONNECTION AFTER INSTALLATION OF NEW ATS.

NOTES FOR ALL E-100 SERIES:

1. HOLLY LAKES BOOSTER PUMP STATION SHALL BE IN OPERATION AT ALL TIME. PROVIDE A TEMPORARY GENERATOR, CABLES, FUEL AND MAKE NECESSARY CONNECTION FOR A COMPLETE WORKING SYSTEM. MINIMUM 500KW GENERATOR SHALL BE PROVIDED. SUPPLY FUEL TO THE TEMPORARY GENERATOR DURING ATS REPLACEMENT.
2. EXISTING CONDUIT ROUTING AND CONDUIT STUB-UP LOCATIONS ARE SHOWN FOR ILLUSTRATION PURPOSE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NEEDED WITHOUT ADDITIONAL COST.
3. NEW ATS DESIGN IS BASED ON ASCO FLOOR MOUNTED ATS (DIM. 38" W x 87" H x 23" D). IF OTHER APPROVED ATS WITH DIFFERENT ENCLOSURE DIMENSION IS USED, CONTRACTOR SHALL PROVIDE NECESSARY NEMA 1 WIREWAY TO CONNECT WITH THE EXISTING CONDUITS AND NEW ATS. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY ADJUSTMENTS, MODIFICATIONS, ETC. FOR A COMPLETE WORKING SYSTEM IN PLACE, WITHOUT ADDITIONAL COST TO THE OWNER.

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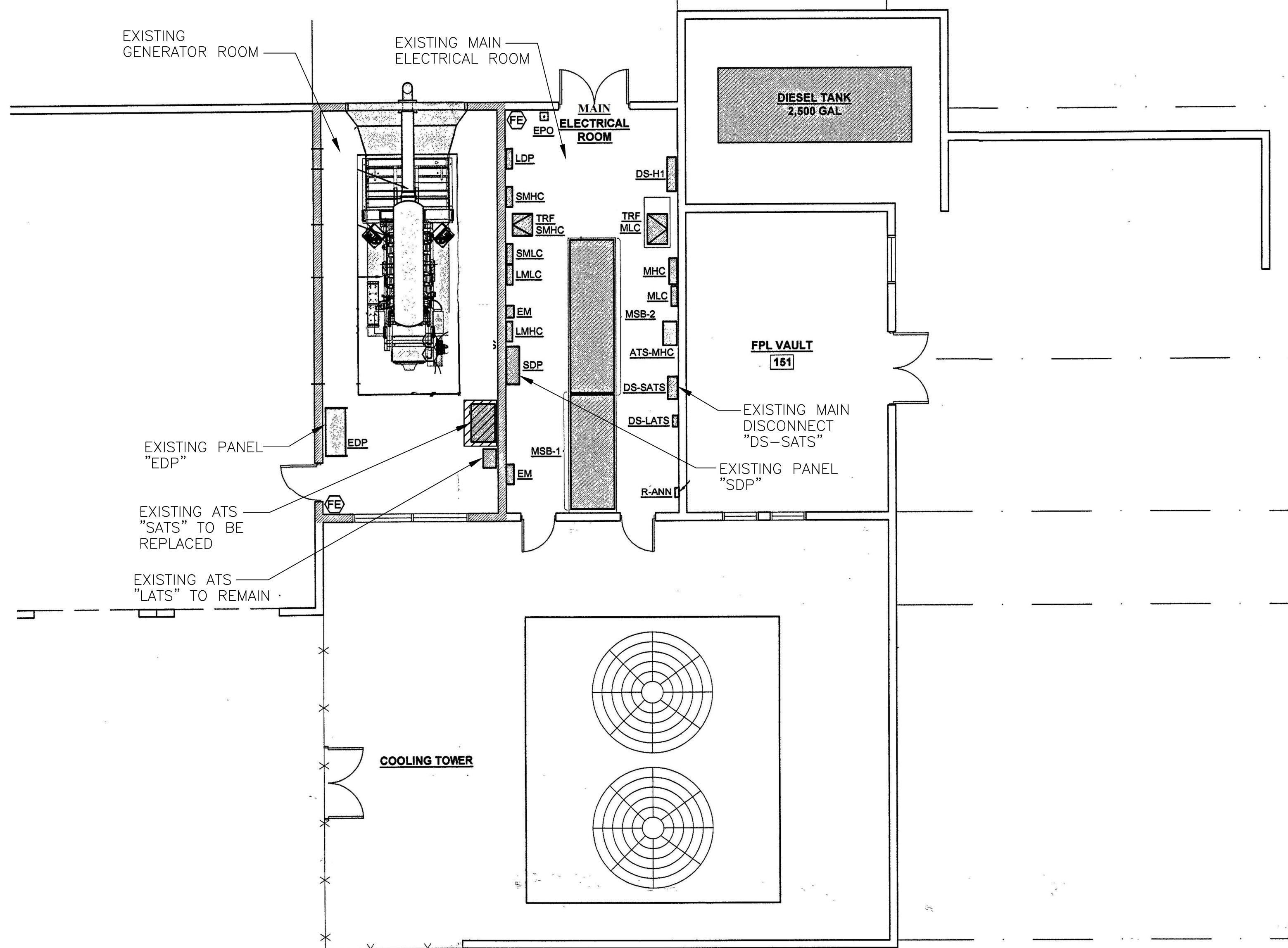
ACADEMIC VILLAGE SITE PLAN

SCALE: N.T.S.



NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

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ACADEMIC VILLAGE MAIN ELECTRICAL ROOM PLAN – PARTIAL DEMOLITION
NOT TO SCALE

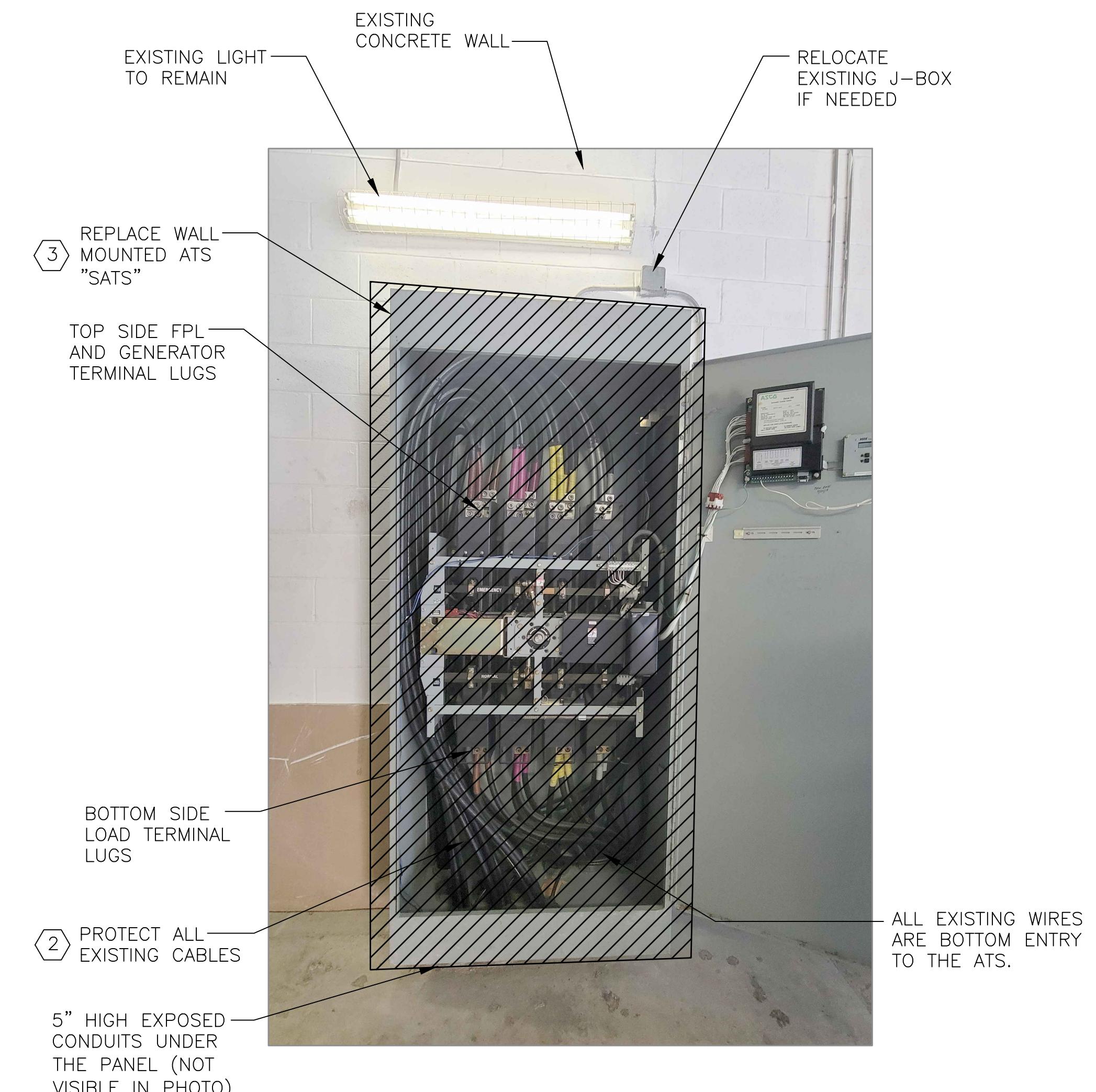
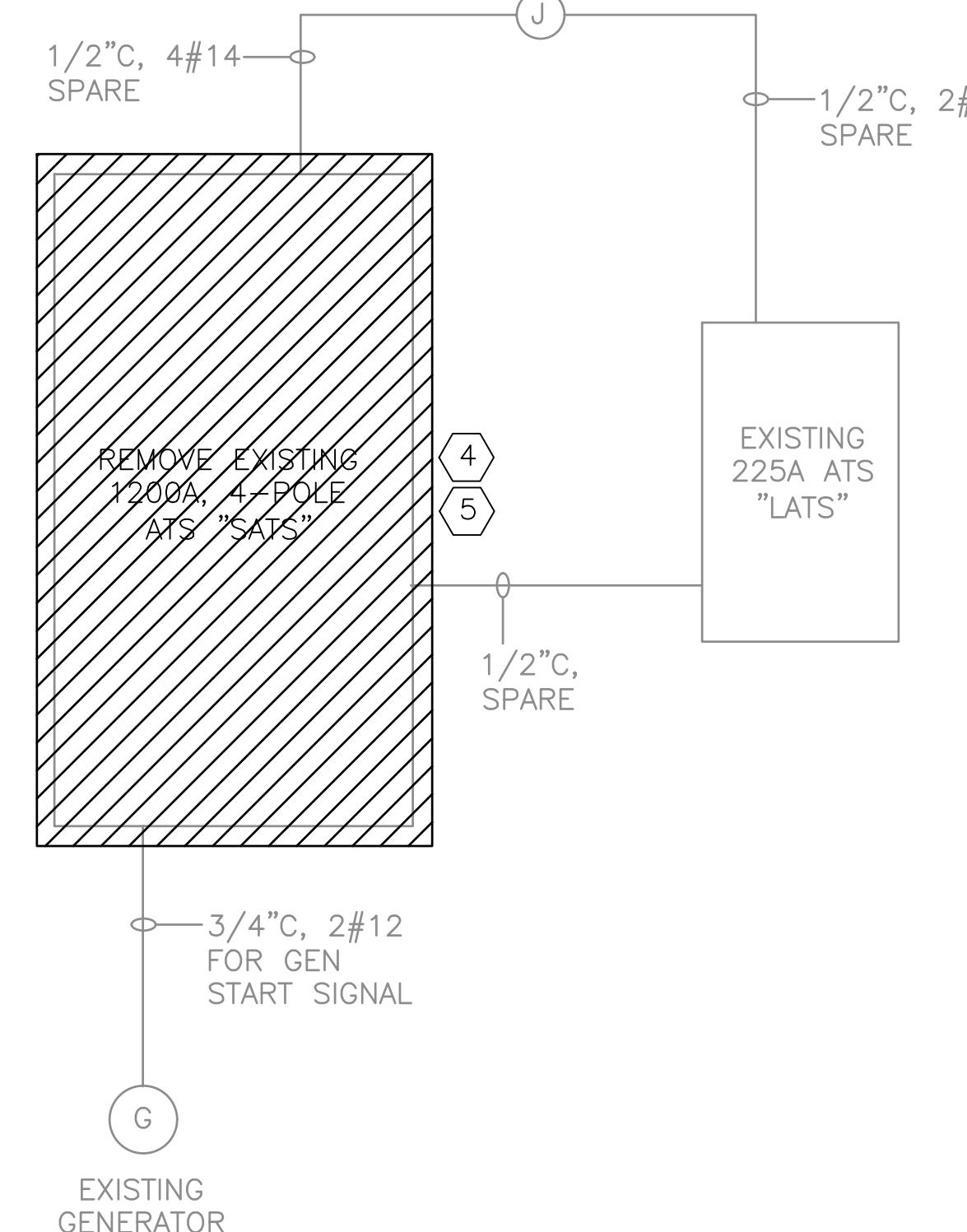
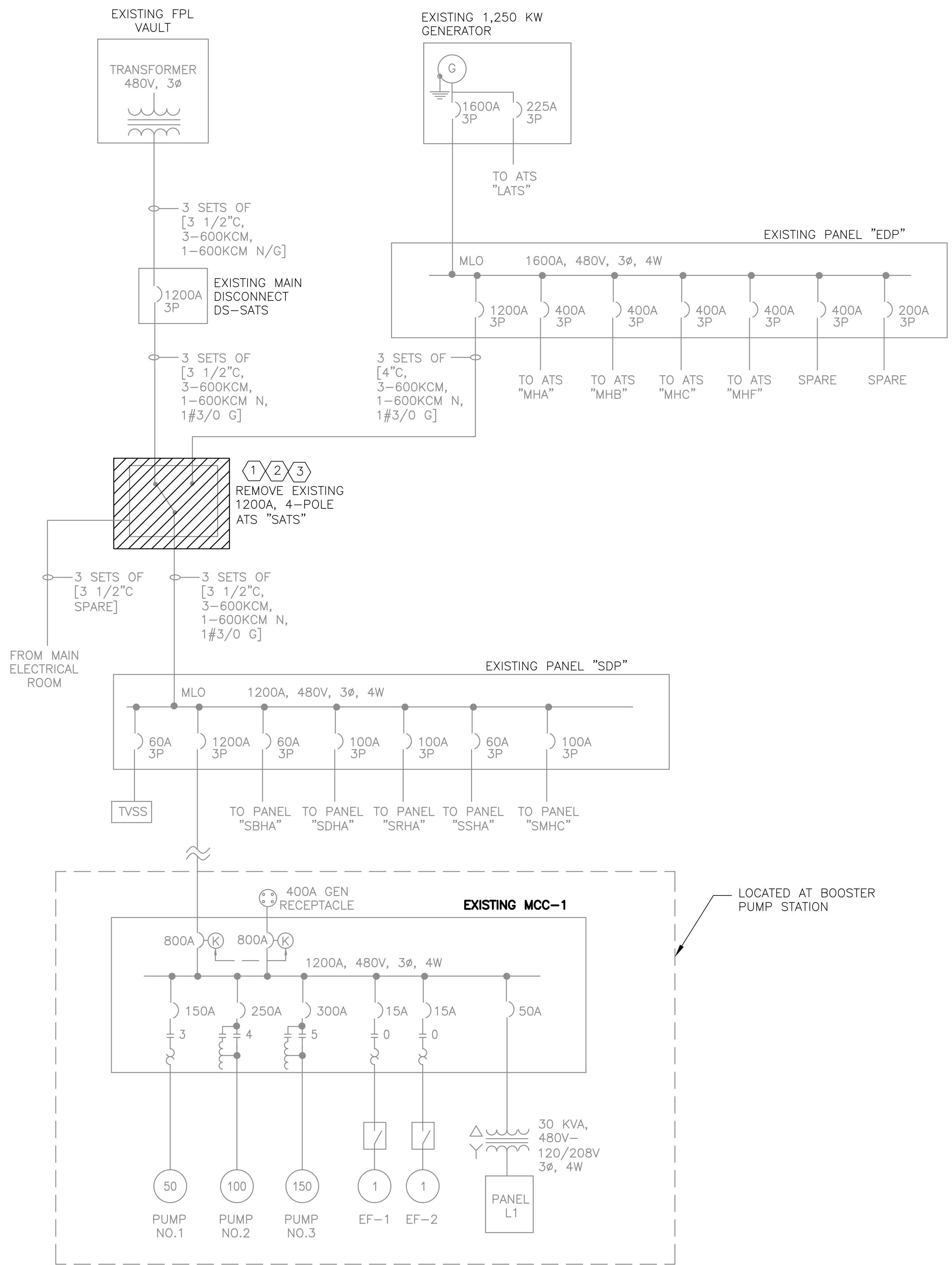


PHOTO 3: ATS DEMOLITION – INNER VIEW ①
NOT TO SCALE

KEYED NOTES:

- ① CONTRACTOR SHALL PERFORM A MEGGER TEST ON THE EXISTING NORMAL POWER AND EMERGENCY POWER CABLES AND THE LOAD SIDE CABLES PRIOR TO ATS REMOVAL. REPORT THE TEST RESULTS TO THE ENGINEER AND OWNER.
- ② CONTRACTOR SHALL PROTECT ALL EXISTING POWER AND CONTROL CABLES IN ATS TO BE RE-USED.
- ③ REPLACE THE EXISTING WALL MOUNTED ATS "SATS" WHICH IS MOUNTED APPROXIMATELY 5" ABOVE FLOOR. EXISTING ATS IS MANUFACTURED BY ASCO AND DIMENSION IS 38"Wx24"Dx87"H.

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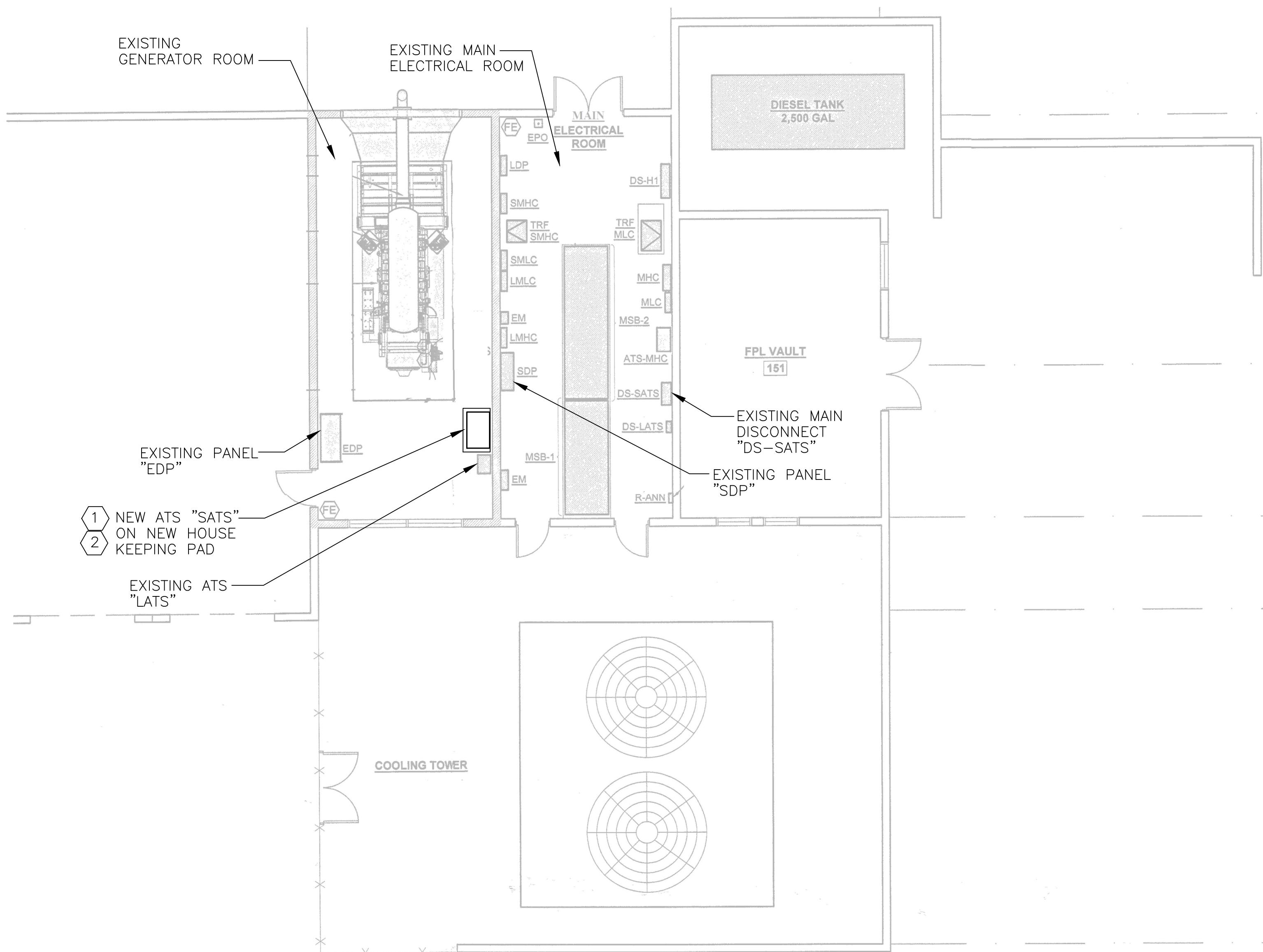
KEYED NOTES:

- ① CONTRACTOR SHALL PERFORM A MEGGER TEST ON THE EXISTING NORMAL POWER AND EMERGENCY POWER CABLES AND THE LOAD SIDE CABLES PRIOR TO ATS REMOVAL. REPORT THE TEST RESULTS TO THE ENGINEER AND OWNER.
- ② CONTRACTOR SHALL PROTECT ALL EXISTING POWER AND CONTROL CABLES IN ATS TO BE RE-USED.
- ③ REPLACE THE EXISTING WALL MOUNTED ATS "SATS" WHICH IS MOUNTED APPROXIMATELY 5" ABOVE FLOOR. EXISTING ATS IS MANUFACTURED BY ASCO AND DIMENSION IS 38"Wx24"Dx87"H.
- ④ CONTRACTOR SHALL IDENTIFY ALL CONTROL CABLE CONNECTIONS IN ATS. LABEL ALL THE CONTROL CABLES TO RECONNECT WITH A NEW ATS.
- ⑤ SUGGESTED EXISTING ATS REMOVAL METHOD IS TO DISCONNECT ALL WIRES, REMOVE COMPONENTS, AND LIFT THE ENCLOSURE WITHOUT DAMAGING THE WIRES. PROTECT EXISTING WIRES AS NEEDED, THEN INSTALL NEW ATS AT THE SAME LOCATION. IT IS CONTRACTOR RESPONSIBLE TO PROVIDE ALL NECESSARY EQUIPMENT, LIFTING MACHINES, AND LABORS TO REMOVE AND TO INSTALL ATS WITHOUT DAMAGING THE WIRES. EXTEND WIRES AS NEEDED. MATCH QUANTITY AND WIRE SIZE WITH EXISTING.

NOTES FOR ALL E-200 SERIES:

1. ATS REPLACEMENT SHALL NOT BE PERFORMED DURING SCHOOL HOURS. IT SHALL BE PERFORMED OUTSIDE THE SCHOOL HOURS OR WEEKENDS. COORDINATE WITH THE OWNER AND GET APPROVAL BEFORE PERFORMING THE REPLACEMENT.
2. ACADEMIC VILLAGE BOOSTER PUMP STATION SHALL BE IN OPERATION AT ALL TIME. PROVIDE A TEMPORARY SOUND ATTENUATED GENERATOR, CABLES, FUEL AND MAKE NECESSARY CONNECTION AT MCC-1 LOCATED AT BOOSTER PUMP STATION FOR A COMPLETE WORKING SYSTEM. MINIMUM 300KW GENERATOR SHALL BE PROVIDED. SUPPLY FUEL TO THE TEMPORARY GENERATOR DURING ATS REPLACEMENT. FOR BIDDING PURPOSE, INCLUDE A MINIMUM OF TWO DAYS TEMPORARY GENERATOR SERVICE WITH THE BID PRICE.
3. EXISTING CONDUIT ROUTING AND CONDUIT STUB-UP LOCATIONS ARE SHOWN FOR ILLUSTRATION PURPOSE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NEEDED.
4. NEW ATS DESIGN IS BASED ON ASCO FLOOR MOUNTED ATS (DIM. 38"W x 87"H x 23"D). IF OTHER APPROVED ATS WITH DIFFERENT ENCLOSURE DIMENSION IS USED, CONTRACTOR SHALL PROVIDE NECESSARY NEMA 1 WIREWAY TO CONNECT WITH THE EXISTING CONDUITS AND NEW ATS. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY ADJUSTMENTS, MODIFICATIONS, ETC. FOR A COMPLETE WORKING SYSTEM IN PLACE, WITHOUT ADDITIONAL COST TO THE OWNER.

DRAFT DOCUMENT FOR COMMISSION REVIEW



ACADEMIC VILLAGE MAIN ELECTRICAL ROOM PLAN – MODIFIED

NOT TO SCALE



KEYED NOTES:

① CONTRACTOR SHALL PERFORM A MEGGER TEST ON THE EXISTING NORMAL POWER AND EMERGENCY POWER CABLES AND THE LOAD SIDE CABLES AFTER THE NEW ATS INSTALLATION. REPORT THE TEST RESULTS TO THE ENGINEER AND OWNER. REPLACE ANY DAMAGED CABLE(S) DURING ATS INSTALLATION WITH NO ADDITIONAL COST TO THE OWNER.

② CONTRACTOR SHALL MODIFY AND EXTEND THE EXISTING POWER AND CONTROL CONDUITS AND CABLES AS REQUIRED TO MAKE CONNECTION WITH THE NEW ATS.

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY

HILLERS ELECTRICAL
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23257 STATE ROAD 7, SUITE 100
BOCA RATON, FLORIDA 33428
(561) 451-9165
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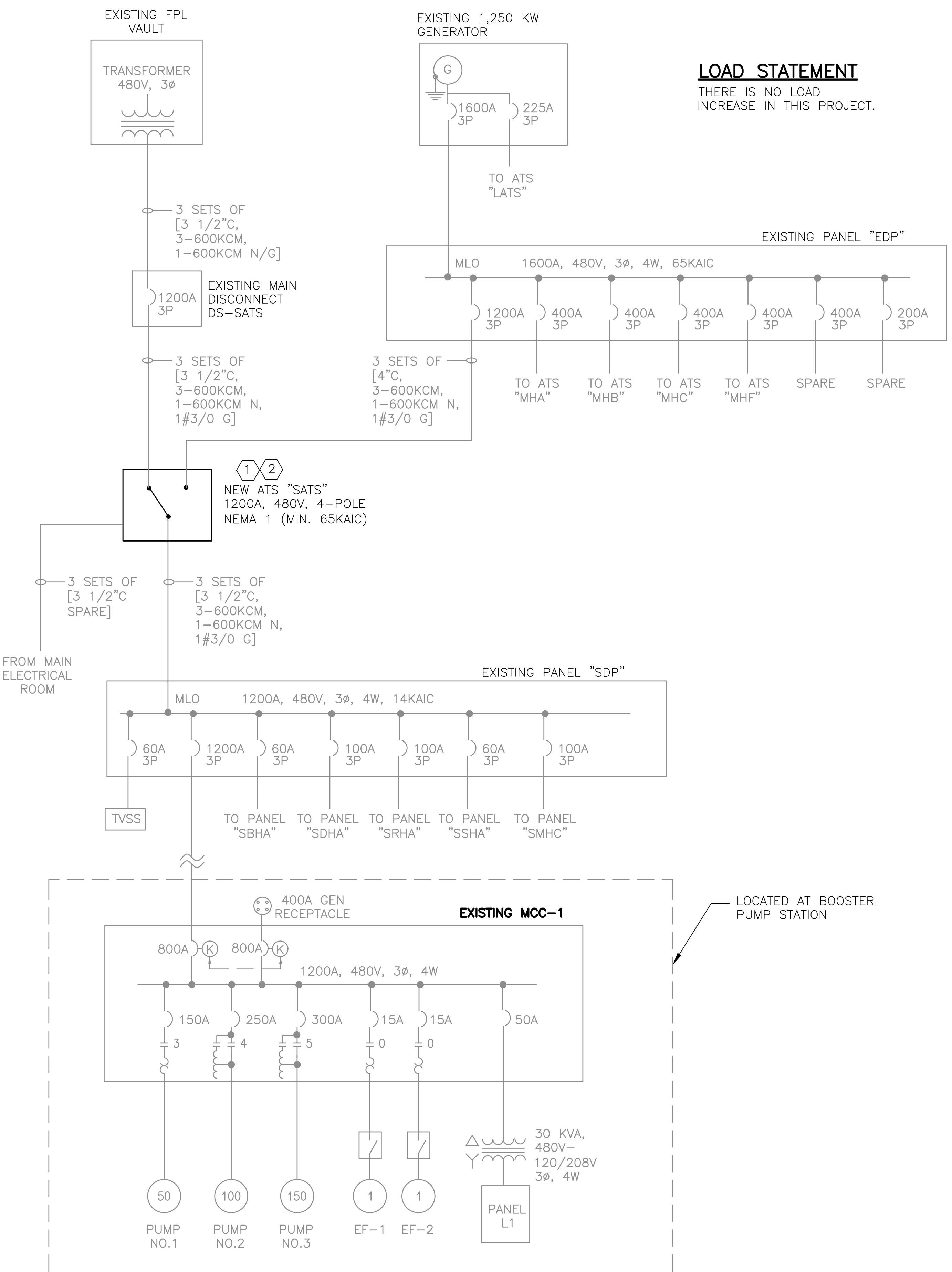
HOLLY LAKES AND ACADEMIC VILLAGE ATS
REPLACEMENT
13955 PEMBROKE ROAD, PEMBROKE PINES, FLORIDA 33029

ACADEMIC VILLAGE MAIN ELECTRICAL
ROOM PLAN - MODIFIED

THEIN WIN, P.E.
STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No.65722
DATE: DEC 2022
BID SET

SCALE
NONE
PROJECT No
PP20
SHEET
E-203

DRAFT DOCUMENT FOR COMMISSION REVIEW

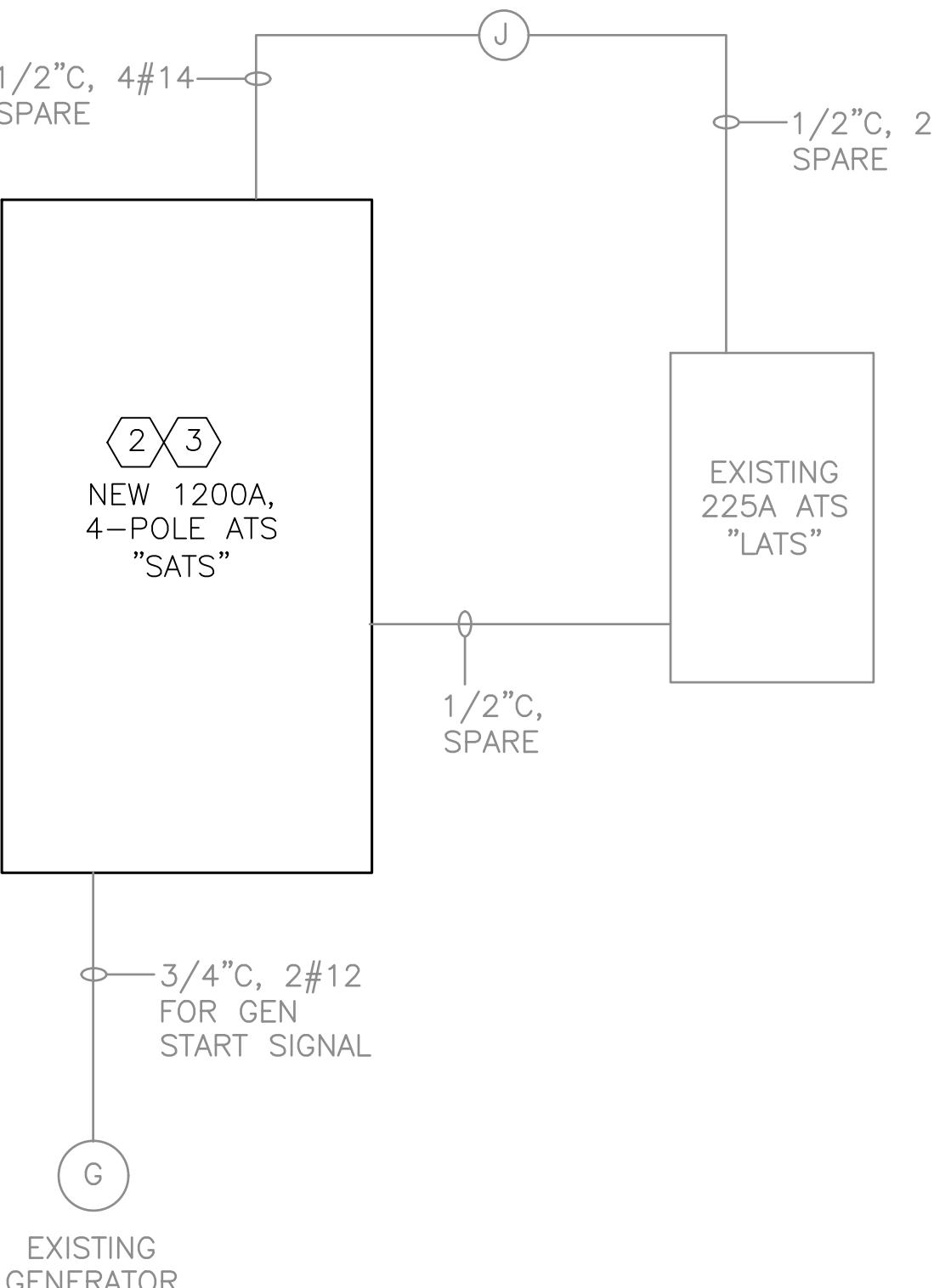


ACADEMIC VILLAGE ONE LINE – PROPOSED

NOT TO SCALE

LOAD STATEMENT

THERE IS NO LOAD INCREASE IN THIS PROJECT.



ACADEMIC VILLAGE RISER – PROPOSED

NOT TO SCALE

KEYED NOTES:

- ① CONTRACTOR SHALL PERFORM A MEGGER TEST ON THE EXISTING NORMAL POWER AND EMERGENCY POWER CABLES AND THE LOAD SIDE CABLES AFTER THE NEW ATS INSTALLATION. REPORT THE TEST RESULTS TO THE ENGINEER AND OWNER. REPLACE ANY DAMAGED CABLE(S) DURING ATS INSTALLATION WITH NO ADDITIONAL COST TO THE OWNER.
- ② CONTRACTOR SHALL MODIFY AND EXTEND THE EXISTING POWER AND CONTROL CONDUITS AS REQUIRED TO MAKE CONNECTION WITH THE NEW ATS.
- ③ CONTRACTOR SHALL FIELD VERIFY AND LABEL ALL EXISTING SIGNALS WIRES BEFORE REMOVAL OF THE ATS. CONTRACTOR SHALL RECONNECT CONTROL WIRES TO ATS, GENERATOR AND PLC SIMILAR TO THE EXISTING CONNECTION AFTER INSTALLATION OF NEW ATS.

NOTES FOR ALL E-200 SERIES:

1. ATS REPLACEMENT SHALL NOT BE PERFORMED DURING SCHOOL HOURS. IT SHALL BE PERFORMED OUTSIDE THE SCHOOL HOURS OR WEEKENDS. COORDINATE WITH THE OWNER AND GET APPROVAL BEFORE PERFORMING THE REPLACEMENT.
2. ACADEMIC VILLAGE BOOSTER PUMP STATION SHALL BE IN OPERATION AT ALL TIME. PROVIDE A TEMPORARY SOUND ATTENUATED GENERATOR, CABLES, FUEL AND MAKE NECESSARY CONNECTION AT MCC-1 LOCATED AT BOOSTER PUMP STATION FOR A COMPLETE WORKING SYSTEM. MINIMUM 300KW GENERATOR SHALL BE PROVIDED. SUPPLY FUEL TO THE TEMPORARY GENERATOR DURING ATS REPLACEMENT. FOR BIDDING PURPOSE, INCLUDE A MINIMUM OF TWO DAYS TEMPORARY GENERATOR SERVICE WITH THE BID PRICE.
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4. NEW ATS DESIGN IS BASED ON ASCO FLOOR MOUNTED ATS (DIM. 38" W x 87" H x 23" D). IF OTHER APPROVED ATS WITH DIFFERENT ENCLOSURE DIMENSION IS USED, CONTRACTOR SHALL PROVIDE NECESSARY NEMA 1 WIREWAY TO CONNECT WITH THE EXISTING CONDUITS AND NEW ATS. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY ADJUSTMENTS, MODIFICATIONS, ETC. FOR A COMPLETE WORKING SYSTEM IN PLACE, WITHOUT ADDITIONAL COST TO THE OWNER.