

**CEDAR KEY WATER AND SEWER DISTRICT
INVITATION TO BID NO: 2024-02
SANITARY SEWER LIFT STATION REHABILITATION**

**BID ADVERTISE DATE: March 27, 2024
BID RELEASE DATE: March 27, 2024
RESPONSE DUE DATE AND TIME: April 30, 2024 @ 3:00 PM EST**

MAIL OR DELIVER RESPONSE TO:
(hand-delivery or express mail services)
Cedar Key Water and Sewer District
ATTN: ITB 2024-02
SANITARY SEWER LIFT STATION REHABILITATION
510 3rd Street
Cedar Key, Florida 32625

Contact:
Alicia M. Johns
Cedar Key Water and Sewer District
510 3rd Street
Cedar Key, Florida 32625
Website: www.ckwater.org
Phone Questions: (352)543-5285
Email Questions: alicia@ckwater.org

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ITB 2024-02
INSTRUCTIONS TO BIDDERS

Bidders interested in the Work are instructed to submit one (1) original hard copy and one (1) electronic copy (non-returnable USB flash drive) of its complete Bid in accordance with this ITB, no later than April 30, 2024 @ **3:00 P.M., Eastern Time** (unless otherwise changed through an addendum to this ITB), to Alicia M. Johns, Cedar Key Water and Sewer District, 510 3rd Street, Cedar Key, Florida 32625. Proposals received after this date and time will not be considered and shall be returned unopened.

All Bids and all attachments must be bound and delivered **SEALED** to the District at the address shown below no later than the time and date set for receipt of Bids. Deliver OR mail the Bid in a **sealed** envelope/package to:

Cedar Key Water and Sewer District
ATTN: ITB 2024-02
SANITARY SEWER LIFT STATION REHABILITATION
510 3rd Street
Cedar Key, Florida 32625

1. Include name and address of Bidder on each sealed envelope/package.
2. If Bid is contained in multiple packages, number each sealed package sequentially, i.e., “1 of 3”, “2 of 3”, “3 of 3”.

Bidders shall construct their Bid in the following format. Required forms can also be provided in Microsoft Word format, upon request. Please contact Alicia M. Johns: (352) 543-5285 or email alicia@ckwater.org.

PROPOSAL TRANSMITTAL AND BID FORM (Appendix B)

All signatures must be by an individual with authority to legally bind the Bidder, witnessed, and corporate and/or notary seal (as applicable.) If the individual signing the Proposal Transmittal Form does not have apparent authority to legally bind the Bidder, attach documentation demonstrating such authority. The corporate or mailing address must match the company information as it is listed on the Florida Department of State Division of Corporations. Attach a copy of the webpage(s) from <http://www.sunbiz.org> as certification of this required information. Verify that all addenda and tax identification number have been provided.

All blanks on the Bid Form shall be completed in ink or electronically. A Bid price shall be indicated for each Bid item, and unit price item listed therein, or the words “No Bid,” “No Change,” or “Not Applicable” entered. In the event of multiplication/addition error(s), the unit price shall prevail. Prices written in words shall prevail over figures where applicable. All bids will be reviewed mathematically and corrected, if necessary, using these standards, prior to further evaluation. An Excel version of the Bid Table within the Bid Form is available by contacting Alicia M. Johns at: (352) 543-5285 or email alicia@ckwater.org.

BID BOND (Appendix C)

All Bids shall be accompanied by Bid Bond made payable to District in the amount of 5% of Bidder's maximum Bid price and in the form of a certified check, cashier's check, or a Bid Bond, utilizing the Form contained in Appendix C hereto.

BIDDER QUALIFICATION QUESTIONNAIRE (Appendix D)

All Bids shall be a completed Bidder Qualification Questionnaire contained in Appendix D hereto.

REQUIRED FORMS, DOCUMENTS, AND CERTIFICATIONS (Appendix E)

All Bidders shall complete and submit the forms, documents, and certifications attached as Appendix E1 – E11 with their Bids.

ITB 2024-02
INTENT AND GENERAL INFORMATION

The Cedar Key Water and Sewer District (the “District”), through this Invitation to Bid No. **2024-02**, is soliciting bids from qualified businesses registered to do business in the State of Florida to provide lift station rehabilitation construction services of five of the District’s sanitary sewer lift stations (the “Work” or the “Project”). The Project includes the demolition of the existing lift station mechanical & electrical components, the installation of new pumps, new discharge piping, valves, and fittings, lining the interior of the existing wet well structure, a new wet well lid and concrete pad, and electrical modifications to make the lift station a complete and operable system. The scope of work is more thoroughly described in the Technical Specifications and Construction Plans attached hereto as Appendix G and H.

It is the intent of this ITB to enter into a Contract with the successful Bidder to begin upon approval of the District and the issuance of a Notice to Proceed (NTP), for the Work.

Firms interested in preparing a bid for this ITB must complete the requirements set forth in this ITB, its attached documents and documents incorporated by reference (collectively referred to as the “ITB”). Under the bid process of the District, the conditions set forth herein are binding on the Bidder as confirmed by the signature of a person with legal authority to bind the Bidder on the cover letter transmitting its Bid to the District in response to this ITB.

If this ITB is amended, the District will issue an appropriate addendum to the ITB. Any addendums will be posted on the District’s Website. If an addendum is issued, all terms and conditions of this ITB that are not specifically modified in the addendum shall remain unchanged. An addendum to this ITB will be issued if any of the date and/or time change, unless the date(s) fall after the date the ITB Bid(s) are due. Specific dates/time will be determined at each phase.

It is understood and the Bidder hereby agrees to be solely responsible for obtaining all materials and determining the best methods that will be utilized to meet the intent of the specifications of this ITB. Failure by the Bidder to acquaint themselves with the available information will not relieve them from responsibility for estimating properly the difficulty or cost of successfully performing the work. Bidders are expected to examine the specifications and all instructions pertaining to the required commodities/services. Failure to do so will be at Bidder’s risk.

The District reserves the right to reject any Bid found to be non-responsive, vague, or non-conforming. The District also reserves the right at any time to withdraw all or part of this ITB in order to protect its best interests. The District is not liable for any costs incurred by the Bidder in preparing its response, nor is a response an offer to contract with any Bidder. Pursuant to Chapter 119, Florida Statutes (FS), all responses are subject to Florida’s public records laws.

While every effort is made to ensure the accuracy and completeness of information in the ITB, it is recognized that the information may not be complete in every detail and that all work may not be expressly mentioned in the ITB. It is the responsibility of the Bidder to include in its Proposal all pertinent information in accordance with the objectives of the ITB.

The ITB and any addenda issued are available on the District’s website at <http://www.ckwater.org> or by contacting Alicia M. Johns at (352)543-5285. All questions pertaining to this ITB should be submitted in writing in accordance with the ITB instructions set forth above.

ADA –Special Accommodations: Any person requiring accommodations by the District due to a disability should call Alicia M. Johns at (352)543-5285 at least five (5) working days prior to any pre-response Conference, response opening, or meeting. If you are hearing or speech impaired, please contact Alicia M. Johns via the Florida Relay Service, which can be reached at 1-800-955-8771 (TDD).

SECTION 1.0 SCHEDULE OF EVENTS

Failure to comply with this or any other paragraph of this ITB shall be sufficient reason for rejection of the bid.

All times listed in the Schedule of Events are Eastern Standard Time (EST).

<i>Event</i>	<i>Date/Time</i>
Bid Advertisement Date/Release of ITB	March 27, 2024
Optional Pre-Bid Meeting	April 10, 2024 @3:00 PM EST
Bid Questions Due from Prospective Bidder	April 17, 2024
Responses to bid questions due	April 22, 2024
BIDS DUE TO DISTRICT	April 30, 2024 @3:00 PM EST
Posting of Intended Award	May 2024
Board Consideration of Intended Award	May 2024
Posting of Notice of Award	May 2024
District and Successful Bidder Enter Into Contract	May 2024

SECTION 2.0 BID QUESTIONS; PRE-BID MEETING

2.1 All inquiries and questions concerning this ITB, must be in writing (e-mail is acceptable), received in accordance with Section 1.0 Schedule of Events, and must be directed to: Alicia M. Johns at alicia@ckwater.org or mailed to Cedar Key Water and Sewer District, 510 3rd Street, Cedar Key, Florida 32625.

Questions and responses will be posted on the District’s Website and, if necessary, an Addendum or Addenda will be issued.

2.2 An **optional** pre-bid meeting will be held at the District Office, 510 3rd Street, Cedar Key, Florida 32625 at 3:00 PM EST on April 10, 2024. Representatives of the District and the Engineer will be present to discuss the Project. The District will prepare such Addenda as it considers necessary in response to questions raised at the pre-bid meeting. Oral statements may not be relied upon and will not be binding or legally effective.

SECTION 3.0 SCOPE OF WORK

- 3.1 All prospective Bidders shall carefully study and review the Technical Specifications for the Project attached hereto as Appendix G hereto, and the Construction Plans attached as Appendix H hereto.
- 3.2 Time is of the essence in the performance of the Work under this Agreement. The Work shall be substantially completed within 235 calendar days from the Commencement Date. The date of substantial completion of the Work (or designated portions thereof) is the date certified by the Design Professional when construction is sufficiently complete, in accordance with the Contract Documents, so the District can occupy or utilize the Work (or designated portions thereof) for the use for which it is intended. The Work shall be fully completed and ready for final acceptance by the District within 265 calendar days from the Commencement Date. Additional provisions governing the contract time are described in the from Contract attached hereto as Appendix F, along with provisions for liquidated damages in the event the above-described timeframes for substantial and final completion are not met.
- 3.3 The use of subcontractors is permitted (subject to the requirements and limitations described in the Contract Documents), provided that the Successful Bidder shall self-perform a minimum of 50% of the Work.

SECTION 4.0 RECEIPT AND OPENING OF THE BID

- 4.1 The District will record the date and time of the receipt of all bids at the District's office located at 510 3rd Street, Cedar Key, Florida 32625. The responsibility for submitting the Bid to the District's Office no later than the specified time and date is solely that of the Bidder. The District will in no way be responsible for delays in mail delivery or delays caused for any other occurrence.

MAIL OR DELIVER BIDS TO:
(hand-delivery or express mail services)

Cedar Key Water and Sewer District
ATTN: ITB 2024-02
SANITARY SEWER LIFT STATION REHABILITATION
510 3rd Street
Cedar Key, Florida 32625

- 4.2 Submission of Bids by fax or other electronic means will not be accepted. Late Bids will not be accepted, i.e., any Bid submitted/received after **3:00 P.M. on April 30, 2024**, unless otherwise changed through the issuance of an addendum to this ITB.
- 4.3 Any bids received after the stated time and date will not be considered. Late bids shall not be opened at the public opening. Arrangements may be made for the unopened bid to be returned at the Bidder's request and expense.

- 4.4 A Bid may be withdrawn or modified only by written notification from the Bidder prior to the time fixed for the opening of Bids. Negligence on the part of the Bidder in preparing the Bid confers no right for withdrawal of the Bid after it has been opened.
- 4.5 All timely bids will be opened on the date and time indicated in Section 1.0, Schedule of Events (i.e. date Bids are due) or as modified by addendum.

SECTION 5.0 CONE OF SILENCE

- 5.1 A Cone of Silence will be in effect for this ITB beginning with the advertisement date of **March 27, 2024** and will terminate upon issuance of Notice of Award. A violation of the “Cone of Silence” renders any award voidable at the sole discretion of the General Manager with approval from the District and may subject the potential Bidder or representative to debarment.
- 5.2 A prospective Bidder shall not have any communication with any of the Board of Commissioners nor candidates for same, nor any employees from the District, nor the Engineer concerning this project. Contractor/Bidder or representative who intend to submit qualifications, or have submitted qualifications, for this project are hereby placed on formal notice that they are not to contact District personnel for such purposes as holding meetings of introduction, meals, or meetings relating to the selection process outside of those specifically scheduled by the District. Any such lobbying activities may cause immediate disqualification for this project.
- 5.3 All requests for interpretations or clarifications shall be in writing, addressed to the contact person as shown in Section 2.0, Bid Questions. All such requests for interpretations or clarifications must be received in writing in accordance with Section 1.0, Schedule of Events. Any and all such interpretations and supplemental instructions shall be in the form of a written addendum which, if issued, shall be posted on the District’s website on the date indicated in Section 1.0, Schedule of Events. Such written addenda shall be binding on the Bidder and shall become a part of the ITB Document(s).
- 5.4 The Cone of Silence shall not apply to:
- a. Communications at the pre-bid meeting.
 - b. Communications during contract negotiations between designated District employees and the intended Vendor.
 - c. Communication with a Vendor by a District employee following Competitive Procurement opening to clarify the Vendor's Response.
 - d. Communication following the filing of a challenge to a Competitive Procurement between the protesting Vendor or the selected Vendor and the General Manager’s Office, and District’s Attorney concerning the challenge.

SECTION 6.0 BID RESPONSE REQUIREMENTS

- 6.1 The use of the terms “shall,” “must,” or “will” (except to indicate simple futurity) in this ITB indicates a mandatory requirement or condition. The words “should” or “may” in this ITB indicate desirable attributes or conditions, but are permissive in nature.

Deviation from, or omission of, such a desirable feature will not by itself cause rejection of a Bid.

6.2 A complete Bid shall include all of the forms, documents, and certifications set forth in Appendix A hereto. This includes:

- a. Bid Form (Appendix B)
- b. Bid Bond (Appendix C)
- c. Bidder Qualifications Statement (Appendix D)
- d. All Required Forms and Certifications included in Appendix E

6.3 **All Bids shall be accompanied by Bid Bond made payable to District in the amount of 5% of Bidder's maximum Bid price and in the form of a certified check, cashier's check, or a Bid Bond (collectively herein referred to as "Bid Bond").**

- a. A Bid Bond shall be on a separate form included in the ITB (Appendix C). The Bid Bond shall be issued by a surety company that meets the requirements of Section 287.0935, Florida Statutes
- b. The Bid Bond of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security, and complied with the other conditions of the Notice of Award, whereupon the Bid Bond will be returned. If the Successful Bidder fails to sign and deliver the Contract Documents and furnish the required contract security within 10 days after the Notice of Award, the District may annul the Notice of Award and the Bid Bond of that Bidder will be forfeited to the District as liquidated damages for such failure.
- c. The Bid Bond of any Bidder whom the District believes to have a reasonable chance of receiving the award may be retained by the District until the earlier of the seventh day after the Effective Date of the Agreement or the sixty-first (61st) day after the Bid opening whereupon the Bid Bond furnished by such Bidders will be returned. The Bid Bond of Bidders whom the District believes do not have a reasonable chance of receiving an award will be returned within ten (10) working days of the Bid opening.

6.2 Bids not meeting all material requirements of this request or which fail to provide all required information, documents, or materials such as required forms, bonds, etc., will be rejected as non-responsive. Material requirements of the bid are those set forth as mandatory, or without which an adequate analysis and comparison of replies is impossible, or those which affect the competitiveness of replies or the cost to the District.

6.3 The District reserves the right to determine which Bids meet the material requirements of the ITB and which Bids are responsible and/or responsive. Further, the Board of Commissioners may reject any and all Bids and seek new Bids when it is in the best interest of the District to do so.

- 6.4 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be provided on the Bid Form, for a Bid by a/an:
- a. Partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be provided on the Bid Form.
 - b. Limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
 - c. Individual shall show the Bidder's name and business address.
 - d. Bid by a joint venture shall be executed by each joint venture member in the manner indicated on the Bid form. The official address of the joint venture must be provided on the Bid Form.
- 6.5 All names shall be printed in ink below the signatures.
- 6.6 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers and dates of which shall be filled in on the Bid form.
- 6.7 The postal and email addresses and telephone number for communication regarding the Bid shall be shown.
- 6.8 A Bidder seeking to do business with the District shall, at the time of submitting a Bid, be appropriately registered with the Department of State in accordance with the provisions of Chapters 605, 607, 617, or 620 Florida Statutes, as applicable. For further information on required filing and forms, please go to the following sites: <http://sunbiz.org/index.html> or <https://www.dos.myflorida.com/>.
- The Bid shall contain evidence of Bidder's authority and qualification to do business in the state or locality where the Project is located or Bidder shall covenant in writing to obtain such qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Proposal Transmittal Form (Bid Form 1).
- 6.9 The Bid should address the requirements in a clear and concise manner in the order stated herein.
- 6.10 Bids must include the information/documents specified in the Bid Proposal Forms. Bids that do not adhere to the format or include the requested information/documents may be considered incomplete and therefore unresponsive by the District.

- 6.11 The District reserves the right to seek additional/supplemental representation on specific issues as needed.
- 6.12 Bids should be typed or clearly written. No changes in or corrections to Bids will be allowed after the Bids are opened.
- 6.13 The signer of the Bid must declare that the Bid in all respects fair and in good faith without collusion or fraud and that the signer of the Bid has the authority to bind the principal Bidder.
- 6.14 The District shall not be liable for any costs incurred by Bidder prior to entering into a contract. Therefore, all Bidders are encouraged to provide a simple, straightforward, and concise description of their ability to meet the ITB requirements.

SECTION 7.0 EVALUATION OF BIDS AND AWARD PROCESS

- 7.1 Bidders who satisfy the required qualifications and are deemed responsible Bidders and who timely submit a responsive Bid will be considered by the District. A Bidder whose Bid, past performance, or current status that does not reflect the capability, integrity or reliability to perform fully and in good faith the requirements of the Contract may be rejected as non-responsible. Bids received from prospective Bidders who have been suspended or debarred will not be accepted or considered.
- 7.2 The District may consider the following factors in addition to price when determining whether a Bidder is responsive and responsible:
 - a. Ability, capacity and skill of the Bidder to perform the contract.
 - b. Whether the Bidder can perform the contract within the time specified, without delay, interference, or conflict with current workload.
 - c. Character, integrity, reputation, judgment, experience and efficiency of the Bidder.
 - d. Quality of performance of previous contracts.
 - e. Previous and existing compliance by the vendor with laws and regulations relating to the contract.
 - f. Sufficiency of the financial resources and ability of the vendor to perform the contract or provide the Work.
 - g. Quality, availability and adaptability of the supplies or contractual services to the particular use required.
 - h. Ability of the Bidder to provide further maintenance and service for the use of the subject of the contract, if applicable.
 - i. Number and scope of conditions attached to the bid or quote.
 - j. Qualifications of personnel, licensing and corporate qualifications.
 - k. Evidence of improper litigation.
 - l. Use of one or more subcontractors with a record of poor performance.

For the purposes of this section, the District may consider evidence from the ten-year period preceding the subject bid.

- 7.3 The District intends to issue a notice of intended award to the lowest price responsive and responsible bidder (subject to the District's right to reject all bids). No award shall be final until considered and approved by the Board.
- 7.4 In the event the lowest, responsive, responsible bid for a construction project exceeds the architectural or engineering cost estimates, the General Manager or designee is authorized, when time or economic considerations preclude rebidding of work of a reduced scope, to negotiate an adjustment of the scope of work with the lowest, responsive, responsible bidder, in order to bring the bid within the amount of available funds. After award of this Bid the District reserves the right to add or delete items/services at prices to be negotiated at the time of addition or deletion. At Contract renewal time(s) or in the event of significant industry wide market changes, the District may negotiate justified adjustments such as price, terms, etc., if in its sole judgment, the District considers such adjustments to be in its best interest.
- 7.5 The District reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. The District further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. The District also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 7.6 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 7.7 In evaluating Bids, the District will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 7.8 The District may conduct such investigations as the District deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents. Any Bidder or sub-contractor that will have access to District facilities or property may be required to be screened to a level that may include but is not limited to fingerprinting and a statewide criminal background check. There may be fees associated with these procedures. These costs are the responsibility of the Bidder or sub-contractor.
- 7.9 If the Contract is to be awarded, the District will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instructions to Bidders, is lowest, price and other factors considered. If detailed in the

bid form, factors such as discounts, transportation costs, and life cycle costs may be used to determine which bidder, if any, is to offer the award.

- 7.10 Responses to this ITB not meeting the requirements specified herein will be considered non-responsive or not responsible, as applicable. In the best interest of the District, the District reserves the right to reject any and all responses or waive any minor irregularity or technicality in responses received. Bidders are cautioned to make no assumptions unless their response has been deemed responsive.
- 7.11 Whenever two or more Bids, which are equal with respect to price, quality and service, are received for procurement of commodities or contractual services, from responsive and responsible Bidders the following steps will be taken to establish the award to the lowest Bidder. This method shall be used for all ties.

Step 1 - Local Business:

Between a Local Business and a Non-Local Business, a Contract award, or the first opportunity to negotiate, as applicable, shall be made to the Local Business.

Step 2 Drug Free Workplace:

At the conclusion of step 1 if all is equal, the Bidder with a Drug Free Workplace program shall be given preference, over a Bidder with no Drug Free Workplace program. The Contract award, or the first opportunity to negotiate, as applicable, shall be made to the Bidder with the Drug Free Workplace program. In order to have a drug free workplace program, a business shall comply with the requirements of § 287.087, F.S.

Step 3 Coin Flip:

At the conclusion of Step 1, and Step 2 if all is equal, the Contract award, or the first opportunity to negotiate, as applicable, shall be determined by the flip of a coin to determine final outcome.

- 7.12 When the tie has been broken pursuant to the above procedures, the Contract award, or the first opportunity to negotiate, as applicable, shall be made.
- 7.13 If an award or negotiation is unsuccessful with the initial Bidder, award or negotiations may commence with the next highest Bidder, utilizing the tiebreaker steps above to make the determination of next lowest Bidder if necessary.
- 7.14 When the District gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Contract with the other Contract Documents which are identified in the Contract as attached thereto. Within ten (10) days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Contract and attached documents to the District. The District shall deliver one fully signed counterpart to Successful Bidder.

SECTION 8.0 INTENT TO AWARD AND CONTRACT EXECUTION

- 8.1 The District reserves the right to incorporate the successful Bid into the Contract. Failure of a Bidder to accept this obligation may result in the cancellation of the award. The Contract document and its exhibits are included as Appendix F, which is attached hereto and incorporated herein by reference.
- 8.2 The construction, interpretation, and performance of this ITB, and all transactions under it shall be governed by the laws of the State of Florida and the District. The Contract shall include all terms and conditions of this ITB, any addenda, response, and the District's contract issued as a result of this ITB.
- 8.3 The District reserves the right to make award(s) by individual item, group of items, all or none, or a combination thereof. **The District reserves the right to reject any and all bids or to waive any minor irregularity or technicality in the bids received.** Award will be made to the lowest responsible and responsive Bidder(s) within the category chosen for basis of award. The District reserves the right to award to one or multiple Bidders at its discretion.
- 8.4 The Successful Bidder will be required to assume responsibility for all services offered in the Bid. The District will consider the Successful Bidder to be the sole point of contact with regard to contractual matters, including payment on any or all charges.
- 8.5 After successful posting of the award for 72 hours, the Successful Bidder will be required to enter into the Contract with the District within the timeframes described in Section 7.14.

SECTION 9.0 STANDARD TERMS AND CONDITIONS (STAC)

- 9.1 Definitions
- 9.2 Florida Public Records Law and Confidentiality
- 9.3 Procurement Challenges
- 9.4 Construction and Venue
- 9.5 Contract
- 9.6 Insurance Requirements and Bond Requirements

9.1 Definitions

The following definitions shall apply to this ITB. Additionally, terms defined in the Contract shall have the same meaning herein.

Award means the determination of a successful Bidder(s) in response to this ITB, resulting in an offer of a Contract to perform the services pursuant to the ITB and their bid.

Bid a proposal submitted in response to this ITB.

Bid Bond means an insurance agreement in which a third party agrees to be liable to pay a certain amount of money in the event that a selected vendor fails to accept the contract as bid. If required, a bid bond/deposit shall be for 5% of the amount of the bid.

Bidder means any firm, individual or organization submitting a Bid in response to this ITB.

Cone of Silence is the prohibition of any communication between a Vendor and a District officer, employee, or agent regarding a pending Competitive Procurement, except for such communications at a duly noticed Pre-Proposal Conference or oral presentation, or with the District's designated representative noted in the Competitive Procurement documents.

Contract or Agreement means the legally enforceable document agreed to and signed by the District and successful Bidder(s) (collectively referred to as the “Parties”). A draft Contract is attached hereto as Appendix F and incorporated herein.

District means the Cedar Key Water and Sewer District (the “District”) and its employees.

Engineer means the consultant engineering firm utilized by the District for engineering design work, including preparation of the drawings and specifications, for this project.

ITB means this document, its attachments and any document hereinafter incorporated by reference.

Local Business means a business that has a current business tax receipt issued by Levy County, if required, and has its principal office located within Levy County currently and for the six (6) month period immediately preceding submission of a response to a Competitive Procurement.

Notice to Proceed (NTP) Authorization/letter that will inform the Contractor of the date that Contractor can start work. NTP start date will be calculated Fifteen (15) calendar days from the date of the Notice to Award.

Successful Bidder means a Bidder who is Awarded a Contract as result of the Bid submitted in response to this ITB.

Payment Bond means a bond which assures that the subcontractors, laborers, and material suppliers will receive payment for the services and products used to fulfill the contract and is due Fifteen (15) days after execution of Contract by the Board of Commissioners for the Cedar Key Water and Sewer District.

Performance Bond means a bond to assure satisfactory performance of the terms of the contract and is due Fifteen (15) days after execution of Contract by the Board of Commissioners for the Cedar Key Water and Sewer District.

Work or Project means the scope of work and/or services.

9.2 Florida Public Records Law and Confidentiality

9.2.1. By submitting a Bid in response to this ITB, a Bidder acknowledges that the District is a governmental entity subject to the Florida Public Records Law (Chapter 119, Florida Statutes). The Bidder further acknowledges that any materials or documents provided to the District may be “public records” and, as such, may be subject to disclosure to, and copying by, the public unless otherwise specifically exempt by Law.

9.2.2. Should the Bidder provide the District with any materials which it believes, in good faith, contain information that would be exempt from disclosure or copying under Florida Law;

the Bidder shall indicate that belief by typing or printing, in bold letters, the phrase “PROPRIETARY INFORMATION” on the face of each affected page of such materials. The Bidder shall submit to the District both a complete copy of such material and a redacted copy in which the exempt information on each affected page, and only such exempt information, has been rendered unreadable. In the event a Bidder fails to submit both copies of such material, the copy submitted will be deemed a public record subject to disclosure and copying regardless of any annotations to the contrary on the face of such document or any page(s) thereof.

- 9.2.3 Should any person request to examine or copy any material so designated and provided the affected Bidder has otherwise fully complied with this provision, the District, in reliance on the representations of the Bidder, will produce for that person only the redacted version of the affected materials. If the person requests to examine or copy the complete version of the affected material, the District shall notify the Bidder of that request, and the Bidder shall reply to such notification, in writing that must be received by the District no later than 4:00 p.m., EST, of the District business day following Bidder’s receipt of such notification, either permitting or refusing to permit such disclosure or copying.
- 9.2.4 Failure to provide a timely written reply shall be deemed consent to disclosure and copying of the complete copy of such material. If the Bidder refuses to permit disclosure or copying, the Bidder agrees to, and shall, hold harmless and indemnify the District for all expenses, costs, damages, and penalties of any kind whatsoever which may be incurred by the District, or assessed or awarded against the District, in regard to the District’s refusal to permit disclosure or copying of such material. If litigation is filed in relation to such request and the Bidder is not initially named as a party, the Bidder shall promptly seek to intervene as a defendant in such litigation to defend its claim regarding the confidentiality of such material. This provision shall take precedence over any provisions or conditions of any Bid submitted by a Bidder in response to this ITB and shall constitute the District’s sole obligation with regard to maintaining confidentiality of any document, material, or information submitted to the District.

9.3 Procurement Challenges

Any Bidder who desires to formally protest may do so on the grounds of material irregularities in the bid procedure, or material irregularities in the evaluation of the bid. Such notice of intent of bid challenge shall be made in writing and delivered to the District within 72 hours after posting of the intended recommendation of award. A formal written bid challenge shall be filed within 5 working days in the General Manager’s Office after the date on which the notice of intent of bid challenge has been submitted. Failure to file a timely notice of intent of bid challenge or failure to file a timely formal written bid challenge shall constitute a waiver of bid challenge proceedings. Bidders who do not submit a legitimate bid do not have standing to file a protest. Furthermore, bidders who would not be awarded the subject contract even if the protest were successful lack standing.

The notice of intent of bid challenge shall contain at a minimum: the name of the bidder, the bidder’s address, fax number, and phone number, the name of the bidder’s representative to whom notices may be sent, the name and bid number of the solicitation, and a brief factual summary of the basis of the intended challenge.

The formal written bid challenge shall: identify the challenger and the solicitation involved, include a clear statement of the grounds on which the challenge is based, refer to the statutes, laws, ordinances, or other legal authorities to which the challenger deems itself entitled by application of such authorities to such grounds. The challenger shall mail a copy of the notice of challenge and the formal written challenge to the apparent best bidder. The General Manager shall, within ten (10) working days of receipt of the formal written challenge, cause the challenge to be investigated. In the event the challenge is not resolved, the Board shall, within a reasonable time, be presented with the written challenge and the General Manager's decision to the challenge prior to award of the bid. The procurement, which is the subject of the protest, shall not proceed until a final decision has been made, unless the Board makes a determination that the contract must proceed without delay to protect substantial interest of the District.

Nothing herein relinquishes the District's rights to waive irregularities and formalities in accordance with its bid package and instructions. Further, nothing herein shall create any rights in the unsuccessful bidder. All decision of the Board shall be final.

9.4 Construction and Venue

The validity, construction, and effect of this ITB and subsequent Contract shall be governed by the Laws of the State of Florida. The provisions of the ITB, Successful Bidder's Bid and subsequent Contract shall be complied with by the Parties, but only to the extent they are consistent with applicable law and the Contract. In the event of an inconsistency, the Order of Precedence shall be followed:

- a. Laws of Florida and Contract
- b. ITB and all of its addendums and attachments
- c. Successful firm's Bid

Venue for all actions arising under the ITB and subsequent Contract shall lie in Jefferson County, Florida, United States.

9.5 Contract

9.5.1 The Successful Bidder will be required to enter into the Contract with the District and will be required to perform the Work in accordance with the Contract terms and conditions. The Draft Contract is attached hereto as Appendix F and incorporated herein by reference.

9.5.2 Any exceptions to the proposed Contract must be noted in Form E-11, Comments on Proposed Contract. The District is under no obligation to modify the proposed Contract to conform to the Successful Bidder's Contract exceptions. Contingent Bids will not be accepted. If acceptance of the Contract Award is contingent on an exception and modification to the Contract, the Bidder must provide this information to the District at the time of submission of bid questions, as outlined in the Schedule of Events in order to obtain a determination from the District regarding the proposed exception. If a Bidder's exception and modification are rejected by the District during the bid question portion of the Bid process and the Bidder later submits a Bid, Bidder shall be deemed to have accepted this Contract provision.

9.6 Insurance Requirements

9.6.1 Insurance Verification Requirements

The insurance required shall be written for not less than the following, or greater if required by law and shall include Employer's liability with limits as prescribed in this contract:

WORKER'S COMPENSATION

State: Statutory

Employer's Liability: \$1,000,000.00

COMPREHENSIVE GENERAL LIABILITY

Bodily Injury: \$1,000,000.00 Each Occurrence

Property Damage: \$1,000,000.00 Each Occurrence

Comprehensive General Liability Insurance shall include:

Contractual Liability, Explosion, Collapse and Underground Coverages and Products and Completed Operations Coverages.

COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily Injury: \$1,000,000.00 Each Occurrence

Property Damage: \$1,000,000.00 Each Occurrence

The insurance requirements described in this Section shall be underwritten by insurers having a Best's Rating of A and Financial Size Category of VIII or higher, or by such other insurers as shall be acceptable to the District in its sole discretion. In addition, a certificate of the issuance of each such insurance policy shall be delivered to the District prior to the commencement of performance of any Work. Such certificate shall contain an agreement by the insurance company issuing the policy that the policy will not be canceled, terminated or modified without thirty (30) days' prior written notice to the District. At least two weeks prior to the expiration of the original policy or any renewal thereof, a new certificate of the renewal of such insurance shall be delivered to the District.

APPENDIX A

**CHECKLIST OF REQUIRED FORMS,
DOCUMENTS, AND CERTIFICATIONS**

**INVITATION TO BID
2024-02
FOR
CEDAR KEY WATER AND SEWER DISTRICT
SANITARY SEWER LIFT STATION REHABILITATION**

APPENDICES

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APPENDIX A: CHECKLIST OF REQUIRED FORMS, DOCUMENTS AND CERTIFICATIONS:

Please submit the items on the following list and any other items required by any section of this ITB. The checklist is provided as a courtesy and may not be inclusive of all items required within this ITB:

- ____ A. Checklist of Required Forms, Documents, Certifications (Appendix A)
- ____ B. Bid Form (Appendix B)
- ____ C. Bid Bond (Appendix C)
- ____ D. Bidder Qualification Statement (Appendix D)
- ____ E. Required Forms and Certifications (Appendix E)
 - ____ 1. Indemnification and Hold Harmless
 - ____ 2. Public Entity Crimes Sworn Statement
 - ____ 3. Equal Employment Opportunity/Affirmative Action Statement
 - ____ 4. Drug Free Workplace Certification
 - ____ 5. Disclosure Statement, Conflicts of Interest Disclosure
 - ____ 6. Non-Collusion Affidavit
 - ____ 7. List of Proposed Subcontractors and Services to be Performed
 - ____ 8. Certification Regarding Debarment, Suspension, and Other Responsibility Matters – Primary Covered Transactions
 - ____ 9. E-Verify Compliance Certification
 - ____ 10. Required Policy Endorsements and Documentation (Insurance Verification)
 - ____ 11. Trench Safety Act
 - ____ 12. Comments on Proposed Contract

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APPENDIX B

**PROPOSAL TRANSMITTAL
AND BID FORM**

APPENDIX B

PROPOSAL TRANSMITTAL AND BID FORM

Cedar Key Water and Sewer District

Sanitary Sewer Lift Station Rehabilitation

Project No. ITB 2024-02

PROPOSAL TRANSMITTAL FORM

The Cedar Key Water and Sewer District (the “District”), reserves the right to accept or reject any and/or all Bids in the best interest of the District.

This Bid in response to ITB 2024-02 Sanitary Sewer Lift Station Rehabilitation is submitted by the below named firm/individual by the undersigned authorized representative.

(Firm Name)

BY _____
(Authorized Representative)

(Printed or Typed Name)

ADDRESS _____

TELEPHONE _____

E-MAIL _____

FEID # _____

LISTING OF ANY CERTIFICATIONS OR LICENSES HELD:

NAME: _____ NUMBER: _____

NAME: _____ NUMBER: _____

To: THE CEDAR KEY WATER AND SEWER DISTRICT (hereinafter called the "District")

The undersigned, as Bidder declares that the only person or parties interested in this Bid as principals are those named herein, that this Bid is made without collusion with any other person, firm or corporation; that he has carefully examined the location of the proposed work, the proposed forms of Agreement and Bonds, and the Contract Drawings and Specifications, including Addenda issued thereto and acknowledges receipt below:

ADDENDA ACKNOWLEDGMENTS: (IF APPLICABLE)

Addendum #1 dated _____ Initials _____ Addendum #2 dated _____ Initials _____
Addendum #3 dated _____ Initials _____ Addendum #4 dated _____ Initials _____

Bidder proposes, and agrees if this Bid is accepted, Bidder will contract with the District in the form of the copy of the Agreement included in these Contract Documents, to provide all necessary machinery, tools, apparatus and other means of construction, including utility and transportation services necessary to do all the Work, and furnish all the materials and equipment specified or referred to in the Contract Documents in the manner and time herein prescribed and according to the requirements of the District as therein set forth, furnish the Contractor's Bonds and Insurance specified in the Contract, and to do all other things required of the Contractor by the Contract Documents.

INSERT SUNBIZ INFORMATION HERE:

BID FORM

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Cedar Key Water and Sewer District
Attn: Alicia M. Johns
510 3rd Street
Cedar Key, FL 32625

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with District in the form included in the ITB to perform all Work as specified or indicated in the ITB for the price(s) and within the times indicated in this Bid and in accordance with the ITB.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the ITB, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of District. Bidder will sign the Contract and will furnish the required contract security, and other required documents within the time periods set forth in the ITB.

2.02 Bidder accepts and acknowledges that District reserves the right to accept or reject any and/or all Bids in the best interest of District.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the ITB, other related data identified in the ITB and the Addendums (if any), receipt of all of which is hereby acknowledged.
- B. Bidder has visited the Project Site and become familiar with and is satisfied as to the general, local, and Project Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Project Site and all drawings of physical conditions relating to existing surface or subsurface structures at or contiguous to the Project Site.

- E. Bidder has considered the information known to Bidder, information commonly known to contractors doing business in the locality of the Project Site, information and observations obtained from visits to the Project Site, the ITB, and the Site-related reports and drawings identified in the ITB with respect to the effect of such information, observations, and documents on
 - 1. the cost, progress and performance of the Work
 - 2. the means, methods, techniques, sequences and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the ITB to be employed by Bidder; and
 - 3. Bidder's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 3.01.E, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required and in accordance with the other terms and conditions of the ITB.
- G. Bidder is aware of the general nature of work (if any) to be performed by District and others at the Project Site that relates to the Work as indicated in the ITB.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the ITB, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The ITB are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

- A. This Bid is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding.

- D. Bidder has not engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract. For the purposes of the Paragraph 4.01.D:
1. “Corrupt practice” means the offering, giving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 2. “Fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of District, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive District of the benefits of free and open competition.
 3. “Collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of District, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 4. “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

Bidder will complete the Work in accordance with the Contract Documents for the price(s) listed by Bidder on the Basis of Bid Table provided below.

A. **LUMP SUM.** Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum item. The lump sum price bid for various items shall be compensation in full for furnishing all materials, labor, equipment, and incidentals with these plans and specification in order to make the system fully functional and operational. All disposal costs shall be included in the bid items.

1. **Bid Item 1.01 – General Conditions:** The **LUMP SUM BID AMOUNT** for all work included under this bid item will be made for mobilization and demobilization of all labor, equipment, materials and appurtenances necessary for construction of the project. Mobilization shall include all those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the initial project site, safety equipment and first aid supplies, and sanitary and other facilities. Also included as part of this bid item is the cost for project performance and payment bonds, insurance, indemnifications, photographs, shop drawings, working drawings, schedules, documents, coordination, and phasing and other miscellaneous items associated with the work. Measurement for this bid item will be lump sum. **The lump sum price for general provisions will be limited to five percent (5%) of the contract amount.** Seventy percent (70%) of the lump sum price will be payable with the first month’s partial payment. The remaining thirty (30%) will be payable with the final partial payment.

2. **Bid Item 1.02 – Stormwater Pollution Prevention Plan:** The **LUMP SUM BID AMOUNT** will be to cover the CONTRACTOR’s cost to comply with the requirements to prepare and submit a Stormwater Pollution Prevention Plan prior to commencement of construction. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
3. **Bid Item 1.03 – Existing Utility Verification:** The **LUMP SUM BID AMOUNT** will be full compensation for the location of all existing utilities as may be required for the construction of this project. The LUMP SUM AMOUNT will be based on acceptable utilities located as required to facilitate the CONTRACTOR’S performance of the work. The amount bid will include, but is not limited to, coordination of “Call-out Locates” of known utilities (i.e. water, sewer, gas, telephone, etc.) as well as “Pot Holeing” or other means of locating by the CONTRACTOR.
4. **Bid Item 1.04 – Lift Station Site - Pipe Pressure Testing:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and testing materials required to pressure test all installed piping as shown and described in the contract documents. All temporary materials or materials not remaining on the ground after the completion of the pressure testing shall remain the property of the Contractor. The LUMP SUM BID AMOUNT will be paid based on the percentages of work completed as approved by the ENGINEER.
5. **Bid Item 1.05 – Lift Station Site – Concrete Slab Testing:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and testing materials required to test all lift station site concrete slabs as shown and described in the contract documents. All temporary materials or materials not remaining on the ground after the completion of the concrete testing shall remain the property of the Contractor. The LUMP SUM BID AMOUNT will be paid based on the percentages of work completed as approved by the ENGINEER.
6. **Bid Item 1.06 – Closeout Documentation:** The **LUMP SUM BID AMOUNT** will be to provide all documentation necessary to close out the project. **The lump sum price for closeout documentation will be a minimum of one-half of one percent (0.5%) of the total contract base bid amount.** The CONTRACTOR may apply for payment upon satisfactory submittal of a clean set of red-line record drawings showing locations of all equipment, pipe lines, valves and fittings installed, submit consent of surety, assurance satisfactory to OWNER that unsettled claims will be settled, proof to OWNER that taxes, fees, and similar obligations of CONTRACTOR have been paid, waiver of lien from every entity (including the CONTRACTOR) that provided services on the project, submittal of final pay request, and a warranty letter stating CONTRACTOR’S obligation for defects and repairs for the duration of the warranty period. The CONTRACTOR may apply for payment on the final pay request.

7. **Bid Item 2.15 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
8. **Bid Item 2.16 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
9. **Bid Item 2.17 – 316 Stainless Steel Float/Cable Holder:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct a float and cable holder. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
10. **Bid Item 2.18 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
11. **Bid Item 2.19 – Lift Station Controls Floats:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
12. **Bid Item 2.25 – Control Panel (NEMA 6P Enclosure):** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall

include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

13. **Bid Item 2.26 – Service Installation:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to construct and install a new main breaker and conduits/wires required to energize the lift station to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
14. **Bid Item 2.27 – Conduits to Wet Well:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to install 2” Sch. 40 PVC conduits below grade to the lift station wet well. The cost shall include all necessary conduits required to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
15. **Bid Item 2.28 – Install Motor Leads & Float Switches:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to pull and terminate motor leads and install float switches. The cost shall include all necessary controls and material to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
16. **Bid Item 2.29 – Startup and Testing:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required for start-up and testing services provided to the OWNER by the MANUFACTURER(S). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
17. **Bid Item 2.30 – Maintenance of Traffic (MOT) Plan:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to implement a MOT Plan that meets FDOT, County, and City requirements. The MOT Plan shall be submitted to the Engineer and Owner for review. The MOT Plan shall be utilized during construction of the lift station rehabilitation and shall remain in place until construction is complete. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
18. **Bid Item 2.31 – Bypass Pumping Plan:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, fuel, and all other items and incidentals required to construct, install, and operate the bypass pumping operation as shown and described in the contract documents. Sewage pump out shall be

discharged to another collection system manhole, lift station, or Vac Truck. It's the responsibility of the Contractor to understand and implement all local, state, and federal regulator rules during the bypass pumping operation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

19. **Bid Item 2.32 – Roadway Restoration:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work, select fill, demolition, saw cutting, milling, earthwork, excavation, paving, backfilling, and compaction as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
20. **Bid Item 2.33 – Site Restoration:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for sitework including but not limited to protection of existing properties, restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, grassing and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
21. **Bid Item 2.34 – Erosion Control:** The LUMP SUM BID AMOUNT will be payment for all labor, materials, and equipment necessary to keep the site from eroding and preventing soil from leaving the site in accordance with the contract documents. The LUMP SUM AMOUNT BID shall be paid based on the percentages of work completed as approved by the ENGINEER.
22. **Bid Item 2.36 – Existing Lift Station Pump, Piping, and Valves Demolition:** The LUMP SUM BID AMOUNT will be payment for all labor, materials, and equipment necessary for clearing, grubbing, digging, hauling away, sand fill, proper disposal of debris and removing existing piping, valves, and fittings in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
23. **Bid Item 2.37 – Existing Concrete Demolition:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station concrete pad as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
24. **Bid Item 2.38 – Existing Electrical Demolition:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station control panel, wiring, conduits, and other existing lift station electrical components as shown and described in the contract documents. The LUMP SUM BID AMOUNT

shall be paid based on the percentages of work completed as approved by the ENGINEER.

25. **Bid Item 2.39 – Remote Telemetry Alert System:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a Remote Telemetry Alert System and conduits/wires required to energize the lift station telemetry to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
26. **Bid Item 3.18 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
27. **Bid Item 3.19 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
28. **Bid Item 3.20 – 316 Stainless Steel Float/Cable Holder:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct a float and cable holder. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
29. **Bid Item 3.21 – 6” 316 Stainless Steel Air Vent:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” 316 Stainless Steel Air Vent for the proposed Lift Station Rehabilitation as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. At a minimum the air vent shall consist of a 6” 316 Stainless Steel Wall Pipe FLG x P.E. and a 2” threadolet.

The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

30. **Bid Item 3.22 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
31. **Bid Item 3.23 – Lift Station Controls Floats:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
32. **Bid Item 3.26 – 2” SCH 80 CPVC Piping and Fittings:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 80 CPVC Piping and Fittings in accordance with the contract documents. Payment shall include, but not be limited to, pipes, fittings, and all other items and incidentals required for construction of the appurtenances as shown in the contract documents. The cost shall include all piping and fittings from the ARVs to the Owner-Purchased Lift Station air vent. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
33. **Bid Item 3.35 – Control Panel (NEMA 6P Enclosure):** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
34. **Bid Item 3.36 – Service Installation:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a new main breaker and conduits/wires required to energize the lift station to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
35. **Bid Item 3.37 – Conduits to Wet Well:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to install 2” Sch. 40 PVC conduits below grade to the lift station wet well. The cost shall include all necessary conduits required to make the lift station a

complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

36. **Bid Item 3.38 – Install Motor Leads & Float Switches:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to pull and terminate motor leads and install float switches. The cost shall include all necessary controls and material to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
37. **Bid Item 3.39 – Startup and Testing:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for start-up and testing services provided to the OWNER by the MANUFACTURER(S). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
38. **Bid Item 3.40 – Maintenance of Traffic (MOT) Plan:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to implement a MOT Plan that meets FDOT, County, and City requirements. The MOT Plan shall be submitted to the Engineer and Owner for review. The MOT Plan shall be utilized during construction of the lift station rehabilitation and shall remain in place until construction is complete. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
39. **Bid Item 3.41 – Bypass Pumping Plan:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, fuel, and all other items and incidentals required to construct, install, and operate the bypass pumping operation as shown and described in the contract documents. Sewage pump out shall be discharged to another collection system manhole, lift station, or Vac Truck. It's the responsibility of the Contractor to understand and implement all local, state, and federal regulator rules during the bypass pumping operation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
40. **Bid Item 3.42 – Site Restoration:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for sitework including but not limited to protection of existing properties, restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, grassing and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
41. **Bid Item 3.43 – Existing Water Meter Relocation:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to relocate the existing water meter and install per the Construction

Documents. The cost shall include all necessary piping, fittings, valves, and other appurtenances to make the water meter a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

42. **Bid Item 3.45 – Erosion Control:** The LUMP SUM BID AMOUNT will be payment for all labor, materials, and equipment necessary to keep the site from eroding and preventing soil from leaving the site in accordance with the contract documents. The LUMP SUM AMOUNT BID shall be paid based on the percentages of work completed as approved by the ENGINEER.
43. **Bid Item 3.47 – Existing Lift Station Pump, Piping, and Valves Demolition:** The LUMP SUM BID AMOUNT will be payment for all labor, materials, and equipment necessary for clearing, grubbing, digging, hauling away, sand fill, proper disposal of debris and removing existing piping, valves, and fittings in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
44. **Bid Item 3.48 – Existing Concrete Demolition:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station concrete pad as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
45. **Bid Item 3.49 – Existing Electrical Demolition:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station control panel, wiring, conduits, and other existing lift station electrical components as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
46. **Bid Item 3.50 – Remote Telemetry Alert System:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to construct and install a Remote Telemetry Alert System and conduits/wires required to energize the lift station telemetry to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
47. **Bid Item 4.19 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The LUMP SUM BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to

support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

48. **Bid Item 4.20 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
49. **Bid Item 4.21 – 316 Stainless Steel Float/Cable Holder:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct a float and cable holder. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
50. **Bid Item 4.22 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
51. **Bid Item 4.23 – Lift Station Controls Floats:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
52. **Bid Item 4.28 – FRP Valve Box w/ Aluminum Access Hatch (H2O Traffic Rated):** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the fiberglass valve box in accordance with the contract documents. Payment shall include, but not be limited to, excavation, shoring, compaction, bedding, grading, reinforcement, and installation of fiberglass valve box, hatches, liner, restoration, and all other items and incidentals required to construct a fully functional fiberglass valve box w/ aluminum access hatch. Payment shall also include all stub-outs, link-seals, restraints, supports required to install and connect the valve box to the lift station piping.. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

53. **Bid Item 4.29 – Control Panel (NEMA 6P Enclosure):** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
54. **Bid Item 4.30 – Service Installation:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a new main breaker and conduits/wires required to energize the lift station to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
55. **Bid Item 4.31 – Conduits to Wet Well:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to install 2” Sch. 40 PVC conduits below grade to the lift station wet well. The cost shall include all necessary conduits required to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
56. **Bid Item 4.32 – Install Motor Leads & Float Switches:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to pull and terminate motor leads and install float switches. The cost shall include all necessary controls and material to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
57. **Bid Item 4.33 – Startup and Testing:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for start-up and testing services provided to the OWNER by the MANUFACTURER(S). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
58. **Bid Item 4.34 – Maintenance of Traffic (MOT) Plan:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to implement a MOT Plan that meets FDOT, County, and City requirements. The MOT Plan shall be submitted to the Engineer and Owner for review. The MOT Plan shall be utilized during construction of the lift station rehabilitation and shall remain in place until construction is complete. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

59. **Bid Item 4.35 – Bypass Pumping Plan:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, fuel, and all other items and incidentals required to construct, install, and operate the bypass pumping operation as shown and described in the contract documents. Sewage pump out shall be discharged to another collection system manhole, lift station, or Vac Truck. It's the responsibility of the Contractor to understand and implement all local, state, and federal regulator rules during the bypass pumping operation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
60. **Bid Item 4.36 – Roadway & Concrete Sidewalk Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing asphalt roadway and pedestrian concrete walkway as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
61. **Bid Item 4.37 – Roadway & Concrete Sidewalk Repair:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary to repair the asphalt roadway and pedestrian concrete sidewalk including but not limited to restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
62. **Bid Item 4.38 – Site Restoration:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for sitework including but not limited to protection of existing properties, restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, grassing and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
63. **Bid Item 4.39 – Erosion Control:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary to keep the site from eroding and preventing soil from leaving the site in accordance with the contract documents. The LUMP SUM AMOUNT BID shall be paid based on the percentages of work completed as approved by the ENGINEER.
64. **Bid Item 4.41 – Existing Lift Station Pump, Piping, and Valves Demolition:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary for clearing, grubbing, digging, hauling away, sand fill, proper disposal of debris and removing existing piping, valves, and fittings in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

65. **Bid Item 4.42 – Existing Concrete Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station concrete pad as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
66. **Bid Item 4.43 – Existing Electrical Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station control panel, wiring, conduits, and other existing lift station electrical components as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
67. **Bid Item 4.46 – Remote Telemetry Alert System:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a Remote Telemetry Alert System and conduits/wires required to energize the lift station telemetry to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
68. **Bid Item 5.17 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
69. **Bid Item 5.18 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
70. **Bid Item 5.19 – 316 Stainless Steel Float/Cable Holder:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material

required to construct a float and cable holder. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

71. **Bid Item 5.20 – 6” 316 Stainless Steel Air Vent:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” 316 Stainless Steel Air Vent for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. At a minimum the air vent shall consist of a 6” 316 Stainless Steel Wall Pipe FLG x P.E. and a 2” threadolet. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
72. **Bid Item 5.21 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
73. **Bid Item 5.22 – Lift Station Controls Floats:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
74. **Bid Item 5.25 – 2” SCH 80 CPVC Piping and Fittings:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 80 CPVC Piping and Fittings in accordance with the contract documents. Payment shall include, but not be limited to, pipes, fittings, and all other items and incidentals required for construction of the appurtenances as shown in the contract documents. The cost shall include all piping and fittings from the ARVs to the Owner-Purchased Lift Station air vent. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
75. **Bid Item 5.34 – Control Panel (NEMA 6P Enclosure):** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

76. **Bid Item 5.35 – Service Installation:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a new main breaker and conduits/wires required to energize the lift station to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
77. **Bid Item 5.36 – Conduits to Wet Well:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to install 2” Sch. 40 PVC conduits below grade to the lift station wet well. The cost shall include all necessary conduits required to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
78. **Bid Item 5.37 – Install Motor Leads & Float Switches:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to pull and terminate motor leads and install float switches. The cost shall include all necessary controls and material to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
79. **Bid Item 5.38 – Startup and Testing:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for start-up and testing services provided to the OWNER by the MANUFACTURER(S). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
80. **Bid Item 5.39 – Maintenance of Traffic (MOT) Plan:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to implement a MOT Plan that meets FDOT, County, and City requirements. The MOT Plan shall be submitted to the Engineer and Owner for review. The MOT Plan shall be utilized during construction of the lift station rehabilitation and shall remain in place until construction is complete. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
81. **Bid Item 5.40 – Bypass Pumping Plan:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, fuel, and all other items and incidentals required to construct, install, and operate the bypass pumping operation as shown and described in the contract documents. Sewage pump out shall be discharged to another collection system manhole, lift station, or Vac Truck. It’s the responsibility of the Contractor to understand and implement all local, state, and federal regulator rules during the bypass pumping operation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

82. **Bid Item 5.41 – Roadway Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing asphalt roadway and as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
83. **Bid Item 5.42 – Roadway Restoration:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary to repair the asphalt roadway including but not limited to restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
84. **Bid Item 5.43 – Site Restoration:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for sitework including but not limited to protection of existing properties, restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, grassing and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
85. **Bid Item 5.44 – Erosion Control:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary to keep the site from eroding and preventing soil from leaving the site in accordance with the contract documents. The LUMP SUM AMOUNT BID shall be paid based on the percentages of work completed as approved by the ENGINEER.
86. **Bid Item 5.46 – Existing Lift Station Pump, Piping, and Valves Demolition:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary for clearing, grubbing, digging, hauling away, sand fill, proper disposal of debris and removing existing piping, valves, and fittings in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
87. **Bid Item 5.47 – Existing Concrete Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station concrete pad as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
88. **Bid Item 5.48 – Existing Electrical Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station control panel, wiring, conduits, and other existing lift station electrical components as shown and described in the contract documents. The LUMP SUM BID AMOUNT

shall be paid based on the percentages of work completed as approved by the ENGINEER.

89. **Bid Item 5.49 – Remote Telemetry Alert System:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a Remote Telemetry Alert System and conduits/wires required to energize the lift station telemetry to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
90. **Bid Item 6.19 – 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The 3” 316 Stainless Steel Pipe Support w/ U-Bolt shall be able to support both the discharge piping and bypass piping. The number of 3” 316 Stainless Steel Pipe Support Brace w/ U-Bolt shall be installed per the pump manufacturer’s recommendation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
91. **Bid Item 6.20 – 2” SCH 40 316 Stainless Steel Guide Rails & Supports:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 40 Stainless Steel Guide Rail & Supports in accordance with the contract documents. Payment shall include, but not be limited to, stainless steel pipes, fittings, anchor bolts, stainless steel plate, and all other items and incidentals required for construction of the guide rails and supports as shown in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
92. **Bid Item 6.21 – 316 Stainless Steel Float/Cable Holder:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 316 Stainless Steel Float/Cable Holder in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct a float and cable holder. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
93. **Bid Item 6.22 – 6” 316 Stainless Steel Air Vent:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” 316 Stainless Steel Air Vent for the proposed Fiberglass Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. At a minimum the air vent shall consist of a 6” 316 Stainless Steel Wall Pipe FLG x P.E. and a 2” threadolet.

The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

94. **Bid Item 6.23 – 316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the 316 Stainless Steel Lifting Chains with Hammerlocks & Masterlinks in accordance with the contract documents. Payment shall include, but not be limited to all 316 Stainless Steel material required to construct the lifting chains. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
95. **Bid Item 6.24 – Lift Station Controls Floats:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing the lift station control floats in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
96. **Bid Item 6.27 – 2” SCH 80 CPVC Piping and Fittings:** The **LUMP SUM BID AMOUNT** will be a payment for furnishing and installing the 2” SCH 80 CPVC Piping and Fittings in accordance with the contract documents. Payment shall include, but not be limited to, pipes, fittings, and all other items and incidentals required for construction of the appurtenances as shown in the contract documents. The cost shall include all piping and fittings from the ARVs to the Owner-Purchased Lift Station air vent. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
97. **Bid Item 6.36 – Wash Down Station Piping, Valves, Fitting, & Meter (Detail A4, M-903):** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, backflow prevention assembly, FRP insulated housing, aluminum post, reinforcing mesh, concrete, hose rack, red rubber hose, and all other items and incidentals required to construct and install the wash down station as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
98. **Bid Item 6.38 – Control Panel (NEMA 6P Enclosure):** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

99. **Bid Item 6.39 – Service Installation:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to construct and install a new main breaker and conduits/wires required to energize the lift station to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
100. **Bid Item 6.40 – Conduits to Wet Well:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to install 2” Sch. 40 PVC conduits below grade to the lift station wet well. The cost shall include all necessary conduits required to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
101. **Bid Item 6.41 – Install Motor Leads & Float Switches:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to pull and terminate motor leads and install float switches. The cost shall include all necessary controls and material to make the lift station a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
102. **Bid Item 6.42 – Startup and Testing:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required for start-up and testing services provided to the OWNER by the MANUFACTURER(S). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
103. **Bid Item 6.43 – Maintenance of Traffic (MOT) Plan:** The LUMP SUM BID AMOUNT will be full compensation for all labor, equipment, and materials required to implement a MOT Plan that meets FDOT, County, and City requirements. The MOT Plan shall be submitted to the Engineer and Owner for review. The MOT Plan shall be utilized during construction of the lift station rehabilitation and shall remain in place until construction is complete. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
104. **Bid Item 6.44 – Bypass Pumping Plan:** The LUMP SUM BID AMOUNT will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, fuel, and all other items and incidentals required to construct, install, and operate the bypass pumping operation as shown and described in the contract documents. Sewage pump out shall be discharged to another collection system manhole, lift station, or Vac Truck. It’s the responsibility of the Contractor to understand and implement all local, state, and federal regulator rules during the bypass pumping operation. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

105. **Bid Item 6.45 – Site Restoration:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for sitework including but not limited to protection of existing properties, restoration of all properties affected by the work to existing or better condition following construction, temporary access, temporary paving, grassing and all sitework related activities. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
106. **Bid Item 6.46 – Erosion Control:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary to keep the site from eroding and preventing soil from leaving the site in accordance with the contract documents. The LUMP SUM AMOUNT BID shall be paid based on the percentages of work completed as approved by the ENGINEER.
107. **Bid Item 6.48 – Existing Lift Station Pump, Piping, and Valves Demolition:** The **LUMP SUM BID AMOUNT** will be payment for all labor, materials, and equipment necessary for clearing, grubbing, digging, hauling away, sand fill, proper disposal of debris and removing existing piping, valves, and fittings in accordance with the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
108. **Bid Item 6.49 – Existing Concrete Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station concrete pad as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
109. **Bid Item 6.50 – Existing Electrical Demolition:** The **LUMP SUM BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work and demoing of the existing lift station control panel, wiring, conduits, and other existing lift station electrical components as shown and described in the contract documents. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
110. **Bid Item 6.51 – Remote Telemetry Alert System:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required to construct and install a Remote Telemetry Alert System and conduits/wires required to energize the lift station telemetry to make it a complete and operable system. The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
111. **Bid Item 8.01 – Lift Station #1 – Powder Coated White NEMA 6P Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure) as shown on

the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

112. **Bid Item 8.02 – Lift Station #6 – Powder Coated White NEMA 6P Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

113. **Bid Item 8.03 – Lift Station #7 – Powder Coated White NEMA 6P Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

114. **Bid Item 8.04 – Lift Station #9 – Powder Coated White NEMA 6P Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

115. **Bid Item 8.05 – Lift Station #10 – Powder Coated White NEMA 6P Control Panel:** The **LUMP SUM BID AMOUNT** will be full compensation for all labor, equipment, and materials required for the construction of a 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure) as shown on the contract drawings. Payment shall include, but not be limited to all 316 Stainless Steel material and mounting hardware required to construct and install a fully functional 316 Stainless Steel Powder Coated White Control Panel (NEMA 6P Enclosure). The LUMP SUM BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.

B. UNIT PRICE. Where payment for items is shown on a unit price basis, payment will be made for the actual quantity installed and will include all labor, material, and equipment necessary for such.

1. **Bid Item 2.01 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors, mix/flush valve for each pump, minimum 100 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
2. **Bid Item 2.02 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pump’s base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
3. **Bid Item 2.03 – 4” Hardened Cast Iron Discharge Elbows:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pump nitride hardened cast iron discharge elbow and accessories. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
4. **Bid Item 2.04– 4” HDPE DR11 Discharge Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” HDPE DR11 Piping for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
5. **Bid Item 2.05 – 4” HDPE DR11 90° Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” HDPE DR11 90° Fitting for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

6. **Bid Item 2.06 – 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
7. **Bid Item 2.07 – 4” 316 Stainless Steel Piping:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install maintain, and all other cost required to install the 4” 316 Stainless Steel Piping as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.
8. **Bid Item 2.08 – 4” DIP:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” DIP as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
9. **Bid Item 2.09 – 4"x6" MJ Increaser:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
10. **Bid Item 2.10 – 4” FL Check Valve:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Check Valves as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

11. **Bid Item 2.11 – 4” FL Plug Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Plug Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
12. **Bid Item 2.12– 4” Stainless Steel FL 90-Degree Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel FL 90-Degree Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
13. **Bid Item 2.13 – 4” Stainless Steel FL Cross Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel Cross Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
14. **Bid Item 2.14 – 4” Aluminum Male Kamlock w/ Female Dust Cover:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Kamlock as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
15. **Bid Item 2.20 – ARV:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the ARV’s as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
16. **Bid Item 2.21 – 2” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

17. **Bid Item 2.22 – 3/4” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 3/4” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
18. **Bid Item 2.23 – Diaphragm Pressure Gauges:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Diaphragm Pressure Gauges as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
19. **Bid Item 2.24 – Connect to Existing Collection System:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, and all other items and incidentals required to construct, install, and operate the entirety of the connection to the existing collection system FM via open cut as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the number of units connected during the requested period as approved by the Engineer.
20. **Bid Item 2.35 – Access Hatch Assembly:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the Access Hatch w/ Safety Grate (H20 Traffic Rated) for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier’s responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4” clear. Upsize hatches as required. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
21. **Bid Item 3.01 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors, mix/flush valve for each pump, minimum 100 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

22. **Bid Item 3.02 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pump’s base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
23. **Bid Item 3.03 – 4” Hardened Cast Iron Discharge Elbows:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pump nitride hardened cast iron discharge elbow and accessories. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
24. **Bid Item 3.04 – 4"x6” 316 Stainless Steel Eccentric Inserter:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
25. **Bid Item 3.05– 6” HDPE DR11 Discharge Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” HDPE DR11 Piping for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
26. **Bid Item 3.06 – 6” HDPE DR11 Fused Offset Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” HDPE DR11 Fused Offset Fitting for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer.
27. **Bid Item 3.07 – 6” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

28. **Bid Item 3.08 – 6” 316 Stainless Steel Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install maintain, and all other cost required to install the 6” 316 Stainless Steel Piping as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.
29. **Bid Item 3.09 – 6” PVC – DR18:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” PVC – DR18 as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
30. **Bid Item 3.10 – 6” FL Check Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” FL Check Valves as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
31. **Bid Item 3.11 – 6” FL Plug Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” FL Plug Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
32. **Bid Item 3.12 – 6” Stainless Steel FL 90-Degree LR Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” 316 Stainless Steel FL 90-Degree LR Fittings as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

33. **Bid Item 3.13– 6” Stainless Steel FL 90-Degree Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” Stainless Steel FL 90-Degree Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
34. **Bid Item 3.14– 6” Stainless Steel FL Tee Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” Stainless Steel FL Tee Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
35. **Bid Item 3.15 – 6” Ductile Iron 90° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
36. **Bid Item 3.16 – 6” Ductile Iron 45° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
37. **Bid Item 3.17 – 6” Aluminum Male Kamlock w/ Female Dust Cover:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Kamlock as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
38. **Bid Item 3.24 – ARV:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the ARV’s as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

39. **Bid Item 3.25 – 2” SCH 80 CPVC Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” SCH 80 CPVC Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
40. **Bid Item 3.27 – 2” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
41. **Bid Item 3.28 – 3/4” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 3/4” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
42. **Bid Item 3.29 – Diaphragm Pressure Gauges:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Diaphragm Pressure Gauges as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
43. **Bid Item 3.30 – 316 Stainless Steel Pipe Stands:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 316 Stainless Steel Pipe Stands as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
44. **Bid Item 3.31 – Geotextile Fabric:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, trenching, backfilling, and staking for geotextile fabric as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured square footage of geotextile fabric material installed during the requested period as approved by the ENGINEER.

45. **Bid Item 3.32 – 6” Granite #57 Stone:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for the installation of 6” Granite #57 stone as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured cubic yards of granite #57 stone material used during the requested period as approved by the ENGINEER.
46. **Bid Item 3.33 – Removable Lockable Traffic Rated Bollards:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, concrete, and Removable Lockable Traffic Rated Bollards as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
47. **Bid Item 3.34 – Connect to Existing Collection System:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, and all other items and incidentals required to construct, install, and operate the entirety of the connection to the existing collection system FM via open cut as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
48. **Bid Item 3.44 – Existing Traffic Sign Relocation:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, trenching, backfilling, and staking for relocating the existing traffic signs as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the number of units relocated and installed during the requested period as approved by the ENGINEER.
49. **Bid Item 3.46 – Access Hatch Assembly:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the Access Hatch w/ Safety Grate for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier’s responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4” clear. Upsize hatches as required. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
50. **Bid Item 4.01 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station’s submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors,

mix/flush valve for each pump, minimum 100 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

51. **Bid Item 4.02 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump's base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
52. **Bid Item 4.03 – 4” Hardened Cast Iron Discharge Elbows:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump nitride hardened cast iron discharge elbow and accessories. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
53. **Bid Item 4.04– 4” HDPE DR11 Discharge Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” HDPE DR11 Piping for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
54. **Bid Item 4.05 – 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
55. **Bid Item 4.06 – 4” 316 Stainless Steel Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install maintain, and all other cost required to install the 4” 316 Stainless Steel Piping as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the

Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.

56. **Bid Item 4.07 – 6” DIP:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” DIP as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
57. **Bid Item 4.08 – 6” MJ Plug:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
58. **Bid Item 4.09 – 4” FL Check Valve:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Check Valves as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
59. **Bid Item 4.10 – 4” FL Plug Valve:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Plug Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
60. **Bid Item 4.11– 4” Stainless Steel FL 90-Degree Fitting:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel FL 90-Degree Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

61. **Bid Item 4.12 – 4” Stainless Steel FL Cross Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel Cross Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
62. **Bid Item 4.13 – 4” Aluminum Male Kamlock w/ Female Dust Cover:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Kamlock as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
63. **Bid Item 4.14 – 6" Ductile Iron 45° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
64. **Bid Item 4.15 – 4"x6" Ductile Iron MJ Increaser:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
65. **Item 4.16 – 6” Tapping Sleeve and Valve w/ Valve Box:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install a 6” Tapping Sleeve & Valve w/ Valve Box as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
66. **Bid Item 4.17 – 2” Schedule 40 PVC Drain Pipe:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, cement, and all other cost required to install the 2” SCH 40 PVC Drain Pipe as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The service line casing quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet

of pipe measured along the top centerline of the casting in place complete and acceptable to the Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.

67. **Bid Item 4.18 – 2” Duck Bill Check Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Duck Bill Check Valve as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
68. **Bid Item 4.24 – ARV:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the ARV’s as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
69. **Bid Item 4.25 – 2” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
70. **Bid Item 4.26 – 3/4” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 3/4” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
71. **Bid Item 4.27 – Diaphragm Pressure Gauges:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Diaphragm Pressure Gauges as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
72. **Bid Item 4.40 – Access Hatch Assembly:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to

construct, test, maintain, and all other cost required to install the Access Hatch w/ Safety Grate (H20 Traffic Rated) for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier's responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4" clear. Upsize hatches as required. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

73. **Bid Item 4.44 – 4" HDPE DR11 90° Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4" HDPE DR11 90° Fitting for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
74. **Bid Item 5.01 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors, mix/flush valve for each pump, minimum 100 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
75. **Bid Item 5.02 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump's base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
76. **Bid Item 5.03 – 4" Hardened Cast Iron Discharge Elbows:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump nitride hardened cast iron discharge elbow and accessories. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
77. **Bid Item 5.04– 4" HDPE DR11 Discharge Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6" HDPE DR11 Piping for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by

the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.

78. **Bid Item 5.05 – 4” HDPE DR11 Fused Offset Fitting:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” HDPE DR11 Fused Offset Fitting for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer.
79. **Bid Item 5.06 – 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 4” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
80. **Bid Item 5.07 – 4” 316 Stainless Steel Piping:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install maintain, and all other cost required to install the 4” 316 Stainless Steel Piping as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.
81. **Bid Item 5.08 – 4” PVC – DR18:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” PVC – DR18 as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
82. **Bid Item 5.09 – 4” FL Check Valve:** The UNIT PRICE BID AMOUNT will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Check Valves as described herein and within the contract documents, complete

as shown on the plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

83. **Bid Item 5.10 – 4” FL Plug Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” FL Plug Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
84. **Bid Item 5.11 – 4” Stainless Steel FL 90-Degree LR Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” 316 Stainless Steel FL 90-Degree LR Fittings as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
85. **Bid Item 5.12– 4” Stainless Steel FL 90-Degree Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel FL 90-Degree Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
86. **Bid Item 5.13– 4” Stainless Steel FL Tee Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 4” Stainless Steel FL Tee Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
87. **Bid Item 5.14 – 4” Ductile Iron 90° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The **UNIT PRICE BID AMOUNT** shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
88. **Bid Item 5.15 – 4” Ductile Iron 45° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment

necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

89. **Bid Item 5.16 – 4” Aluminum Male Kamlock w/ Female Dust Cover:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Kamlock as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
90. **Bid Item 5.23 – ARV:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the ARV’s as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
91. **Bid Item 5.24 – 2” SCH 80 CPVC Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” SCH 80 CPVC Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
92. **Bid Item 5.26 – 2” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
93. **Bid Item 5.27 – 3/4” Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 3/4” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
94. **Bid Item 5.28 – Diaphragm Pressure Gauges:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment

necessary to construct, install, maintain, and all other cost required to install the Diaphragm Pressure Gauges as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

95. **Bid Item 5.29 – 316 Stainless Steel Pipe Stands:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 316 Stainless Steel Pipe Stands as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
96. **Bid Item 5.30 – Geotextile Fabric:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, trenching, backfilling, and staking for geotextile fabric as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured square footage of geotextile fabric material installed during the requested period as approved by the ENGINEER.
97. **Bid Item 5.31 – 6” Granite #57 Stone:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for the installation of 6” Granite #57 stone as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured cubic yards of granite #57 stone material used during the requested period as approved by the ENGINEER.
98. **Bid Item 5.32 – 6’ Tall Black Vinyl Chain Link Fence w/ Swing Gate:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, concrete, and black vinyl fence as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured black vinyl chain link fence material used during the requested period as approved by the ENGINEER.
99. **Bid Item 5.33 – Connect to Existing Collection System:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, and all other items and incidentals required to construct, install, and operate the entirety of the connection to the existing collection system FM via open cut as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
100. **Bid Item 5.45 – Access Hatch Assembly:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the Access Hatch

w/ Safety Grate for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier's responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4" clear. Upsize hatches as required. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.

101. **Bid Item 6.01 – Submersible Centrifugal Pumps:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pumps and accessories. This includes, but is not limited to, pumps, cast iron impeller & volute insert, FM explosion proof motors, mix/flush valve for each pump, minimum 100 LF of electrical cord, coatings, mounting brackets, and all other items and incidentals associated with the submersible pumps. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
102. **Bid Item 6.02 – Submersible Pump Base Plate:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump's base plate and accessories. This includes, but is not limited to, base plate material, anchors, and mounting brackets. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
103. **Bid Item 6.03 – 4" Hardened Cast Iron Discharge Elbows:** The **UNIT PRICE BID AMOUNT** will be full compensation for furnishing and installing the lift station's submersible pump nitride hardened cast iron discharge elbow and accessories. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
104. **Bid Item 6.04 – 4"x6" 316 Stainless Steel Eccentric Increaser:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
105. **Bid Item 6.05– 6" HDPE DR11 Discharge Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6" HDPE DR11 Piping for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the

horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.

106. **Bid Item 6.06 – 6” HDPE DR11 Fused Offset Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” HDPE DR11 Fused Offset Fitting for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer.
107. **Bid Item 6.07 – 6” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the 6” DIPS Flange HDPE/316 Stainless Steel Adapter w/ Stainless Steel Backup Rings for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
108. **Bid Item 6.08 – 6” 316 Stainless Steel Piping:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install maintain, and all other cost required to install the 6” 316 Stainless Steel Piping as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the Engineer with deduction for the laid length of valves and fittings. The UNIT PRICE BID AMOUNT shall be paid based on the measured length of pipe installed during the requested period as approved by the ENGINEER.
109. **Bid Item 6.09 – 6” PVC – DR18:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” PVC – DR18 as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT consisting of pipe quantities to be paid for under this section shall be based on the diameter and the horizontal/vertical distance in linear feet of pipe measured along the top centerline of the pipe in place complete and acceptable to the ENGINEER.
110. **Bid Item 6.10 – 6” FL Check Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” FL Check Valves as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT

PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

111. **Bid Item 6.11 – 6” FL Plug Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” FL Plug Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
112. **Bid Item 6.12 – 6” Stainless Steel FL 90-Degree LR Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” 316 Stainless Steel FL 90-Degree LR Fittings as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
113. **Bid Item 6.13– 6” Stainless Steel FL 90-Degree Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” Stainless Steel FL 90-Degree Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
114. **Bid Item 6.14– 6” Stainless Steel FL Tee Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 6” Stainless Steel FL Tee Fitting as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
115. **Bid Item 6.15 – 6” Ductile Iron 90° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
116. **Bid Item 6.16 – 6” Ductile Iron 45° MJ Fitting:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the

fitting as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

117. **Item 6.17 – 6” Isolation Valve w/ Valve Box:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install a 6” Isolation Valve w/ Valve Box as described herein and within the contract documents, complete as shown on the plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
118. **Bid Item 6.18 – 6” Aluminum Male Kamlock w/ Female Dust Cover:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Kamlock as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
119. **Bid Item 6.25 – ARV:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the ARV’s as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
120. **Bid Item 6.26– 2” SCH 80 CPVC Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” SCH 80 CPVC Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
121. **Bid Item 6.28 – 2” 316 Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2” Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
122. **Bid Item 6.29 – 3/4” 316 Stainless Steel Ball Valve:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the

3/4" Stainless Steel Ball Valves as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

123. **Bid Item 6.30 – Diaphragm Pressure Gauges:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the Diaphragm Pressure Gauges as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
124. **Bid Item 6.31 – 316 Stainless Steel Pipe Stands:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 316 Stainless Steel Pipe Stands as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.
125. **Bid Item 6.32 – Geotextile Fabric:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, trenching, backfilling, and staking for geotextile fabric as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured square footage of geotextile fabric material installed during the requested period as approved by the ENGINEER.
126. **Bid Item 6.33 – 6" Granite #57 Stone:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for the installation of 6" Granite #57 stone as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured cubic yards of granite #57 stone material used during the requested period as approved by the ENGINEER.
127. **Bid Item 6.34 – 6' Tall Black Vinyl Chain Link Fence w/ Swing Gate:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, concrete, and black vinyl fence as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the measured black vinyl chain link fence material used during the requested period as approved by the ENGINEER.
128. **Bid Item 6.35 – 2" Corporation Stop w/ Saddle:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the 2" Corporation Stop w/ Saddle as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the

Engineer. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the ENGINEER.

129. **Bid Item 6.37 – Connect to Existing Collection System:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials including, but not limited to, piping, fittings, valves, and all other items and incidentals required to construct, install, and operate the entirety of the connection to the existing collection system FM via open cut as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the percentages of work completed as approved by the ENGINEER.
130. **Bid Item 6.47 – Access Hatch Assembly:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, test, maintain, and all other cost required to install the Access Hatch w/ Safety Grate for the Lift Station as described herein and within the contract documents, complete as shown on the Plans, specified, and directed by the Engineer. It shall be the pump supplier’s responsibility to confirm the adequacy of the specified minimum hatch size to enable the pump(s) to be easily removed from the wet well through the hatch without disassembly with a minimum 4” clear. Upsize hatches as required. The UNIT PRICE BID AMOUNT shall be paid based on the number of units installed during the requested period as approved by the Engineer.
131. **Bid Item 7.01 – Concrete Class IV (5,500 PSI 28-Day Compressive Strength):** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, vapor barriers, reinforcement, concrete, formwork, finishing, and testing as shown and described in the contract documents. The unit price cost shall also include all costs associate with forming installation of concrete including but not limited to forms, joints, placement of reinforcing steel, installation of waterstops, and priming of contact surfaces. The UNIT PRICE BID AMOUNT shall be paid based on the amount of measured concrete and material installed during the requested period as approved by the ENGINEER.
132. **Bid Item 7.02 – Grade 60 Carbon Steel Reinforcing:** The **UNIT PRICE BID AMOUNT** will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, vapor barriers, reinforcement, concrete, formwork, finishing, and testing as shown and described in the contract documents. The UNIT PRICE BID AMOUNT shall be paid based on the amount of measured concrete and material installed during the requested period as approved by the ENGINEER.
133. **Bid Item 7.03 – Link Type Modular Pipe Wall Penetration Seal:** The **UNIT PRICE BID AMOUNT** will be full compensation for all labor, materials, and equipment necessary to construct, install, maintain, and all other cost required to install the link seal as described herein and within the contract documents,

complete as shown on the Plans, specified, and directed by the Engineer. The unit price cost shall also include all costs associate with furnishing and installing modular type wall seals for lift station wall pipe penetrations including but not limited to removing existing non-shrink grout, surface preparation, and core drilling as required. The UNIT PRICE BID AMOUNT shall be paid based on the units installed during the requested period as approved by the ENGINEER.

134. **Bid Item 7.04 – Electrical Panel Support Column and Foundation:** The UNIT PRICE BID AMOUNT will be compensation for all labor, equipment, and materials necessary for site work, earthwork, excavation, backfilling, compaction, vapor barriers, reinforcement, concrete, formwork, finishing, and testing as shown and described in the contract documents. The unit price cost shall also include all costs associate with furnishing and installing electrical control panel supports including but not limited to foundation excavation and shoring, foundation concrete and reinforcing steel, aluminum posts, and mounting hardware. The UNIT PRICE BID AMOUNT shall be paid based on the measured concrete material used during the requested period as approved by the ENGINEER.

135. **Bid Item 7.05 – Multilayer Polymer Liner System:** The UNIT PRICE BID AMOUNT will be compensation for all labor, equipment, and materials including but not limited to the installation of spray applied polymer lining system, minor crack and leak repair, and surface cleaning and preparation. The UNIT PRICE BID AMOUNT shall be paid based on the amount of measured multilayer polymer liner system and material installed during the requested period as approved by the ENGINEER.

136. **Bid Item 7.06 – Non-Shrink Grout Repair:** The UNIT PRICE BID AMOUNT will be compensation for all labor, equipment, and materials necessary to install non-shrink grout. The UNIT PRICE BID AMOUNT shall be paid based on the amount of measured non-shrink grout and material installed during the requested period as approved by the ENGINEER.

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Basis of Bid Table

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
1	General				
1.01	General Conditions (Max 5% of Bid)	1	LS		
1.02	Stormwater Pollution Prevention Plan	1	LS		
1.03	Existing Utility Verification	1	LS		
1.04	Lift Station Site - Pipe Pressure Testing	1	LS		
1.05	Lift Station Site - Concrete Slab Testing	1	LS		
1.06	Closeout Documentation (Max 0.5% of Bid)	1	LS		
SUB-TOTAL GENERAL					
2	Lift Station #1 Site Rehabilitation				
2.01	Submersible Centrifugal Pumps	2	EA		
2.02	Submersible Pump Base Plate	2	EA		
2.03	4" Hardened Cast Iron Discharge Elbows	2	EA		
2.04	4" HDPE DR11 Discharge Piping	22	LF		
2.05	4" HDPE DR11 90° Fitting	2	EA		
2.06	4" DIPS Flange HDPE/316 Stainless Steel Adapter	2	EA		
2.07	4" 316 Stainless Steel Piping	6	LF		
2.08	4" DIP	2	LF		
2.09	4"x6" MJ Increaser	1	EA		
2.10	4" FL Check Valve	2	EA		
2.11	4" FL Plug Valve	2	EA		
2.12	4" Stainless Steel FL 90° Fitting	3	EA		
2.13	4" Stainless Steel FL Cross Fitting	1	EA		
2.14	4" Aluminum Male Kamlock w/ Female Dust Cap	1	EA		
2.15	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
2.16	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
2.17	316 Stainless Steel Float/Cable Holder	1	LS		
2.18	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
2.19	Lift Station Control Floats	1	LS		
2.20	ARV	1	EA		
2.21	2" 316 Stainless Steel Ball Valve	1	EA		
2.22	3/4" 316 Stainless Steel Ball Valve	2	EA		
2.23	Diaphragm Pressure Gauges	2	EA		
2.24	Connect to the Existing Collection System	1	EA		
2.25	Control Panel (NEMA 6P Enclosure)	1	LS		
2.26	Service Installation	1	LS		
2.27	Conduits to Wet Well	1	LS		
2.28	Install Motor Leads & Float Switches	1	LS		
2.29	Startup and Testing	1	LS		
2.30	Maintenance of Traffic (MOT) Plan	1	LS		
2.31	Bypass Pumping Plan	1	LS		
2.32	Roadway Restoration	1	LS		
2.33	Site Restoration	1	LS		
2.34	Erosion Control	1	LS		
2.35	Access Hatch Assembly	1	EA		
2.36	Existing Lift Station Pump, Piping, and Valves Demolition	1	LS		
2.37	Existing Concrete Demolition	1	LS		
2.38	Existing Electrical Demolition	1	LS		
2.39	Remote Telemetry Alert System	1	LS		
SUB-TOTAL LIFT STATION #1 SITE REHABILITATION					
3	Lift Station #6 Site Rehabilitation				
3.01	Submersible Centrifugal Pumps	2	EA		
3.02	Submersible Pump Base Plate	2	EA		

3.03	4" Hardened Cast Iron Discharge Elbows	2	EA		
3.04	4"x6" 316 Stainless Steel Eccentric In increaser	2	EA		
3.05	6" HDPE DR11 Discharge Piping	28	LF		
3.06	6" HDPE DR11 Fused Offset Fitting	2	EA		
3.07	6" DIPS Flange HDPE/316 Stainless Steel Adapter	2	EA		
3.08	6" 316 Stainless Steel Piping	10	LF		
3.09	6" PVC - DR18	15	LF		
3.10	6" FL Check Valve	2	EA		
3.11	6" FL Plug Valve	3	EA		
3.12	6" Stainless Steel FL 90° LR Fitting	3	EA		
3.13	6" Stainless Steel FL 90° Fitting	1	EA		
3.14	6" Stainless Steel FL Tee Fitting	2	EA		
3.15	6" Ductile Iron 90° MJ Fitting	1	EA		
3.16	6" Ductile Iron 45° MJ Fitting	1	EA		
3.17	6" Aluminum Male Kamlock w/ Female Dust Cap	1	EA		
3.18	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
3.19	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
3.20	316 Stainless Steel Float/Cable Holder	1	LS		
3.21	6" 316 Stainless Steel Air Vent	1	LS		
3.22	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
3.23	Lift Station Control Floats	1	LS		
3.24	ARV	2	EA		
3.25	2" SCH 80 CPVC Ball Valve	2	EA		
3.26	2" SCH 80 CPVC Piping and Fittings	1	LS		
3.27	2" 316 Stainless Steel Ball Valve	2	EA		
3.28	3/4" 316 Stainless Steel Ball Valve	2	EA		
3.29	Diaphragm Pressure Gauges	2	EA		
3.30	316 Stainless Steel Pipe Stands	3	EA		
3.31	Geotextile Fabric	92	SF		
3.32	6" Granite #57 Stone	3	CY		
3.33	Removable Lockable Traffic Rated Bollard	3	EA		
3.34	Connect to the Existing Collection System	1	EA		
3.35	Control Panel (NEMA 6P Enclosure)	1	LS		
3.36	Service Installation	1	LS		
3.37	Conduits to Wet Well	1	LS		
3.38	Install Motor Leads & Float Switches	1	LS		
3.39	Startup and Testing	1	LS		
3.40	Maintenance of Traffic (MOT) Plan	1	LS		
3.41	Bypass Pumping Plan	1	LS		
3.42	Site Restoration	1	LS		
3.43	Existing Water Meter Relocation	1	LS		
3.44	Existing Traffic Sign Relocation	2	EA		
3.45	Erosion Control	1	LS		
3.46	Access Hatch Assembly	1	EA		
3.47	Existing Lift Station Pump, Piping, and Valves Demolition	1	LS		
3.48	Existing Concrete Demolition	1	LS		
3.49	Existing Electrical Demolition	1	LS		
3.50	Remote Telemetry Alert System	1	LS		
SUB-TOTAL LIFT STATION #6 SITE REHABILITATION					
4	Lift Station #7 Site Rehabilitation				
4.01	Submersible Centrifugal Pumps	2	EA		
4.02	Submersible Pump Base Plate	2	EA		
4.03	4" Hardened Cast Iron Discharge Elbows	2	EA		
4.04	4" HDPE DR11 Discharge Piping	12	LF		
4.05	4" DIPS Flange HDPE/316 Stainless Steel Adapter	2	EA		

4.06	4" 316 Stainless Steel Piping	6	LF		
4.07	6" DIP	10	LF		
4.08	6" MJ Plug	1	EA		
4.09	4" FL Check Valve	2	EA		
4.10	4" FL Plug Valve	3	EA		
4.11	4" Stainless Steel FL 90° Fitting	5	EA		
4.12	4" Stainless Steel FL Cross Fitting	1	EA		
4.13	4" Aluminum Male Kamlock w/ Female Dust Cap	1	EA		
4.14	6" Ductile Iron 45° MJ Fitting	2	EA		
4.15	4"x6" Ductile Iron MJ In increaser	1	EA		
4.16	6" Tapping Sleeve and Valve w/ Valve Box	1	EA		
4.17	2" Schedule 40 PVC Drain Pipe	2	LF		
4.18	2" Duck Bill Check Valve	1	EA		
4.19	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
4.20	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
4.21	316 Stainless Steel Float/Cable Holder	1	LS		
4.22	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
4.23	Lift Station Control Floats	1	LS		
4.24	ARV	1	EA		
4.25	2" 316 Stainless Steel Ball Valve	1	EA		
4.26	3/4" 316 Stainless Steel Ball Valve	2	EA		
4.27	Diaphragm Pressure Gauges	2	EA		
4.28	FRP Valve Box w/ Aluminum Access Hatch (H2O Traffic Rated)	1	LS		
4.29	Control Panel (NEMA 6P Enclosure)	1	LS		
4.30	Service Installation	1	LS		
4.31	Conduits to Wet Well	1	LS		
4.32	Install Motor Leads & Float Switches	1	LS		
4.33	Startup and Testing	1	LS		
4.34	Maintenance of Traffic (MOT) Plan	1	LS		
4.35	Bypass Pumping Plan	1	LS		
4.36	Roadway & Concrete Sidewalk Demolition	1	LS		
4.37	Roadway & Concrete Sidewalk Restoration	1	LS		
4.38	Site Restoration	1	LS		
4.39	Erosion Control	1	LS		
4.40	Access Hatch Assembly	1	EA		
4.41	Existing Lift Station Pump, Piping, and Valves Demolition	1	LS		
4.42	Existing Concrete Demolition	1	LS		
4.43	Existing Electrical Demolition	1	LS		
4.44	4" HDPE DR11 90° Fitting	2	EA		
4.45	4" 316 Stainless Steel Air Vent	1	EA		
4.46	Remote Telemetry Alert System	1	LS		
SUB-TOTAL LIFT STATION #7 SITE REHABILITATION					
5	Lift Station #9 Site Rehabilitation				
5.01	Submersible Centrifugal Pumps	2	EA		
5.02	Submersible Pump Base Plate	2	EA		
5.03	4" Hardened Cast Iron Discharge Elbows	2	EA		
5.04	4" HDPE DR11 Discharge Piping	28	LF		
5.05	4" HDPE DR11 Fused Offset Fitting	2	EA		
5.06	4" DIPS Flange HDPE/316 Stainless Steel Adapter	2	EA		
5.07	4" 316 Stainless Steel Piping	11	LF		
5.08	4" PVC - DR18	4	LF		
5.09	4" FL Check Valve	2	EA		
5.10	4" FL Plug Valve	3	EA		
5.11	4" 316 Stainless Steel FL 90° LR Fitting	3	EA		
5.12	4" Stainless Steel FL 90° Fitting	1	EA		

5.13	4" Stainless Steel FL Tee Fitting	2	EA		
5.14	4" Ductile Iron 90° MJ Fitting	1	EA		
5.15	4" Ductile Iron 45° MJ Fitting	1	EA		
5.16	4" Aluminum Male Kamlock w/ Female Dust Cap	1	EA		
5.17	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
5.18	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
5.19	316 Stainless Steel Float/Cable Holder	1	LS		
5.20	6" 316 Stainless Steel Air Vent	1	LS		
5.21	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
5.22	Lift Station Control Floats	1	LS		
5.23	ARV	2	EA		
5.24	2" SCH 80 CPVC Ball Valve	2	EA		
5.25	2" SCH 80 CPVC Piping and Fittings	1	LS		
5.26	2" 316 Stainless Steel Ball Valve	2	EA		
5.27	3/4" 316 Stainless Steel Ball Valve	2	EA		
5.28	Diaphragm Pressure Gauges	2	EA		
5.29	316 Stainless Steel Pipe Stands	3	EA		
5.30	Geotextile Fabric	81	SF		
5.31	6" Granite #57 Stone	2	CY		
5.32	6' Tall Black Vinyl Chain Link Fence w/ Swing Gate	53	LF		
5.33	Connect to the Existing Collection System	1	EA		
5.34	Control Panel (NEMA 6P Enclosure)	1	LS		
5.35	Service Installation	1	LS		
5.36	Conduits to Wet Well	1	LS		
5.37	Install Motor Leads & Float Switches	1	LS		
5.38	Startup and Testing	1	LS		
5.39	Maintenance of Traffic (MOT) Plan	1	LS		
5.40	Bypass Pumping Plan	1	LS		
5.41	Roadway Demolition	1	LS		
5.42	Roadway Restoration	1	LS		
5.43	Site Restoration	1	LS		
5.44	Erosion Control	1	LS		
5.45	Access Hatch Assembly	1	EA		
5.46	Existing Lift Station Pump, Piping, and Valves Demolition	1	LS		
5.47	Existing Concrete Demolition	1	LS		
5.48	Existing Electrical Demolition	1	LS		
5.49	Remote Telemetry Alert System	1	LS		
SUB-TOTAL LIFT STATION #9 SITE REHABILITATION					
6	Lift Station #10 Site Rehabilitation				
6.01	Submersible Centrifugal Pumps	2	EA		
6.02	Submersible Pump Base Plate	2	EA		
6.03	4" Hardened Cast Iron Discharge Elbows	2	EA		
6.04	4"x6" 316 Stainless Steel Eccentric In increaser	2	EA		
6.05	6" HDPE DR11 Discharge Piping	34	LF		
6.06	6" HDPE DR11 Fused Offset Fitting	2	EA		
6.07	6" DIPS Flange HDPE/316 Stainless Steel Adapter	2	EA		
6.08	6" 316 Stainless Steel Piping	11	LF		
6.09	6" PVC - DR18	7	LF		
6.10	6" FL Check Valve	2	EA		
6.11	6" FL Plug Valve	3	EA		
6.12	6" 316 Stainless Steel FL 90° LR Fitting	3	EA		
6.13	6" Stainless Steel FL 90° Fitting	1	EA		
6.14	6" Stainless Steel FL Tee Fitting	2	EA		
6.15	6" Ductile Iron 90° MJ Fitting	1	EA		
6.16	6" Ductile Iron 45° MJ Fitting	2	EA		

6.17	6" Isolation Valve w/ Valve Box	1	EA		
6.18	6" Aluminum Male Kamlock w/ Female Dust Cap	1	EA		
6.19	3" 316 Stainless Steel Pipe Support Brace w/ U-Bolt	1	LS		
6.20	2" SCH 40 316 Stainless Steel Guide Rails & Supports	1	LS		
6.21	316 Stainless Steel Float/Cable Holder	1	LS		
6.22	6" 316 Stainless Steel Air Vent	1	LS		
6.23	316 Stainless Steel Lifting Chains w/ Hammerlocks & Masterlinks	1	LS		
6.24	Lift Station Control Floats	1	LS		
6.25	ARV	2	EA		
6.26	2" SCH 80 CPVC Ball Valve	2	EA		
6.27	2" SCH 80 CPVC Piping and Fittings	1	LS		
6.28	2" 316 Stainless Steel Ball Valve	2	EA		
6.29	3/4" 316 Stainless Steel Ball Valve	2	EA		
6.30	Diaphragm Pressure Gauges	2	EA		
6.31	316 Stainless Steel Pipe Stands	3	EA		
6.32	Geotextile Fabric	115	SF		
6.33	6" Granite #57 Stone	2.5	CY		
6.34	6' Tall Black Vinyl Chain Link Fence w/ Swing Gate	58	LF		
6.35	2" Corporation Stop w/ Saddle	1	EA		
6.36	Washdown Station Piping, Valves, Fitting, & Meter (Detail A4, M-903)	1	LS		
6.37	Connect to the Existing Collection System	1	EA		
6.38	Control Panel (NEMA 6P Enclosure)	1	LS		
6.39	Service Installation	1	LS		
6.40	Conduits to Wet Well	1	LS		
6.41	Install Motor Leads & Float Switches	1	LS		
6.42	Startup and Testing	1	LS		
6.43	Maintenance of Traffic (MOT) Plan	1	LS		
6.44	Bypass Pumping Plan	1	LS		
6.45	Site Restoration	1	LS		
6.46	Erosion Control	1	LS		
6.47	Access Hatch Assembly	1	EA		
6.48	Existing Lift Station Pump, Piping, and Valves Demolition	1	LS		
6.49	Existing Concrete Demolition	1	LS		
6.50	Existing Electrical Demolition	1	LS		
6.51	Remote Telemetry Alert System	1	LS		
SUB-TOTAL LIFT STATION #10 SITE REHABILITATION					
7	<u>Lift Station Structural Components</u>				
7.01	Concrete Class IV (5,500 PSI 28-Day Compressive Strength)	18	CY		
7.02	Grade 60 Carbon Steel Reinforcing	4,525	LB		
7.03	Link Type Modular Pipe Wall Penetration Seal	16	EA		
7.04	Electrical Panel Support Column & Foundation	10	EA		
7.05	Multilayer Polymer Liner System	1,300	SF		
7.06	Non-Shrink Grout Repair	4.9	CF		
SUB-TOTAL LIFT STATION STRUCTURAL COMPONENTS					
TOTAL BASE BID COST					

8	<u>Lift Station Control Panels (Additive Alternate)</u>				
8.01	Lift Station #1 - Powder Coated White NEMA 6P Control Panel	1	EA		
8.02	Lift Station #6 - Powder Coated White NEMA 6P Control Panel	1	EA		
8.03	Lift Station #7 - Powder Coated White NEMA 6P Control Panel	1	EA		
8.04	Lift Station #9 - Powder Coated White NEMA 6P Control Panel	1	EA		
8.05	Lift Station #10 - Powder Coated White NEMA 6P Control Panel	1	EA		
TOTAL LIFT STATION CONTROL PANELS (ADDITIVE ALTERNATE) BID COST					

APPENDIX C

BID BOND

APPENDIX C

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____
_____ ,

(herein after called the Principal) and _____

(herein called the Surety), a corporation chartered and existing under the laws of the state of _____ with its principal offices in the city of _____ and authorized to do business in the State of Florida are held and firmly bound unto the Cedar Key Water and Sewer District (hereinafter called the "District"), in the full and just sum of _____ dollars (\$ _____) good and lawful money of the United States of America, to be paid upon demand of the District, to which payment well and truly to be made, the Principal and the Surety bind themselves, their heirs, and executors, administrators, and assigns, jointly and severally and firmly by these presents.

Whereas, the Principal is about to submit, or has submitted to the District, a proposal for furnishing all labor, materials, equipment and incidentals necessary to furnish and install:

Project No. ITB 2024-02; Sanitary Sewer Lift Station Rehabilitation

NOW, THEREFORE: The conditions of this obligation are such that if the Proposal be accepted, the Principal shall, within fifteen days after the date of a written Notice of Award, execute a Contract in accordance with the Proposal and upon the terms, conditions and price(s) set forth therein, of the form and manner required by the District, and execute a sufficient and satisfactory Contract Performance Bond and Payment Bond payable to the District, in an amount of 100 Percent of the total Contract price each in a form and with security satisfactory to the said District, then this obligation to be void; otherwise to be and remain in full force and virtue in the law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid District, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

IN TESTIMONY Thereof, the Principal and Surety have caused these presents to be duly signed and sealed this _____ day of _____, _____.

Principal

By _____
(Seal)

Surety

(Seal)

Countersigned _____

Local Resident Producing Agent for _____

APPENDIX D

BIDDER QUALIFICATION QUESTIONNAIRE

APPENDIX D

BIDDER QUALIFICATION QUESTIONNAIRE

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets if necessary. Bidders may attach additional sheets as necessary if additional space is required.

1. How many years has your organization been in business as a Contractor?

2. Describe and give contact information of current projects that you have underway. Do you have a project(s) underway which might interfere with the start of this Work and completion on schedule?

3. List projects and provide a brief description that you have completed similar in type, size, and nature as the one proposed. Note: Projects may be larger than this project.

- a. Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____
Address: _____
Date Started: _____ Date Completed: _____ Contract Value: _____
Team Members: _____

Description of Project: _____

- b. Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____

Address: _____
Date Started: _____ Date Completed: _____ Contract Value: _____
Team Members: _____

Description of Project: _____

c. Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____
Address: _____
Date Started: _____ Date Completed: _____ Contract Value: _____
Team Members: _____

Description of Project: _____

4. List any additional references you would like to include outside of projects similar in scope to this one

Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____
Address: _____

Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____
Address: _____

Name of Project: _____
Owner/Engineer: _____ Telephone No.: _____
Address: _____

5. List the projects completed within Levy County in the past (5) years.

6. Have you ever failed to complete work awarded to you? If so, where and why?

-
7. Bidders must disclose and provide a description of any and all conflicts occurring in the past seven (7) years with any contracts, projects, or clients. Conflicts include, but are not limited to, payment disputes, quality of work disputes, failure to timely perform, lawsuits, administrative proceedings, claims or threatened claims on bonds, and other matters that may call into question the Bidder's ability to assure a quality and good faith performance. Poor or unacceptable past performance may result in a Bidder being deemed "not responsible." Failure to disclose relevant Conflict information may result in termination for a breach of contract.

List all past project conflicts, litigations, arbitrations, mediations, informal settlement discussions, or disputes involving your company for the past (3) years and outcome. Fully describe the circumstances (use additional sheets if necessary).

8. State the true and exact, correct, and complete name under which you do business. BIDDER IS (select one):

A SOLE PROPRIETORSHIP, PARTNERSHIP OR CORPORATION

(Bidder Name)

(Address)

By _____ (Printed name of person authorized to sign)

(Title)

(Authorized Signature)

Phone No.: _____

9. LIST ALL PRINCIPALS OF ORGANIZATION: (President, Vice President, Secretary-Treasurer, Partner, etc.)

Signature and Title of Person Submitting Application

Date

APPENDIX E

REQUIRED FORMS AND CERTIFICATIONS (E1 – E11)

**APPENDIX E-1
INDEMNIFICATION AND HOLD HARMLESS**

As further described in the Contract Documents, to the fullest extent permitted by law, Bidder shall indemnify and hold harmless the Cedar Key Water and Sewer District and its officers, agents, and employees from any and all claims, liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, arising out of or connected to Bidder's performance of this Contract.

Signed: _____

Name: _____

Title: _____

Firm: _____

Address: _____

APPENDIX E-2
SWORN STATEMENT UNDER SECTION 287.133(3)(a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the Cedar Key Water and Sewer District.

By : _____
[Print individual's name and title]

for _____
[Print name of entity submitting sworn statement]

Whose business address is:

and (if applicable) its Federal Employer Identification Number (FEIN) is . _____

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement).

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

a. A predecessor or successor of a person convicted of a public entity crime: or

b. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

ITB 2024-02 Sanitary Sewer Lift Station Rehabilitation

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. [Indicate which statement applies.]

_____ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However there has been a subsequent proceeding before a hearing a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted contractor list. [Attach a copy of the final order.]

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

(Signature)

Sworn to and subscribed before me this _____ day of _____, 2024.

Personally known _____ OR Produced identification _____
(Type of identification)

NOTARY PUBLIC

Notary Public - State of _____

My commission expires: _____

Printed, typed, or stamped commissioned name of notary public

APPENDIX E-3
DRUG FREE WORKPLACE CERTIFICATION

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more responses which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a response received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie responses will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

- 1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- 2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees from drug abuse violations.
- 3) Give each employee engaged in providing the commodities or contractual services that are under this solicitation a copy of the statement specified in subsection (1) above.
- 4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under this solicitation, the employee will abide by the terms of the statement and will notify the employee of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the work place no later than five (5) days after such conviction.
- 5) Impose a sanction, on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
- 6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

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

VENDOR _____ TITLE _____

AUTHORIZED SIGNATURE _____ DATE _____

**APPENDIX E-4
DISCLOSURE STATEMENT
CONFLICT OF INTEREST DISCLOSURE**

The award hereunder is subject to the provisions of Chapter 112, Florida Statutes. Bidders must disclose with their proposals whether any officer, director, employee or agent is also an officer or an employee of the Cedar Key Water and Sewer District. All firms must disclose the name of any such officer or employee who owns, directly or indirectly, an interest of five percent (5%) or more in the Bidder's firm or any of its branches or affiliates. All Bidders must also disclose the name of any employee, agent, lobbyist, previous employee of the entities listed above, or other person, who has received or will receive compensation of any kind, or who has registered or is required to register under Section 112.3215, Florida Statutes, in seeking to influence the actions of the Cedar Key Water and Sewer District with this procurement.

Names of Officer, Director, Employee or Agent that is also an Officer or Employee of the Cedar Key Water and Sewer District.

Name of an State Officer or Employee that owns 5% or more in Bidder's firm:

Name

Company

Date

**APPENDIX E-5
NON-COLLUSION AFFIDAVIT**

The undersigned being first duly sworn as provided by law, deposes and says:

1. This Affidavit is made with the knowledge and intent that it is to be filed with the Cedar Key Water and Sewer District and that it will be relied upon by said District in any consideration which may give to and any action it may take with respect to this Proposal.

2. The undersigned is authorized to make this Affidavit on behalf of,

(Name of Corporation, Partnership, Individual, etc.)

a , _____ formed under the laws of _____
(Type of Business) (State or Province)

of which he is . _____
(Sole partner, president, etc.)

3. Neither the undersigned nor any other person, firm or corporation named in above Paragraph 2, nor anyone else to the knowledge of the undersigned, have themselves solicited or employed anyone else to solicit favorable action for this Proposal by the District, also that no head of any department or employee therein, or any officer of the District is directly interested therein.

4. This Proposal is genuine and not collusive or a sham; the person, firm or corporation named above in Paragraph 2 has not colluded, conspired, connived or agreed directly or indirectly with any bidder or person, firm or corporation, to put in a sham Proposal, or that such other person, firm or corporation, shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference with any person, firm or corporation, to fix the prices of said proposal or proposals of any other bidder; and all statements contained in the proposal or proposals described above are true; and further, neither the undersigned, nor the person, firm or corporation named above in Paragraph 3, has directly or indirectly submitted said proposal or the contents thereof, or divulged information or data relative thereto, to any association or to any member or agent thereof.

AFFIANT'S NAME

AFFIANT'S TITLE

TAKEN, SWORN AND SUBSCRIBED TO BEFORE ME this _____ day of _____, 2024.

Personally Known _____ or Produced Identification _____

Type of Identification _____

Notary Public

(Print, Type or Stamp Commissioned Name of Notary Public)

**APPENDIX E-6
LIST OF PROPOSED CONTRACTORS AND SERVICES TO BE PERFORMED**

By signing below, Bidder certifies that in the event it is awarded the contract, Bidder, as the prime contractor for the Project, shall self-perform at a minimum 50% of the Project Work.

For Each Subcontractor Listed Below, Attach Additional Sheets Containing an Experience Statement with Pertinent Information Regarding Similar Projects and Other Experience

Subcontract 1 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 2 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 3 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 5 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 6 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 7 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 8 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 9 Name: City/State/Zip: Services to Perform and Percentage:
Subcontract 10 Name: City/State/Zip: Services to Perform and Percentage:

Signature

Title

ITB 2024-02 Sanitary Sewer Lift Station Rehabilitation

Contractor/Firm

Address

APPENDIX E-7
CERTIFICATION REGARDING DEBARMENT, SUSPENSION, DISCRIMINATORY
VENDORS
AND OTHER RESPONSIBILITY MATTERS

- 1) The Bidder certifies to the best of its knowledge and belief, that it and its principals:
 - a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any State or Federal department or agency;
 - b) Have not within a three (3) year period preceding this been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of these offenses enumerated in paragraph (1)(b) of this certification; and
 - d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- 2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.
- 3) No subcontract will be issued for this project to any party which is debarred or suspended from eligibility to receive state or federally funded contracts.
- 4) The Bidder certifies that neither Bidder nor any of its affiliates have been placed on the discriminatory vendor list maintained by the Florida Department of Management Services pursuant to section 287.134, Florida Statutes, within three (3) years of the date of advertisement of this ITB.

Signature

Title

Contractor/Firm

Address

**APPENDIX E-8
E-VERIFY COMPLIANCE CERTIFICATION**

In accordance with the Governor of Florida’s Executive Order 11-116, the Proposer hereby certifies that the U.S. Department of Homeland Security’s E-Verify system will be used to verify the employment eligibility of all new employees hired by the Contractor during the Contract term, and shall expressly require any subcontractors performing work or providing services pursuant to the Contract to likewise utilize the U.S. Department of Homeland Security’s E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term; and shall provide documentation of such verification to the Cedar Key Water and Sewer District upon request.

As the person authorized to sign this state, I certify that this firm complies/will comply fully with this ITB regarding e-Verify Compliance.

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

**APPENDIX E-10
TRENCH SAFETY ACT**

Bidder acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Chapter 553, Part VI, Florida Statutes. The Bidder further identifies the cost to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF,SY)	Unit Quantity	Unit Cost	Extended Cost
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
Total \$ _____				

Failure to complete the above may result in the Bid being declared non-responsive.

Dated _____ Bidder _____

By _____

APPENDIX E-11
COMMENTS ON PROPOSED CONTRACT (see Appendix F)

Comments on Proposed Contract
<u>Contract Provision at Issue</u>
<u>Objection by Bidder</u>
<u>Suggested Resolution</u>

APPENDIX F
FORM CONTRACT

Appendix F
CONSTRUCTION AGREEMENT

CEDAR KEY WATER AND SEWER DISTRICT, an independent special district unit of government, situated at 510 3rd Street, Cedar Key, Florida 32625 (the "District"), hereby contracts with [Insert Contractor's Name, Address, and Corporate Registration Info] (the "Contractor") in connection with the District's Project [**Project Name**], **Project No. #** (the "Project"), as said work is set forth in the Plans and Specifications prepared by [**Consultant/Engineer**], the Engineer and/or Architect of Record (the "Design Professional") and other Contract Documents hereafter specified (the "Work").

The District and the Contractor, for the consideration herein set forth, agree as follows:

Section 1. Contract Documents.

A. The Contract Documents consist of this Agreement, the Exhibits described in Section 36 hereof, the Legal Advertisement, ITB 2024-02 Intent and General Information, the Instructions to Bidders, the Technical Specifications included in ITB 2024-02, the Construction Plans included in ITB 2024-02, the Contractor's Bid proposal and any duly executed and issued addenda, Change Orders, Work Directive Changes, Field Orders, Work Authorizations and amendments relating thereto. All of the foregoing Contract Documents are incorporated by reference and made a part of this Agreement (all of said documents including the Agreement sometimes being referred to herein as the "Contract Documents" and sometimes as the "Agreement"). A copy of the Contract Documents shall be maintained by Contractor at the Project site at all times during the performance of the Work.

B. The Design Professional is the initial interpreter of the Contract Documents but is not the judge between the District and the Contractor. The District reserves the right to make final decisions considering the Design Professional's recommendations or interpretations of the Contract Documents. The Design Professional does not have authority to obligate or commit the District to fund additional expenditures or approve extensions of time over the approved Contract Time or Amount. However, the Design Professional's interpretation as to the intent of his design shall be final and not subject to interpretation by the District's staff.

C. Any Work that may be reasonably inferred from the specifications as being required to produce the intended result shall be supplied whether or not it is specifically called for. In case of any inconsistency or conflict among the provisions of the Agreement and any other terms and conditions of any documents comprising the Contract Documents, the provisions of the Agreement shall control. Concerning the Contract Documents, the order of precedence shall be as follows: (1) Change Orders; (2) the Agreement, including amendments and Exhibits except as otherwise provided; (3) Field Orders; (4) the solicitation documents, including any addenda. The Contract Documents listed above represent the entire and integrated Agreement between the parties hereto, and supersede prior negotiations, representations, or agreements, either written or oral.

D. Work, materials or equipment described in words which have a well-known technical or trade meaning, shall be deemed to refer to such recognized standards.

E. The District shall furnish to the Contractor up to three (3) sets of the Contract Documents as are reasonably necessary for execution of the Work. Additional copies of the Contract Documents shall be furnished, upon request, at the cost of reproduction.

F. The Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the District.

G. Construction services provided by Contractor for the Project shall be under the general direction of **INSERT DISTRICT Project Manager**, or their successor, who shall act as the District's representative during the term of this Agreement. If the District's representative is not a District employee, then District's representative is not authorized to issue changes to the Contract Amount, Contract Time, or Scope of Work without express approval by the Department Director, General Manager, or Board of Directors.

H. The District's representative, within the authority conferred by the Board of Directors, shall initiate written Change Orders, and notification to the Contractor of any and all changes approved by the District in the Contractor's: (1) compensation; (2) time and/or schedule of service delivery; (3) and any amendment (s) or other change(s) relative to the Work pursuant to this Contract or Change Orders pertaining thereto. Following District approval, the District's representative shall coordinate issuance of any such documents. The District's representative shall be responsible for acting on the District's behalf to administer, coordinate, interpret and otherwise manage the contractual provisions and requirements set forth in this Contract or any amendments, or Change Orders issued hereunder.

I. Neither the Contractor nor any Subcontractor, Supplier, or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the District shall have or acquire any title to or ownership rights to any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of the Design Professional; and they shall not reuse any of them on extensions of the Project or any other project without written consent of the District or their Design Professional and the specific written verification or adaptation by the Design Professional.

Section 2. Scope of Work.

A. The Project is to provide lift station rehabilitation construction services of five of the District's sanitary sewer lift stations, as set forth in the Plans and Specifications prepared by the Design Professional. The Contractor agrees to furnish and pay for all management, supervision, financing, labor, materials, tools, transportation, fuel, supplies, utilities, equipment and services of every kind and type necessary to diligently, timely, and fully perform and complete in a good and workmanlike manner the Work required by this Agreement to complete the Project.

B. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturers, fabricator or processors except as otherwise provided in the Contract Documents.

Section 3. Contract Amount.

A. In consideration of the faithful performance by the Contractor of the covenants in this Agreement to the full satisfaction and acceptance of the District, the District agrees to pay, or cause to be paid, to Contractor the following amount (herein "Contract Amount"), in accordance with the terms of this Agreement: [\$] or in WORDS: [**AND NO/100**]. The cost proposal is on the following page.

The remainder of this page is intentionally left blank

[Insert Cost Proposal]

B. If the Contract Amount includes an Allowance, the Contractor shall cause the Work covered by the Allowance to be done for such sums within the limits of the Allowance as the District may approve. The Contractor agrees that the Contract Amount includes such sums as they deem proper for costs and any profit on account of any Allowances. No demands for an additional sum for overhead or profit will be allowed.

C. Any agreed upon changes to the Contract Amount must be accomplished by an approved, written Change Order in the form attached to this Agreement.

D. The District may subsequently identify items eligible for direct purchase for sales tax savings. The District shall, at its sole discretion, have the option to purchase directly from the supplier or vendor, any supplies, materials or equipment included in the Contractor's bid for the Contract. The District reserves the right to require Contractor to assign to the District agreements with suppliers for such goods. Contractor shall, from time to time submit, update and keep current, for consideration by the District, a list of all materials, supplies and equipment to be purchased, organized by supplier or vendor. Such list shall include a brief description of the materials, supplies and equipment and the name and address of the supplier or vendor. Suppliers or vendors reasonably anticipated to furnish material, supplies and equipment with an aggregate purchase value of less than \$10,000 need not be listed. Goods not required for the performance of the Contract shall not be purchased under this Agreement. The District reserves the right to delete or add items from this Agreement when it is in the District's best interest. Upon approval by the District, the Contractor will provide a worksheet by electronic means which will include a proposal from the vendor detailing the description of the item to be purchased, total price and sales tax to be deducted. The District will then issue a purchase order directly to the vendor for the cost of the item less the sales tax. Upon completion of all direct purchases the Contractor will prepare a deductive Change Order reducing the Contract Amount by the total amount of the purchases, inclusive of all sales tax, shipping, handling, insurance, and other similar charges paid by Owner. Administrative costs incurred by the Contractor with this Agreement, including administering the purchases in the name of the District, shall be considered to be included in the base bid proposal for work. No addition shall be added to the Contract Amount because of the service provided by the Contractor in the purchase of property, materials, et cetera, in the name of the District.

Section 4. Bonds.

A. The Contractor shall provide Performance and Payment Bonds, in the form prescribed in the Exhibits to the Agreement, in the amount of 100% of the Contract Amount, the costs of which are to be paid by Contractor. If the Contract is increased by a Change Order, it shall be the Contractor's responsibility to ensure that the Performance and Payment Bonds are amended accordingly, and a copy of the amendment forwarded to the District. The Performance and Payment Bonds shall be underwritten by a surety authorized to do business in the State of Florida and otherwise acceptable to the District; provided, however, the surety shall be rated as "A-" or better as to general policy holders rating and Class V or higher rating as to financial size category and the amount required shall not exceed 5% of the reported policy holders surplus, all as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc. of 75 Fulton Street, New York, New York 10038.

B. If the surety for any bond furnished by Contractor is declared bankrupt, becomes insolvent, its right to do business is terminated in the State of Florida, or it ceases to meet the requirements imposed by the Contract Documents, the Contractor shall, within five (5) calendar days thereafter, substitute another bond and surety, both of which shall be subject to the District's approval.

Section 5. Contract Time and Liquidated Damages.

A. Time is of the essence in the performance of the Work under this Agreement. The "Commencement Date" is established in the Notice to Proceed to be issued by the District. Written Notice to Proceed is contingent upon and will be done subsequent to the Contractor fully satisfying the District's stated insurance and Bond submittal requirements. The Contractor shall commence the Work within ten (10) calendar days from the Commencement Date. No Work shall be performed at the Project site prior to the Commencement Date. Any Work performed by the Contractor prior to the Commencement Date shall be at the sole risk of the Contractor. The Work shall be substantially completed within **235 calendar days** from the Commencement Date. The date of substantial completion of the Work (or designated portions thereof) is the date certified by the Design Professional when construction is sufficiently complete, in accordance with the Contract Documents, so the District can occupy or utilize the Work (or designated portions thereof) for the use for which it is intended. The Work shall be fully and finally completed and ready for final acceptance by the District within **265 calendar days** from the Commencement Date (herein "Contract Time").

B. The District and the Contractor recognize that, since time is of the essence for this Agreement, the District will suffer financial loss if the Work is not completed within the time specified above, as said time may be adjusted as provided for herein. Should the Contractor fail to substantially complete the Work within the time period noted above, the District shall be entitled to assess, as liquidated damages, but not as a penalty, **\$1,000.00** for each calendar day thereafter until substantial completion is achieved. The Project shall be deemed to be substantially completed on the date the Design Professional issues a Substantial Completion Certificate pursuant to the terms hereof. Upon substantial completion, should the Work not be fully and finally completed within the time period noted above, the District shall be entitled to assess, as liquidated damages, but not as a penalty, **\$500.00** for each calendar day thereafter until final completion is achieved. The Contractor hereby expressly waives and relinquishes any right which it may have to seek to characterize the above noted liquidated damages as a penalty, which the parties agree represents a fair and reasonable estimate of the District's actual damages at the time of contracting if the Contractor fails to complete the Work in a timely manner.

C. When any period of time is referenced by days herein, it shall be computed to exclude the first day and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation, and the last day shall become the next succeeding day which is not a Saturday, Sunday or legal holiday. All days shall mean calendar day and not business day.

Section 6. Intent of Contract Documents.

A. It is the intent of the Contract Documents to describe a functionally complete project (or portion thereof) to be constructed in accordance with the Contract Documents. Any work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words which have a well known technical or trade meaning are used to describe work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association or to the laws or regulations of any governmental authority having jurisdiction over the Project, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, law or regulation in effect at the time the Work is performed, except as may be otherwise specifically stated herein.

B. If before or during the performance of the Work, Contractor discovers a conflict, error or discrepancy in the Contract Documents, Contractor immediately shall report same to Design Professional in writing and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from the Design Professional. If required, a Field Order or Change Order will be issued pursuant to Section 15 of this Agreement. If the Contractor performs any Construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Design Professional and District, the Contractor shall assume responsibility for such performance and shall share in costs associated with any corrections. Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to Contractor with the Contract Documents before commencing any portion of the Work.

C. Drawings are intended to show general arrangements, design and extent of Work and are not intended to serve as shop drawings. Specifications are separated into divisions for convenience of reference only and shall not be interpreted as establishing divisions for the Work, trades, subcontracts, or extent of any part of the Work. In the event of a discrepancy between or among the drawings, specifications or other Contract Document provisions, Contractor shall be required to comply with the provision which is the more restrictive or stringent requirement upon the Contractor, as determined by the Design Professional. Unless otherwise specifically mentioned, all anchors, bolts, screws, fittings, fillers, hardware, accessories, trim and other parts required in connection with any portion of the Work to make a complete, serviceable, finished and first quality installation shall be furnished and installed as part of the Work, whether or not called for by the Contract Documents.

Section 7. Investigation and Utilities.

A. Contractor shall have the sole responsibility of satisfying itself concerning the nature and location of the Work and the general and local conditions, and particularly, but without limitation, with respect to the following: those affecting transportation, access, disposal, handling and storage of materials; availability and quality of labor; water, sewer, and electric power; availability and condition of roads; work area; living facilities; climatic conditions and seasons; physical conditions at the work-site and the project area as a whole; topography and ground surface

conditions; nature and quantity of the surface materials to be encountered; subsurface conditions; equipment and facilities needed preliminary to and during performance of the Work; and all other costs associated with such performance. The failure of Contractor to acquaint itself with any applicable conditions shall not relieve Contractor from any of its responsibilities to perform under the Contract Documents, nor shall it be considered the basis for any claim for additional time or compensation.

B. Contractor shall locate all existing roadways, railways, drainage facilities and utility services above, upon, or under the Project site, said roadways, railways, drainage facilities and utilities (surface and subsurface) being referred to in this Sub-Section 7.B. as the "Utilities". Contractor shall contact the owners of all Utilities to determine the necessity for relocating or temporarily interrupting any Utilities during the construction of the Project. Contractor shall schedule and coordinate its Work around any such relocation or temporary service interruption. Contractor shall be responsible for properly shoring, supporting and protecting all Utilities at all times during the course of the Work. Relocation or shutdown of District facilities must be requested by the Contractor in writing a minimum of ten (10) calendar days prior to the proposed Work. The District shall have the final decision with respect to whether the relocation or shutdown is required and when the relocation or shutdown of facilities may take place. The Work may need to be performed at night or on weekends to minimize the interruption of service or to meet the operational needs of the District's facilities.

Section 8. Schedule.

A. The Contractor, within ten (10) calendar days after receipt of a Notice of Award, shall prepare and submit to the District and Design Professional, for their review and approval, a progress schedule for the Project (herein "Progress Schedule"). The Progress Schedule shall relate to all Work required by the Contract Documents and shall provide for expeditious and practicable execution of the Work within the Contract Time. The Progress Schedule shall indicate the dates for starting and completing the various stages of the Work.

B. The Progress Schedule shall be updated monthly by the Contractor. All monthly updates to the Progress Schedule shall be subject to the District's and Design Professional's review and approval. Contractor shall submit the updates to the Progress Schedule with its monthly Applications for Payment noted below. The District's and the Design Professional's review and approval of the submitted Progress Schedule updates shall be a condition precedent to the District's obligation to pay Contractor.

Section 9. Progress Payments.

A. Prior to submitting its first monthly Application for Payment, Contractor shall submit to the District and the Design Professional, for their review and approval, a schedule of values based upon the Contract Price, listing the major elements of the Work and the dollar value for each element. After its approval by the District and Design Professional, this schedule of values shall be used as the basis for the Contractor's monthly Applications for Payment. This schedule shall be updated and submitted each month to the Design Professional along with a completed and notarized copy of the Application for Payment form. No voluntary acceleration or

early completion of the Work shall modify the time of payments to Contractor as set forth in the approved Schedule of Values.

B. Prior to submitting its first monthly Application for Payment, Contractor shall submit to the District and the Design Professional a complete list of all its proposed subcontractors and materialmen, showing the work and materials involved and the dollar amount of each proposed subcontract and purchase order. The first Application for Payment shall be submitted no earlier than thirty (30) days after the Commencement Date.

C. If payment is requested on the basis of materials and equipment not incorporated into the Project, but delivered and suitably stored at the site or at another location agreed to by the District in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that the District has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances, together with evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the District's interest therein, all of which shall be subject to the District's satisfaction.

D. Contractor shall submit two (2) copies of its monthly Application for Payment to the Design Professional on or before the 25th day of each month for work performed during the previous month. Invoices received after the 25th day of each month shall be considered for payment as part of the next month's application. Within ten (10) calendar days after receipt of each Application for Payment, the Design Professional shall either:

D.1 indicate his approval of the requested payment;

D.2 indicate his approval of only a portion of the requested payment, stating in writing his reasons therefore; or

D.3 return the Application for Payment to the Contractor indicating, in writing, the reason for refusing to approve payment and the action necessary to make the payment request proper.

In the event of a total denial and return of the Application for Payment by the Design Professional, the Contractor may make the necessary corrections and resubmit the Application for Payment. The District shall, within thirty (30) calendar days after District approval of an Application for Payment, pay the Contractor the amounts so approved. Provided, however, in no event shall the District be obligated to pay any amount greater than that portion of the Application for Payment approved by the Design Professional.

E. The District shall retain five percent (5%) of the gross amount of each monthly payment request or five percent (5%) of the portion thereof approved by the Design Professional for payment, whichever is less. Such sums shall be accumulated and released to Contractor as follows. Within 20 days after the Design Professional delivers the tentative punch list to Contractor as set forth in set forth in Section 26 herein, the District will pay the contractor the remaining contract balance including retainage previously withheld less an amount equal to 150 percent of the estimated cost to complete the items on the tentative punch list (the "remaining

retainage”). The remaining retainage will be released to the Contractor with final payment. .

F. Monthly payments to Contractor shall in no way imply or constitute approval or acceptance of Contractor's work.

G. Each Application for Payment shall be accompanied by a Release and Affidavit, in the form attached to this Agreement, showing that all materials, labor, equipment and other bills associated with that portion of the Work for which payment is being requested have been paid in full. The District shall not be required to make payment until and unless these affidavits are furnished by the Contractor.

H. Contractor agrees and understands that funding limitations exist and that the expenditure of funds must be spread over the duration of the Project at regular intervals based on the Contract Amount and Progress Schedule. Accordingly, prior to submitting its first monthly Application for Payment, Contractor shall prepare and submit for the District's and the Design Professional's review and approval, a detailed Project Funding Schedule, which shall be updated as necessary and approved by the District to reflect approved adjustments to the Contract Amount and Contract Time. No voluntary acceleration or early completion of the Work shall modify the time of payments to Contractor as set forth in the approved Project Funding Schedule.

Section 10. Payments Withheld.

A. The Design Professional or the District may decline to approve any Application for Payment, or portions thereof, because of subsequently discovered evidence or subsequent inspections. The Design Professional or the District may nullify the whole or any part of any approval for payment previously issued and the District may withhold any payments otherwise due Contractor under this Agreement or any other agreement between the District and Contractor, to such extent as may be necessary in the District's opinion to protect it from loss because of:

A.1 Defective Work not remedied;

A.2 Third party claims filed or reasonable evidence indicating probable filing of such claims;

A.3 Failure of Contractor to make payment properly to subcontractors or for labor, materials or equipment;

A.4 Reasonable doubt that the Work can be completed for the unpaid balance of the Contract Amount;

A.5 Reasonable indication that the Work will not be completed within the Contract Time;

A.6 Unsatisfactory prosecution of the Work by the Contractor;

A.7 Failure to provide accurate and current "As-Builts"; or

A.8 Any other material breach of the Contract Documents.

B. If these conditions in Subsection 10.A are not remedied or removed, the District may, after three (3) days written notice, rectify the same at Contractor's expense. The District also may offset against any sums due Contractor the amount of any liquidated or unliquidated obligations of Contractor to the District, whether relating to or arising out of this Agreement or any other agreement between Contractor and the District.

Section 11. Final Payment.

A. The District shall make final payment to Contractor within thirty (30) calendar days after the Work is finally inspected and accepted by both the District and the Design Professional in accordance with Section 26.A. herein, provided that Contractor first, and as an explicit condition precedent to the accrual of Contractor's right to final payment, shall have furnished the District with a properly executed and notarized copy of the Release and Affidavit, as well as, a duly executed copy of the Surety's consent to final payment and such other documentation that may be required by the Contract Documents and the District.

B. Contractor's acceptance of final payment shall constitute a full waiver of any and all claims by Contractor against the District arising out of this Agreement or otherwise relating to the Project, except those previously made in writing and identified by Contractor as unsettled at the time of the final Application for Payment. Neither the acceptance of the Work nor payment by the District shall be deemed to be a waiver of the District's right to enforce any obligations of Contractor hereunder or to the recovery of damages for defective Work not discovered by the Design Professional or the District at the time of final inspection.

Section 12. Submittals and Substitutions.

A. Contractor shall carefully examine the Contract Documents for all requirements for approval of materials to be submitted such as a schedule of values, safety manual, shop drawings, data, test results, schedules and samples. Contractor shall submit all such materials at its own expense and in such form as required by the Contract Documents in sufficient time to prevent any delay in the delivery of such materials and the installation thereof.

B. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other suppliers may be accepted by the District if sufficient information is submitted by Contractor to allow the District to determine that the material or equipment proposed is equivalent or better than to that named. Requests for review of substitute items of material and equipment will not be accepted by the District from anyone other than Contractor and all such requests must be submitted by Contractor to Design Professional within thirty (30) calendar days after Notice of Award is received by Contractor.

C. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make application to the Design Professional for acceptance thereof, certifying that the proposed substitute shall perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application shall state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of substantial completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the District for the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service shall be indicated. The application also shall contain an itemized estimate of all costs that will result, directly or indirectly, from acceptance of such substitute, including costs for redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Design Professional in evaluating the proposed substitute. The Design Professional may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

D. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Design Professional, if Contractor submits sufficient information to allow the Design Professional to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedures for submission to and review by the Design Professional shall be the same as those provided herein for substitute materials and equipment.

E. The Design Professional shall be allowed a reasonable time within which to evaluate each proposed substitute. The Design Professional shall be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without the Design Professional's and the District's prior written acceptance which shall be evidenced by either a Change Order or an approved Shop Drawing. The District may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute. The Design Professional will record time required by the Design Professional and the Design Professional's consultants in evaluating substitutions proposed by Contractor and making changes in the Contract Documents occasioned thereby. Whether or not the District accepts a proposed substitute, Contractor shall reimburse the District for the charges of the Design Professional and the Design Professional's consultants for evaluating each proposed substitute, or such charges may be deducted from an application for payment, at the District's sole discretion.

Section 13. Daily Reports, As-Builts and Meetings.

A. Unless waived in writing by the District, Contractor shall complete and submit to Design Professional on a weekly basis a daily log of the Contractor's work for the preceding week in a format approved by the Design Professional and the District. The daily log shall document all activities of Contractor at the Project site including, but not limited to, the following:

- A.1. Weather conditions showing the high and low temperatures during work hours, the amount of precipitation received on the Project site, and any other weather conditions which adversely affect the Work;
- A.2. Soil conditions which adversely affect the Work;
- A.3. The hours of operation by Contractor's and subcontractor's personnel;
- A.4. The number of Contractor's and subcontractor's personnel present and working at the Project site, by subcontract and trade;
- A.5. All equipment present at the Project site, description of equipment uses and designation of time equipment was used (specifically indicating any down time);
- A.6. Description of Work being performed at the Project site;
- A.7. Any unusual or special occurrences at the Project site;
- A.8. Materials received at the Project site;
- A.9. A list of all visitors to the Project site; and
- A.10. Any problems that might impact either the cost or quality of the Work or the time of performance.

The daily log shall not constitute nor take the place of any notice required to be given by Contractor to the District or Design Professional pursuant to the Contract Documents.

B. Contractor shall maintain in a safe place at the Project site one record copy of the Contract Documents, including, but not limited to, all drawings, specifications, addenda, amendments, Change Orders, Work Directive Changes and Field Orders, as well as all written interpretations and clarifications issued by the Design Professional, in good order and annotated to show all changes made during construction. The annotated drawings shall be continuously updated by the Contractor throughout the prosecution of the Work to accurately reflect all field changes that are made to adapt the Work to field conditions, changes resulting from Change Orders, Work Directive Changes and Field Orders, and all concealed and buried installations of piping, conduit and utility services. All buried and concealed items, both inside and outside the Project site, shall be accurately located on the annotated drawings as to depth and in relationship to not less than two (2) permanent features (e.g. interior or exterior wall faces). The annotated drawings shall be clean, and all changes, corrections and dimensions shall be given in a neat and legible manner in a contrasting color. The "As-Built" record documents, together with all approved samples and a counterpart of all approved shop drawings shall be available to Design Professional for reference. Current and accurate "As-Built" record documents shall be submitted with each Application for Payment. Failure to provide current and accurate "As-Built" record drawings shall be reason for rejecting the Application for Payment. Upon completion of the Work and as a condition precedent to Contractor's entitlement to final payment, these "As-Built" record

documents, samples and shop drawings shall be delivered to Design Professional by Contractor for the District.

C. The Contractor shall submit to the Design Professional one complete set of all recorded changes made during Construction entitled "As-Built" and dated. Submittals shall be made in accordance with the above and shall be submitted at the time of Substantial Completion.

D. Certified "as-built" information, which the Contractor must show on marked-up copies of the design drawings, prints, and other materials as specified above, shall include both authorized and unauthorized changes and any modifications to material types from that specified in the bid plans and Specifications. As a prerequisite to any payments, the Contractor shall make available to the Design Professional all "as-built" information pertinent to the design drawings each month prior to his submission of a monthly application for payment. The Contractor shall also obtain "as-built" cross-sections of the roadway, ditches, channels, and other drainage ways as shown in the Contract Documents at intervals not to exceed 100 ft. The Contractor shall set benchmarks on or within 100 ft. of each control structure constructed as part of the Project. A complete description including elevation and location of each control structure benchmark shall be provided to the Design Professional as part of the "as-built" information. The elevation shall be clearly and permanently indicated on each benchmark.

E. "As-built" dimensions and elevations shall be obtained by a Professional Land Surveyor registered in the State of Florida pursuant to Chapter 472, Florida Statutes. The "as-built" drawings shall be signed and sealed by the Contractor's Professional Land Surveyor in accordance with Section 472.025, Florida Statutes.

F. All pertinent surveyors' field survey notes containing the "as-built" data shall be sealed and submitted to the Design Professional for review and acceptance prior to authorization of the final payment.

G. "As-built" data shall be secured, and the accuracy of measurements shall be 0.01 ft.

H. All sub-surface improvements considered part of the Work as shown in the Contract Documents shall be "as-built" by the Contractor prior to backfilling.

I. Contractor shall keep all records and supporting documentation which concern or relate to the Work hereunder for a minimum of five (5) years from the date of termination of this Agreement or the date the Project is completed, whichever is later. The District, or any duly authorized agents or representatives of the District, shall have the right to audit, inspect and copy all such records and documentation as often as they deem necessary during the period of this Agreement and during the five (5) year period noted above; provided, however, such activity shall be conducted only during normal business hours.

J. In addition to other requirements provided herein, Contractor shall comply with public records laws embodied in chapter 119, Florida Statutes, and specifically shall:

J.1. Keep and maintain public records required by the District in order to perform the Scope of Services identified herein.

J.2. Upon request from the District provide the District with any requested public records or allow the requested records to be inspected or copied within a reasonable time by the District.

J.3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and thereafter if the Contractor does not transfer all records to the District.

J.4. Transfer, at no cost, to District all public records in possession of the Contractor upon termination of this Agreement and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the District, upon request from the District, in a format that is compatible with the information technology systems of the District. If the Contractor keeps and maintains public records upon the conclusion of this Agreement, the Contractor shall meet all applicable requirements for retaining public records that would apply to the District.

K. If Contractor does not comply with a public records request, the District shall treat that omission as breach of this Agreement and enforce the contract provisions accordingly. Additionally, if the Contractor fails to provide records when requested, the Contractor may be subject to penalties under section 119.10, Florida Statutes and reasonable costs of enforcement, including attorney fees.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS, ALICIA M. JOHNS, 510 3rd STREET, CEDAR KEY, FL 32625, (352) 543-5285, ALICIA@CKWATER.ORG.

Section 14. Contract Time and Extensions.

A. Contractor shall diligently pursue the completion of the Work and coordinate the Work being done on the Project by its subcontractors and materialmen, as well as coordinating its Work with all work of others at the Project Site, so that its Work or the work of others shall not be delayed or impaired by any act or omission by Contractor. Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures, as well as coordination of all portions of the Work under the Contract Documents, and the coordination of the District's suppliers and contractors as set forth in Section 17.B. herein.

B. Should Contractor be obstructed or delayed in the prosecution of or completion of the Work as a result of unforeseeable causes beyond the control of Contractor, and not due to its fault or neglect, including but not restricted to acts of God or of the public enemy, acts of

government, fires, floods, epidemics, quarantine regulation, strikes or lockouts, Contractor shall notify the District in writing within forty-eight (48) hours after the commencement of such delay, stating the cause or causes thereof, or be deemed to have waived any right which Contractor may have had to request a time extension.

C. No interruption, interference, inefficiency, suspension or delay in the commencement or progress of the Work from any cause whatever, including those for which the District may be responsible, in whole or in part, shall relieve Contractor of his duty to perform or give rise to any right to damages or additional compensation from the District. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against the District will be the right to seek an extension to the Contract Time; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage For Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion.

Section 15. Changes in the Work.

A. The District shall have the right at any time during the progress of the Work to increase or decrease the Work. Promptly after being notified of a change, Contractor shall submit an itemized estimate of any cost or time increases or savings it foresees as a result of the change. Except in an emergency endangering life or property, or as expressly set forth herein, no addition or changes to the Work shall be made except upon written order of the District, and the District shall not be liable to the Contractor for any increased compensation without such written order. No officer, employee or agent of the District is authorized to direct any extra or changed work orally.

B. A Change Order, in the form attached to this Agreement, Exhibit H, shall be issued and executed promptly after an agreement is reached between Contractor and the District concerning the requested changes. Contractor shall promptly perform changes authorized by duly executed Change Orders. The Contract Amount and Contract Time shall be adjusted in the Change Order in the manner as the District and Contractor shall mutually agree.

C. If the District and Contractor are unable to agree on a Change Order for the requested change, Contractor shall, nevertheless, promptly perform the change as directed by the District in a written Work Directive Change. In that event, the Contract Amount and Contract Time shall be adjusted as directed by the District. If Contractor disagrees with the District's adjustment determination, Contractor must make a claim pursuant to Section 16 of this Agreement or else be deemed to have waived any claim on this matter it might otherwise have had.

D. In the event a requested change results in an increase to the Contract Amount, the amount of the increase shall be limited to the Contractor's reasonable direct labor and material costs and reasonable actual equipment costs as a result of the change (including allowance for labor burden costs) plus a maximum ten percent (10%) markup for all overhead and profit. However, where the Work involved is covered by unit prices contained in the Contract Documents or subsequently agreed upon, those unit prices shall be applied to the quantities of the items involved. In the event such change Work is performed by a Subcontractor, a maximum ten percent

(10%) markup for all overhead and profit for all Subcontractors' and sub-subcontractors' direct labor and material costs and actual equipment costs shall be permitted, with a maximum five percent (5%) markup thereon by the Contractor for all of its overhead and profit, for a total maximum markup of fifteen percent (15%). All compensation due Contractor and any Subcontractor or sub-subcontractor for field and home office overhead is included in the markups noted above.

E. The District shall have the right to conduct an audit of Contractor's books and records to verify the accuracy of the Contractor's claim with respect to Contractor's costs associated with any Change Order.

F. The Design Professional shall have authority to order minor changes in the Work not involving an adjustment to the Contract Amount or an extension to the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes may be affected by Field Order or by other written order. Such changes shall be binding on the Contractor.

Section 16. Claims and Disputes.

A. A Claim is a demand or assertion by one of the parties seeking an adjustment or interpretation of the terms of the Contract Documents, payment of money, extension of time or other relief with respect to the terms of the Contract Documents. The term "Claim" also includes other disputes and matters in question between the District and Contractor arising out of or relating to the Contract Documents. The responsibility to substantiate a Claim shall rest with the party making the Claim.

B. Claims by the Contractor shall be made in writing to the District and Design Professional within forty-eight (48) hours after the first day of the event giving rise to such Claim or else the Contractor shall be deemed to have waived the Claim. Written supporting data shall be submitted to the District and Design Professional within fifteen (15) calendar days after the occurrence of the event, unless the District grants additional time in writing, or else the Contractor shall be deemed to have waived the Claim. All claims shall be priced in accordance with the provisions of Subsection 15.D.

C. Any dispute, action or proceeding arising out of or related to this Agreement shall be exclusively commenced in the state courts of Levy County, Florida, or where proper subject matter jurisdiction exists, in the United States District Court for the Northern District of Florida. Each party irrevocably submits and waives any objections to the exclusive personal jurisdiction and venue of such courts, including any objection based on forum non conveniens.

E. This Agreement and the rights and obligations of the parties shall be governed by the laws of the State of Florida without regard to its conflict of laws principles.

F. The Contractor shall proceed diligently with its performance as directed by the District, regardless of any pending Claim, action, suit or administrative proceeding, unless otherwise agreed to by the District in writing. The District shall continue to make payments in accordance with the Contract Documents during the pendency of any Claim.

Section 17. Other Work.

A. The District may perform other work related to the Project at the site by the District's own forces, have other work performed by utility owners or let other direct contracts. If the fact that such other work is to be performed is not noted in the Contract Documents, written notice thereof will be given to Contractor prior to starting any such other work. If Contractor believes that such performance will involve additional expense to Contractor or require additional time, Contractor shall send written notice of that fact to the District and Design Professional within forty-eight (48) hours of being notified of the other work. If the Contractor fails to send the above required forty-eight (48) hour notice, the Contractor will be deemed to have waived any rights it otherwise may have had to seek an extension to the Contract Time or adjustment to the Contract Amount.

B. Contractor shall afford each utility owner and other contractor who is a party to such a direct contract (or the District, if the District is performing the additional work with the District's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate its Work with theirs. Contractor shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the Design Professional and the others whose work will be affected. The duties and responsibilities of Contractor under this paragraph are for the benefit of such utility owners and other Contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between the District and such utility owners and other contractors.

C. If any part of Contractor's Work depends for proper execution or results upon the work of any other contractor or utility owner (or the DISTRICT), Contractor shall inspect and promptly report to Design Professional in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. Contractor's failure to report will constitute an acceptance of the other work as fit and proper for integration with Contractor's Work.

Section 18. E-Verify.

As a condition precedent to entering into this Agreement and in compliance with Section 448.095, Fla. Stat., Contractor and its subcontractors shall, register with and use the E-Verify system to verify work authorization status of all employees.

A. Contractor shall require each of its subcontractors to provide Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. Contractor shall maintain a copy of the subcontractor's affidavit as part of and pursuant to the records retention requirements of this Agreement.

B. The District, Contractor, or any subcontractor who has a good faith belief that a person or entity with which it is contracting has knowingly violated Section 448.09(1), Fla. Stat. or the provisions of this section shall terminate the contract with the person or entity.

C. The District, upon good faith belief that a subcontractor knowingly violated the provisions of this section, but Contractor otherwise complied, shall promptly notify Contractor and Contractor shall immediately terminate the contract with the subcontractor.

D. A contract terminated under the provisions of this section is not a breach of contract and may not be considered such. Any contract termination under the provisions of this section may be challenged pursuant to Section 448.095(5)(d), Fla. Stat. (2023). Contractor acknowledges that upon termination of this Agreement by the District for a violation of this section by Contractor, Contractor may not be awarded a public contract for at least one (1) year after the date on which the contract was terminated. Contractor further acknowledges that Contractor is liable for any costs incurred by the District as a result of termination of any contract for a violation of this section.

E. Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section, including this subsection, requiring the subcontractors to include these clauses in any lower tier subcontracts. Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this section.

Section 19. Indemnification and Insurance.

A. The Contractor agrees, to the fullest extent permitted by law, to defend, indemnify and hold harmless the District, its agents, representatives, officers, directors, officials and employees from and against claims, damages, losses and expenses (including but not limited to attorney's fees, court costs and costs of appellate proceedings) relating to, arising out of or resulting from the Contractor's negligent acts, errors, mistakes or omissions relating to Contractor's performance pursuant to this Agreement. The Contractor's duty to defend, hold harmless and indemnify the District its agents, representatives, officers, directors, officials and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury; sickness; disease; death; or injury to impairment, or destruction of tangible property including loss of use resulting therefrom, caused by any negligent acts, errors, mistakes or omissions related to the performance of this Agreement including any person for whose acts, errors, mistakes or omissions the Contractor may be legally liable.

B. The waiver by a party of any breach or default in performance shall not be deemed to constitute a waiver of any other or succeeding breach or default. The failure of the District to enforce any of the provisions hereof shall not be construed to be a waiver of the right of the District thereafter to enforce such provisions. The foregoing indemnification shall the same be construed to constitute agreement by Contractor to indemnify the District for the negligent acts or omissions of the District, its officers, agents, or employees, or third parties.

C. Contractor agrees to, at the option of the District, pay the cost of defense, the District and its representative from any and all claims, losses, penalties, demands, judgments, and costs of suit, including attorneys' fees and paralegals' fees, for any expense, damage or liability incurred by any of them, whether for personal injury, property damage, direct or consequential

damages, or economic loss, arising directly or indirectly on account of or in connection with the Work done by Contractor under this Agreement or by any person, firm or corporation to whom any portion of the Work is subcontracted by Contractor or resulting from the use by Contractor, or by any one for whom Contractor is legally liable, of any materials, tools, machinery or other property of the District. This provision is intended to apply even if the injury or damage is caused in whole or in part by any act, omission or default of the District or Design Professional or their consultants, agents, officers and employees. The District and Contractor agree the first \$100.00 of the Contract Amount paid by the District to Contractor shall be given as separate consideration for this indemnification, and any other indemnification of the District by Contractor provided for within the Contract Documents, the sufficiency of such separate consideration being acknowledged by Contractor by Contractor's execution of the Agreement.

D. Contractor shall obtain and carry, at all times during its performance under the Contract Documents, insurance of the types and in the amounts set forth in the Insurance Requirements attached to this Agreement, Exhibit F. All insurance policies shall be from responsible companies duly authorized to do business in the State of Florida and/or responsible risk retention group insurance companies which are registered with the State of Florida having a Best's Rating of A and Financial Size Category of VIII or higher, or by such other insurers as shall be acceptable to the District in its sole discretion. Within ten (10) calendar days after Notice of Award is received by Contractor, Contractor shall provide the District with properly executed Certificates of Insurance to evidence Contractor's compliance with the insurance requirements of the Contract Documents. Said Certificates of Insurance shall be on forms approved by the District. The Certificates of Insurance shall be personally, manually signed by the authorized representatives of the insurance company/companies shown on the Certificates of Insurance, with proof that they are authorized representatives thereof. In addition, certified, true and exact copies of all insurance policies required hereunder shall be provided to the District, on a timely basis, when requested by the District.

E. The Certificates of Insurance and required insurance policies shall contain provisions that thirty (30) days prior written notice by registered or certified mail shall be given the District of any cancellation, intent not to renew, or reduction in the policies or coverages, except in the application of the aggregate limits provisions. In the event of a reduction in the aggregate limit of any policy, Contractor shall immediately take steps to have the aggregate limit reinstated to the full extent permitted under such policy.

F. All insurance coverages of the Contractor shall be primary to any insurance or self insurance program carried by the District applicable to this Project. The acceptance by the District of any Certificate of Insurance does not constitute approval or agreement by the District that the insurance requirements have been satisfied or that the insurance policy shown on the Certificate of Insurance is in compliance with the requirements of the Contract Documents. No work shall commence at the Project site unless and until the required Certificates of Insurance are received by the District.

G. The Contractor will be fully responsible for all acts and omissions of his subcontractors and of persons directly or indirectly employed by them and of persons for whose acts they may be liable to the same extent that they are employed by him. Nothing in the Contract

Documents shall create any contractual relationship between any subcontractor and the District. The District may, upon request, furnish to any subcontractor, to the extent practicable, evidence of amounts paid to the Contractor on account of specific Work done.

H. Contractor shall require each of its subcontractors to procure and maintain, until the completion of the subcontractor's work, insurance of the types and to the limits specified in the Insurance Requirements attached to this Agreement, unless such insurance requirements for the subcontractor is expressly waived in writing by the District. All liability insurance policies, other than professional liability, worker's compensation, employer's liability and business auto liability policies, obtained by Contractor to meet the requirements of the Contract Documents shall name the District and Design Professional as additional insureds and shall contain severability of interest provisions. If any insurance provided pursuant to the Contract Documents expires prior to the completion of the Work, renewal Certificates of Insurance and, if requested by the District, certified, true copies of the renewal policies, shall be furnished by Contractor within thirty (30) days prior to the date of expiration.

I. Should at any time the Contractor does not maintain the insurance coverages required herein, the District may terminate the Agreement or at its sole discretion shall be authorized to purchase such coverages and charge the Contractor for such coverages purchased. The District shall be under no obligation to purchase such insurance, nor shall it be responsible for the coverages purchased or the insurance company or companies used. The decision of the District to purchase such insurance coverages shall in no way be construed to be a waiver of any of its rights under the Contract Documents.

J. Contractor shall submit to Design Professional a copy of all accident reports arising out of any injuries to its employees or those of any firm or individual to whom it may have subcontracted a portion of the Work, or any personal injuries or property damages arising or alleged to have arisen on account of any work by Contractor under the Contract Documents.

Section 20. Compliance with Laws.

A. Contractor agrees to comply, at its own expense, with all federal, state and local laws, codes, statutes, ordinances, rules, regulations and requirements applicable to the Project, including but not limited to those dealing with taxation, worker's compensation, equal employment and safety. If Contractor observes that the Contract Documents are at variance therewith, it shall promptly notify the District and Design Professional in writing.

Section 21. Cleanup and Protections.

A. Contractor agrees to keep the Project site clean at all times of debris, rubbish and waste materials arising out of the Work. At the completion of the Work, Contractor shall remove all debris, rubbish and waste materials from and about the Project site, as well as all tools, appliances, construction equipment and machinery and surplus materials, and shall leave the Project site clean and ready for occupancy by the District.

B. Any existing surface or subsurface improvements, including, but not limited to, pavements, curbs, sidewalks, pipes, utilities, footings, structures, trees and shrubbery, not indicated in the Contract Documents to be removed or altered, shall be protected by Contractor from damage during the prosecution of the Work. Any such improvements so damaged shall be restored by Contractor to the condition equal to that existing at the time of Contractor's commencement of the Work, and the Contractor shall bear the cost of any such restorations.

C. If the Contractor fails to clean up as provided in the Contract Documents, the District may do so, and the cost thereof shall be deducted from the final payment due the Contractor.

Section 22. Assignment.

A. Contractor shall not assign this Agreement or any part thereof, without the prior consent in writing of the District. If Contractor does, with approval, assign this Agreement or any part thereof, it shall require that its assignee be bound to it and to assume toward Contractor all of the obligations and responsibilities that Contractor has assumed toward the District.

Section 23. Permits, Licenses and Taxes.

A. Pursuant to Section 218.80, F.S., the District will pay for all District permits and fees, including license fees, permit fees, impact fees or inspection fees applicable to the work. Contractor is not responsible for paying for permits issued by the District wherein the work is to be performed but is responsible for acquiring all permits. The District may require the Contractor to deliver internal budget transfer documents to applicable District agencies when the Contractor is acquiring permits.

B. All permits, fees and licenses necessary for the prosecution of the Work which are not issued by the District shall be acquired and paid for by the Contractor. The Contractor and his sureties, together with his officers, agents, and employees, shall protect and hold the District harmless against any and all demands made for such fees or claims brought or made by holder of any invention or patent.

C. The Contractor shall be fully responsible for the execution and adherence to all directives, instructions, conditions, special conditions, and limiting conditions contained in permits specifically issued for the Work and which pertain to or affect the construction phase of this project, and shall be solely responsible for issuance of any Notices required thereby.

Section 24. Termination for Default.

A. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the District to terminate the Agreement, in whole or in part, as further set forth in this Section, if Contractor: (1) fails to begin the Work under the Contract Documents within the time specified herein; or (2) fails to properly and timely perform the Work as directed by the District or the Design Professional or as provided for in the approved Progress Schedule; or (3) performs the Work unsuitably or neglects or refuses to remove materials or to

correct or replace such Work as may be rejected as unacceptable or unsuitable; or (4) discontinues the prosecution of the Work; or (5) fails to resume Work which has been suspended within a reasonable time after being notified to do so; or (6) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; or (7) allows any final judgment to stand against it unsatisfied for more than ten (10) days; or (8) makes an assignment for the benefit of creditors; or (9) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; or (10) materially breaches any other provision of the Contract Documents.

B. The District shall notify Contractor in writing of Contractor's default(s). If the District determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the District, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate Contractor's right to proceed under the Agreement, in whole or in part, and take possession of all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the District, in its sole discretion, may choose.

C. If the District deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including Design Professional and attorneys' fees) or damages incurred by the District incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to the District on demand the full amount of such excess, including costs of collection, attorney's fees (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the District to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the District, as the case may be, shall be approved by the Design Professional, upon application, and this obligation for payment shall survive termination of the Agreement.

D. The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the District in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefore or re-letting the Work, and in settlement, discharge or compromise of any claims, demands, suits, and judgments pertaining to or arising out of the Work hereunder.

E. If, after notice of termination of Contractor's right to proceed pursuant to this Section, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the District is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the District shall be the same as and limited to those afforded Contractor under Section 24 below.

Section 25. Termination for Convenience and Right of Suspension.

A. The District shall have the right to terminate this Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against the District shall be limited to that portion of the Contract Amount earned through the date of termination, together with any retainage withheld and reasonable termination expenses incurred, but Contractor shall not be entitled to any other or further recovery against the District, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

B. The District shall have the right to suspend all or any portions of the Work upon giving Contractor not less than two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds six (6) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

Section 26. Completion.

A. When the entire Work (or any portion thereof designated in writing by the District) is ready for its intended use, Contractor shall notify the District and Design Professional in writing that the entire Work (or such designated portion) is substantially complete and request that Design Professional issue a Certificate of Substantial Completion (or Certificate of Partial Substantial Completion). Within a reasonable time thereafter, the District, Contractor and Design Professional shall make an inspection of the Work (or designated portion thereof) to determine the status of completion. If the District and Design Professional do not consider the Work (or designated portion) substantially complete, Design Professional shall notify Contractor in writing giving the reasons therefor. If the District and Design Professional consider the Work (or designated portion) substantially complete, Design Professional shall prepare and deliver to Contractor a Certificate of Substantial Completion (or Certificate of Partial Substantial Completion) which shall fix the date of Substantial Completion for the entire Work (or designated portion thereof) and include a tentative punch list of items to be completed or corrected by Contractor before final payment, including the cost to complete each item on the list, including the cost to complete each item on the tentative punch list. The District shall have the right to exclude Contractor from the Work and Project site (or designated portion thereof) after the date of Substantial Completion, but the District shall allow Contractor reasonable access to complete or correct items on the tentative punch list. The risk of loss for the Project and the Work performed thereon shall not pass to the District until the Certificate of Substantial Completion (or Partial Substantial Completion) is approved by the Design Professional.

B. Within fourteen (14) calendar days of receipt of written certification by Contractor that the Work is completed in accordance with the Contract Documents and is ready for final inspection and acceptance and upon receipt of a final Application for Payment, Design

Professional will make such inspection and, if he finds the Work acceptable and fully performed under the Contract Documents, he shall promptly issue a final Certificate for Payment, recommending that, on the basis of his observations and inspections, and the Contractor's certification that the Work has been completed in accordance with the terms and conditions of the Contract Documents, that the entire balance found to be due Contractor is due and payable. Neither the final payment nor the remaining retainage shall become due and payable until Contractor submits: (1) the Release and Affidavit in the form attached, (2) consent of surety to final payment, (3) all required As-Builts, shop drawings and other submittals; and (4) if required by the District, other data establishing payment or satisfaction of all obligations, such as receipts, releases and waivers of liens, arising out of the Contract Documents, to the extent and in such form as may be designated by the District. The District reserves the right to inspect the Work and make an independent determination as to the Work's acceptability, even though the Design Professional may have issued his recommendations. Unless and until the District is completely satisfied, neither the final payment nor the remaining retainage shall become due and payable.

C. Prior to final payment, the Design Professional may request the Contractor to permit the use of a specified part of the Project which the District believes it may use without significant interference with construction of the other parts of the Project. If the Contractor agrees, he will certify to the Design Professional that said part of the Project is Substantially Complete and request the Design Professional to issue a Certificate of Substantial Completion for that part of the Project. Within fourteen (14) calendar days thereafter, the Design Professional and the Contractor will make an inspection of that part of the Project to determine its status of completion. If the District considers that part of the Project to be Substantially Complete, the Design Professional will deliver to the Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, and listing the punch list of items to be completed or corrected before final payment and fixing the responsibility between the District and the Contractor for maintenance, heat and utilities as to that part of the Project. The District shall have the right to exclude the Contractor from any part of the Project, which is so certified to be Substantially Complete, but the District will allow the Contractor reasonable access to complete or correct items on the punch list.

Section 27. Warranty.

A. Contractor shall obtain and assign to the District all express warranties given to Contractor or any subcontractors by any materialmen supplying materials, equipment or fixtures to be incorporated into the Project.

B. Contractor warrants to the District that any materials and equipment furnished under the Contract Documents shall be new unless otherwise specified, and that all Work shall be of good quality, free from all defects and in conformance with the Contract Documents. Contractor further warrants to the District that all materials and equipment furnished under the Contract Documents shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturers, fabricators, suppliers or processors except as otherwise provided for in the Contract Documents. If, within one (1) year after final completion, any Work is found to be defective or not in conformance with the Contract Documents, Contractor shall correct it promptly after receipt of written notice from the District.

Contractor shall also be responsible for and pay for replacement or repair of adjacent materials or Work which may be damaged as a result of such replacement or repair. These warranties are in addition to those implied warranties to which the District is entitled as a matter of law.

C. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by an application for progress payment, whether incorporated in the Project or not, will be passed to the District prior to the next application for progress payment, free and clear of all liens, claims, security interest and encumbrances; and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor or by any other person performing the Work at the site or furnishing materials and equipment for the Project subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

Section 28. Tests and Inspections.

A. The District, Design Professional, their respective representatives, agents and employees, and governmental agencies with jurisdiction over the Project shall have access at all times to the Work, whether the Work is being performed on or off of the Project site, for their observation, inspection and testing. Contractor shall provide proper, safe conditions for such access. Contractor shall provide Design Professional with timely notice of readiness of the Work for all required inspections, tests or approvals.

B. If the Contract Documents or any codes, laws, ordinances, rules or regulations of any public authority having jurisdiction over the Project requires any portion of the Work to be specifically inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Design Professional the required certificates of inspection, testing or approval. When any portion of the Work subject to inspection is ready for such, the Contractor shall provide the Design Professional forty-eight (48) hours' notice prior to the inspection. All inspections, tests or approvals shall be performed in a manner and by organizations acceptable to the Design Professional and the District.

C. If any Work that is to be inspected, tested or approved is covered without written concurrence from the Design Professional, such work must, if requested by Design Professional, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Design Professional timely notice of Contractor's intention to cover the same and Design Professional has not acted with reasonable promptness to respond to such notice. If any Work is covered contrary to written directions from Design Professional, such Work must, if requested by Design Professional, be uncovered for Design Professional's observation and be replaced at Contractor's sole expense.

D. The District shall charge to Contractor and may deduct from any payments due Contractor all engineering, and inspection expenses incurred by the District in connection with any overtime work. Such overtime work consisting of any work during the construction period beyond the regular eight (8) hour day and for any work performed on Saturday, Sunday or holidays.

E. Neither observations nor other actions by the Design Professional nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

Section 29. Defective Work.

A. Work not conforming to the requirements of the Contract Documents in the sole judgment of the Design Professional shall be deemed defective Work. If required by the District or Design Professional, Contractor shall, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or if the defective Work has been rejected by the District or Design Professional, remove it from the site and replace it with conforming Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including, but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby, and shall hold the District harmless for same.

B. If the District or Design Professional consider it necessary or advisable that covered Work be observed by Design Professional or inspected or tested by others, Contractor, at the District's or Design Professional's request, shall uncover, expose or otherwise make available for observation, inspection or tests as the District or Design Professional may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals), and the District shall be entitled to an appropriate decrease in the Contract Amount. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Amount and/or an extension to the Contract Time, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

C. If any portion of the Work is defective, or Contractor fails to supply sufficient skilled workers with suitable materials or equipment, or fails to finish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the District or Design Professional may order Contractor to stop the Work, or any portion thereof, until the cause for such stop in the work has been eliminated; however, this right of the District and Design Professional to stop the Work shall not give rise to any duty on the part of the District or Design Professional to exercise this right for the benefit of Contractor or any other party.

D. Should the District determine, in its sole opinion, that it is in the District's best interest to accept defective Work, the District may do so. Contractor shall bear all direct, indirect and consequential costs attributable to the District's evaluation of and determination to accept defective Work. If such determination is rendered prior to final payment, a Change Order shall be executed evidencing such acceptance of such defective Work, incorporating the necessary revisions in the Contract Documents and reflecting an appropriate decrease in the Contract Amount. If the District accepts such defective Work after final payment, Contractor shall promptly pay the District an appropriate amount to adequately compensate the District for its acceptance of the defective Work.

E. If Contractor fails, within a reasonable time after the written notice from the District or Design Professional, to correct defective Work or to remove and replace rejected defective Work as required by Design Professional or the District, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any of the provisions of the Contract Documents, the District may, after seven (7) days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, the District may exclude Contractor from any or all of the Project site, take possession of all or any part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Project site and incorporate in the Work all materials and equipment stored at the Project site or for which the District has paid Contractor but which are stored elsewhere. Contractor shall allow the District, Design Professional and their respective representatives, agents, and employees such access to the Project site as may be necessary to enable the District to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of the District in exercising such rights and remedies shall be charged against Contractor, and a Change Order shall be issued, incorporating the necessary revisions to the Contract Documents, including an appropriate decrease to the Contract Amount. Such direct, indirect and consequential costs shall include, but not be limited to, fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by the District of the District's rights and remedies hereunder.

Section 30. Supervision and Superintendents.

A. Contractor shall plan, organize, supervise, schedule, monitor, direct and control the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents. Contractor shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without prior written notice to the District and Design Professional except under extraordinary circumstances. The superintendent shall be Contractor's representative at the Project site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. The District shall have the right to direct Contractor to remove and replace its Project superintendent, with or without cause.

Section 31. Protection of Work.

A. Contractor shall fully protect the Work from loss or damage and shall bear the cost of any such loss or damage until final payment has been made. If Contractor or any one for whom Contractor is legally liable is responsible for any loss or damage to the Work, or other work or materials of the District or the District's separate contractors, Contractor shall be charged with the same, and any monies necessary to replace such loss or damage shall be deducted from any amounts due Contractor.

B. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger said Work or property.

C. Contractor shall not disturb any benchmark established by the Design Professional with respect to the Project. If Contractor, or its subcontractors, agents or anyone for whom Contractor is legally liable, disturbs the Design Professional's benchmarks, Contractor shall immediately notify the District and Design Professional. The Design Professional shall reestablish the benchmarks and Contractor shall be liable for all costs incurred by the District associated therewith.

Section 32. Emergencies.

A. In the event of an emergency affecting the safety or protection of persons or the Work or property at the Project site or adjacent thereto, Contractor, without special instruction or authorization from the District or Design Professional is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Design Professional written notice within forty-eight (48) hours after the occurrence of the emergency, if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Design Professional determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Change Order shall be issued to document the consequences of the changes or variations. If Contractor fails to provide the forty-eight (48) hour written notice noted above, the Contractor shall be deemed to have waived any right it otherwise may have had to seek an adjustment to the Contract Amount or an extension to the Contract Time.

Section 33. Use of Premises.

A. The District will furnish, as indicated in the Contract Documents and not later than the date when needed by the Contractor, the lands which entail the Project Site upon which the Work is to be done, rights-of-way for access thereto, and such other lands which are designated for the use of the Contractor. The Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment unless designated otherwise.

B. The Contractor shall be responsible for staging, protecting, and storing equipment or materials. Contractor shall confine all construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other lands and areas permitted by law, rights of way, permits and easements, and shall not unreasonably encumber the Project site with construction equipment or other material or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or any land or areas contiguous thereto, resulting from the performance of the Work.

Section 34. Safety.

A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

A.1. All employees on the Work and other persons and/or organizations who may be affected thereby;

A.2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project site; and

A.3. Other property on Project site or adjacent thereto, including trees, shrubs, walks, pavements, roadways, structures, utilities and any underground structures or improvements not designated for removal, relocation or replacement in the Contract Documents.

B. Contractor shall comply with all applicable codes, laws, ordinances, rules and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Contractor shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of underground structures and improvements and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation or replacement of their property. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as the Work is completed and final acceptance of same by the District has occurred.

C. Contractor shall designate a responsible representative at the Project site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to the District. District shall have the right to direct Contractor to remove and replace this individual, with or without cause.

Section 35. Project Meetings.

A. Prior to the commencement of Work, the Contractor shall attend a preconstruction conference with the Design Professional and others as appropriate to discuss the Progress Schedule, procedures for handling shop drawings and other submittals, and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work. During the prosecution of the Work, the Contractor shall attend any and all meetings convened by the Design Professional or the District with respect to the Project, when directed to do so by the District or Design Professional. Contractor shall have its subcontractors and suppliers attend all such meetings (including the preconstruction conference) as may be directed by the District or Design Professional.

Section 36. Exhibits Incorporated.

The following documents are expressly agreed to be incorporated by reference and made a part of this Agreement:

- A. Legal Advertisement
- B. Invitation to Bid
- C. Bid Proposal with required forms
- D. Performance Bond
- E. Public Payment Bond
- F. Insurance Requirements, including certificates of insurance
- G. Form of Release and Affidavit
- H. Change Order Form
- I. Technical Specifications
- J. Construction Plans

Section 37. Notices.

A. All notices required or made pursuant to this Agreement by the Contractor to the District shall be in writing and delivered by hand or by United States Postal Service Department, first class mail, postage pre-paid, return receipt requested, addressed to the following:

General Manager
Cedar Key Water and Sewer District
510 3rd Street
Cedar Key, Florida 32625

B. All notices required or made pursuant to this Agreement by the District to Contractor shall be made in writing and shall be delivered by hand or by United States Postal Service Department, first class mail, postage pre-paid, return receipt requested, or by Federal Express, addressed to the following:

Corporate Name of Contractor: _____

Address (including city, state and zip): _____

Name of person with their title to whose _____

Attention the notice should be sent: _____

Telephone and Fax numbers: _____

C. Either party may change its above noted address by giving written notice to the other party in accordance with the requirements of this Section.

Section 38. Modification.

No modification or change to the Agreement shall be valid or binding upon the parties unless in writing and executed by the party or parties intended to be bound by it.

Section 39. Successors and Assigns.

Subject to other provisions hereof, the Agreement shall be binding upon and shall inure to the benefit of the successors and assigns of the parties to the Agreement.

Section 40. Governing Law.

The Agreement shall be interpreted under and its performance governed by the laws of the State of Florida.

Section 41. No Waiver.

The failure of the District to enforce at any time or for any period of time any one or more of the provisions of the Agreement shall not be construed to be and shall not be a waiver of any such provision or provisions or of its right thereafter to enforce each and every such provision.

Section 42. Vendors on Scrutinized Companies Lists.

By executing this Agreement, Contractor, certifies that it is not: (1) listed on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, (2) engaged in a boycott of Israel, (3) listed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to section 215.473, Florida Statutes, or (4) engaged in business operations in Cuba or Syria. Pursuant to section 287.135(5), Florida Statutes, the District may immediately terminate this Agreement for cause if the Contractor is found to have submitted a false certification as to the above or if the Contractor is placed on the Scrutinized Companies that Boycott Israel List, is engaged in a boycott of Israel, has been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, during the term of the Agreement. If the District determines that the Contractor has submitted a false certification, the District will provide written notice to the Contractor. Unless the Contractor demonstrates in writing, within 90 calendar days of receipt of the notice, that the District's determination of false certification was made in error, the District shall bring a civil action against the Contractor. If the District's determination is upheld, a civil penalty equal to the greater of \$2 million or twice the amount of this Agreement shall be imposed on the Contractor, and the Contractor will be ineligible to bid on any Agreement with a Florida agency or local governmental entity for three years after the date of District's determination of false certification by Contractor. If federal law ceases to authorize the states to adopt and enforce the contracting prohibition identified in this Section 42, this Section 42 shall be null and void.

Section 43. Modification.

Agreement may not be modified unless such modifications are evidenced in writing signed by both District and Contractor. Such modifications shall be in the form of a written Amendment executed by both parties.

Section 44. Entire Agreement.

Each of the parties hereto agrees and represents that the Agreement comprises the full and entire agreement between the parties affecting the Work contemplated, and no other agreement or understanding of any nature concerning the same has been entered into or will be recognized, and that all negotiations, acts, work performed, or payments made prior to the execution hereof shall be deemed merged in, integrated and superseded by the Agreement.

Section 45. Severability.

Should any provision of the Agreement be determined by a court to be unenforceable, such a determination shall not affect the validity or enforceability of any other section or part thereof.

Section 46. Subcontracting.

The Contractor may subcontract up to fifty percent 50% of work under this Contract. The District reserves the right to accept the use of a subcontractor or to reject the selection of a particular subcontractor and to inspect all facilities of any subcontractor. If applicable, regardless of any subcontract, the Contractor is ultimately responsible for all work to be performed under this Contract, including but not limited to design, permitting, construction, surveying, contract management, land acquisition, legal services, right-of-way acquisition, zoning, replating, comprehensive plan amendment code variance, and other services, as necessary. The Contractor agrees to be responsible for the fulfillment of all work elements included in any subcontract and agrees to be responsible for the payment of all monies due under any subcontract. It is understood and agreed by the Contractor that the District shall not be liable to any subcontractor for any expenses or liabilities incurred under the subcontract and that the Contractor shall be solely liable to the subcontractor for all expenses and liabilities incurred under the subcontract. If a subcontractor fails to perform or make progress, as required by this Contract, and it is necessary to replace the subcontractor to complete the work in a timely fashion, the Contractor shall promptly do so, subject to acceptance of the new subcontractor by the District. Failure of a subcontractor to timely or properly perform its obligations shall not relieve Contractor of its obligations hereunder.

Subcontracts, which involve equipment purchases as part of an installation/retrofit or that include infrastructure and/or infrastructure improvements, as defined in Florida Chief Financial Officer (CFO) Memorandum No. 5 (2011-2012), must be capitalized in accordance with Chapter 691-72, Florida Administrative Code (F.A.C.). The Contractor shall be responsible for maintaining appropriate property records for any subcontracts that include the purchase of equipment as part of the delivery of services. The Contractor shall ensure its subcontracts issued under this Contractor, if any, impose this requirement, in writing, on its subcontractors.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date(s) indicated below.

CONTRACTOR:

(Company Name)

ATTEST:

By: _____ (Signature) _____ (Printed)

Its: _____ (Title)

Date: _____

Witness:

Its: _____
President/Corporate Secretary/Witness
[Corporate Seal]

Date: _____

2nd Witness (if not incorporated)

OWNER: Cedar Key Water and Sewer District

(SEAL)

By: _____
Chair

ATTEST:

Date: _____

Clerk

APPROVED AS TO FORM:

Attorney for the District

EXHIBIT A
LEGAL ADVERTISEMENT

EXHIBIT B
INVITATION TO BID

EXHIBIT C
BID PROPOSAL WITH REQUIRED FORMS

EXHIBIT D
PERFORMANCE BOND

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS: That _____
_____, as Principal, whose principal business address is

_____ and phone number is _____, and
_____, as Surety, whose principal
address is _____

_____ and phone number is: _____ are
held and firmly bound to the Cedar Key Water and Sewer District (the "DISTRICT"), as Obligee
in the sum of: _____

(\$ _____) for the payment whereof we bond ourselves, our heirs,
executors, personal representatives, successors and assigns, jointly and severally.

WHEREAS, Principal has entered into a contract dated as of the _____ day of
_____, 20____, with Obligee for _____

_____ DISTRICT Project No.: _____
in accordance with drawings and specifications, which contract is incorporated by reference and
made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract;
and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including
appellate proceedings, that Obligee sustains because of any default by Principal under the Contract,
including, but not limited to, all delay damages, whether liquidated or actual, incurred by Obligee;
and

3. Performs the guarantee of all work and materials furnished under the Contract for
the time specified in the Contract, then this bond is void; otherwise it remains in full force.

Any changes in or under the Contract and compliance or noncompliance with any formalities
connected with the Contract or the changes do not affect Surety's obligation under this Bond.

The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the specifications referred to therein shall in anywise affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the specifications.

This bond is intended to comply with provisions of Section 255.05, Florida Statutes, and all terms and conditions of said statute are incorporated herein by reference thereto, specifically including but not limited to the notice and time limitation provisions of said section. In the event of any conflict, ambiguity or discrepancy between Section 255.05, Florida Statutes, and this Bond, Florida Statutes shall control. No right of action shall accrue on this Bond to or, for the use of any person or entity other than the DISTRICT and those persons or corporations provided for by said statute, their heirs, executors, administrators, successors or assigns.

It is further agreed and understood that if the DISTRICT is required to initiate legal proceedings to recover on this Bond, the may also recover its costs relating there to, including a reasonable amount for its attorney's fees and legal assistant's fees before trial, at trial, on appeal and in bankruptcy.

IN WITNESS WHEREOF, the above parties have executed this instrument this ____ day of _____, 20____, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
in the presence of:

PRINCIPAL:

(Company Name of Contractor)

By: _____ (Officers Signature)

_____ (Officers Name Printed)

Witnesses as to Principal Name: _____ (Signature)

Its: _____ (Title)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20_____, by _____ (officer's name), as _____ (title) of _____ (company name), a(n) _____ (state) corporation, on behalf of the corporation. He/she is personally known to me OR has produced _____ as identification and did (did not) take an oath.

My Commission Expires: _____

Signature of Notary : _____
(Legibly Printed) _____

(AFFIX OFFICIAL SEAL)

Notary Public, State of _____

Commission No. _____

ATTEST: SURETY:

(Printed Company Name)

(Business Address)

(Surety Authorized Signature)

(Printed Name)

Witness as to Surety _____ (Signature)

_____ (Printed Name)

OR

As Attorney in Fact (Signature) (Printed Name)

(Attach Power of Attorney)

Witnessed by: _____
(Signature) (Printed Name)

(Business Address) (Telephone Number)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____ (officer's name), as _____ (title) of _____ Surety, on behalf of Surety. He/She is personally known to me OR has produced _____ as identification and who did (did not) take an oath.

My Commission Expires: _____

Signature of Notary : _____
(Legibly Printed) _____

(AFFIX OFFICIAL SEAL) Notary Public, State of _____

Commission No. _____

EXHIBIT E
PUBLIC PAYMENT BOND

BOND No. _____

KNOW ALL MEN BY THESE PRESENTS: That _____
_____, as Principal, whose principal business address is:

_____ and phone number and fax numbers are: _____
and _____, as Surety, whose
principal address is:

_____ and phone number and fax numbers are: _____ are held
and firmly bound to the CEDAR KEY WATER AND SEWER DISTRICT (the "DISTRICT") as
Obligee in the sum of _____ (\$_____)

for the payment whereof we bind ourselves, our heirs, executors, personal representatives,
successors and assigns, jointly and severally.

WHEREAS, Principal has entered into a contract dated as of the ____ day of _____,
20___, with Obligee for in accordance with drawings and specifications, which contract is
incorporated by reference and made a part hereof, and this referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal promptly makes payment to all
claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor,
materials or supplies, used directly or indirectly by Principal in the prosecution of the work
provided for in the Contract, then is bond is void; otherwise it remains in full force.

Any changes in or under the Contract and compliance or noncompliance with any
formalities connected with the Contract or the changes do not affect Surety's obligation under this
Bond.

The provisions of this bond are subject to the time limitations of Section 255.05(2). In no
event will the Surety be liable in the aggregate to claimants for more than the penal sum of this
Payment Bond, regardless of the number of suits that may be filed by claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this ____ day
of _____, 20___, the name of each party being affixed and these presents duly signed by
its under-signed representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL: _____
(Company Name of Contractor)

By: _____ (Officer's Signature)
_____ (Officer's Name Printed)

Witnesses as to Principal Name: _____ (Signature)
Its: _____ (Title)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this ___ day of _____,
20____, by _____ (officer's name), as
_____ (title) of _____, a
_____ corporation, on behalf of the corporation. He/she is personally known to me OR
has produced _____ as identification and did (did not) take an oath.

My Commission Expires: _____

Signature of Notary: _____

(Legibly Printed) _____

(AFFIX OFFICIAL SEAL)

Notary Public, State of _____

Commission No.: _____

ATTEST: SURETY:

(Printed Company Name)

(Business Address)

(Surety Authorized Signature)

(Printed Name)

Witness as to Surety: _____ (Signature)
_____ (Printed Name)

OR

As Attorney in Fact (Signature) (Printed Name)

(Attach Power of Attorney)

Witnessed by: _____ (Signature) _____ (Printed Name)

(Business Address)

(Telephone Number)

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20 __,
by _____ (officer's name), as _____ (title)
of _____ Surety, on behalf of Surety. He/She is personally
known to me OR has produced _____ as identification and
who did (did not) take an oath.

My Commission Expires: _____

Signature of Notary: _____
(Legibly Printed) _____

(AFFIX OFFICIAL SEAL)

Notary Public, State of _____
Commission

No: _____

EXHIBIT F
INSURANCE REQUIREMENTS
CERTIFICATES OF INSURANCE

(1) The Contractor shall obtain and maintain such insurance as will protect it from: (1) claims under worker's compensation laws, disability benefit laws, or other similar employee benefit laws; (2) claims for damages because of bodily injury, occupational sickness or disease or death of his employees including claims insured by usual personal injury liability coverage; (3) claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees including claims insured by usual personal injury liability coverage; and (4) from claims for injury to or destruction of tangible property including loss of use resulting there from -- any or all of which claims may arise out of, or result from, the services, work and operations carried out pursuant to and under the requirements of the Contract Documents, whether such services, work and operations be by the Contractor, its employees, or by subcontractor(s), or anyone employed by or under the supervision of any of them, or for whose acts any of them may be legally liable.

(2) This insurance shall be obtained and written for not less than the limits of liability specified hereinafter, or as required by law, whichever is greater.

(3) The Contractor shall require, and shall be responsible for assuring throughout the time the Agreement is in effect, that any and all of its subcontractors obtain and maintain until the completion of that subcontractor's work, such of the insurance coverages described herein as are required by law to be provided on behalf of their employees and others.

(4) The Contractor shall obtain, have and maintain during the entire period of the Agreement insurance policies, which contain the following information and provisions:

- (A) The name and type of policy and coverages provided;
- (B) The amount or limit applicable to each coverage provided;
- (C) The date of expiration of coverage;
- (D) The designation of the DISTRICT as an additional insured and a certificate holder. (This requirement may be excepted for Worker's Compensation and professional liability Insurance.);
- (E) The following clause must appear on the Certificate of Insurance:

Should any material change occur in any of the above described policies or should any of said policies be canceled before the expiration date thereof, the issuing company will mail at least thirty (30) days written notice to the DISTRICT.

(5) If the initial, or any subsequently issued Certificate of Insurance expires prior to the completion of the Work or termination of the Agreement, the Contractor shall furnish to the DISTRICT, in triplicate, renewal or replacement Certificate(s) of Insurance not later than thirty (30) calendar days prior to the date of their expiration. Failure of the Contractor to provide the DISTRICT with such renewal certificate(s) shall be considered justification for the DISTRICT to terminate the Agreement.

(6) Contractor shall include the DISTRICT, the DISTRICT's agents, officers and employees in the Contractor's General Liability and Automobile Liability policies as additional insureds.

(7) If the DISTRICT has any objection to the coverage afforded by other provisions of the insurance required to be purchased and maintained by Contractor in accordance with the requirements of the Contract Documents on the basis of its not complying with the Contract Documents, the DISTRICT shall notify Contractor in writing thereof within thirty (30) days of the delivery of such certificates to the DISTRICT. Contractor shall provide to the DISTRICT such additional information with respect to its insurance as may be requested.

(8) The Contractor shall obtain and maintain the following insurance coverages as provided hereinbefore, and in the type, amounts and in conformance with the following minimum requirements:

WORKER'S COMPENSATION

State: Statutory

Employer's Liability: \$1,000,000.00

COMPREHENSIVE GENERAL LIABILITY

Bodily Injury: \$1,000,000.00 Each Occurrence

Property Damage: \$1,000,000.00 Each Occurrence

Comprehensive General Liability Insurance shall include:

Contractual Liability, Explosion, Collapse and Underground Coverages and Products and Completed Operations Coverages.

COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily Injury: \$1,000,000.00 Each Occurrence

Property Damage: \$1,000,000.00 Each Occurrence

Comprehensive Automobile Liability shall include coverage for any owned auto, non-owned autos and hired autos.

EXHIBIT G
RELEASE AND AFFIDAVIT

COUNTY OF _____

STATE OF FLORIDA

Before me, the undersigned authority, personally appeared _____, who after

being duly sworn, deposes and says:

(1) In accordance with the Contract Documents and in consideration of \$ _____ paid, _____ ("Contractor") releases and waives for itself and its subcontractors, materialmen, successors and assigns, all claims demands, damages, costs and expenses, whether in contract or in tort, against the Cedar Key Water and Sewer District (the "DISTRICT"), its Board of Directors, employees and agents relating in any way to the performance of the Agreement between Contractor and the DISTRICT, dated _____, _____, for the period from _____ to _____.

(2) Contractor certifies for itself and its subcontractors, materialmen, successors and assigns, that all charges for labor, materials, supplies, lands, licenses and other expenses for which the DISTRICT might be sued or for which a lien or a demand against any payment bond might be filed, have been fully satisfied and paid.

(3) Contractor agrees to indemnify, defend and save harmless the DISTRICT, its Board of Directors, employees and agents from all demands or suits, actions, claims of liens or other charges filed or asserted against the DISTRICT arising out of the performance by Contractor of the Work covered by this Release and Affidavit.

(4) This Release and Affidavit is given in connection with Contractor's [monthly/final] Application for Payment No. _____.

CONTRACTOR:

By: _____ (signature of the executive officer)

Its: _____ (title of the executive officer)

Date: _____

Witnesses

[Corporate Seal]

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,
_____, by _____, as _____ of
_____, a _____ corporation, on behalf of the
corporation. He/she is personally known to me or has produced _____
_____ as identification and did (did not) take an oath.

My Commission Expires: _____
(Signature of Notary)

Name: _____
(Legibly Printed)

(AFFIX OFFICIAL SEAL)

Notary Public, State of _____

Commission No.: _____

EXHIBIT H
CHANGE ORDER FORM

CHANGE ORDER NO. _____ CEDAR KEY WATER AND SEWER DISTRICT
PROJECT NO. _____

TO: _____

DATE: _____

PROJECT NAME: _____

Cedar Key Water and Sewer District Project No. _____

Under our AGREEMENT dated _____.

You hereby are authorized and directed to make the following change(s) in accordance with terms and conditions of the Agreement:

FOR THE ADDITIVE or DEDUCTIVE Sum of:
_____ (\$ _____).

Original Agreement Amount	\$ _____
Sum of Previous Changes	\$ _____
This Change Order ADD/DEDUCT	\$ _____
Present Agreement Amount	\$ _____

The time for completion shall be (increased/decreased) by _____ calendar days due to this Change Order. Accordingly, the Contract Time is now _____ (_____) calendar days and the final completion date is _____. Your acceptance of this Change Order shall constitute a modification to our Agreement and will be performed subject to all the same terms and conditions as contained in our Agreement indicated above, as fully as if the same were repeated in this acceptance. The adjustment, if any, to the Agreement shall constitute a full and final settlement of any and all claims arising out of or related to the change set forth herein, including claims for impact and delay costs.

Accepted: _____, 20____ .

CEDAR KEY
WATER AND SEWER DISTRICT

CONTRACTOR

By: _____
Chair

By: _____
President

DESIGN PROFESSIONAL: By: _____ Consulting Engineer

APPENDIX G
TECHNICAL SPECIFICATIONS

SPECIFICATIONS AND CONTRACT DOCUMENTS

FOR

CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION

PREPARED FOR:

**CEDAR KEY WATER AND SEWER DISTRICT
510 3RD STREET
CEDAR KEY, FL 32625**

PREPARED BY:

**BASKERVILLE-DONOVAN, INC.
449 WEST MAIN STREET
PENSACOLA, FLORIDA 32502**

ENGINEERING BUSINESS NO. EB-0000340

BDI PROJECT NO. 123503.01

RELEASE FOR BID

MARCH 2024

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CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION

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Date: _____

Tyler Lee, P.E.
(Environmental Discipline)
Florida Registration No. 93309
Telephone No. 850.438.9661

Date: _____

Nicholas Conlin, P.E.
(Structural Discipline)
Florida Registration No. 86637
Ebbstone, Inc.
3370 Captital Circle NE, Suite J
Tallahassee, FL 32306
Telephone No. 850.894.4521

Date: _____

Joseph A. Lane, P.E.
(Electrical Discipline)
Florida Registration No. 42632
NHWL Engineering Inc.
2888 Remington Green Ln
Tallahassee, FL 32308
Telephone No. 850.893.7722

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SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Future work.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and Drawing conventions.

- B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Cedar Key Sanitary Sewer Lift Station Rehabilitation

1. Project Location: Cedar Key, Florida

- B. Owner: Cedar Key Water and Sewer, 510 3rd Street, Cedar Key, Florida 32625.

1. Owner's Representative: James McCain, General Manager, 352-543-5285, james@ckwater.org.

- C. Engineer: Baskerville-Donovan, Inc. Tyler T. Lee, P.E., 850-438-9661, tlee@baskervilledonovan.com.

- D. Engineer's Consultants: Engineer has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Nicholas Conlin, P.E., Electrical Engineer, Ebbstone, 850-894-4521, conlin@ebbstone.com.

2. Joseph Lane, P.E., Structural Engineer, NHWL Engineering Inc., 850-545-7725
jlane@NHWL.com.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 1. This project consists of rehabilitating five (5) existing lift stations. The lift station rehabilitation includes the demolition of the existing lift station mechanical & electrical components, the installation of new pumps, new discharge piping, valves, and fittings, a new wet well lid and concrete pad, and electrical modifications to make the lift station a complete and operable system.
- B. Type of Contract:
 1. Project will be constructed under a single prime contract.

1.5 PHASED CONSTRUCTION

- A. The Work shall be conducted in a single phase.

1.6 FUTURE WORK

- A. The Contract Documents include requirements that will allow Owner to carry out future work following completion of this Project; provide for the following future work. There is currently no future work being planned at this time.

1.7 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits: Confine construction operations to WWTP property.
 2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing buildings affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.9 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted by signed authorization of the Owner.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 01 40 00 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a lump sum price per complete component or complete and operational unit process.
- B. For payment on a lump sum basis as a unit price, no separate payment will be made for any item of work required to complete the lump sum item. Lump sum bid items shall be complete, tested and fully operable prior to request for final payment. The lump sum price bid for various items shall be compensation in full for furnishing all materials, labor, equipment, dewatering, sheeting, shoring, sitework and incidentals necessary to install these items complete and operable in every detail and in accordance with these plans and specifications.
- C. Measurement and Payment: See schedule of measurement of payment in this section. Individual Specification Sections may have additional requirements for measurement and payment. In the event of a conflict, the most stringent measurement or payment shall prevail.
- D. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- E. List of Lump Sum Prices: A schedule of lump sum prices is included in the Construction Documents.

T. Lee, P.E.
BDI/PNS

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 22 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
 - 4. Preconstruction video recordings.
 - 5. Periodic construction video recordings.
- B. Related Requirements:
 - 1. Section 01 70 00 "Execution and Closeout Requirements.
 - 2. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos on CD-ROM or thumb-drive. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in a WORD document:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- C. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings on DVD or thumb drive. Include copy of key plan indicating each video's location and direction.
2. Identification: With each submittal, provide the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
3. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in three-ring binders. Provide label on front and spine. Include a cover sheet with label information. Include name of Project and date of video recording on each page.

1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode. Provide supplemental lighting in low light levels or backlit conditions.
- C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- D. Metadata: Record accurate date and time from camera.
- E. File Names: Name media files with date and sequential numbering suffix.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.
 1. Flag construction limits before taking construction photographs.
 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.

3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- C. Periodic Construction Photographs: Take 20 photographs monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- D. Time-Lapse Sequence Construction Photographs: Take 20 photographs as indicated, to show status of construction and progress since last photographs were taken.
1. Frequency: Take photographs monthly, on the same date each month.
 2. Vantage Points: Following suggestions by Engineer, during each of the following construction phases, take not less than two of the required shots from same vantage point each time to create a time-lapse sequence as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above-grade structural framing.
 - c. Exterior building enclosure.
 - d. Interior Work, through date of Substantial Completion.
- E. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for submission as Project Record Documents. Engineer will inform photographer of desired vantage points.

1.6 CONSTRUCTION VIDEO RECORDINGS

- A. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
1. Confirm date and time at beginning and end of recording.
 2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.
- B. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.
- C. Preconstruction Video Recording: Before starting construction, record video recording of Project site and surrounding properties from different vantage points, as directed by Engineer.
1. Flag construction limits before recording construction video recordings.
 2. Show existing conditions adjacent to Project site before starting the Work.
 3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of construction.
 4. Show protection efforts by Contractor.

- D. Periodic Construction Video Recordings: Record video recording monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes(s).
- E. Time-Lapse Sequence Construction Video Recordings: Record video recording to show status of construction and progress.
 - 1. Vantage Points: Following suggestions by Engineer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 33

SECTION 01 35 13 - SPECIAL CONDITIONS

The following Special Conditions take precedence over Plans and Specifications:

1. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the state. Control measures must be adequate to assure that turbidity in the receiving water will not be increased more than 10 nephelometric turbidity units (NTU), or as otherwise required by the state or other controlling body, in water used for public water supply or fish unless limits have been established for the particular water. In surface water used for other purposes, the turbidity must not exceed 25 NTU unless otherwise permitted. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion.
2. Special emphasis shall be given to controlling erosion during the entire project. Erosion control measures shall be employed so as to prevent any erosion or off-site degradation.
3. Erosion evident within the limits of construction shall be the responsibility of the CONTRACTOR during the full term of the contract and for the full (1) year guarantee period. Areas subject to erosion during this time shall be fully restored to original or design conditions (as applicable) within 10 days of notice to the CONTRACTOR.
4. Within 20 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 which the CONTRACTOR proposes to perform at no additional cost to the OWNER in case of a hurricane warning. Such measures shall be in accordance with local and state requirements

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

5. Any disturbance by the Contractor beyond the limits of construction shall be repaired to original condition or better at the Contractor's expense.
6. The Contractor shall maintain prominent and clear labeling of its company name and its local phone number at each project site. The Contractor and each of its major subcontractors shall provide two points of contact with 24-hour phone numbers to Owner prior to beginning construction.
7. Contractor shall maintain a roster of known personnel employed by Contractor, and Subcontractors to be utilized at the project site. Contractor shall update the list on at least a monthly basis.
8. THE "DISTRICT" will issue a final acceptance for the contract once the specified system becomes operational. Final acceptance will also be contingent on the acceptable restoration of all areas disturbed during construction. THE "DISTRICT" will also require the Contractor to provide his written warranty, release of lien, and acceptable "as-builts." Upon final payment to the Contractor by the Owner, the Contractor's warranty will begin.

9. Archeological Finds

During any activities which involve excavation or ground disturbance, Contractor shall monitor all construction activities. In the event that fortuitous finds or unexpected discoveries, such as prehistoric or historic artifacts, including pottery or ceramics, stone tools or metal implements, or other physical remains that could be associated with North American cultures or early colonial or American settlement are encountered at any time within the project areas, the Contractor should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. If the excavation process uncovers items, or evidence thereof, which might be of archaeological, historic, or architectural interest, Contractor shall to stop work immediately and take all reasonable measures to protect the items in a manner sufficient to avoid additional harm until the significance of the discovery can be determined. If items of significance are discovered, the Owner will contact the appropriate agencies for a determination of required actions. Project activities should not resume in the area without written authorization from the Owner.

In the event that any human remains are unearthed, all work shall stop immediately and the area shall be secured in accordance with local, state, and federal statutes.

10. Sewer bypass pumping/piping: On projects requiring temporary sewer bypass pumping/piping, it is the Contractor's responsibility to furnish, install, operate, and remove the appropriate sized materials and equipment and employ the site appropriate means and methods by which to complete this task without causing sewer spills, overflows, sewer backup into customers' homes, or service disruptions to the THE "DISTRICT" sewer customers. Regardless of the means and methods chosen by the Contractor, the following conditions shall be met:
- a. THE "DISTRICT" typically pays a lump sum price for bypass pumping/piping, but still desires the Contractor to minimize the time required to operate its flow diversion strategy. Time is of the essence with whatever flow diversion method chosen and implemented by Contractor.
 - b. It is the Contractor's responsibility to minimize, as much as practical, all impacts (i.e. above ground piping across roads and driveways) to local residents and motorists, and to maintain traffic and driveway access as much as practical. Contractor shall perform lane closures and/or detours on days and at hours as directed and allowed by governing roadway agency.
 - c. Contractor shall be equipped with tools, equipment, manpower, and material necessary to clean overflows resulting from failure of sewer bypass pumping/piping, to include use of environmentally friendly biodegradable disinfectant. See Special Condition Note concerning fines and penalties to be levied on Contractor due to overflows caused by faulty sewer bypass pumping/piping.
 - d. THE "DISTRICT" may not be readily available to assist with potential problems associated with the Contractor's selected bypass pumping/piping system, however, should THE "DISTRICT" respond and/or assist with issues associated with the flow diversion, then Contractor will be charged for THE "DISTRICT" personnel, vehicle, equipment, and material costs.
 - e. When possible, the Contractor shall construct the new infrastructure first (i.e. lift station, force main, gravity sewer, manhole) and place into service while the existing infrastructure remains in operation. When not possible to construct the new infrastructure first, the Contractor shall install its bypass pumping/piping and assure its operation prior to beginning work on the new infrastructure. For existing lift stations that must remain in operation, site must remain accessible at all times to THE "DISTRICT" vehicles (service trucks, tanker trucks, vacuum trucks, etc.), utility service trucks, and bypass pumps and generators.
 - f. Minimum requirements for bypass pumping/piping with gas powered engines/pumps:
 1. Max dBA rating at 7 meters shall not exceed 72 dBA (less than 72 dBA is desirable) and shall be accomplished via the use of specialized residential grade noise attenuators/mufflers and/or baffles.
 2. Primary system shall be backed up with redundant secondary system.

3. Secondary pump system shall be supplied and equipped with emergency float. An auto-dialer shall be installed to notify the Contractor of emergency conditions. Auto-dialer shall dial the following personnel, in order:
 - a) Contractor representative #1
 - b) Contractor representative #2
 - c) Contractor representative #3
 - d) Bypass pump company representative #1
 - e) Bypass pump company representative #2
 - f) THE "DISTRICT" Representative
4. Contractor shall provide name and 2 phone numbers each of at least three Contractor representatives that will be available to respond to emergencies. This info will be supplied to the Engineer, THE "DISTRICT", and the FDEP.
5. Contractor shall have crews, equipment, and supplies capable of making needed repairs on site within two hours of initial notification (first contact attempt) of an emergency situation. Contractor shall pay \$1,000 for each hour it is not on site and fully operational after the initial two hour response window.
6. Contractor shall provide repairs and have flow diversion back in full operation within 4 hours of initial notification (first contact attempt). Contractor shall pay \$1,000 for each hour the bypass pumping/piping system is not operational after the initial four hour response window.
7. Fuel tanks shall meet all regulatory requirements (i.e. double hull, etc.).
8. All suction and discharge piping shall be welded HDPE and all valves, check valves, and other fittings shall be flanged.
- g. Minimum requirements for bypass pumping/piping with vacuum trucks, tanker trucks, or frac (storage) tanks:
 1. All material collected by vacuum trucks, tanker trucks, and frac tanks must be taken to THE "DISTRICT"'s WRF in Cedar Key unless otherwise coordinated, allowed, and directed by THE "DISTRICT".
- h. Minimum requirements for bypass pumping/piping with usage of collection system storage:
 1. Although heavily discouraged, it is understood that very brief moments of collection system storage are needed from time to time in order to incorporate bypass piping/pumping measures. Contractor shall schedule said moments to very low flow periods and for very brief periods. Contractor is responsible for all damages resulting from sewer back-ups onto private properties as a result of its use of collection system storage. Contractor is responsible for cleaning portions of collection system used for storage should deposition as a result of system storage.
- i. Minimum requirements for bypass pumping/piping with other means and methods not contained in this section:
 1. Other bypass pumping/piping methods system requires review and approval by THE "DISTRICT" and the Engineer.
11. The contractor shall be responsible for all bypass pumping associated with the construction of the proposed improvements. Contractor shall provide bypass pumps, piping, valves, fittings, fuel and any other items required for the bypass operation. Contractor shall maintain fuel in the bypass pump such that the pump will operate during times when the contractor is not on-site. Additionally, the bypass piping will need to cross the existing roadway. Contractor shall maintain vehicular traffic access at all times.
12. All internal combustion-powered equipment and/or standby power generators shall have, as a minimum, a residential grade silencer (muffler) for equipment to be operating beyond the hours of operation allowed by local Noise Attenuation Ordinance requirements. The equipment shall be noise attenuated to emit a maximum noise level of 80 dBA at 30 feet from the equipment, unless otherwise required by local ordinance.

13. In the event that any sanitary sewer overflow (SSOs) occur as a result of Contractor's operations, including but not limited to bypass pumping on flow diversion activities, or any failures therein, Contractor shall be responsible for all cleanup operations required thereby as well as paying all fines issued by the Florida Department of Environmental Protection (FDEP). If FDEP fines THE "DISTRICT" due to an SSO event and demands payment, THE "DISTRICT" may require payment from Contractor in the suggested fine amounts or withhold payment from Contractor in these amounts, at THE "DISTRICT" option.
14. It is the Contractor's responsibility to satisfy any and all requirements as specified by the Florida Department of Environmental Protection (FDEP), the Florida Department of Transportation, or any other regulatory agency relative to Federal, State or County agencies. Contractor shall be liable for and pay fines or penalties associated with his activities as may be levied by authorities having jurisdiction.
15. Unless otherwise specified, the contractor will be required to limit construction to the hours of 7:00 AM to 6:00 PM, or to within daylight hours, whichever is more restrictive, unless written permission has been obtained from the Owner. All internal combustion-powered equipment and/or standby power generators shall have, as a minimum, a residential grade silencer (muffler) for equipment to be operating beyond the hours of operation allowed by local Noise Attenuation Ordinance requirements. The equipment shall be noise attenuated to emit a maximum noise level of 80 dBA at 30 feet from the equipment, unless otherwise required by local ordinance.
16. "Regular work hours" are defined as from 7:00 a.m. to 6:00 p.m. and "legal holidays" are defined as all those recognized by THE "DISTRICT".
17. Discharge from pumps, well points, and any other equipment utilized for dewatering excavations shall not be released to any wetland. Provide temporary piping and hoses as necessary to convey all discharges to a storm drain, the location to be approved by OWNER. The effects of temporary piping and hoses on pedestrian and vehicular access will be evaluated when reviewing a point of discharge for approval.

END OF SECTION 01 35 13

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
 2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
 3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as

appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Engineer.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Engineer.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be

used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. **Quality-Control Personnel Qualifications:** Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- C. **Submittal Procedure:** Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. **Testing and Inspection:** In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
 - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. **Continuous Inspection of Workmanship:** Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. **Monitoring and Documentation:** Maintain testing and inspection reports including log of approved and rejected results. Include work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. **Test and Inspection Reports:** Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. **Specialists:** Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. **Testing Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. **Preconstruction Testing:** Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.

- e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.
 2. Notify Engineer seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **Testing Agency Responsibilities:** Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify

agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Engineer.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 70 00 "Execution and Closeout Requirements".
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.
 - 2. Section 31 20 00 "Earth Moving" for disposal of ground water at Project site.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect/Engineer, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

- D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste-handling procedures.
 - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete bases for supporting posts.
- B. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Field Offices, General: Contractor will provide conditioned interior space for field offices for duration of Project.
- C. Common-Use Field Office: Of sufficient size to accommodate needs of Contractor, Architect/Engineer, and Owner personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 - 3. Drinking water and private toilet.
 - 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 - 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Section 01 10 00 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- E. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment and one land-based telephone line(s) for each field office.
1. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
- H. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Engineer and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:
1. Processor: Intel Core i5 or i7.
 2. Memory: 8 gigabyte.
 3. Disk Storage: 500 gigabyte hard-disk drive and combination DVD-RW/CD-RW drive.
 4. Display: 36-inch LCD monitor with 256-Mb dedicated video RAM.
 5. Full-size keyboard and mouse.
 6. Network Connectivity: 10/100BaseT Ethernet.
 7. Operating System: Microsoft Windows 10 Professional.
 8. Productivity Software:
 - a. Microsoft Office Professional, 2013 or higher, including Word, Excel, and Outlook.
 - b. Adobe Reader 11.0 or higher.
 - c. WinZip 7.0 or higher.
 9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
 10. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 1.0 Mbps upload and 15 Mbps download speeds at each computer.
 11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
 12. Backup: External hard drive, minimum 1 terabyte, with automated backup software providing daily backups.

3.4 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E136. Comply with NFPA 241.
 2. Maintain support facilities until Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 31 20 00 "Earth Moving."
 3. Recondition base after temporary use, including removing contaminated material, regrading, proof rolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course.
- D. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- E. Parking: Provide temporary parking areas for construction personnel.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution."

I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

J. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 01 10 00 "Summary."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 31 10 00 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.

2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.

4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

- E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- H. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- I. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- K. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

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SECTION 01 57 23 - TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Temporary stormwater pollution controls.

1.3 STORMWATER POLLUTION PREVENTION PLAN

- A. It is the responsibility of the CONTRACTOR to obtain the Stormwater Pollution Prevention Plan (SWPPP) and implement the plan during construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Engineer, and earthwork subcontractor.
 - 2. Review requirements of the SWPPP, including permitting process, worker training, and inspection and maintenance requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPP): Within **15** days of date established for commencement of the Work, submit completed SWPPP.
- B. EPA authorization under the EPA's "2017 Construction General Permit (CGP)."
- C. Stormwater Pollution Prevention (SWPP) Training Log: For each individual performing Work under the SWPPP.
- D. Inspection reports.

1.6 QUALITY ASSURANCE

- A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.
 - 1. SWPPP Coordinator shall complete and finalize the SWPPP form.
 - 2. SWPPP Coordinator shall be responsible for inspections and maintaining of all requirements of the SWPPP.
- B. Installers: Trained as indicated in the SWPPP.

PART 2 - PRODUCTS

2.1 TEMPORARY STORMWATER POLLUTION CONTROLS

- A. Provide temporary stormwater pollution controls as required by the SWPPP.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.
- B. Locate stormwater pollution controls in accordance with the SWPPP.
- C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.
 - 1. Inspect, repair, and maintain SWPPP controls during construction.
 - a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined in the SWPPP.
- D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 01 57 23

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for limits on use of Project site.
 - 2. Section 01 33 00 "Submittal Procedures" for submitting surveys.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

- C. Certified Surveys: Submit two copies signed by land surveyor.
- D. Final Property Survey: Submit five copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.

4. Recommended corrections.

- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer according to requirements in Section 01 31 00 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels of construction and elsewhere as needed to locate each element of Project.
 2. Establish limits on use of Project site.
 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.
 6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

- D. **Building Lines and Levels:** Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. **Record Log:** Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

- A. **Identification:** Owner will identify existing benchmarks, control points, and property corners.
- B. **Reference Points:** Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. **Benchmarks:** Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. **Certified Survey:** On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. **Final Property Survey:** Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. **Recording:** At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 01 77 00 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 10 00 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as

practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.

- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00 "Temporary Facilities."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with the Owner and Engineer.
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

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SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Disposing of nonhazardous construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL

- A. General: Provide handling, containers, storage, signage, transportation, and other items as required to accomplish waste management during the entire duration of the Contract.

- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.2 DISPOSAL OF WASTE

- A. General: Remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site for more than seven days.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 01 32 33 "Photographic Documentation" for submitting final completion construction photographic documentation.
 - 2. Section 01 78 23 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Section 01 79 00 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. No later than thirty (30) days prior to substantial completion of the Work, Contractor shall submit in accordance with Section 218.735(7), Florida Statutes, a single list of items required to render the Work complete, satisfactory, and acceptable. The list shall be subject to the approval by the City's project engineer (if applicable) and by the City. Contractor shall modify as necessary to obtain approval and adjust the completion date to allow sufficient for satisfactory and acceptable completion.
- B. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain **Owner's** signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit sustainable design submittals not previously submitted.
 - 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

- D. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
 6. Advise Owner of changeover in utility services.
 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements.
 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- E. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **10** days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 01 29 00 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report.
 5. Submit final completion photographic documentation.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On

receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
2. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Page number.
3. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Engineer will return annotated file.
 - b. PDF electronic file. Engineer will return annotated file.
 - c. Web-based project software upload. Utilize software feature for creating and updating list of incomplete items (punch list).
 - d. **Three** paper copies. Engineer will return **two** copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within **15** days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit **on digital media acceptable to Engineer.**

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

- c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - 1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
 - p. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 50 00 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired.

Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

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SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Engineer will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Engineer, by email to Engineer. Enable reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Engineer will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Engineer will return copy with comments.
 1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to commencing demonstration and training.
- E. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components

of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Engineer.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Engineer that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 - 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 - 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 - 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.

3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.
- 1.11 PRODUCT MAINTENANCE MANUALS
- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.
- B. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up. See other requirements in Section 01 22 00 "Unit Prices."

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training: Submit **two** copies within **seven** days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name of Engineer.
 - c. Name of Contractor.

- d. Date of training.
2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding training module and a table of contents with bookmarks to corresponding training components. Include name of Project and date of training on each page.
3. At completion of training, submit complete training manual(s) for Owner's use prepared in PDF file format.

1.5 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
- B. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Engineer.

1.7 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.

2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.

5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.

7. Maintenance: Include the following:
 - a. Inspection procedures.

- b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

- A. Engage qualified manufacturer representatives to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish Contractor with names and positions of participants.
- B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with at least **seven** days' advance notice.
- C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 01 79 00

SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.5 SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:

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1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Predemolition Photographs or Video: Submit before Work begins.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.
- F. Closeout Submittals
1. Inventory: Submit a list of items that have been removed and salvaged.
 2. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

- A. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

1.7 FIELD CONDITIONS

- A. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical. Notify Owner's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 PRODUCTS

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SELECTIVE DEMOLITION

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2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the Owner's Representative.
- E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
 - 2. Engage a professional engineer where Contractor's field personnel are unable to make adequate determination.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove plumbing, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.

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- c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
- d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
- e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 - 4. Maintain adequate ventilation when using cutting torches.
 - 5. Remove dangerous or unsuitable materials and promptly dispose of off-site.
 - 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 8. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.

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3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Owner's Representative, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.
1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

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SECTION 03 20 00
CONCRETE REINFORCING STEEL

PART 1 GENERAL

1.1 SUMMARY

- A. Work shall consist of furnishing and placing reinforcing steel in accordance with these specifications and in conformity with the Drawings.

1.2 REFERENCED STANDARDS

- A. The following is a list of standards which may be referenced in this section:
1. American Association of State and Highway Transportation Officials (AASHTO):
 - a. M31M/M31, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - b. AASHTO Standard Specifications for Welding of Structural Steel Highway Bridges.
 2. American Concrete Institute (ACI):
 - a. ACI Detailing Manual.
 - b. 117, Specifications for Tolerance for Concrete Construction and Materials.
 - c. 318, Building Code Requirements for Structural Concrete.
 3. American Welding Society (AWS):
 - a. D1.1/D1.1M, Structural Welding Code - Steel.
 - b. D1.4/D1.4M, Structural Welding Code - Reinforcing Steel.
 - c. D2.0, Welded Highway and Railway Bridges.
 4. ASTM International (ASTM):
 - a. A82/A82M, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - b. A497/A497M, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
 - c. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - d. A996/A996M, Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
 - e. A706/A706M, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
 - f. A767/A767M, Standard Specification for Zinc-coated (Galvanized) Steel Bars for Concrete Reinforcement.
 - g. A775/A775M, Standard Specification for Epoxy-coated Steel Reinforcing.
 5. Concrete Reinforcing Steel Institute (CRSI):
 - a. Manual of Standard Practice.
 - b. Placing Reinforcing Bars.

1.3 SUBMITTALS

- A. Two copies of a list of all reinforcing steel and bending diagrams shall be furnished to the Owner at the site of the work at least one week before the placing of reinforcing steel is begun. Such lists will not be reviewed for accuracy. The Contractor shall be responsible for the accuracy of the lists and for furnishing and placing all reinforcing steel in accordance with the details shown on the plans.

1.4 DELIVERY, STORAGE, AND PROTECTION

- A. Reinforcing steel shall be stored off of the ground and protected from oil or other materials detrimental to the steel or bonding capability of the reinforcing bar. Epoxy-coated reinforcing

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bars shall be stored on protective cribbing.

PART 2 PRODUCTS

2.1 REINFORCING STEEL

- A. Deformed Bars: All bar steel reinforcement shall be of the deformed type, ASTM A615, AASHTO M31M/M31, and Grade 60.
- B. Spirals:
 - 1. Spirals, hot-rolled plain or deformed bars per ASTM A615, Grade 60 or cold drawn wire per ASTM A82/A82M as specified on the DRAWINGS.
 - 2. Spirals for columns shall have two (2) "spacers" with a section modulus $> 0.030 \text{ in}^3$ to maintain the proper pitch and spacing.
- C. Epoxy-Coated Reinforcing Bars: Epoxy-coated reinforcing bars shall conform to ASTM A775/A775M. When required, damaged epoxy coating shall be repaired with patching material conforming to ASTM A775/A775M in accordance with the material manufacturer's recommendations.
- D. Zinc-coated (Galvanized Reinforcing Bars): Zinc-coated reinforcing bars shall conform to ASTM A767/A767M. When required, damaged zinc coating shall be repaired with a zinc-rich formulation conforming to ASTM A767/A767M.
- E. Welded Wire Fabric: All welded wire fabric reinforcement shall conform to ASTM A497/A497M.
- F. Identification:
 - 1. Bundles of reinforcing bars and wire spirals shall be tagged, with a metal tag, showing specification, grade, size, quantity, and suitable identification to permit checking, sorting, and placing. When bar marks are used to identify reinforcing bars on the Drawings, the bar mark shall be shown on the tag. Tags shall be removed prior to concrete placement.
 - 2. Bundles of flat sheets and rolls of welded wire fabric shall be tagged similar to reinforcing bars.

2.2 TIE WIRE

- A. 16-gauge wire ties, manufactured by American Wire Tie, Inc., or equal. When epoxy-coated reinforcing steel is shown on the Drawings, PVC coated wire ties shall be used. The minimum PVC coating shall be 0.7 mils.

2.3 BAR SUPPORTS

- A. General: Bar supports and spacing shall be in accordance with the CRSI Manual of Standard Practice, Chapter 3, a maximum of four (4) feet, or as required by the Drawings.
- B. Slabs: Uncoated steel or non-metallic composite chairs shall be used unless otherwise shown on the Drawings. If required by Owner, the chair shall be stapled on a bearing pad to prevent chair displacement. The bearing pad shall be made of exterior grade plywood and be approximately five (5) inches square.
- C. Columns: Plastic "space wheels" are required.
- D. Epoxy-Coated and Zinc-Coated Bar Supports: Epoxy-coated reinforcing bars supported from formwork shall rest on coated wire bar supports made of dielectric or other acceptable materials. Wire supports shall be fully coated with dielectric material, compatible with

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concrete. Reinforcing bars used as support bars shall be epoxy-coated. In walls reinforced with epoxy-coated bars, spreader bars shall be epoxy-coated. Proprietary combination bar clips and spreaders used in walls with epoxy-coated reinforcing shall be made of corrosion-resistant material or coated with dielectric material.

2.4 FABRICATION

- A. Fabrication tolerances for straight and bent bars shall be in accordance with the requirements of Subsection 4.3, Tolerance, of ACI 315 and the CRSI Manual of Standard Practice.

PART 3 EXECUTION

3.1 GENERAL

- A. Rust, seams, surface irregularities, or mill scale shall not be cause for rejection provided that the weight and height of deformations of a hand-wire-brushed test specimen are not less than the applicable ASTM Specification.

3.2 BAR LIST

- A. Contractor shall be responsible for the accuracy of the lists and for furnishing and placing all reinforcing steel in accordance with the details shown on the Drawings.
- B. Bar lists and bending diagrams for structures, which are included on the Drawings, do not have to be furnished by Contractor. When bar lists and bending diagrams are included on the Drawings, they are intended for estimating approximate quantities. Contractor shall verify the quantity, size, and shape of the bar reinforcement against those shown on the Drawings and make any necessary corrections before ordering.

3.3 BENDING

- A. All reinforcing bars shall be bent cold. Bars partially embedded in concrete shall not be field bent, except as shown on the Drawings or permitted. Bars shall not be bent or straightened in a manner that may injure the material.

3.4 SPIRALS

- A. One and one-half (1-1/2) finishing bends are required at the top and bottom of the spiral. Spacers shall be provided in accordance with Chapter 5, Section 9 of the CRSI Manual of Standard Practice. Welding as an aid to fabrication and/or installation is not permitted.

3.5 PLACING AND FASTENING

- A. When placed in the Work, the reinforcing bars shall be free from dirt, loose mill scale, paint, oil, loose rust, or other foreign substance.
- B. The placing, fastening, splicing, and supporting of reinforcing steel and wire mesh or bar mat reinforcement shall be in accordance with the Drawings and the latest edition of "CRSI Placing Reinforcing Bars." In case of discrepancy between the Drawings and the CRSI publication stated above, the Drawings shall govern. Reinforcement shall be placed within the tolerances provided in ACI 117.
- C. Steel reinforcement shall be accurately placed in the positions shown on the Drawings and firmly held during the placing and setting of concrete by means of spacer strips, stays, metal chairs or other approved devices or supports. Precast concrete bricks or other types of bricks are not permitted for support of reinforcement in footings, slabs, or any other part of

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the work. Chair and bolster supports for slabs and walls shall be spaced at a maximum of four- (4-) foot centers unless otherwise shown on the Drawings. Staples used to attach bar supports to wall and roof forms shall have the staple "tails" clipped after form removal. For columns, three (3) wheels, spaced one hundred twenty degrees (120°) apart, shall be placed every four (4) feet of column height. Contractor may increase the column spiral pitch if a conflict occurs with the wheel. Pre-tied column reinforcing steel lowered into column forms shall be lowered vertically to prevent damage to the space wheels.

- D. Bars shall be securely tied at fifty percent (50%) of all intersections except where spacing is less than one (1) foot in each direction, when alternate intersections shall be tied unless otherwise called out on the Drawings or in applicable Specifications. Tying of steel by spot welding shall not be permitted unless specifically authorized by Owner. The placing and securing of the reinforcement in any unit or section shall be accepted by Owner before any concrete is placed in any such unit or section.
- E. Bundle bars shall be tied together at not more than six- (6-) foot centers.

3.6 SPLICING

- A. Bar steel reinforcement shall be furnished in the full lengths indicated on the Drawings. Splicing of bars, except where shown on the Drawings, shall not be permitted without the written acceptance of Owner. Splices shall be staggered. In cases where permission is granted to splice bars, other than those shown on the Drawings, the additional material required for the lap shall be furnished by Contractor at Contractor's own expense. The minimum distance between staggered splices for reinforcing bars shall be the length required for a lapped splice in the bar. All splices shall be full contact splices.
- B. Splices shall not be permitted at points where the section is not sufficient to provide a minimum distance of two (2) inches between the splice and the nearest adjacent bar or the surface of the concrete.
- C. Welding of reinforcement shall be done only if detailed on the Drawings or if authorized by OWNER in writing. Welding shall be done by a certified welder. The welding shall conform to AWS D1.4/D1.4M with the modifications and additions specified hereinafter. Where AWS D2.0 Specifications for Welded Highway and Railway Bridges is referenced, the reference shall be construed to be for AWS D1.1. Where the term AWS D1.1/D1.1M is used it shall mean the American Welding Society Structural Welding Code, D1.5/D1.5M as modified and amended by the AASHTO Standard Specifications for Welding of Structural Steel Highway Bridges. After completion of welding, coating damage to coated reinforcing steel bars shall be repaired.
- D. When required or permitted, a mechanical connection may be used to splice reinforcing steel bars or as substitution for dowel bars. The mechanical connection shall be capable of developing a minimum of one hundred twenty five percent (125%) of the yield strength of the reinforcing bar in both tension and compression. All parts of mechanical connections used on coated bars, including steel splice sleeves, bolts, and nuts shall be coated with the same material used for repair of coating damage.

3.7 CUTTING

- A. When coated reinforcing bars are cut in the field, the ends of the bars shall be coated with the same material used for repair of coating damage.

END OF SECTION

SECTION 03 30 00
CAST IN PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. The work shall consist of furnishing, forming, placing, finishing, and curing Portland cement concrete and furnishing and placing steel reinforcement as required to build the structures shown on the drawings.

1.2 SUBMITTALS

- A. Mix Design: Submit for approval mix design proposed for use.
- B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
 - 1. Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.

1.3 QUALITY ASSURANCE

- A. Contractor shall obtain concrete from a plant that is currently listed on the FDOT Materials Acceptance and Certification System for structural concrete.
- B. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- C. Testing: Employ an independent testing agency acceptable to Owner to design concrete mixes and to perform material evaluation tests. Provide 7 and 28 day cylinder tests. Comply with ASTM C 143, C 173, C 31 and C 39.
- D. Standards:
 - 1. ACI 301, Specifications for structural Concrete for Buildings.
 - 2. ACI 318, Building Code Requirements for Reinforced Concrete, and CRSI Manual of Standard Practice.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Portland cement shall be Type II or Type IIA as specified in ASTM C 150 or as otherwise specified on the plans. Fly ash used a partial substitution of Portland cement shall conform to the requirements of ASTM C 618, Class C or F. Blast furnace slag used as a partial substitution of Portland cement shall conform to ASTM Standard C 989 for ground granulated blast-furnace slag.
- B. Water used in mixing and curing concrete shall be clean and free from injurious amounts of oil, salt, acid, alkali, algae, organic matter, or other deleterious substances.
- C. Aggregates shall conform to the requirements of ASTM C 33 for fine and coarse aggregate for concrete. Aggregates must be clean, hard, strong, and durable particles free of absorbed chemicals, clay coatings, organic materials, trash, and clay or soil balls. Aggregates are to

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be handled in a way that minimizes segregation. The maximum size of aggregate particles should not exceed:

1. 1/5 the narrowest dimension of the member
 2. 3/4 the clear spacing between reinforcing bars and between reinforcing bars and forms
 3. 1/3 the depth of the slab
- D. Fiber Reinforcing may be used when approved by the Owner. Fiber to be added to concrete during batching at a rate of 0.1% to 0.2% by volume.
- E. Steel bar reinforcement Reinforcing bars shall be Grade 60 unless otherwise specified on the drawings or approved by the Owner. Reinforcing steel shall conform to ASTM A 615. Dowels shall be plain round bars conforming to the same specifications for deformed steel bars. Welded steel wire fabric reinforcement shall conform to ASTM A 185. Gauges, spacing and arrangement of wires shall be as defined in ACI Standard 315. When placed, reinforcing bars shall be free from loose, flakey rust, mill scale, oil, grease, or paint.
- F. Chemical Admixtures
1. Air-entraining admixtures shall conform to the requirements of ASTM C 260. If air-entraining cement is used, any additional air-entraining admixture shall be of the same type as that in the cement.
 2. Water reducing and/or retarding admixtures shall conform to the requirements of ASTM C 494, Types A, B, D, F or G.
 3. Plasticizing admixtures or plasticizing and retarding admixtures shall conform to the requirements of ASTM C 494 Types F or G, or ASTM C 1017 as applicable.
 4. Accelerating and water-reducing and accelerating admixtures shall be noncorrosive and conform to the requirements of ASTM C 494, Types C and E.
 5. Other admixtures such as accelerators or retarders may be used with the approval of the Owner.
- G. Curing compound shall conform to the requirements of ASTM C 309 or ASTM C 1315. Curing compounds shall be delivered to the site in the original container. The compound shall be stored on site to prevent damage to the container or freezing.
- H. Preformed expansion joint filler shall conform to the requirements of ASTM D 1752, Type I, Type II or, Type III, unless bituminous type is specified. Bituminous type preformed expansion joint filler shall conform to the requirements of ASTM D 994.

2.2 CONCRETE CLASS

- A. Concrete shall have a minimum design strength of 5,500 psi at 28 days, unless otherwise specified. Fly ash may be used as a partial substitution for Portland cement in an amount of no more than 25 percent (by weight) of the cement in the concrete mix, unless otherwise specified. The Contractor is responsible for design and proportioning of the concrete mix to attain the specified compressive strength.

2.3 AIR CONTENT AND CONSISTENCY

- A. Unless otherwise specified the air content (by volume) shall be 5 to 7 percent of the volume of the concrete at the time of placement. Air entrainment admixtures can be added to meet the air content requirements.
- B. Unless otherwise specified, the slump shall be 3 to 5 inches. High range, water reducing agents (plasticizers) may be used to increase workability, reduce water content, and control

concrete temperature in hot weather. The maximum slump after adding high range water reducing agents (plasticizers) shall be 7.5 inches. The slump shall be 3 inches or less prior to the addition of any water reducing agents. When specified, directed, or approved by the Owner, a water-reducing, set-retarding, or other admixture shall be used. Any admixtures used shall meet the requirements in Section 2 unless otherwise approved by the Owner.

PART 3 EXECUTION

3.1 MIXERS AND MIXING

- A. Concrete shall be uniform and thoroughly mixed when delivered to the work site. The proportions of the aggregates shall be such as to produce a concrete mixture that will work readily into corners and angles of the forms and around reinforcement when consolidated, but not segregated or exude free water during consolidation. Variations in slump of more than 1 inch within a batch are considered evidence of inadequate mixing and shall be corrected by increasing mixing time or other acceptable alternative.
- B. No mixing water in excess of the amount called for by the job mix shall be added to the concrete during mixing or hauling or after arrival at the delivery point.

3.2 FORMS

- A. Forms shall be of wood, plywood, steel, or other approved material and shall be mortar tight. The forms and associated falsework shall be substantial and unyielding and shall be constructed so that the finished concrete will conform to the specified dimensions and contours. Form surfaces shall be smooth and free from holes, dents, sags, or other irregularities. Forms shall be coated with a nonstaining form release agent before being set into place.
- B. For liquid-tight structures metal ties or anchorages within the forms shall be equipped with cones, she-bolts or other devices that permit their removal to a depth of at least 1 inch (unless otherwise specified) without injury to the concrete. Ties designed to break off below the surface of the concrete shall not be used without cones. If approved fiberglass or plastic form ties are used, the tie ends shall be cut flush with the finish concrete and ground smooth.
- C. For structures which are not required to be liquid-tight, form ties shall be removed flush with or below the concrete surface.
- D. All edges that will be exposed to view when the structure is completed shall be chamfered, unless finished with molding tools.

PART 4 EXECUTION

4.1 PREPARATION OF FORMS AND SUBGRADE

- A. Prior to placement of concrete, the forms and subgrade shall be free of chips, sawdust, debris, water, ice, snow, extraneous oil, mortar, or other harmful substances or coatings and the temperature of all surfaces to be in contact with the new concrete shall be not be less than 40 degrees Fahrenheit. Any oil on the reinforcing steel or other surfaces required to be bonded to the concrete shall be removed. Rock surfaces shall be cleaned by air-water cutting, wet sandblasting, or wire brush scrubbing, as necessary, and shall be wetted immediately before placement of concrete. The earth surface shall be firm and damp. Placement of concrete on mud, dried earth, or uncompacted fill or frozen subgrade is not permitted.

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- B. Items to be embedded in the concrete shall be positioned accurately and anchored firmly.
- C. Weepholes in walls or slabs shall be formed with nonferrous material.

4.2 CONVEYING

- A. Concrete shall be delivered to the site and discharged into the forms within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather or under conditions contributing to quick stiffening of the concrete, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes unless an approved set-retarding admixture is used or the mix remains workable and the temperature does not exceed the requirements stated in Section 20. In any case, concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods that prevent segregation of the aggregates and assure no loss of mortar occurs.

4.3 PLACING

- A. Concrete shall not be placed until the subgrade, forms, steel reinforcement, and embedded items have been inspected and approved. The Owner will determine any required testing needed for the placement of the specified concrete. No concrete shall be placed except in the presence of the Owner or with permission from the Owner. The Contractor shall give reasonable notice to the Owner each time concrete is to be placed. Such notice shall provide sufficient time for the Owner to inspect the subgrade, forms, steel reinforcement, and other preparations for compliance with the specifications. Deficiencies are to be corrected before concrete is delivered for placing. The Owner can delegate any or all duties to other qualified personnel.
- B. The concrete shall be deposited as closely as possible to its final position in the forms. It shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Formed concrete shall be placed in horizontal layers not more than 20 inches deep. When a superplasticizer is used the horizontal layer can be increased to 5 ft. deep. Slab concrete shall be placed to design thickness in one continuous layer.
- C. Concrete shall not be dropped more than 5 feet vertically unless suitable equipment is used to prevent segregation. When a superplasticizer used, the concrete shall not be allowed to drop more than 10 feet. Hoppers and chutes, pipes, or "elephant trunks" shall be used as necessary to prevent segregation and the splashing of mortar on the forms and reinforcing steel above the layer being placed.
- D. Immediately after the concrete is placed in the forms, it shall be consolidated by spading, hand tamping, or vibration as necessary to ensure a smooth surface and dense concrete. Each layer shall be consolidated to ensure monolithic bond with the preceding layer. The use of vibrators shall not be used to transport concrete in the forms, slabs, or conveying equipment. Vibration shall not be applied directly to the reinforcement steel or the forms. If the surface of a layer of concrete in place sets to the degree that it will not flow and merge with the succeeding layer when spaded or vibrated, the Contractor shall discontinue placing concrete and shall make a construction joint according to the procedure specified in Section 3.4.
- E. If placing is discontinued when an incomplete horizontal layer is in place, the unfinished end of the layer shall be formed by a vertical bulkhead.

4.4 CONSTRUCTION JOINTS

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- A. Construction joints shall be made at the locations shown on the drawings. If construction joints are needed that are not shown on the drawings, they shall be placed in locations approved by the Owner.
- B. Where a feather edge would be produced at a construction joint, as in the top surface of a sloping wall, an insert form shall be used so that the resulting edge thickness on either side of the joint is not less than 6 inches.
- C. In walls and columns, as each lift is completed, the top surface shall be immediately and carefully protected from any condition that might adversely affect the hardening of the concrete.
- D. Steel tying and form construction adjacent to concrete in place shall not be started until the concrete has cured at least 12 hours. Before new concrete is deposited on or against concrete that has hardened, the forms shall be retightened. New concrete shall not be placed until the hardened concrete has cured at least 12 hours.
- E. The surface of construction joints shall be cleaned of all unsatisfactory concrete or other foreign materials by means approved by the Owner. The surface shall be kept moist for at least 1 hour before the new concrete is placed.

4.5 EXPANSION/ISOLATION AND CONTRACTION/CONTROL JOINTS

- A. The types and locations of expansion and contraction joints shall be made only at locations shown on the drawings unless otherwise directed by the Owner.
- B. Exposed concrete edges at expansion and contraction joints shall be carefully tooled or chamfered, and the joints shall be free of mortar and concrete. Contraction joints can be constructed using saw cuts to a depth of approximately $\frac{1}{4}$ of the total thickness between 4 to 12 hours from when the concrete is placed.
- C. Preformed expansion joint filler shall be held firmly in the correct position as the concrete is placed. Joint filler shall be left exposed for its full length with clean and true edges.
- D. When open joints are specified, they shall be constructed by the insertion and subsequent removal of a wooden strip, metal plate, or other suitable template in such a manner that the corners of the concrete are not chipped or broken. The edges of open joints shall be finished with an edging tool before the joint strips are removed.

4.6 WATERSTOPS

- A. Waterstops shall be held firmly in the correct position as the concrete is placed. Joints in metal waterstops shall be soldered, brazed, or welded. If specified by the Owner, joints in rubber or plastic waterstops shall be cemented, welded, or vulcanized as recommended by the manufacturer.

4.7 REMOVAL OF FORMS

- A. Forms shall be removed in such a way as to prevent damage to the concrete. Supports shall be removed in a manner that permits the concrete to take the stresses of its own weight uniformly and gradually. The minimum period from completion of the concrete placement to the removal of the forms shall be based on either strength tests or cumulative times.
- B. Strength tests – The strength of the in place concrete is determined by testing concrete cylinders specifically cast for this purpose and cured adjacent to the member in accordance

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with the ASTM C 31 method for determining removal time. Unless otherwise specified, forms supporting the weight of the concrete member may be removed after the concrete strength is 70 percent of that specified for the class of concrete.

- C. Cumulative time – The total accumulative time, not necessarily continuous, that the air adjacent to the concrete is above 50 degrees Fahrenheit and the specific concrete curing has occurred concurrently will be determined. Forms may be removed after the total accumulation time shown below.
- D. Accumulation form removal times
 - 1. Sides of slabs or beams 12 hours
 - 2. Undersides of slabs or beams
 - a. Clear span < 10 ft 4 days
 - b. Clear span 10 – 20 ft 7 days
 - c. Clear Span > 20 ft 14 days
 - 3. Sides of walls or columns
 - a. Height < 10 ft 12 hours
 - b. Height 10 – 20 ft 24 hours
 - c. Height > 20 ft 72 hours
 - 4. Values apply to normal concrete. Values for concrete that contains cements or admixtures that significantly retard or accelerate strength gain will be determined by the Owner and based on actual design mix data.
 - 5. Values apply to members designed to support significant superimposed loads.
 - 6. Values for members designed for only self weight when placed in service shall be 50 percent greater.
 - 7. Values apply to members not subject to significant horizontal loads. Additional time or rebracing is needed for members subject to significant wind or other horizontal loads.
 - 8. Subsequent higher lifts may be placed after 12 hours.

4.8 FINISHING UNFORMED SURFACES

- A. All exposed surfaces of the concrete shall be accurately screeded to grade and then float finished, unless specified otherwise.
- B. Excessive floating or troweling of surfaces while the concrete is soft is not permitted.
- C. Adding dry cement or water to the surface of the screeded concrete to expedite finishing is not allowed.
- D. Joints and edges on unformed surfaces that will be exposed to view shall be chamfered or finished with molding tools.

4.9 CURING

- A. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. All concrete and its surfaces shall be kept from freezing during the curing period. The required curing period may be reduced if a mix is used that will accelerate the curing time. For accelerated mixes the curing time shall not be less than 3 days. Any accelerated mixes and reduced curing times must be approved by the Owner. Exposed surfaces shall be kept continuously moist for the entire period, or until curing compound is applied as specified below. Moisture shall be maintained by sprinkling, flooding, or fog spraying, or by covering with continuously moistened canvas, cloth mats, straw, sand, or other approved material. Wood forms left in place during the curing period shall be kept continuously wet. A formed surface shall be thoroughly wetted immediately after forms are removed and shall be kept

wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged.

- B. Concrete, except at construction joints, may be coated with the approved curing compound instead of continued application of moisture, except as otherwise specified. The compound shall be sprayed on the moist concrete surface as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs, and finishing of that surface are completed. The compound shall be applied at a uniform rate of not less than 1 gallon per 175 square feet of surface and shall form a continuous adherent membrane over the entire surface. Curing compound shall be thoroughly mixed before applying and continuously agitated during application. Curing compound shall not be applied to a surface requiring bond to subsequently placed concrete, such as construction joints, shear plates, reinforcing steel, and other embedded items. If the membrane is damaged during the curing period, the damaged area shall be resprayed at the rate of application specified above. Any surface covered by the membrane shall not be trafficked unless protected from wear.

4.10 REMOVAL AND REPLACEMENT OR REPAIR

- A. When concrete is honeycombed, damaged, or otherwise defective, the Contractor shall remove and replace the structure or structural member containing the defective concrete or, where feasible, correct or repair the defective parts. The Owner determines the required extent of removal, replacement, or repair. Before starting repair work, the Contractor shall obtain the Owner's approval of the plan for repairs. The final repair work will result in at least the same structural strength of the original design.

4.11 TEMPERATURE REQUIREMENTS

- A. Concrete in hot weather
1. The Contractor shall apply effective means to maintain the temperature of the concrete below 90 degrees Fahrenheit during mixing, conveying, and placing.
- B. Concrete in cold weather
1. Concrete shall not be mixed nor placed when the daily minimum atmospheric temperature is less than 40 degrees Fahrenheit unless facilities are provided to prevent the concrete from freezing. The use of accelerators or water reducing admixtures will be approved by the Owner. Concrete shall not be placed on frozen surfaces or forms.
 2. Temperature requirements based on smallest section dimension:

a.	>12"	55 – 75° F
b.	12 to 36"	50 – 70° F
c.	36 to 72"	45 – 65° F
	>72"	40 – 60° F
 3. The temperature of the concrete at the time of placing shall be within the placement temperature range shown below, unless otherwise specified.
 4. The minimum temperature of the concrete for the first 72 hours after placement shall not be less than the minimum temperature shown above. If the minimum temperature requirements are not met and the concrete did not freeze, the protection time will be extended a period equal to twice the number of hours the temperature was below the minimum temperature. At the end of the protection period, the concrete shall be allowed to cool gradually. The maximum decrease at the concrete surface in a 24-hour period shall not exceed 40° F. The Contractor shall supply a cold weather concrete plan and monitoring plan to be approved by the Owner.

END OF SECTION

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SECTION 03 30 53 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This specification shall be used for all non-lift station related cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
 - 1. Section 32 31 13 "Chain Link Fences and Gates" for Chain Link Fences and Gates.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.

1.5 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. Comply with the following sections of ACI 301 unless modified by requirements in the Contract Documents:
 - 1. "General Requirements."

2. "Formwork and Formwork Accessories."
3. "Reinforcement and Reinforcement Supports."
4. "Concrete Mixtures."
5. "Handling, Placing, and Constructing."

B. Comply with ACI 117.

2.2 STEEL REINFORCEMENT

- A. Recycled content of steel products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- C. Plain-Steel Wire: ASTM A 1064, as drawn.
- D. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064, flat sheet.

2.3 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer throughout the project.
- B. Cementitious Materials:
 1. Portland Cement: ASTM C 150 Type II
- C. Normal-Weight Aggregate: ASTM C 33, 1-1/2-inch nominal maximum aggregate size.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494, Type A.
 2. Retarding Admixture: ASTM C 494, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.
- F. Water: ASTM C 94.

2.4 RELATED MATERIALS

- A. Vapor Retarder: Plastic sheet, ASTM E 1745, Class A or B.
- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.6 CONCRETE MIXTURES

- A. Comply with ACI 301.
- B. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: 3000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.50.
 - 3. Slump Limit: 5 inches, plus or minus 1 inch.
 - 4. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116, and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION

- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
 - 1. Lap joints 6 inches and seal with manufacturers recommended adhesive or joint tape.

3.4 STEEL REINFORCEMENT INSTALLATION

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

3.6 CONCRETE PLACEMENT

- A. Comply with ACI 301 for placing concrete.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Consolidate concrete with mechanical vibrating equipment according to ACI 301.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/2 inch.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to smooth-formed-finished as-cast concrete where indicated:
 - 1. Smooth-rubbed finish.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
 - 1. Do not further disturb surfaces before starting finishing operations.
- C. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

- E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- F. Slip-Resistive Broom Finish: Apply a slip-resistive finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301.

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BDI/PNS

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

END OF SECTION 03 30 53

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SECTION 03 41 00
STRUCTURAL PRECAST CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
1. Precast concrete for structures
 2. Cast-in-place concrete that is replaced at the Contractor's option with structural precast concrete.

1.2 REFERENCED STANDARDS

- A. American Concrete Institute (ACI):
1. ACI 117 – Specifications for Tolerances for Concrete Construction and Materials
 2. ACI 301 – Specifications for Structural Concrete
 3. ACI 318/318R – Building Code Requirements for Concrete and Commentary
- B. ASTM International (ASTM):
1. ASTM A123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 2. ASTM A153/A153M – Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 3. ASTM C31/C31M – Standard Practice for Making and Curing Concrete Test Specimens in the Field
 4. ASTM C39/C39M – Test Method for Compressive Strength of Cylindrical Concrete Specimens
 5. ASTM C877 – Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections
 6. ASTM C1433 – Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
- C. Precast/Prestressed Concrete Institute (PCI):
1. PCI MNL 116 – Manual for Quality Control for Plants and Production of Structural Precast Concrete Products
 2. PCI MNL 135 – Tolerances for Precast and Prestressed Concrete Construction

1.3 SUBMITTALS

- A. Shop Drawings and Calculations: Submit Shop Drawings showing the following:
1. Detailed drawings of units, members, and components, showing dimensions and sections of each.
 2. Shop Drawings shall show complete details and substantiating calculations of the method and materials the Contractor proposes to use, including quantities, dimensions, and locations of sleeves, anchors, brackets, inserts, reglets, reinforcing steel, lift devices, accessories, and methods of securing same in forms.
 3. Casting, consolidating, and finishing procedures.
 4. Shop Drawings and calculations shall be stamped and wet signed by a structural engineer registered in the State of Florida.
- B. Mix Designs:
1. Mix designs shall be submitted for each class of concrete on the job and shall show names and brands of all materials, proportions, slump, strength, gradation of coarse and fine aggregates, admixtures, amount of water, and the like. The proposed location

where the mix will be used on job shall be clearly indicated at the top of all proposed mix design sheets.

2. Each mix design submittal, for concrete designated by strength, shall be accompanied by certified test data or trial batch test reports in accordance with the requirements of these Technical Specifications.

C. Product Data:

1. Submit manufacturer's product data of manufactured products and accessories. Include manufacturer's detailed drawings and dimensions when applicable.

D. Certificates:

1. Submit evidence of current plant certification under the PCI Plant Certification Program, the Caltrans Precast Fabrication Qualification Audit Program, or approval by the International Code Council (ICC).
2. Submit manufacturers' certifications of compliance for materials as required by PCI MNL-116.
3. For welders, furnish welding certificates or affidavits attesting to the welders' qualifications to perform the indicated and specified welding.

E. Laboratory Test Reports:

1. Laboratory test reports shall show the name of testing agency, date of testing, types of tests performed and shall be signed by a principal of the testing agency who is a registered civil or structural engineer in the State of Florida. Laboratory tests shall not be older than eight months and shall certify that the tested materials meet the specified standards.
2. Laboratory test reports for concrete mix designs shall clearly identify each material or mix number of each mix tested to verify the correlation between the tested mix designs and the proposed mix designs.
3. When required by other portions of these Technical Specifications, laboratory test reports shall be submitted for each material to be used in each class of concrete, or for each mix design and shall show compliance with appropriate ASTM Standards and these Technical Specifications.

1.4 QUALITY ASSURANCE

- A. Qualifications of Fabricator: Fabricator of precast concrete products shall be listed on the FDOT Materials Acceptance and Certification Listing for Precast Drainage Structure Production Facilities.
- B. Qualifications of Welders: Welders shall be prequalified in accordance with AWS D1.1/D1.1M or AWS D1.4/D1.4M, as applicable to the Work.
- C. Tolerances: Fabricate and erect precast concrete members within the tolerances recommended in PCI MNL-116 and PCI MNL-135.

1.5 Delivery, Storage, And Handling

- A. Transport, handle, and store units in a manner that will prevent damage to the members.
- B. If storage of precast units at the site is necessary, store units in a manner that will prevent cracking, distortion, staining, or other damage. Support members at their normal support points.

PART 2 PRODUCTS

2.1 MATERIALS

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- A. A. Reinforcing Steel: Comply with applicable requirements of Technical Specifications Section 03 20 00 - Concrete Reinforcing.
- B. Portland Cement Concrete
 - 1. Comply with applicable requirements of Technical Specifications Section 03 05 15 - Portland Cement Concrete. Provide class of concrete as indicated on the Design Drawings.
 - 2. Anchors, Lift Devices, and Accessories: Provide concrete inserts, reglets, anchors, brackets, and fasteners as indicated or required for fabrication and installation work. All items shall be galvanized in accordance with ASTM A153/A153M or ASTM A123/A123M, as applicable. Contractor shall select the lift devices, and shall be responsible for their performance and for any damage resulting from the use of faulty or inferior devices. Lift devices shall not be visible on exposed faces of precast members.

2.2 FABRICATION

- A. Requirements and Standards
 - 1. Manufacture precast concrete units in accordance with PCI MNL-116, and applicable requirements of ACI 318/318R, Chapter 16.
 - 2. Forms shall be accurately constructed to produce members to dimension, shape, configuration, and profile indicated. When not otherwise indicated, construct forms to produce smooth concrete.
 - 3. Concrete reinforcement, lifting reinforcement, and concrete inserts and anchorage devices shall be placed and secured against movement as required.
 - 4. Concrete shall be placed and consolidated to shape, configuration, and dimensions indicated.
 - 5. Members shall be moist cured in accordance with curing requirements specified in PCI MNL-116. Minimum curing period for combined initial curing and secondary curing shall be seven Days or until the specified strength of concrete is attained.
- B. Finishes:
 - 1. For those items not exposed to public view, provide "smooth form finish" as specified in Technical Specifications Section 03 35 00 - Concrete Finishing.
- C. Markings: Provide permanent markings in precast units to identify pick-up points and orientation in the structure, conforming with the markings indicated on Shop Drawings. Imprint the date of casting on each precast unit where it will not show in the finished structure.

2.3 QUALITY CONTROL

- A. An independent testing laboratory shall perform inspections and tests as required to verify compliance with these Technical Specifications.
- B. Test concrete for compressive strength as in accordance with ASTM C39/C39M. A set of seven cylinders shall be prepared for every 10 precast units, or fraction thereof, cast in any one day. Two cylinders shall be tested at 3 Days, two cylinders at 7 Days, two cylinders at 28 Days, and one cylinder shall be retained for further testing as may be required. Cylinders shall be prepared and moist cured in accordance with ASTM C31/C31M.

PART 3 EXECUTION

3.1 EXAMINATION

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STRUCTURAL PRECAST CONCRETE

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- A. Examine all parts of the supporting structure and the conditions under which the precast concrete units are to be erected and installed. Verify the locations of anchors to pre-determine the accuracy of the installation of each member.

3.2 ERECTION/INSTALLATION

- A. Transport and erect precast concrete units in accordance with PCI MNL-116 and as specified herein.
- B. Erect precast concrete units and accurately install in place with mechanical hoisting equipment more than adequate for the loads.
- C. Maintain precast concrete unit in upright position at all times. Handle unit only by indicated lifting devices or cushioned pads, and in a manner that will not overstress or damage the unit.
- D. Erect precast concrete units in accordance with indicated erection tolerances and the requirements of ACI 117. Comply with erection sequences indicated. Position units to avoid eccentric application of forces, and make complete and uniform contact with bearing surfaces.
- E. Provide anchorage and attachment welding and bolting, as indicated, in accordance with PCI MNL-116. Provide touch-up painting of field welds and abraded steel surfaces.
- F. At completion, units shall be plumb, level, and square, true to line, with angles and edges parallel with related building lines.

END OF SECTION

SECTION 03 62 00
NON-SHRINK GROUT

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish, mix, place, and cure prepackaged, non-shrink, cementitious grout for concrete repair.

PART 2 SUBMITTALS

- A. Contractor shall submit for approval prior to construction product material data sheets, manufacturer installation instructions and recommendations, and safety data sheets.

2.2 QUALITY ASSURANCE

- A. Non-shrink grout used shall be a product listed on the FDOT Approved Products List (APL).
- B. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 3 PRODUCTS

3.1 MATERIALS AND EQUIPMENT

- A. Provide prepackaged, non-shrink, cementitious grout that conforms to the following requirements:
 - 1. General
 - a. Grout shall conform to ASTM C-1107 and the properties described in this special specification. Grout having metallic formulations or chlorides will not be allowed. No additives shall be added to prepackaged grout. Extension of a grout mix with pea gravel will be allowed only if recommended by the manufacturer. The Contractor shall submit manufacturer literature demonstrating compliance with this specification for approval by the Owner. Commercial grouts known to conform include Degussa Masterflow 928, Sika Grout 212, and Euclid Hi-Flow Grout.
 - 2. Mechanical
 - a. Minimum compressive strength of ASTM C-109 2" cubes per Table 1.

Table 1

Minimum Grout Strengths

Age	Compressive Strength (psi)
1 day	2,500
3 days	4,000
7days	5,000
28 days	5,800

- 3. Compatibility

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- a. Expansion: ASTM C-1107 Grade B or C.
 - b. Modulus of Elasticity: 2.8 to 5.0 x 10⁶ psi per ASTM C-469.
 - c. Coefficient of Thermal Expansion: 3.0 to 10.0 x 10⁶ / deg F per ASTM C-531.
4. Constructability
 - a. Flowability: 20 to 30 second fluid consistency efflux time per ASTM C-939 and CRD-C-611 Flow Cone.
 - b. Set Time: 2.5 to 5.0 hours Initial Set, and 4.0 to 8.0 hours Final Set.
 5. Durability
 - a. Freeze Thaw: 300 cycles, RDF 90% per ASTM C-666.
 - b. Sulfate Resistance: expansion at 26 weeks < 0.1% per ASTM C-1012.
- B. Equipment
1. Provide clean mechanical mortar mixer for batching grout. Transport grout from mixer to final location by wheelbarrow, bucket, or pumping. Use appropriate hardware to completely fill shear keys without air voids.

PART 4 CONSTRUCTION

4.1 CONNECTION PREPARATION

- A. Grouted surfaces shall be cleaned by pressure washing as soon before grouting as practically possible. Grouted concrete surfaces shall be prewetted to a moist, saturated surface-dry condition prior to grouting, and without ponded or free-standing water. Forming of connections shall be grout tight.

4.2 GROUT MIXING AND PLACEMENT

- A. Grout shall be mixed according to manufacturer recommendations, including requirements for expiration date, proportion, grout mix and outside air temperature, and mixing duration. Grout placement shall ensure no air voids are introduced. Evidence of frothing, foaming, or segregation shall be cause for removal and recasting as deemed necessary by the Owner.

4.3 JOB SAMPLING

- A. Quality control of grouting in construction will include tests for flowability and compressive strength.
- B. Flowability
 1. Periodic tests to calibrate grout mix proportions will be performed using a flow cone in accordance with ASTM C939.
- C. Compressive Strength
 1. A minimum of (4) 3 in. x 6 in. cylinders will be sampled from the grout mixer for each batch, unless directed otherwise by the Engineer. At least two samples will be tested to demonstrate sufficient strength prior to the next construction activity (as indicated in the plans), and at least two samples will be tested after 28 days to demonstrate conformance to Table 1.

4.4 CURING

- A. Cure exposed grout surfaces with wet mats or curing compound as recommended by the manufacturer. Temperature of the grout shall remain above 45 deg F during curing. When outside air temperatures exceed 80° F, the grouted connections should be shielded from sunlight.

END OF SECTION

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NON-SHRINK GROUT

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SECTION 08 31 13
ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish and install access frames and covers as shown in the Contract Documents. Access frames and grates shall include protective grating panel.

1.2 REFERENCE STANDARDS

1.3 SUBMITTALS

- A. All materials and procedures required to establish compliance with the specifications shall be submitted upon request to the owner/engineer for review/approval. Submittals shall include at least the following:
1. Technical Data Sheet on each product used.
 2. Safety Data Sheet (SDS) for each product used.
 3. Descriptive literature, bulletins and or catalogs of materials.

1.4 QUALITY ASSURANCE

- A. The manufacturer of the access frames and covers shall be a company that specializes in the design and manufacture of corrosion protection materials /systems for wastewater structures.
- B. The materials/products shall be suitable for installation in a wastewater environment.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Non-roadway installations:
1. Access Frames and Covers
 - a. The access frames and covers shall have a 1/4-in. thick mill finish, aluminum frame, incorporating a continuous concrete anchor.
 - b. Door panel shall be 1/4-in. aluminum diamond plate, reinforced to withstand a 25-foot column of stationary water, and H-20 load rating.
 - c. Stainless steel cam locks shall be provided to work in conjunction with a 9/16-in. diameter EPDM compression gasket, mounted to the underside of the door.
 - d. Door shall open to 90 degrees and automatically lock with a T-316 stainless steel hold-open arm with an aluminum release handle.
 - e. Hinges and all fastening hardware shall be T-316 stainless steel.
 2. Protective Grating Panel
 - a. Secondary protective grating panel shall be 3 inch (77mm) thick aluminum "I" bar grating.
 - b. Grating panel color and finish shall be Safety Orange powder- coating.
 - c. Grating panel shall be hinged with tamper proof stainless steel bolts, and shall be supplied with positive latch to maintain unit in an upright position.
 - d. A 6-in. (152mm) viewing area shall be provided on each lateral unhinged side of grating panel, for visual observation and limited maintenance procedures.
 - e. A padlock hasp for owner-supplied padlock shall be provided.
- B. Roadway Installations:
1. The access frames and covers shall be unpainted cast iron ASTM A536, Grade 70-

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2. Access hatch and frame shall be H-20 load rated for in-street applications.
3. Frame lids shall include a factory installed EPDM gasket to provide a water resistant seal.
4. Protective Grating Panel
 - a. Grating panel color and finish shall be Safety Orange powder- coating.
 - b. Grating panel shall be hinged with tamper proof stainless steel bolts, and shall be supplied with positive latch to maintain unit in an upright position.

PART 3 EXECUTION

3.1 STORAGE

- A. Prior to installation, access covers should be stored in a dry area on the original shipping pallets.

3.2 HANDLING

- A. Standard practice precautions should be taken whenever handling or moving palletized access covers by forklift.

3.3 MATERIAL INSTALLATION

- A. Formwork must be flush to the inside of frame of the support ledge. The entire frame and ledge must be supported with Class A concrete.
- B. Secure unit to formwork using standard construction practices.
- C. When pouring concrete, cover should be in the closed position.
- D. Concrete to finish flush with top of unit framework.
- E. Unit should be left in formwork for not less than 24 hours.
- F. Clean all excess concrete from frame, over seat; and in the case of a channel frame model, the drainage coupling.

3.4 WARRANTY

- A. Unit shall carry a Lifetime guarantee against defects in material and/or workmanship.

END OF SECTION

SECTION 09 96 36 - CHEMICAL-RESISTANT COATINGS FOR METALS IN WASTEWATER FACILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Field application of chemical-resistant coatings.
 - 1. Section 09 90 01 - Spectrshield Coatings (Wet well interior)

1.2 DEFINITIONS

- A. Refer to ASTM D16 for definitions of terms used in this Section.

1.3 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - 2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. California Department of Public Health:
 - 1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
- C. Green Seal:
 - 1. GC-3 - Environmental Criteria for Anti-Corrosive Paints.
 - 2. GS-11 - Paints and Coatings.
- D. Master Painters Institute:
 - 1. MPI - Approved Products List.
- E. NSF International:
 - 1. NSF 61 - Drinking Water System Components - Health Effects.
- F. South Coast Air Quality Management District:
 - 1. SCAQMD Rule 1113 - Architectural Coatings.
- G. SSPC: The Society for Protective Coatings:
 - 1. SSPC-PA 2 - Procedure for Determining Conformance to Dry Coating Thickness Requirements.
 - 2. SSPC-SP 1 - Solvent Cleaning.
 - 3. SSPC-SP 2 - Hand Tool Cleaning.

4. SSPC-SP 3 - Power Tool Cleaning.
5. SSPC-SP 5/NACE 1 - White Metal Blast Cleaning.
6. SSPC-SP 6/NACE 3 - Commercial Blast Cleaning.
7. SSPC-SP 10/NACE 2 - Near-White Metal Blast Cleaning.
8. SSPC-SP 10 - Near-White Metal Blast Cleaning.

1.4 PREINSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Requirements for preinstallation meeting.
- B. Convene minimum one week prior to commencing Work of this Section.

1.5 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.
- B. Do not apply finish coats unless coatable sealant has been applied.

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 1. Submit manufacturer data on coatings.
 2. Include MPI - Approved Products Lists with proposed products highlighted.
- C. Samples:
 1. Submit two paper chip samples, illustrating range of colors and textures available for each surface finishing product as scheduled.
 2. Coated Samples:
 - a. Submit two coated samples, illustrating selected colors and textures for each selected color and system with specified coats cascaded.
 - b. Submit on proposed substrate.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer Instructions: Submit special surface preparation procedures, substrate conditions requiring special attention, and.
- F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- G. Qualifications Statements:
 1. Submit qualifications for manufacturer and applicator.
 2. Submit manufacturer's approval of applicator.

1.7 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

- B. Operation and Maintenance Data: Submit information on cleaning, touchup, and repair of coated surfaces.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.
- B. Extra Stock Materials:
 - 1. Furnish 1 repair kit for each color used, as recommended by the manufacturer
 - 2. Store where directed by Owner.

1.9 QUALITY ASSURANCE

- A. Materials in Contact with Potable Water: Certified to NSF 61.
- B. Surface Burning Characteristics:
 - 1. Fire-Retardant Finishes: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.
- C. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.10 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Applicator: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Container Labeling: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Inspection:
 - 1. Accept materials on Site in manufacturer's sealed and labeled containers.
 - 2. Inspect for damage and to verify acceptability.
- D. Store materials in ventilated area and otherwise according to manufacturer instructions.
- E. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.12 AMBIENT CONDITIONS

- A. Section 01 50 00 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.
- B. Storage Conditions:
 - 1. Minimum Ambient Temperature: 45 degrees F.
 - 2. Maximum Ambient Temperature: 90 degrees F
- C. Application Conditions:
 - 1. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by coating manufacturer.
 - 2. Do not apply exterior coatings during rain or snow, when relative humidity is outside humidity ranges, or when moisture content of surfaces exceeds those required by coating manufacturer.
 - 3. Lighting Level: 80fcmeasured mid-height at substrate surface.

1.13 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish two-year manufacturer's warranty for coatings.

PART 2 PRODUCTS

2.1 APPLICATORS

- A. Applicators shall be approved by coating manufacturer.

2.2 COATINGS

- A. Materials:
 - 1. Coatings:
 - a. Ready mixed, except field-catalyzed coatings.
 - b. Capable of drying or curing free of streaks or sags.
 - 2. Accessories:
 - a. Grade: Commercial.
 - b. Turpentine.
 - c. Thinners.
 - d. Other materials not specifically indicated but required to achieve specified finishes.

2.3 PRODUCT REQUIREMENTS

- A. Application: Ferrous metal structures and miscellaneous fabrications.
 - 1. Surface Preparation: SSPC-SP 10.
 - 2. Amine-cured epoxy.
 - 3. Manufacturers:
 - a. Sherwin Williams Company.

- b. Substitutions: As specified in Section 01 25 00 – Substitution Procedures.
- 4. Interior & Exterior Exposed (not immersed):
 - a. Primer: Macropoxy 5000 PrePrime Rust Penetrating Epoxy Pre-Primer Transparent; DFT 1.5-2.0 mils
 - b. Intermediate Coat: Macropoxy 646 Fast Cure Epoxy Black: DFT 5.0-10.0 mils.
 - c. Finish Coat: Acrolon 218 HS top coat; 3.0-6.0 mils
 - d. Finish Color: As selected by Engineer from manufacturer’s standard colors.
- 5. Immersed – Wastewater:
 - a. Primer: Macropoxy 646 Fast Cure Epoxy Black; DFT 5.0-10.0 mils
 - b. Stripe Coat: Macropoxy 646 Fast Cure Epoxy Black; DFT 5.0-10.0 mils
 - c. Finish Coat: Macropoxy 646 Fast Cure Epoxy Black; DFT 5.0-10.0 mils
- B. Application: Ductile or cast iron pipe, pumps, motors, and valves.
 - 1. Surface Preparation: SSPC-SP 10.
 - 2. Amine-cured epoxy.
 - 3. Manufacturers:
 - a. Sherwin Williams Company.
 - b. Substitutions: As specified in Section 01 25 00 – Substitution Procedures.
 - 4. Interior and/or Exterior Exposed:
 - a. Primer: Macropoxy 5000 PrePrime Rust Penetrating Epoxy Pre-Primer Transparent; DFT 1.5-2.0 mils.
 - b. Intermediate Coat: Macropoxy 646 Fast Cure Epoxy Black: DFT 5.0-10.0 mi.
 - c. Finish Coat: Acrolon 218 HS top coat; 3.0-6.0 mils.
 - d. Finish Color: As selected by Engineer from manufacturer’s standard colors.
- C. Application: Steel pipe and equipment:
 - 1. Surface Preparation: SSPC-SP 10.
 - 2. Polyamide Epoxy:
 - 3. Manufacturers:
 - a. Sherwin Williams Company.
 - b. Substitutions: As specified in Section 01 25 00 - Product Requirements.
 - 4. Interior and/or Exterior Exposed:
 - a. Primer: Macropoxy 5000 PrePrime Rust Penetrating Epoxy Pre-Primer Transparent; DFT 1.5-2.0 mils.
 - b. Intermediate Coat: Macropoxy 646 Fast Cure Epoxy Black: DFT 5.0-10.0 mi.
 - c. Finish Coat: Acrolon 218 HS top coat; 3.0-6.0 mils.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for application examination.

- B. Verify that surfaces and substrate conditions are ready to receive Work as recommended by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of Work, and report conditions capable of affecting proper application to Architect/Engineer.
- D. Test shop-applied primer for compatibility with subsequent cover materials.
- E. Moisture Content:
 - 1. Measure moisture content of surfaces using electronic moisture meter.
 - 2. Do not apply finishes unless moisture content of surfaces are within limits of manufacturer recommendations.
- F. Examine areas and conditions under which coating systems are to be applied. Notify Engineer of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for application preparation.
- B. Prepare coatings as follows:
 - 1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
 - 2. For smooth flow and brushing properties.
- C. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- D. Defects:
 - 1. Correct defects and clean surfaces capable of affecting Work of this Section.
 - 2. Remove or repair existing coatings exhibiting surface defects.
- E. Marks: Seal marks that may bleed through surface finishes with shellac.
- F. Impervious Surfaces:
 - 1. Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach.
 - 2. Rinse with clean water and allow surface to dry.
- G. Aluminum Surfaces Scheduled for Coating:
 - 1. Remove surface contamination by steam or high-pressure water.
 - 2. Remove oxidation with acid etch and solvent washing.
 - 3. Apply etching primer immediately following cleaning.
- H. Copper Surfaces Scheduled for Coating:
 - 1. Remove contamination by steam, high-pressure water, or solvent washing.
 - 2. Apply vinyl-etch primer immediately following cleaning.

- I. Copper Surfaces Scheduled for Natural Oxidized Finish:
 - 1. Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid.
 - 2. Rub on repeatedly for required effect, and, once attained, rinse surfaces with clear water and allow to dry.
- J. Galvanized Surfaces:
 - 1. Remove surface contamination and oils, and wash with solvent.
 - 2. Apply coat of etching primer.
- K. Uncoated Steel and Iron Surfaces:
 - 1. Remove grease, mill scale, weld splatter, dirt, and rust.
 - 2. If heavy coatings of scale are evident, remove by hand or power tool wire brushing or by sandblasting.
 - 3. Clean by washing with solvent.
 - 4. Apply treatment of phosphoric acid solution, ensuring that weld joints, bolts, and nuts are similarly cleaned.
 - 5. Spot-prime coat after repairs.
- L. Shop-Primed Steel Surfaces:
 - 1. Sand and scrape to remove loose primer and rust.
 - 2. Feather edges to make touchup patches inconspicuous.
 - 3. Clean surfaces with solvent.
 - 4. Prime bare steel surfaces.
- M. Existing Work:
 - 1. Extend existing paint and coatings installations using materials and methods compatible with existing installations and as specified.
- N. Ductile or Cast Iron
 - 1. Surfaces shall be abrasive swept blasted to removal oil, grease, dirt, dust, loose annealing oxides, loose rust and loose mold coatings. Tightly adherent annealing oxides, rust and mold coatings (i.e., unable to be removed by lifting with a dull putty knife) may remain on the surface.
 - 2. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
- O. Ferrous Metal Structures and Miscellaneous Fabrications
 - 1. General: Remove hardware, plates, lighting fixtures, and similar items already installed that are not to be painted. Remove these items to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
 - 2. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Where indicated for blast cleaning, conform to SSPC-SP 10.
 - 3. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
 - 4. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

5. Touch up bare areas and shop applied prime coats that have been damaged. Any areas having bare metal after surface preparation shall be cleaned in accordance with SSPC-SP2 hand tool cleaning or SSPC-SP3 power tool cleaning. Feather all edges and touch up with the same primer as the shop coat.

3.3 APPLICATION

- A. Do not apply finishes to surfaces that are not dry.
- B. Apply each coat to uniform appearance.
- C. Cleaning:
 1. Vacuum surfaces to remove loose particles.
 2. Use tack cloth to remove dust and particles just prior to applying next coat.
- D. Finishing Mechanical and Electrical Equipment:
 1. Raw sewage force mains and gravity sewer pipe - Green.
 2. Coat shop-primed equipment.
 3. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components, and coat separately.
 4. Coat insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and except where these items are shop finished.
 5. Color-Coding:
 - a. Color-code equipment, piping, conduit, and exposed duct work according to indicated requirements.
 - b. Color band and identify with flow arrows, names, and numbering.
 6. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings that were removed prior to finishing.
- E. Application
 1. Apply coatings in accordance with manufacturer's instructions.
 2. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
 3. Keep containers closed when not in use to avoid contamination.
 4. Do not use mixed coatings beyond pot life limits.
 5. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
 6. Uniformly apply coatings at spreading rate required to achieve specified DFT.
 7. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.
 8. Stripe paint with brush critical locations on steel such as welds, corners, and edges using specified primer.

3.4 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. Inspecting:

1. Surface Preparation: Comply with SSPC-SP 10.

C. Testing:

1. Holiday Testing: Submerged surfaces including surfaces within vapor area.
2. Dry Film Thickness: Measure according to SSPC-PA 2, Level 3.

D. Equipment Acceptance:

1. Repair or recoat areas containing holidays according to coating manufacturer instructions.
2. Retest repaired or recoated areas.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. Collect waste material that may constitute fire hazards, place in closed metal containers, and remove daily from Site.

3.6 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.

B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.7 REPAIR

A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.

B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color. Coating repair shall be in accordance with manufacturer recommendations.

C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.8 FIELD QUALITY CONTROL

A. Services:

1. Verify coatings and other materials are as specified.
2. Verify surface preparation and application are as specified.
3. Verify DFT of each coat and total DFT of each coating system are as specified using wet film and dry film gauges.
4. Coating Defects: Check coatings for film characteristics or defects that would adversely affect performance or appearance of coating systems.
 - a. Check for holidays on interior steel immersion surfaces using holiday detector.

B. Report:

1. Submit written reports describing inspections made and actions taken to correct nonconforming work.
2. Report nonconforming work not corrected.
3. Submit copies of report to Engineer.

3.9 CLEANING

- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

3.10 PROTECTION OF COATING SYSTEMS

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Engineer.
- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

END OF SECTION 09 96 36

SECTION 09 96 37
TOTAL LINING SYSTEM FOR WASTEWATER STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. The work described within details a complete program for wastewater structure lining and rehabilitation. This specification details the methods, procedures, materials and equipment required to produce "A Total Lining System for Wastewater Structures". The completed system will provide a corrosion resistant liner that restores the surface profile and eliminates water infiltration and exfiltration.

1.2 REFERENCE STANDARDS

- A. ASTM D7234 – Adhesion
- B. ASTM D412 - Tensile Strength (PSI)
- C. ASTM D412 - Elongation (%)
- D. ASTM D624 - Tear Strength (PLI)
- E. ASTM D2240 - Hardness
- F. ASTM D522 - Flexibility (1/8" mandrel)
- G. ASTM D4060 - Taber Abrasion (mg loss)

1.3 SUBMITTALS

- A. All materials and procedures required to establish compliance with the specifications shall be submitted upon request to the owner/engineer for review/approval. Submittals shall include at least the following:
 - 1. Technical Data Sheet on each product used.
 - 2. Safety Data Sheet (SDS) for each product used.
 - 3. Manufacturer's Certification of Applicator.
 - 4. Certified Applicator Minimum Qualifications (Section 1.4 D).
 - 5. Descriptive literature, bulletins and or catalogs of materials.
 - 6. Work procedures including flow diversion plan, method of repair, etc.
 - 7. Material and method for repair of leaks or cracks in the structure.
 - 8. Applicator and Manufacturer warranty forms (Section 3.5)

1.4 QUALITY ASSURANCE

- A. The manufacturer of the total lining system for wastewater structures shall be a company that specializes in the design and manufacture of corrosion protection materials /systems for wastewater structures.
- B. The applicator (company performing the installation) shall be completely trained in leak repair, surface preparation and application of the lining system.
- C. The materials/products shall be suitable for installation in a wastewater environment without any deterioration of the liner.
- D. The applicator shall be trained and provide a letter of certification from the manufacturer for

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the handling, mixing, application, and inspection of the liner system as described herein.

- E. To ensure total unit responsibility, all materials and installation thereof shall be furnished and coordinated by manufacturer/certified applicator.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. The materials to be utilized in the lining of wastewater structures shall be designed and manufactured to withstand the severe effects a wastewater environment. The manufacturer of the corrosion protection products shall have at least 10 years of experience in the production of the lining products utilized, and the products shall have satisfactory installation record.
- B. Equipment for installation of lining materials shall be of high quality and as recommended by the manufacturer.
- C. The lining system to be utilized for wastewater structures shall be a multi-layer 'stress skin panel' liner system as described below:
 - 1. Liner.
 - a. Installation: Moisture barrier
 - 1) Liner: Modified Polymer (Silicone modified polyurea)
 - b. Installation: Surfacer
 - 1) Liner: Polyurethane/Polymeric blend foam
 - c. Installation: Final corrosion barrier
 - 1) Liner: Modified polymer (Silicone modified Polyurea)
- D. The Modified polymer (silicone modified polyurea) shall be sprayable, solvent free, two-component polymeric, moisture/chemical barrier specifically developed for the corrosive wastewater environment.
- E. The Polyurethane Rigid Structure Foam, shall be low viscosity two-component, containing flame retardants.
- F. Total thickness of multi-layer liner system shall be a minimum of 500 mils.
- G. The product shall be SPECTRASHIELD, manufactured by CCI Spectrum, Inc. or Approved Equal.

PART 3 EXECUTION

3.1 INITIAL INSPECTION

- A. Applicator shall take appropriate action to comply with all local, state, and federal regulations including those set forth by OSHA, EPA, the Owner and any other applicable authorities.
- B. Prior to conducting any work, an initial inspection of the structure shall be performed to determine need for protection against hazardous gases or oxygen depleted atmosphere and the need for flow control or flow diversion.
- C. If required, submit a plan for flow control or bypass to the owner/engineer for approval prior to conducting the work.
- D. New Portland cement structures shall have endured a minimum of 28 days since

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manufacture prior to commencing installation of the liner system.

3.2 SURFACE PREPARATION

- A. The surface preparation program will include checking the atmosphere for hydrogen sulfide, methane, low oxygen, or other gases, approved flow control equipment, and surface preparation equipment.
- B. Surface preparation for standard manhole structures shall be in accordance with the manufacturer's recommendations, and may include high pressure water cleaning and shall provide a surface compatible for installation of the liner system.
- C. Surface preparation and methods for other structures shall be in accordance with the manufacturer's recommendations, and may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, or detergent water cleaning, and shall be suited to provide a surface compatible for installation of the liner system.
- D. The surface preparation method shall produce a cleaned, abraded and sound surface with no evidence of laitance, loose concrete, loose brick, loose mortar, contaminants or debris, and shall display a surface profile suitable for application of the liner system in accordance with the manufacturer's recommendations.
- E. After completion of surface preparation, perform the seven point check list, inspecting for:
 - 1. Leaks
 - 2. Cracks
 - 3. Holes
 - 4. Exposed Rebar
 - 5. Ring and Cover condition
 - 6. Invert Condition
 - 7. Inlet and Outlet Pipe Condition
- F. After the defects in the structure are identified, repair all leaks and severe cracks with Spectra-Grout, or other methods approved by the manufacturer.
- G. Upon completion of leak and crack repair, the surface shall be primed in accordance with the manufacturer's recommendations.

3.3 MATERIAL INSTALLATION

- A. Application procedures shall conform to recommendations of the manufacturer, including materials handling, mixing, environmental controls during application, safety and spray equipment.
- B. Spray equipment shall be specifically designed to accurately ratio and apply the liner system.
- C. Application of multi-component liner system shall be in strict accordance with manufacturer's recommendation. Final installation minimum total thickness shall be 500 mils. A permanent identification and date of work performed shall be affixed to the structure in a readily visible location.
- D. If requested a final written report may be provided to the owner/engineer detailing the location, date of work and description of the work.

3.4 FINAL INSPECTION

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- A. Final liner system shall be completely free of pinholes or voids. Liner thickness shall be the minimum value as described herein.
- B. Visual inspection may be made by the Owner/Engineer. Any deficiencies in the finished liner system shall be marked and repaired according to the procedures set forth by the manufacturer

3.5 WARRANTY

- A. Applicator and Manufacturer must warrant the liner system installation against failure for a period of 10 years from the installation date. Applicator shall correct failures any time prior to 10 years after the installation date. Failure will be deemed to have occurred if the protective liner fails to: (a) prevent the internal corrosion of the structure or (b) prevent groundwater infiltration. Failure does not include damage resulting from mechanical force or the presence of chemical substances not customarily present or used in Wastewater Structures, defects in the workmanship or devices of others upon which the Wastewater Structure functions or act of God. The liner must be installed in accordance with Manufacturer's instructions by Applicators certified by Manufacturer. Executed 10-year Applicator and Manufacturer warranties are to be provided upon completion of work

END OF SECTION

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:

1. Drawings and general provisions of the specifications and/or contract documents apply to this Section.
2. Review these documents for coordination with additional requirements and information that apply to work under this Section.
3. The intent of this specification is to supplement the latest specifications that may be produced by the Cedar Key Water and Sewer District for Wastewater Pumping Stations. It is the intent of the project drawings, notes, and specifications to comply and coordinate with the District's specifications and requirements. Coordination with the Owner and/or Owner's representative concerning the District's specifications is part of the Electrical Contractor's work.

B. Scope of Work:

1. The Electrical Contractor shall furnish services, skilled and common labor, and apparatus and materials required for the complete installation as shown and within the intent of the drawings and these Specifications.
2. The Project consists of the rehabilitation of five (5) Wastewater Lift Stations. The drawings and specifications are provided for each Lift Station. In general, the work shall be to provide work to remove the electrical components of the existing Lift Station and install the equipment, conduit, and wiring for the electrical service to each Lift Station and to install the control equipment (supplied by others) and to supply and install the conduit and wiring to connect the control equipment and motor driven equipment.
3. Work includes, but not limited to, the following and shall be completed in accordance with the project construction drawings and specifications:
 - a. Electrical Service to the Lift Stations. Coordination with the serving Utility is part of the work.
 - b. The supply and installation of the Main Disconnect/Breaker including conduit, wiring and terminations.
 - c. Receiving, storing, and installing the Lift Station Control Panel. Coordination with the Control Panel supplier for a proposed SCADA system and the SCADA panel supplier/integrator is part of the work.
 - d. A SCADA System will be added to the control design of the Lift Stations. The SCADA panel will reside in the new control panels. The SCADA System will be cellular phone based (i.e. no additional antennas, poles, external wiring). Configuration of the SCADA System will be by others. The contractor's work will be wiring of devices/inputs to the SCADA terminals (field instrument wiring).
 - e. Grounding - supply, installation and testing of Service Grounding, Ground Rods and equipment grounding.
 - f. Support for commissioning and start-up of all electrical and control systems for both Lift Stations. Coordination with the Owner and/or the Owner's representative is part of the work.
 - g. Demolition work to remove the existing Lift Station control panel and wiring to the wet well is part of the work (determination of wiring, removal of cables, etc.). Coordination of the demolition with the owner, utility, and other contractors is part of the work.

1.2 REFERENCES

- A. General:
 - 1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
 - 2. Unless otherwise noted, the referenced standard edition is the current one at the time of Award of Contract.
 - 3. Refer to specifications and/or contract documents "General Requirements" for the list of applicable regulatory requirements.
- B. ANSI/NFPA 70 - National Electrical Code.
- C. ANSI - American National Standards Institute
- D. Illuminating Engineering Society of North America (IES)
- E. National Electrical Safety Code (NESC)
- F. NFPA – National Fire Protection Association:
 - 1. Standard for Electrical Safety in the Workplace (NFPA 70E)
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems

1.3 SUBMITTALS

- A. Submit under provisions of Division 01 Section "General Requirements" Paragraph X, Submittals and as required by other sections of the Specifications.
- B. Shop Drawings: The Subcontractor shall submit for approval Shop Drawings prepared in accordance with Division 01 Section "General Requirements", Paragraph X and as required by other sections of the Specifications.

1.4 QUALITY ASSURANCE

- A. Materials and Equipment: Refer to specifications and/or contract documents "General Requirements".
- B. If the Drawings or Specifications may not appear clear or definite, the Subcontractor shall request the Project Manager through 'Request for Information' (RFI) process for an interpretation and decision of same, and shall have such questions decided before proceeding with the Work.
- C. Manufacturer's Directions: Follow manufacturer's directions covering points not shown on the drawings or specified herein. Manufacturer's directions do not take precedence over drawings and Specifications. Where these are in conflict with the Drawings and Specifications, notify the Project Manager for clarification before installing the work.
- D. Protection of Equipment:
 - 1. Care shall be exercised during construction to avoid damage or disfigurement. Equipment shall be protected from dust and moisture prior to and during construction. The Electrical

- Contractor is cautioned that concrete finishing, painting, etc. in electrical rooms/areas shall not proceed if unprotected equipment is installed.
2. Where required or directed, construct temporary protection for equipment and installations so as to protect same from dust and debris caused by construction.
 3. All protection shall be substantially constructed with the use of clean canvas, heavy plastic, and plywood as required, and made tight and dust proof as directed.
 4. The Electrical Contractor shall repair by spray or brush painting, after properly preparing the surface, scratches or defects in the finish of the equipment. Only identical paint furnished by the equipment manufacturer shall be used for such purposes.
 5. Failure of the Contractor to protect the equipment as outlined herein shall be grounds for rejection of the equipment and its installation.
- E. Qualifications and License Requirements:
1. Certified electricians shall have evidence of certification in their possession at all times. Non-certified personnel shall perform electrical work under the continuous supervision of a certified electrician.
- F. Materials and Equipment: Materials and equipment shall be new. Materials and equipment for which tests have been established by Underwriter's Laboratories, Inc. shall be approved by that body and shall bear its label of approval or the label of an OSHA approved nationally recognized testing laboratory [NRTL].
1. In lieu of label or listing by Underwriter's Laboratories, Inc. or NRTL, consideration will be given to certified test reports of an adequately equipped, recognized independent test laboratory competent to perform such testing indicating conformance to requirements of the applicable Underwriter's Laboratories, Inc. standards.
 2. Unless otherwise approved by the Project Manager, the materials to be furnished under this Specification shall be the standard products of manufacturers regularly engaged in the production of such equipment equal to or superior to material specified, and shall be the manufacturer's latest standard design that complies with the Specification requirements.
- G. Approval of Materials:
1. Refer to specification and/or contract documents "General Requirements" concerning approval of materials and equipment.
 2. A complete list of materials and equipment proposed shall be submitted to the Project Manager for approval. The list shall include for each item: the manufacturer, the manufacturer's catalog number, type or class, the rating, capacity, size, etc.
 3. The Subcontractor shall submit a brochure containing catalog cuts or drawings and data for, but not limited to, the following items:
 - a. Main Disconnect/Circuit Breaker with enclosure
 - b. Junction Boxes and Pull Boxes
 - c. Conduit
 - d. Wiring
 4. Before installation of the equipment, the Electrical Contractor shall submit for approval detailed construction drawings for each item of fabricated equipment required for the electrical installation. Drawings shall be to scale and fully dimensioned and shall provide sufficient detail to clearly indicate the arrangement of equipment and its components.
 5. Installation of approved substituted equipment is the Contractor's responsibility, and changes required to work included under other divisions for installations of approved substituted equipment must be made to the satisfaction of the Owner's and/or Owner's representative and without change in contract price. Approval by the Owner's and/or Owner's of substituted equipment and/or dimension drawings does not waive these requirements.

1.5 EXISTING CONDITIONS

- A. The Lift Station sites are existing, and coordination with the owner and the serving utility is part of the work. Coordination with other contractors' work schedules and installed work by others is part of the Electrical Contractors work.

1.6 COORDINATION

- A. Refer to specifications and/or contract documents "General Requirements".

1.7 MAINTENANCE

- A. Maintenance and Operating Instructions: The Electrical Contractor shall provide Maintenance and Operating Instruction documents as part of the Final/Record document submittal.

1.8 WARRANTY

- A. Refer to specifications and/or contract document "General Requirements". Unless stated otherwise the Electrical Contractor shall warranty material, equipment, and workmanship for one year after start-up of the Lift Stations.

PART 2 - PRODUCTS

2.1 GENERAL

- A. In addition to material and equipment specified, the Electrical Contractor shall also provide incidental materials required to affect a complete installation. Such incidental materials include solders, tapes, caulking, mastics, gaskets, conduit support materials (straps, uni-strut, etc.), wire labels and similar items that are approved for the purpose.
- B. Materials and equipment shall be uniform throughout the installation. Equipment of the same type shall be of the same manufacturer. Materials and equipment shall be new. Materials and equipment for which tests have been established by the Underwriter's Laboratories, Inc. shall have been approved by that body, or an equivalent testing firm (see Paragraph 1.4.F) and shall bear its label of approval.

PART 3 - EXECUTION

3.1 TESTS

- A. Upon completion of the electrical construction work, perform tests and provide test reports as specified in this and other sections. Testing shall include:
 - a. Grounding – Fall of Potential method. Maximum, ground resistance shall be 10 ohms.
 - b. Wiring and termination continuity as part of the commissioning work.
- B. The Electrical Contractor shall submit to the Owner and/or Owner's representative three (3) copies of test results, certified in writing, witnessed, signed and dated, immediately upon completion of

work. Unsatisfactory condition revealed by these test results, or unsatisfactory methods of tests and/or testing apparatus and instruments, shall be corrected by the Electrical Contractor to the satisfaction of the Owner and/or Owner's representative.

- C. The Project Manager reserves the right to require that the Subcontractor perform and repeat tests that are deemed necessary to complete or check the tests or the certified records of the Subcontractor at any time during the course of the work. The Subcontractor shall correct unsatisfactory portion of his work that is revealed by the tests or that may be due to progressive deterioration during this period, unless the item in question was a direct specification.

3.2 NOT USED

3.3 EQUIPMENT IDENTIFICATION

- A. Transformers: Transformers shall be identified by one-inch-high white stenciled-on characters giving bank number and circuit feeding the transformer in agreement with the Drawings.
- B. Panelboards: Panel boards shall be identified by circuit number, voltage, phase, and wire as shown on drawings or specified elsewhere in these Specifications.
- C. Schedules: Panelboards shall be furnished with a complete 8-1/2" x 11" typewritten schedule mounted on the inside of the inner door. If field changes are necessary, new schedules shall be provided by the Contractor. Forms will be provided by the Project Manager.

3.4 GENERAL INSTALLATION METHODS

- A. Carpentry, Cutting, Patching, and Core Drilling:
 - 1. Provide carpentry, cutting, patching, and core drilling required for installation of material and equipment specified in the scope of work.
 - 2. Do not cut, core, or drill structural members without consent of the Project Manager.
- B. Waterproof Construction:
 - 1. Maintain waterproof integrity of penetrations of materials intended to be waterproof. Provide flashings at exterior roof penetrations. Caulk penetrations of foundation walls and floors watertight. Provide membrane clamps at penetrations of waterproof membranes.
 - 2. Provide waterproof NEMA 6P enclosures for equipment or devices mounted outside or otherwise exposed to the weather.
- C. Equipment Concrete Pads:
 - 1. Equipment located on concrete floors inside the building or on grade outside the building, shall be mounted on a concrete base. The concrete base shall be four inches high and shall extend six inches beyond the edge of equipment base unless indicated otherwise on drawings.
 - 2. Coordinate concrete bases: Concrete bases indicated on Architectural or Structural drawings are specified in other Divisions. Concrete bases not on Architectural or Structural drawings are requirements of this Division.
- D. Demolition and Removal:
 - 1. Demolition and removal/salvage of existing electrical equipment (control panels; float switches/cables; motor leads, power and control wiring) is part of the work. Coordinate waste removal with the Owner.

END OF SECTION 260500

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SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract and Division 01 Specification Sections, apply to this Section.
- B. Geotechnical Reports have been prepared for the project. The contractor shall review the reports for general subsurface conditions, recommendations for construction, etc. and comply with all recommendations therein.

1.2 SUMMARY

A. Section Includes:

- 1. Excavating and filling for rough grading the Site.
- 2. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses, and plants.
- 3. Excavating and backfilling for buildings and structures.
- 4. Drainage course for concrete slabs-on-grade.
- 5. Subbase course for concrete walks.
- 6. Subsurface drainage backfill for walls and trenches.
- 7. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:

- 1. Section 31 10 00 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
- 2. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, Section 204 "Graded Aggregate Base" for base courses beneath pavement.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

- 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
- 2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

- E. Drainage Course: Aggregate layer often supporting a slab-on-grade that minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 - 1. Geotextiles/ Geo synthetics.
 - 2. Controlled low-strength material, including design mixture.
 - 3. Detectable Warning tapes.
- B. Samples for Verification: For the following products, in sizes indicated below:
 - 1. Geotextile/ Geo Synthetics.: 12 by 12 inches (300 by 300 mm).
 - 2. Detectable Warning Tape: 12 inches (300 mm) long; of each color.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Test Reports: For each borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D 2487.
 - 2. Laboratory compaction curve according to ASTM D 1557.

- B. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.6 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations. Satisfactory and Unsatisfactory soils will be identified by Geotechnical Engineer on site
- B. Satisfactory Soils: See A above. General description follows: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: See A above. General description follows: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: As specified in FDOT Specifications, Section 204.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed fractured stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- H. Drainage Course Drainage Gravel, #57 stone: Narrowly graded mixture of washed, crushed stone or gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.
- I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and zero to 5 percent passing a No. 4 (4.75-mm) sieve.
- J. Sand: ASTM C 33/C 33M; fine aggregate.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES/ GEO SYNTHETICS

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
 - 3. Permittivity: 0.5 per second, minimum; ASTM D 4491.
 - 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
 - 3. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 - 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- C. Turf Reinforcement Mat: A geo synthetic consisting of a synthetic fiber matrix continued between nets, top and bottom.
 - 1. TRMs shall be Landlok 450 (unless indicated otherwise on the plans)

2.3 CONTROLLED LOW-STRENGTH MATERIAL

- A. Controlled Low-Strength Material: Self-compacting, flowable concrete material produced from the following:
 - 1. Portland Cement: ASTM C 150/C 150M, Type II.
 - 2. Fly Ash: ASTM C 618, Class C or F.

3. Normal-Weight Aggregate: ASTM C 33/C 33M, 3/4-inch (19-mm) nominal maximum aggregate size.
 4. Water: ASTM C 94/C 94M.
 5. Air-Entraining Admixture: ASTM C 260/C 260M.
- B. Produce conventional-weight, controlled low-strength material with 140-psi (965-kPa) compressive strength when tested according to ASTM C 495/C 495M.

2.4 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.
 6. Purple: Reclaimed Water

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock and obstructions to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 24 inches (600 mm) outside of concrete forms other than at footings.
 - b. 12 inches (300 mm) outside of concrete forms at footings.
 - c. 6 inches (150 mm) outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. 6 inches (150 mm) beneath bottom of concrete slabs-on-grade.
 - f. 6 inches (150 mm) beneath pipe in trenches and the greater of 24 inches (600 mm) wider than pipe or 42 inches (1065 mm) wide.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended as bearing surfaces.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
1. Clearance: 12 inches (300 mm) each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
1. For pipes and conduit less than 6 inches (150 mm) in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 2. For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
 3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
 4. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.8 SUBGRADE INSPECTION

- A. Notify Engineer when excavations have reached required subgrade.
- B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes) to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph (5 km/h).
 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Geotechnical Engineer, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Engineer.
 - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Engineer.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, damp proofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Initial Backfill:
 - 1. Soil Backfill: Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the pipe or conduit.

- a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

E. Final Backfill:

1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.

F. Detectable Warning Tape: Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material. Except final 12" of fill shall be as required by landscape plans and specifications.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use foundations and footings, fill approved by the geotechnical engineer.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry density.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
1. Under structures, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent. Reference #5 below.
 2. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.
 3. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent. Top 12" below final grade shall be as specified in landscape plans and specifications.
 4. For utility trenches, compact each layer of initial and final backfill soil material at 92 percent.
 5. Under building slabs, foundations, and footings, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material as recommended by the Geotechnical Engineer.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm).
 2. Walks: Plus or minus 1 inch (25 mm).
 3. Pavements: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.17 BASE COURSES UNDER PAVEMENTS

- A. Place base courses under pavements according to FDOT Specification Section 204.

3.18 SUBBASE AND BASE COURSES UNDER WALKS

- A. Place subbase course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course under walks as follows:
1. Install separation geotextile if shown on plans on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

2. Place subbase course 6 inches (150 mm) or less in compacted thickness in a single layer.
3. Place subbase course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
4. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.19 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Drainage courses shall be provided where shown on plans.
- B. Place drainage course on subgrades free of mud, frost, snow, or ice.
- C. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 1. Install subdrainage geotextile (when required by plans) on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 2. Place drainage course 6 inches (150 mm) or less in compacted thickness in a single layer.
 3. Place drainage course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
 4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.20 FIELD QUALITY CONTROL

- A. Special Inspections: Additional requirements may be necessary for earthwork associated with structural building components. Comply with all requirements stated herein as well as in the structural plans.
- B. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, or ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Building Slab Areas: At subgrade and at each compacted fill and backfill layer, as required by the Geotechnical Engineer.
 2. Foundation Wall Backfill: At subgrade and each compacted backfill layer, at least one test for every 25 feet (30 m) or less of wall length but (no fewer than two tests) or as directed by Geotechnical Engineer..
 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet (46 m) or less of trench length but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 20 00

SECTION 31 23 16 - EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil densification.
2. Excavating for building foundations.
3. Excavating for Site structures.

B. Related Requirements:

1. Section 31 23 17 - Trenching: Excavating as required for utilities.
2. Section 31 23 23 - Fill: Backfilling at building perimeter and Site structures, and fill under slabs on grade, pavement, and landscaped areas.
3. Division 33 Public Water Utility Distribution Piping and Fittings: Pipe materials, and fittings.
4. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Section 01 22 00 - Price and Payment Procedures: Contract Sum/Price modification procedures.

1.3 REFERENCE STANDARDS

- A. Local utility standards when working within 24 inches of utility lines.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings:

1. Indicate soil densification grid for each size and configuration footing requiring soil densification.
2. Excavation Protection Plan:
 - a. Describe sheeting, shoring, and bracing materials and installation, as required, to protect excavations and adjacent structures and property.
 - b. Submit signed and sealed Shop Drawings with design calculations and assumptions to support plan.

- C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

D. Qualifications Statement:

1. Submit qualifications for licensed professional.

PART 2 - PRODUCTS

- 2.1 Not Used.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for installation preparation.
- B. Utility Service Locator:
1. Call local utility service-line information at 811 not less than **three** working days before performing Work.
 2. Request that underground utilities be located and marked within and immediately surrounding **construction areas**.
 3. Identify required lines, levels, contours, and data.
- C. Existing Utilities:
1. Protect from damage utilities indicated to remain.
- D. Protect plant life, lawns and other features designated to remain as portion of final landscaping.
- E. Protect benchmarks, survey control points, **existing structures, fences** from excavating equipment and vehicular traffic.
- F. Do not close or obstruct **roadways** or **hydrants** without permits.

3.2 SOIL DENSIFICATION BY VIBRO-COMPACTION

- A. Description:
1. Vibro-compact substrates below footing bearing surfaces for footings as indicated on Drawings before excavating Site.
 2. Densify existing subsoils with existing relative density rating of "compact to dense" to attain relative density rating of "very dense."
 3. Densify subsoils to depth of **3 feet**.
- B. Equipment:
1. Depth Vibrator:

- a. Type: Poker.
 - b. Follower Tubes: Furnish visible marking every **12 inches** to enable insertion depth measurement.
2. Motion: Radial in horizontal plane.
 3. Data Acquisition System: Record amps or pressure of vibrator motor over time and depth.
- C. Procedure:
1. Perform densification in presence of **Engineer**.
 2. Perform densification directly under each footing, with vibrator inserted in grid pattern at maximum **6 feet** o.c.
 3. Arrange compaction grid for each footing for maximum number of insertion points, and with outermost insertion points within bearing area of footings.
 4. Adjust compaction grid arrangement and spacing as directed by **Engineer** to achieve required densification.
 5. Insert vibrator to maximum specified depth, densify soils for 30 seconds or other time as directed by **Engineer**, and withdraw vibrator every **12 inches** while repeating densification at each increment.
 6. If subsurface obstruction prevents vibrator insertion to specified depth, request instructions from **Engineer** to compensate for obstruction.
- D. Tolerances:
1. Maximum Deviation from Center of Completed Compaction: **8 inches** from indicated position.
 2. Maximum Deviation from Vertical: 4 degrees during vibrator insertion.

3.3 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation Work.
- B. Excavate subsoil to accommodate building foundations.
- C. Compact disturbed load-bearing soil in direct contact with foundations to original bearing capacity, as specified in **Section 31 23 23 - Fill** and **Section 31 23 17 - Trenching**.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Do not interfere with **45** -degree bearing splay of foundations.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- G. Trim excavation and remove loose matter.
- H. Notify Engineer of unexpected subsurface conditions.
- I. Correct over-excavated areas with structural fill as specified in Section 31 23 23 - Fill as directed by Engineer.

- J. Remove excavated material from Site.
- K. Repair or replace items indicated to remain that have been damaged by excavation.

3.4 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for testing, adjusting, and balancing.
- B. Inspecting: Request visual inspection of bearing surfaces by **Engineer** before installing subsequent Work.

3.5 PROTECTION

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for protecting finished Work.
- B. Prevent displacement or loose soil from falling into excavation, and maintain soil stability.
- C. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- D. Protect structures, utilities, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that may be created by earth operations.

END OF SECTION 31 23 16

SECTION 31 23 17 - TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Excavating trenches for utilities.
 2. Backfilling and compaction.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International:
1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
 3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

1.3 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication or ordering material.

1.6 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type S2.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
 - 1. Engineer and Owner reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions. General depths of utilities shall be 36" to top of pipe from finished grade.

3.2 PREPARATION

- A. Call Local Utility Line Information service at 811 not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- D. Maintain and protect above and below grade utilities indicated to remain.
- E. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls as required during progress of Work.

3.3 TRENCHING

- A. Excavate subsoil required for utilities to utility service.
- B. Remove lumped subsoil, boulders, and rock up to 1/6 cubic yard, measured by volume.
- C. Do not advance open trench more than 200 feet ahead of installed pipe.
- D. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.
- E. Excavate bottom of trenches maximum 2' wider than outside diameter of pipe.
- F. Excavate trenches to depth indicated in Contract Documents. Provide uniform and continuous bearing and support for bedding material and pipe.

- G. When Project conditions permit, slope side walls of excavation starting 2' above top of pipe. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.
- H. When subsurface materials at bottom of trench are loose or soft, notify Engineer, and request instructions.
- I. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Clean Fill and compact to density equal to or greater than requirements for subsequent backfill material.
- J. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- K. Remove excess subsoil not intended for reuse, from site.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:
 - 1. Subsoil Fill: Maximum 12 inches compacted depth.
- D. Employ placement method that does not disturb or damage utilities in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 20 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to the public.

3.6 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.
- D. Frequency of Tests: Along Coastal Hwy. (U.S. 98) take samples in three lifts every 100 feet. Along remaining portions of the project, alternate taking samples as follows: a sample in the first 12 inch lift at beginning of project and then every 300 feet, in the second lift beginning at 100 feet into project and then every 300 feet; followed by a sample in the third lift every 300 feet beginning at 200 feet into the project.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 73 00 - Execution: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION 31 23 17

SECTION 31 23 23 - FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Backfilling site structures to subgrade elevations.
2. Fill for over-excavation.

B. Related Requirements:

1. Section 03 30 01 - Cast-in-Place Concrete: Concrete materials.
2. Section 31 23 16 - Excavation: Backfilling of building foundations and utilities within building perimeter.
3. Section 31 23 17 - Trenching: Backfilling of utility trenches.
4. Section 33 14 13 - Public Water Utility Distribution Piping: Pipe materials,.
5. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg Rammer and a 457-mm Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
2. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D6031/D6031M - Standard Test Method for Logging In Situ Moisture Content and Density of Soil and Rock by the Nuclear Method in Horizontal, Slanted, and Vertical Access Tubes.
6. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit manufacturer information for geotextile fabric, indicating fabric and construction.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Concrete:
 - 1. Description:
 - a. Structural, as specified in Section 03 30 01 - Cast-in-Place Concrete

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for installation examination.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for installation preparation.
- B. Compact subgrade to specified density requirements for subsequent backfill materials.
- C. Soft Subgrade:
 - 1. Cut out soft areas of subgrade not capable of compaction in place.
 - 2. Backfill with **granular** fill and compact to density equal to or greater than specified requirements for subsequent fill material.
- D. Scarify subgrade surface to depth of 12 inches.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations.
- B. Systematically backfill to allow maximum time for natural settlement.

- C. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces, and do not backfill with frozen materials.
- D. Maximum Compacted Depths:
 - 1. Place material in continuous layers to following depths:
 - a. Subsoil Fill: **12**inches.
 - b. Structural Fill: **8**inches.
- E. Use placement method that does not disturb or damage **foundation perimeter drainage**, or utilities in trench.
- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Make gradual grade changes and blend slope into level areas.
- H. Remove surplus backfill materials from Site.
- I. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus **1** inch from required elevations.
- B. Top Surface of Backfilling: Plus or minus **1**inch from required elevations.
- C. Top Surface of General Backfilling: Plus or minus from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for testing, adjusting, and balancing.
- B. Inspecting: Request visual inspection of bearing surfaces by **Engineer** before installing subsequent Work.
- C. Testing:
 - 1. Laboratory Material Testing: Comply with **ASTM D6938**.
 - 2. In-Place Compaction Testing:
 - a. Density Tests: Comply with **ASTM D6938**.
 - b. Moisture Tests: Comply with **ASTM D6031/D6031M**.
 - 3. If tests indicate that Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.6 PROTECTION

- A. Section 01 70 00 - Execution and Section 01 77 00 - Closeout Procedures: Requirements for protecting finished Work.
- B. Reshape and recompact fills subjected to vehicular traffic during construction.

END OF SECTION 31 23 23

SECTION 31 25 01 - SEDIMENTATION AND EROSION CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary to perform all installation, maintenance, removal, and area cleanup related to sedimentation control work as shown on the Drawings and as specified herein or as required to prevent the transport of silt or sediment outside the limits of construction. The work shall include, but not necessarily be limited to, installation of temporary access ways and staging areas, silt fences, temporary seeding, turbidity barriers, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, and final cleanup.
- B. The CONTRACTOR shall prepare a Sedimentation and Erosion Control Plan. This plan shall be used as a minimum in developing the Pollution Prevention Plan for the NPDES permit application (notification) to be filed by the CONTRACTOR.

1.2 RELATED REQUIREMENTS

- A. The Contract Documents include, but are not limited to, the following related sections:
 - 1. SECTION 315000 – EXCAVATION SUPPORT AND PROTECTION.

1.3 SUBMITTALS

- A. Within 10 days after award of Contract, the CONTRACTOR shall submit to the ENGINEER for approval, technical product literature for all commercial products to be used for sedimentation and erosion control.

1.4 QUALITY ASSURANCE

- A. The CONTRACTOR shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off-site areas, via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment outside the limits of construction shall be installed, maintained, removed, and cleaned up at the expense of the CONTRACTOR. No additional charges to the OWNER will be considered.
- B. Sedimentation and erosion control measures shall conform to the Best Management Practices outlined in the Drawings and in the Florida Development Manual.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Silt Fence

1. Steel posts shall be a minimum of 5 feet in length, 2-1/2-in by 2-1/2-in by 1/4-in angle post with self-fastening tabs and a 5-in by 4-in (nominal) steel anchor plate at bottom.
2. Welded wire fabric shall be 4-in by 4-in mesh of 12 gauge by 12 gauge steel wire.
3. Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X as manufactured by Mirafi, Inc., Charlotte, NC or equal.
4. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-in diameter soft aluminum wire.
5. Prefabricated commercial silt fence may be substituted for built-in-field fence. Pre-fabricated silt fence shall be "Envirofence" as manufactured by Mirafi Inc., Charlotte, NC or approved equal.

B. Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, rye, or hay that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

C. Latex acrylic copolymer, such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, CA or approved equivalent shall be used as straw mulch tackifier.

D. An asphalt tackifier may be used in place of a latex acrylic copolymer with prior written approval from the ENGINEER.

E. Baled Hay or Straw: This work shall consist of construction of baled hay or straw dams to protect against downstream accumulations of silt. The baled hay or straw dams shall be constructed in accordance with the details in the FDOT Roadway and Traffic Design Standards. All baled hay or straw utilized shall comply with the provisions of FDOT Specification Section 9811-3.1 for dry mulch.

F. Erosion control matting shall be installed as shown on the drawings or as approved by the Engineer. Erosion control matting shall be North American Green P300 or approved equal.

G. Excelsior matting shall be installed as shown on the drawings or as approved. Excelsior matting shall be North American Green SC150 or approved equal.

H. Fabric formed concrete erosion protection shall be Armorform as manufactured by Nicolon, or equal. Material shall correspond to the 4-inch thick Uniform Section Mat (USM), or approved equal.

PART 3 - EXECUTION

3.1 LOCATION OF SEDIMENT/EROSION CONTROL

- A. At a minimum, sediment/erosion control devices shall be installed at all locations shown on the plans and specified herein.
- B. Sediment/erosion control devices shall be installed at 500 feet intervals along all swales and ditches constructed and around all installed drainage structures prior to placement of sod.
- C. Sediment/erosion control shall be installed along all limits of construction.
- D. Sediment control or turbidity barriers shall be installed along the upstream side of all littoral zones within stormwater ponds. Sediment control or turbidity barriers shall be installed along the open water side of all littoral zones in borrow areas in which excavation is being conducted.
- E. CONTRACTOR shall provide additional sediment/erosion control and turbidity barriers as needed to control the transport of silt and sediments outside of the limits of construction.
- F. Sediment/erosion control shall be installed around the base of all soil stockpile areas.
- G. Sediment/erosion control devices shall be installed along the perimeter of all staging areas.
- H. Sediment/erosion control for all construction activities which take place within or adjacent to identified wetlands shall have double sediment/erosion control barriers. The separation between the double barriers shall be at least 5 feet, but no greater than 10 feet.
- I. All disturbed areas, greater than one (1) acre, in which construction activities have stopped and are not anticipated to resume for a period of three months or longer shall be temporarily seeded, within five days of stoppage of construction.
- J. All disturbed areas, greater than one (1) acre, in which construction activities have been stopped and are not anticipated to resume for a period of 21 days, but not longer than three months shall be temporarily mulched, within five days of stoppage of construction in accordance with Paragraph 3.4.

3.2 INSTALLATION

- A. Silt Fence Installation
 - 1. Silt fences shall be positioned as specified indicated on the Drawings and as necessary to prevent movement of sediment produced by construction activities outside of the limits of construction or as approved.
 - 2. Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.
 - 3. Drive metal-stakes, 8 feet on center (maximum) at back edge of trenches. Stakes shall be driven 2 feet (minimum) into ground.
 - 4. Hang 4 by 4 woven wire mesh on posts, setting bottom of wire in bottom of trench. Secure wire to posts with self-fastening tabs.

5. Hang filter fabric on wire carrying to bottom of trench with about 4-in of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure with tie wires 12-in O.C. both ways.
6. Backfill trench with excavated material and tamp.
7. Install pre-fabricated silt fence according to MANUFACTURER's instructions.

B. Hay Bale Barrier

1. Bales shall be either wire-bound or string-tied with the bindings oriented around the sides rather than over and under the bales.
2. Bales shall be placed lengthwise in a single row with the ends of adjacent bales tightly abutting one another.
3. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After bales are staked and chinked, the excavated soil shall be backfilled against the barrier. Backfilled material shall conform to the ground level on the downhill side and shall be built up to 2 inches against the uphill side.
4. Each bale shall be securely anchored by at least two stakes or rebars driven through the bale. The first stake shall be driven toward the previously laid bale to force the bales together. Stakes shall be driven deep enough into the ground to securely anchor the bales.
5. The gaps between each bale shall be chinked (filled by wedging) with straw to prevent water from escaping between the bales.

C. Turbidity Barriers

1. Turbidity barriers should extend the entire depth of the water.
2. Turbidity barriers should not be placed perpendicular to flow. Barriers should be installed at an angle to the flow. Angle should be determined on the amount of flow in the waterway and the MANUFACTURER's recommendation.
3. Turbidity barrier should be 10 to 20 percent longer than the straight line measurement.
4. Joints between panels should be kept to a minimum.
5. Barrier should extend to the top of bank. All ends should be secured firmly to the shoreline.
6. Where significant flow is anticipated, a heavy woven pervious filter fabric may be substituted.

D. Inlet Protection

1. Inlet protection shall be installed for all catch basins, drop inlets, drop structures, inlets to drainage pipes, or other structures.
2. A 5-foot strip of sod shall be laid surrounding the perimeter of each structure.
3. A silt fence or haybale barrier shall be installed around the perimeter of the sodded area.

E. Fabric Formed Concrete Erosion Protection

1. Fabric formed concrete erosion protection shall be installed as shown on the drawings and in accordance with MANUFACTURER's recommendations.

F. Erosion Control and Excelsior Matting

1. Erosion control and excelsior matting blankets shall be installed as shown on the drawings and as approved in accordance with MANUFACTURER's instructions. The area to be covered shall be properly prepared before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow, and stapled. Blankets shall be placed a minimum of three rows (of 4-ft) wide (total approx. 12-ft width) and stapled together in accordance with MANUFACTURER's instructions. Side overlaps shall be 6-in minimum. The staples shall be made of wire, 0.091-in in diameter or greater, "U" shaped with legs 10-in in length and a 1-1/2-in crown. The staples shall be driven vertically into the ground, spaced approximately 2 linear feet apart, on each side, and one row in the center alternately spaced between each side. Upper and lower ends of the matting shall be buried to a depth of 4-in in a trench. The bottom of the fold shall be 4-in below the ground surface. Staple on both sides of fold. Where the matting must be cut or more than one roll length is required, turn down upper end of downstream roll into a trench to a depth of 4-in. Overlap lower end of upstream roll 4-inches past edge of downstream roll and staple.
2. To ensure full contact with soil surface, roll matting with a roller weighing 100 pounds per foot of width perpendicular to flow direction after placing matting, stapling and seeding and sodding. Thoroughly inspect channel after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

3.3 MAINTENANCE AND INSPECTIONS

A. Inspections

1. CONTRACTOR shall make a visual inspection of all sedimentation and erosion control devices (including turbidity barriers) once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to areas outside the limits of construction, CONTRACTOR shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.
2. CONTRACTOR shall keep a log of all inspections indicating the following:
 - a. Date and time of inspection
 - b. Inspector
 - c. Amount of rainfall
 - d. Erosion and sediment control devices inspected
 - e. Condition of sediment and erosion control devices
 - f. Repairs needed
 - g. Date repair is completed

B. Device Maintenance

1. Silt Fences
 - a. Remove accumulated sediment once it builds up to one-half of the height of the fabric.
 - b. Replace damaged fabric, or patch with a 2-ft minimum overlap.
 - c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.
2. Hay Bale Barriers

- a. Remove accumulated sediment once it builds up to one-half of the height of the hay bales.
 - b. Replace damaged hay bales.
 - c. Make other repairs as necessary to ensure that the hay bales are filtering all runoff directed to the barrier.
3. Inlet Protection
- a. Remove accumulated sediment once it builds up to one-half of the height of the barrier.
 - b. Remove all sediment accumulated within the barrier and replace damaged sod.
 - c. Make other repair as necessary to ensure that the inlet protection device is operating properly.
4. Turbidity Barriers
- a. Turbidity barriers shall be inspected on a daily basis.
 - b. Replace damaged fabric, or patch with a 2 foot minimum overlap.
 - c. Make other repairs as necessary to ensure barriers are effectively maintaining turbidity levels outside of the barrier within regulatory limits.

3.4 TEMPORARY MULCHING

- A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 21 days of the completion of rough grading. If construction activities are not planned to resume for three months or longer, the temporary seeding requirements shall be followed.
- B. Straw mulch shall be applied at rate of 2,000 lbs/acre and tackified with latex acrylic copolymer at a rate of 1 gal/1000 ft² diluted in a ratio of 30 parts water to 1 part latex acrylic copolymer mix.
- C. After temporary mulching, traffic should be kept to a minimum, except for designated temporary access roads.

3.5 SEDIMENT BASINS

- A. The stormwater ponds may serve as sediment traps during the term of construction. The CONTRACTOR shall monitor the depth of sediment in each stormwater pond on a monthly basis and after each storm which produced greater than one (1) inch of rainfall. Sediments shall be removed from the stormwater ponds when they constitute one-half of the volume below the normal pool elevation. CONTRACTOR shall reexcavate all stormwater ponds to their original design depths after all areas served by the pond have reached substantial completion and all soil has been stabilized.

3.6 REMOVAL AND FINAL CLEANUP

- A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Drawings or specified herein.

T. Lee, P.E.
BDI/PNS

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SECTION 31 50 00 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes temporary excavation support and protection systems.
- B. Related Requirements:
 - 1. Section 01 32 33 "Photographic Documentation" for recording preexisting conditions and excavation support and protection system progress.
 - 2. Section 31 20 00 "Earth Moving" for excavating and backfilling and for controlling surface-water runoff and ponding.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, performance properties, and dimensions of individual components and profiles, and calculations for excavation support and protection system.
- B. Shop Drawings: For excavation support and protection system, prepared by or under the supervision of a qualified professional engineer.
 - 1. Include plans, elevations, sections, and details.
 - 2. Show arrangement, locations, and details of soldier piles, piling, lagging, tiebacks, bracing, and other components of excavation support and protection system according to engineering design.
 - 3. Indicate type and location of waterproofing.
 - 4. Include a written plan for excavation support and protection, including sequence of construction of support and protection coordinated with progress of excavation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor and professional engineer.
- B. Contractor Calculations: For excavation support and protection system. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

- C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by inadequate performance of excavation support and protection systems. Submit before Work begins.
- D. Record Drawings: Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions.

1.5 FIELD CONDITIONS

- A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:
 - 1. Notify Engineer no fewer than two days in advance of proposed interruption of utility.
 - 2. Do not proceed with interruption of utility without Engineer's written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Provide, design, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting earth and hydrostatic pressures and superimposed and construction loads.
 - 1. Contractor Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified professional engineer.
 - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
 - 3. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.
 - 4. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

2.2 MATERIALS

- A. General: Provide materials that are either new or in serviceable condition.
- B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.
- C. Steel Sheet Piling: ASTM A 328/A 328M, ASTM A 572/A 572M, or ASTM A 690/A 690M; with continuous interlocks.
 - 1. Corners: Roll-formed corner shape with continuous interlock.
- D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of size and strength required for application.

- E. Shotcrete: Comply with Section 03 37 13 "Shotcrete" for shotcrete materials and mixes, reinforcement, and shotcrete application.
- F. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.
- G. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- H. Tiebacks: Steel bars, ASTM A 722/A 722M.
- I. Tiebacks: Steel strand, ASTM A 416/A 416M.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
 - 1. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Locate excavation support and protection systems clear of permanent construction so that construction and finishing of other work is not impeded.

3.2 SOLDIER PILES AND LAGGING

- A. Install steel soldier piles before starting excavation. Extend soldier piles below excavation grade level to depths adequate to prevent lateral movement. Space soldier piles at regular intervals not to exceed allowable flexural strength of wood lagging. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.
- B. Install wood lagging within flanges of soldier piles as excavation proceeds. Trim excavation as required to install lagging. Fill voids behind lagging with soil, and compact.
- C. Install wales horizontally at locations indicated on Drawings and secure to soldier piles.

3.3 SHEET PILING

- A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock vertical edges to form a continuous barrier.
- B. Accurately place the piling, using templates and guide frames unless otherwise recommended in writing by the sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 60 inches. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.
- C. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 TIEBACKS

- A. Drill, install, grout, and tension tiebacks.
- B. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.
 - 1. Have test loading observed by a qualified professional engineer responsible for design of excavation support and protection system.
- C. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.5 BRACING

- A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.
 - 1. Do not place bracing where it will be cast into or included in permanent concrete work unless otherwise approved by Engineer.
 - 2. Install internal bracing if required to prevent spreading or distortion of braced frames.
 - 3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.6 FIELD QUALITY CONTROL

- A. Survey-Work Benchmarks: Resurvey benchmarks weekly during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Engineer if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
- B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.
- C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.7 REMOVAL AND REPAIRS

- A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.
 - 1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlying construction and abandon remainder.
 - 2. Fill voids immediately with approved backfill compacted to density specified in Section 31 20 00 "Earth Moving."
 - 3. Repair or replace, as approved by Engineer, adjacent work damaged or displaced by removing excavation support and protection systems.
- B. Leave excavation support and protection systems permanently in place.

END OF SECTION 31 50 00

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SECTION 31 63 26
DRILLED CAISSONS

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish and install panel support structure and foundation as shown in the Plans.

1.2 REFERENCE STANDARDS

- A. ASTM B429 – Aluminum Posts
- B. ASTM F593 – Stainless Steel Bolts
- C. ASTM F594 – Stainless Steel Nuts
- D. ASTM C 94 – Concrete
- E. ASTM A 615 – Reinforcing Steel
- F. ASTM A 252 – Corrugated Steel
- G. ASTM A 444 – Steel Pipe

1.3 SUBMITTALS

- A. Submit for approval test reports.
- B. Submit Shop Drawings to Owner for approval.

1.4 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Construction Tolerances:
 - 1. Location, not more than L/24 of shaft diameter or 3 inches, whichever is less.
 - 2. Shafts out of plumb, not more than 1.5 percent of length nor exceeding 12.5 percent of shaft diameter or 15 percent, whichever is less.
 - 3. Concrete cut-off elevation, plus 1 inch to minus 3 inches.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Posts:
 - 1. Provide Grade 6061-T6 Aluminum tubing meeting the requirements of ASTM B429.
 - 2. Provide Type 316 stainless steel bolts, nuts, washers, shims, anchor rods, and shims mounting hardware.
- B. Caissons:
 - 1. Application: Caissons for foundation support.
 - 2. Type: Steel-reinforced caissons (cast-in-place piles) for electrical panel structural support.

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3. Concrete: ASTM C 94, 4000 psi, 28 day minimum compressive strength.
4. Reinforcing Bars: ASTM A 615, Grade 60.
5. Casings: Steel pipe, ASTM A 252, Grade 2 or ASTM A 36.
6. Casings: Corrugated steel, ASTM A 444.

PART 3 EXECUTION

3.1 GENERAL

- A. Construct foundations in accordance with the Plans. Perform the excavations required for the shafts, through whatever materials encountered, to the dimensions and elevations shown in the Contract Documents, using methods and equipment suitable for the intended purpose and the materials encountered.
- B. Provide drilling tools with a diameter not smaller than one inch of the shaft diameter required in the Plans. Provide equipment capable of constructing shafts to a depth equal to the depth shown in the Plans plus 5 feet.
- C. Provide temporary surface casings from at least 1 foot above the ground surface to at least 5 feet below the ground surface. For foundations located within permanent sidewalks or within 5 feet of curb sections, provide temporary surface casings from no lower than the top of sidewalk to at least 5 feet below the ground surface.
- D. Place caissons only after earthwork operations in immediate area are completed. Drive caissons continuously.

3.2 REINFORCING STEEL CONSTRUCTION AND PLACEMENT

- A. Completely assemble and place as a unit the cage of reinforcing steel, consisting of longitudinal bars, ties, and cage stiffener bars, immediately after the Owner inspects and accepts the shaft excavation and immediately prior to placing concrete. Tie all intersections of drilled shaft reinforcing steel with cross ties or "figure 8" ties. Use double strand ties, ties with larger tie wire, U-bolts, or similar when necessary. The Owner will give final approval of the cage construction and placement subject to satisfactory performance in the field.

3.3 CONCRETE PLACEMENT

- A. Place concrete as soon as possible after completing all excavation, cleaning the shaft excavation, inspecting and finding it satisfactory, and immediately after placing reinforcing steel. Continuously place concrete in the shaft to the top of the casing. Continue placing concrete after the casing is full until good quality concrete is evident at the top of the casing. Place concrete through a tremie or concrete pump using approved methods.

3.4 FORMS:

- A. When the top of shaft elevation is above ground or above water, form the portion of the shaft above ground and the portion of the shaft above water with a removable form or another approved method to the dimensions shown in the Plans.

3.5 TOLERANCES

- A. Ensure that the vertical alignment of the shaft excavation does not vary from the alignment shown in the Plans by more than 1/4 inches per foot of depth.
- B. After placing all the concrete, ensure that the top of the reinforcing steel cage is no more than 6 inches above and no more than 3 inches below plan position.

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DRILLED CAISSONS

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- C. Ensure that the reinforcing cage is concentric with the shaft within a tolerance of 1-1/2 inches. Ensure that concrete cover is a minimum of 4-1/2 inches unless shown otherwise in the Plans.
- D. Ensure that the minimum diameter of the drilled shaft is not smaller than the specified shaft diameter minus 1 inch. All casing diameters shown in the Plans refer to I.D. (inside diameter) dimensions.
- E. Replace defective or non-conforming caissons.

END OF SECTION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Galvanized-Steel chain link fabric.
2. Galvanized-steel framework.

- B. Related Sections:

1. Section 03 30 53 "Miscellaneous Cast-in-Place Concrete for post footings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has at least three years' experience and has completed at least five chain link fence projects with same material and of similar scope to that indicated for this Project with a successful construction record of in service performance.
- B. Single Source Responsibility: Obtain chain link fences and gates, including accessories, fittings, and fastenings, from a single source.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE

A. Reinforced Vinyl Fence Fabric

1. Fabric Diameter & Finish: As indicated on Drawings.
 - a. 3-1/2" x 5" mesh by 9 ga. (0.148") galvanized before weaving per ASTM A392 & A817, 1.2 oz Type II Class 4. 3-1/2" x 5" mesh by 9 ga. (0.148") galvanized before weaving per ASTM A392 & A817, 1.2
2. Fabric Color: The vinyl coated chain link fabric shall be black.

2.2 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1083 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1083 based on the following:

1. Fence Height: 72 inches.
2. Heavy Industrial Strength: Material Group IA, round steel pipe, Schedule 40
 - a. End, Corner, Line, and Pull Post: 4.0 inches in diameter.
3. Horizontal Framework Members: top and bottom rails complying with ASTM F 1043.
 - a. Top Rail: 2.375 inch OD Type I or II Steel Pipe.
4. Brace Rails: Comply with ASTM F 1043.
5. Metallic Coating for Steel Framing:
 - a. Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123/A 123M or

2.3 TENSION WIRE

A. Metallic-Coated Steel Wire: 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817 and ASTM A 824, with the following metallic coating:

2.4 HORIZONTAL-SLIDE GATES

A. General: Comply with ASTM F 1184 for gate posts and single sliding gate types.

1. Classification: Type I Overhead Slide.
 - a. Gate Leaf Width: As indicated.

b. Gate Fabric Height: As indicated.

B. Pipe and Tubing:

1. Zinc-Coated Steel: Protective coating and finish to match fence framing.
2. Gate Posts: Comply with ASTM F 1184. Provide round tubular steel posts.
3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: Welded.

D. Overhead Track Assembly: Manufacturer's standard track, with overhead framing supports, bracing, and accessories, engineered to support size, weight, width, operation, and design of gate and roller assemblies.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line-to-line posts.

E. Tension and Brace Bands: Pressed steel.

F. Tension Bars: Steel length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Hot-Dip Galvanized Steel: 0.106-inch- diameter wire galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.

2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.7 FENCE GROUNDING

- A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.
 - 1. Material above Finished Grade: Copper.
 - 2. Material on or below Finished Grade: Copper.
 - 3. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.
- B. Connectors and Grounding Rods: Comply with UL 467.
 - 1. Connectors for Below-Grade Use: Exothermic welded type.
 - 2. Grounding Rods: Copper-clad steel, 5/8 by 100 inches.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
 - 1. Install fencing on established boundary lines inside property line.

3.3 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 1 inches above grade; shape and smooth to shed water.
- C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.
- D. Line Posts: Space line posts uniformly at 96 inches o.c.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
 - 1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Install and secure to posts with fittings.
- I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

- J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 GROUNDING AND BONDING

- A. Fence Grounding: Install at maximum intervals of 100 feet.
- B. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.
- C. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2 unless otherwise indicated.
- D. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location.
- E. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.
- F. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

- G. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

3.6 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

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SECTION 33 01 30.81
MANHOLE REHABILITATION

PART 1 GENERAL

1.1 SUMMARY

- A. Rehabilitate existing sanitary sewer manholes.

1.2 REFERENCES

- A. ASTM C 1140 - Standard Practice for Preparing and Testing Specimens from Shortcrete Test Panels.
- B. ASTM D 698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft).

1.3 SUBMITTALS

- A. Installer Qualifications: Submit qualifications to the Owner of installers of liners and wall repair systems. List installer's personnel who have satisfactorily completed manufacturer's training in product application within the previous 2 years. Include date of certification for each person.
- B. Product Data: Submit product data, including surface preparation instructions and application instructions, from pre-approved manufacturer of wall repair materials, hydraulic cements, quick-set mortars, specialized sealants, grouts, manhole inserts, manhole frame covers and frame-to-manhole seals.

1.4 QUALITY ASSURANCE

- A. Perform work needed to make manholes structurally sound, improve flow, prevent entrance of inflow or groundwater, prevent entrance of soil or debris, and provide protection against hydrogen sulfide gas attack.
- B. Manufacturer's Product Support: When requested by the Owner, provide a representative employed by the manufacturer having technical training in admixture and manhole wall liner available for consultation on site upon 48 hours notice.

1.5 PROJECT CONDITIONS

- A. Manholes Containing Mechanical or Electrical Equipment:
 - 1. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, immediately notify the Owner.
 - 2. Reschedule work in such manholes until equipment has been removed and further instructions are given.
 - 3. Do not subject manholes with mechanical hardware or electrical equipment to diversion or bypass pumping.
 - 4. Damage to installed equipment, due to Contractor's failure to adhere to this instruction, will be repaired by the Contractor at no expense to the Owner.
- B. Field Location of Manholes, Cleanouts and End of Lines:

1. Contractor is responsible for locating and uncovering all manholes, cleanouts and ends of lines. If Contractor is unable to locate manholes, cleanouts or ends of lines, notify Engineer in writing.
2. Manholes may be located within project limits which are not part of the system being rehabilitated. Properly identify manholes before starting work.

PART 2 PRODUCTS

2.1 WALL CLEANING MATERIALS.

- A. High Pressure Water: 3,500 psi minimum force.
- B. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil and other matter which would interfere with bond of sealing material to wall; refer to sealing material manufacturer's recommendations.

2.2 WALL REPAIR MATERIALS.

- A. Hydraulic Cements: Use a blend of cement powders or hydraulic cement to stop active leaks in the manhole structure.
- B. Quick-set Mortar: Use a quick-set mortar to repair wide cracks, holes or disintegrated mortar.

2.3 MANHOLE WALL LINERS, BENCH FORMING AND REPAIR MATERIALS.

- A. All Standard Products will be pre-approved prior to use.

2.4 MANHOLE COVERS, FRAME INSERTS AND FRAME-TO-MANHOLE SEALS.

- A. New Access Doors and Frames: Comply with Item 08 31 13, "Access Doors and Frames".

PART 3 Provide manhole inserts including new dishes, gaskets and relief valves. Select appropriate watertight inserts to fit walls and frames of manholes.

PART 4 Stainless steel (18 gauge minimum) inserts; Southwestern Packing and Seals "Rain Stopper," or approved equal.

PART 5 Stamp inserts with the words, "Property of City of Houston".

PART 6 Inserts will have a handle of plastic-coated stainless steel installed on the body of the insert dish. The handle will be attached with a #6 high-grade stainless steel rivet. Each dish will have a factory-installed 5-foot-long, 3/16 in. braided stainless steel retaining cable to connect the dish to the manhole frame.

PART 7 Frame-to-Manhole Seals: As manufactured by Cretex, or approved equal.

PART 8 Provide Adeka Ultraseal P201 or approved equal, sealing materials between adjustments rings and manhole frames.

PART 9 EXECUTION

9.1 Mixers and mixing

- A. Concrete shall be uniform and thoroughly mixed when delivered to the work site. The proportions of the aggregates shall be such as to produce a concrete mixture that will work

readily into corners and angles of the forms and around reinforcement when consolidated, but not segregated or exude free water during consolidation. Variations in slump of more than 1 inch within a batch are considered evidence of inadequate mixing and shall be corrected by increasing mixing time or other acceptable alternative.

- B. No mixing water in excess of the amount called for by the job mix shall be added to the concrete during mixing or hauling or after arrival at the delivery point.

9.2 Forms

- A. Forms shall be of wood, plywood, steel, or other approved material and shall be mortar tight. The forms and associated falsework shall be substantial and unyielding and shall be constructed so that the finished concrete will conform to the specified dimensions and contours. Form surfaces shall be smooth and free from holes, dents, sags, or other irregularities. Forms shall be coated with a nonstaining form release agent before being set into place.
- B. For liquid-tight structures metal ties or anchorages within the forms shall be equipped with cones, she-bolts or other devices that permit their removal to a depth of at least 1 inch (unless otherwise specified) without injury to the concrete. Ties designed to break off below the surface of the concrete shall not be used without cones. If approved fiberglass or plastic form ties are used, the tie ends shall be cut flush with the finish concrete and ground smooth.
- C. For structures which are not required to be liquid-tight, form ties shall be removed flush with or below the concrete surface.
- D. All edges that will be exposed to view when the structure is completed shall be chamfered, unless finished with molding tools.

PART 10 EXECUTION

10.1 Preparation of forms and subgrade

- A. Prior to placement of concrete, the forms and subgrade shall be free of chips, sawdust, debris, water, ice, snow, extraneous oil, mortar, or other harmful substances or coatings and the temperature of all surfaces to be in contact with the new concrete shall be not be less than 40 degrees Fahrenheit. Any oil on the reinforcing steel or other surfaces required to be bonded to the concrete shall be removed. Rock surfaces shall be cleaned by air-water cutting, wet sandblasting, or wire brush scrubbing, as necessary, and shall be wetted immediately before placement of concrete. The earth surface shall be firm and damp. Placement of concrete on mud, dried earth, or uncompacted fill or frozen subgrade is not permitted.
- B. Items to be embedded in the concrete shall be positioned accurately and anchored firmly.
- C. Weepholes in walls or slabs shall be formed with nonferrous material.

10.2 Conveying

- A. Concrete shall be delivered to the site and discharged into the forms within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather or under conditions contributing to quick stiffening of the concrete, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes unless an approved

set-retarding admixture is used or the mix remains workable and the temperature does not exceed the requirements stated in Section 20. In any case, concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods that prevent segregation of the aggregates and assure no loss of mortar occurs.

10.3 Placing

- A. Concrete shall not be placed until the subgrade, forms, steel reinforcement, and embedded items have been inspected and approved. The Owner will determine any required testing needed for the placement of the specified concrete. No concrete shall be placed except in the presence of the Owner or with permission from the Owner. The Contractor shall give reasonable notice to the Owner each time concrete is to be placed. Such notice shall provide sufficient time for the Owner to inspect the subgrade, forms, steel reinforcement, and other preparations for compliance with the specifications. Deficiencies are to be corrected before concrete is delivered for placing. The Owner can delegate any or all duties to other qualified personnel.
- B. The concrete shall be deposited as closely as possible to its final position in the forms. It shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Formed concrete shall be placed in horizontal layers not more than 20 inches deep. When a superplasticizer is used the horizontal layer can be increased to 5 ft. deep. Slab concrete shall be placed to design thickness in one continuous layer.
- C. Concrete shall not be dropped more than 5 feet vertically unless suitable equipment is used to prevent segregation. When a superplasticizer used, the concrete shall not be allowed to drop more than 10 feet. Hoppers and chutes, pipes, or "elephant trunks" shall be used as necessary to prevent segregation and the splashing of mortar on the forms and reinforcing steel above the layer being placed.
- D. Immediately after the concrete is placed in the forms, it shall be consolidated by spading, hand tamping, or vibration as necessary to ensure a smooth surface and dense concrete. Each layer shall be consolidated to ensure monolithic bond with the preceding layer. The use of vibrators shall not be used to transport concrete in the forms, slabs, or conveying equipment. Vibration shall not be applied directly to the reinforcement steel or the forms. If the surface of a layer of concrete in place sets to the degree that it will not flow and merge with the succeeding layer when spaded or vibrated, the Contractor shall discontinue placing concrete and shall make a construction joint according to the procedure specified in Section 3.4.
- E. If placing is discontinued when an incomplete horizontal layer is in place, the unfinished end of the layer shall be formed by a vertical bulkhead.

10.4 Construction joints

- A. Construction joints shall be made at the locations shown on the drawings. If construction joints are needed that are not shown on the drawings, they shall be placed in locations approved by the Owner.
- B. Where a feather edge would be produced at a construction joint, as in the top surface of a sloping wall, an insert form shall be used so that the resulting edge thickness on either side of the joint is not less than 6 inches.

- C. In walls and columns, as each lift is completed, the top surface shall be immediately and carefully protected from any condition that might adversely affect the hardening of the concrete.
- D. Steel tying and form construction adjacent to concrete in place shall not be started until the concrete has cured at least 12 hours. Before new concrete is deposited on or against concrete that has hardened, the forms shall be retightened. New concrete shall not be placed until the hardened concrete has cured at least 12 hours.
- E. The surface of construction joints shall be cleaned of all unsatisfactory concrete or other foreign materials by means approved by the Owner. The surface shall be kept moist for at least 1 hour before the new concrete is placed.

10.5 Expansion/isolation and contraction/control joints

- A. The types and locations of expansion and contraction joints shall be made only at locations shown on the drawings unless otherwise directed by the Owner.
- B. Exposed concrete edges at expansion and contraction joints shall be carefully tooled or chamfered, and the joints shall be free of mortar and concrete. Contraction joints can be constructed using saw cuts to a depth of approximately $\frac{1}{4}$ of the total thickness between 4 to 12 hours from when the concrete is placed.
- C. Preformed expansion joint filler shall be held firmly in the correct position as the concrete is placed. Joint filler shall be left exposed for its full length with clean and true edges.
- D. When open joints are specified, they shall be constructed by the insertion and subsequent removal of a wooden strip, metal plate, or other suitable template in such a manner that the corners of the concrete are not chipped or broken. The edges of open joints shall be finished with an edging tool before the joint strips are removed.

10.6 Waterstops

- A. Waterstops shall be held firmly in the correct position as the concrete is placed. Joints in metal waterstops shall be soldered, brazed, or welded. If specified by the Owner, joints in rubber or plastic waterstops shall be cemented, welded, or vulcanized as recommended by the manufacturer.

10.7 Removal of forms

- A. Forms shall be removed in such a way as to prevent damage to the concrete. Supports shall be removed in a manner that permits the concrete to take the stresses of its own weight uniformly and gradually. The minimum period from completion of the concrete placement to the removal of the forms shall be based on either strength tests or cumulative times.
- B. Strength tests – The strength of the in place concrete is determined by testing concrete cylinders specifically cast for this purpose and cured adjacent to the member in accordance with the ASTM C 31 method for determining removal time. Unless otherwise specified, forms supporting the weight of the concrete member may be removed after the concrete strength is 70 percent of that specified for the class of concrete.
- C. Cumulative time – The total accumulative time, not necessarily continuous, that the air adjacent to the concrete is above 50 degrees Fahrenheit and the specific concrete curing has occurred concurrently will be determined. Forms may be removed after the total

accumulation time shown below.

- D. Accumulation form removal times
1. Sides of slabs or beams 12 hours
 2. Undersides of slabs or beams
 - a. Clear span < 10 ft 4 days
 - b. Clear span 10 – 20 ft 7 days
 - c. Clear Span > 20 ft 14 days
 3. Sides of walls or columns
 - a. Height < 10 ft 12 hours
 - b. Height 10 – 20 ft 24 hours
 - c. Height > 20 ft 72 hours
 4. Values apply to normal concrete. Values for concrete that contains cements or admixtures that significantly retard or accelerate strength gain will be determined by the Owner and based on actual design mix data.
 5. Values apply to members designed to support significant superimposed loads.
 6. Values for members designed for only self weight when placed in service shall be 50 percent greater.
 7. Values apply to members not subject to significant horizontal loads. Additional time or rebracing is needed for members subject to significant wind or other horizontal loads.
 8. Subsequent higher lifts may be placed after 12 hours.

10.8 Finishing unformed surfaces

- A. All exposed surfaces of the concrete shall be accurately screeded to grade and then float finished, unless specified otherwise.
- B. Excessive floating or troweling of surfaces while the concrete is soft is not permitted.
- C. Adding dry cement or water to the surface of the screeded concrete to expedite finishing is not allowed.
- D. Joints and edges on unformed surfaces that will be exposed to view shall be chamfered or finished with molding tools.

10.9 Curing

- A. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. All concrete and its surfaces shall be kept from freezing during the curing period. The required curing period may be reduced if a mix is used that will accelerate the curing time. For accelerated mixes the curing time shall not be less than 3 days. Any accelerated mixes and reduced curing times must be approved by the Owner. Exposed surfaces shall be kept continuously moist for the entire period, or until curing compound is applied as specified below. Moisture shall be maintained by sprinkling, flooding, or fog spraying, or by covering with continuously moistened canvas, cloth mats, straw, sand, or other approved material. Wood forms left in place during the curing period shall be kept continuously wet. A formed surface shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged.
- B. Concrete, except at construction joints, may be coated with the approved curing compound instead of continued application of moisture, except as otherwise specified. The compound shall be sprayed on the moist concrete surface as soon as free water has disappeared, but

shall not be applied to any surface until patching, repairs, and finishing of that surface are completed. The compound shall be applied at a uniform rate of not less than 1 gallon per 175 square feet of surface and shall form a continuous adherent membrane over the entire surface. Curing compound shall be thoroughly mixed before applying and continuously agitated during application. Curing compound shall not be applied to a surface requiring bond to subsequently placed concrete, such as construction joints, shear plates, reinforcing steel, and other embedded items. If the membrane is damaged during the curing period, the damaged area shall be resprayed at the rate of application specified above. Any surface covered by the membrane shall not be trafficked unless protected from wear.

10.10 Removal and replacement or repair

- A. When concrete is honeycombed, damaged, or otherwise defective, the Contractor shall remove and replace the structure or structural member containing the defective concrete or, where feasible, correct or repair the defective parts. The Owner determines the required extent of removal, replacement, or repair. Before starting repair work, the Contractor shall obtain the Owner's approval of the plan for repairs. The final repair work will result in at least the same structural strength of the original design.

10.11 Temperature Requirements

- A. Concrete in hot weather
 - 1. The Contractor shall apply effective means to maintain the temperature of the concrete below 90 degrees Fahrenheit during mixing, conveying, and placing.
- B. Concrete in cold weather
 - 1. Concrete shall not be mixed nor placed when the daily minimum atmospheric temperature is less than 40 degrees Fahrenheit unless facilities are provided to prevent the concrete from freezing. The use of accelerators or water reducing admixtures will be approved by the Owner. Concrete shall not be placed on frozen surfaces or forms.
 - 2. Temperature requirements based on smallest section dimension:
 - a. >12" 55 – 75° F
 - b. 12 to 36" 50 – 70° F
 - c. 36 to 72" 45 – 65° F
 - >72" 40 – 60° F
 - 3. The temperature of the concrete at the time of placing shall be within the placement temperature range shown below, unless otherwise specified.
 - 4. The minimum temperature of the concrete for the first 72 hours after placement shall not be less than the minimum temperature shown above. If the minimum temperature requirements are not met and the concrete did not freeze, the protection time will be extended a period equal to twice the number of hours the temperature was below the minimum temperature. At the end of the protection period, the concrete shall be allowed to cool gradually. The maximum decrease at the concrete surface in a 24-hour period shall not exceed 40° F. The Contractor shall supply a cold weather concrete plan and monitoring plan to be approved by the Owner.

END OF SECTION

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SECTION 33 05 19 - PRESSURE PIPING TIED JOINT RESTRAINT SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tied joint restraint system.

B. Related Requirements:

1. Section 31 23 17 - Trenching: Trenching and backfilling requirements for Site utilities.
2. Section 33 11 16 - Site Water Utility Distribution Piping: Execution requirements for piping Work as required by this Section.
3. Section 40 05 13 – Ductile Iron Pipe and Fittings: Pipe materials, manholes, and accessories from outside building to connection with municipal sewers.

1.2 REFERENCE STANDARDS

A. American National Standards Institute:

1. ANSI B1.1 - Unified Inch Screw Threads, UN and UNR Thread Form.

B. ASTM International:

1. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
5. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
6. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength.
7. ASTM A588 - Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi Minimum Yield Point, with Atmospheric Corrosion Resistance.
8. ASTM A588M - Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi Minimum Yield Point, with Atmospheric Corrosion Resistance.
9. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
10. ASTM F436 - Standard Specification for Hardened Steel Washers.
11. ASTM F436M - Standard Specification for Hardened Steel Washers.

C. American Water Works Association:

1. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.

1.3 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with installation of fittings and joints that require restraint.

1.4 PREINSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Requirements for preinstallation meeting.
- B. Convene minimum one week prior to commencing Work of this Section.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit catalog data for restrained joint details and installation instructions.
- C. Shop Drawings:
 - 1. Indicate restrained joint details and materials being used.
 - 2. Submit layout drawings showing piece numbers and locations.
 - 3. Indicate restrained joint locations.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- F. Qualifications Statement:
 - 1. Submit qualifications for manufacturer, fabricator, and licensed professional.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of joint restraints.

1.7 QUALITY ASSURANCE

- A. Perform Work according to Cedar Key Water and Sewer standards.
- B. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' documented experience.

- C. Licensed Professional: Professional engineer experienced in design of specified Work and licensed at Project location.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Provide pressure pipeline with restrained joints at each bends, tees, and changes in direction.

2.2 TIED JOINT RESTRAINT SYSTEMS

- A. No dissimilar metals shall be used.
- B. Tie Bolts:
 - 1. Mechanical Joints, 2-inch and 3-inch:
 - a. 5/8 inch.
 - b. Finish: 304 Stainless Steel.
 - 2. Mechanical and Flanged Joints, 4-inch to 12-inch:
 - a. 3/4 inch.
 - b. Finish: 304 Stainless Steel.
- C. Tie Nut:
 - 1. Description: Hex nut for each tie bolt and tie rods.
 - 2. Finish: 304 Stainless Steel.
- D. Tiepin:
 - 1. Bends and Hydrants: 3/4 inch round bar stock.
 - 2. Size and Shape: 6 inch hairpin.
 - 3. Finish: 304 Stainless Steel.
- E. Tie Coupling:
 - 1. Description:
 - a. Extension of continuous-threaded rods.
 - b. Provide with center stop to aid installation.
 - 2. Finish: 304 Stainless Steel.
- F. Tie Clamp:
 - 1. Description:
 - a. Retainer clamp for ductile iron, asbestos-cement, and polyvinyl chloride push-on pipe.

- b. Locate in front of bell.
- 2. Finish: 304 Stainless Steel.

G. Tie Rod:

- 1. Description: Continuous-threaded rod for cutting to desired lengths.
- 2. Finish: 304 Stainless Steel.

H. Tie Bar:

- 1. Description: Steel bar used to restrain push-in plugs.
- 2. Finish: 304 Stainless Steel.

I. Tie Washer:

- 1. Description: Round flat washers.
- 2. Finish: 304 Stainless Steel.

2.3 MATERIALS

A. Steel:

- 1. 304 Stainless Steel: Comply with ASTM A240.

2.4 FINISHES

A. 304 Stainless Steel:

- 1. Factory applied.
- 2. Comply with ASTM A240.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that pipe and fittings are ready to receive Work.
- C. Field measure and verify conditions for installation of Work.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Clean surfaces of pipe and fittings that are to receive tied joint restraint systems.

3.3 INSTALLATION

- A. Install pipe and fittings according to AWWA C600.

- B. Install joint restraint system such that joints are mechanically locked together to prevent joint separation.
- C. Installation Standards: Install Work according to Cedar Key Water and Sewer standards.

3.4 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.
- B. Torque nuts on mating threaded fasteners from 45 ft. lb. to 60 ft. lb. for 5/8 inch nuts.
- C. Torque nuts on mating threaded fasteners from 75 ft. lb. to 90 ft. lb. for 3/4 inch nuts.
- D. Torque 1 inch nuts from 100 ft. lb. to 120 ft. lb.

END OF SECTION 33 05 19

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SECTION 33 11 16 - SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings for Site water line, including domestic water line.
2. Tapping sleeves and valves.
3. Valves: Gate, ball, swing check, and butterfly.
4. Positive displacement meters.
5. Reduced-pressure backflow preventers.
6. Underground pipe markers.
7. Valve boxes.
8. Bedding and cover materials.

B. Related Requirements:

1. Section 03 30 00 - Cast-in-Place Concrete: Concrete.
2. Section 31 23 16 - Excavation: Product and execution requirements for excavation and backfill.
3. Section 31 23 17 - Trenching: Execution requirements for trenching.
4. Section 31 23 23 - Fill: Requirements for backfill to be placed by this Section.
5. Section 33 13 00 - Disinfecting of Water Utility Distribution: Disinfection of Site service utility water piping.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Society of Sanitary Engineering:

1. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent.
2. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers.

C. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM A48M - Standard Specification for Gray Iron Castings.

3. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
5. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
6. ASTM 02737 – Standard Specification for Polyethylene (PE) Plastic Tubing.
7. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
8. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
9. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
10. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
11. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

D. American Water Works Association:

1. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
2. AWWA C504 - Rubber-Seated Butterfly Valves, 3 In. (75 mm) Through 72 In. (1,800 mm).
3. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS.
4. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
5. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
6. AWWA C606 - Grooved and Shouldered Joints.
7. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
8. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
9. AWWA C702 - Cold-Water Meters - Compound Type.
10. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
11. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.
12. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm) for Water Service.
13. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

E. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on pipe materials, pipe fittings, valves, and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

- D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work according to Cedar Key Water and Sewer standards.
- B. Maintain 1 copy of each standard affecting Work of this Section on Site.
- C. All items in Part 2 – Products shall meet the NSF-61 requirement.

PART 2 - PRODUCTS

- A. HDPE Pipe:
 - 1. Pipe: Comply with AWWA C901 and ASTM 02737.
 - a. Comply with AWWA C901.
 - b. Type: Molded or fabricated.
 - 2. Joints: Butt fusion.
- B. PVC Pipe:
 - 1. ASTM D1785, Schedule 40.
 - 2. Fittings: ASTM D2466, PVC.
 - 3. Joints:
 - a. Comply with ASTM D2855.
 - b. Type: Solvent weld.

2.2 SERVICE SADDLE

- A. Approved Manufacturer/Style:
 - 1. Ford F202.
 - 2. Romac 202NS.

B. Service Saddle:

1. Saddles shall have two stainless steel 2-inch straps.

C. Description:

1. Material: Ductile or cast iron.
2. Coating: Epoxy Nylon.

2.3 GATE VALVES

A. Approved Manufacturer: American Darling or M&H.

B. Furnish materials according to Cedar Key Water and Sewer standards.

C. 2-1/2 Inch and Smaller: Brass or bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, with control rod, valve box, and valve key.

D. Mark manufacturer's name and pressure rating on valve body.

2.4 BALL VALVES

A. Approved Manufacturer: Ford #B-11-77W or A.Y. McDonald #4134-135.

B. Furnish materials according to Cedar Key Water and Sewer standards.

C. 2 Inch and Smaller: Brass body, TEFC-coated brass ball, rubber seats and stem seals, tee stem pre-drilled for control rod, FIP inlet end, FIP outlet with electrical ground connector, with control rod, valve box, and valve key.

D. Mark manufacturer's name and pressure rating on valve body.

2.5 SWING CHECK VALVES

A. Furnish materials according to Cedar Key Water and Sewer standards.

B. 2 Inches to 24 Inches: AWWA C508, iron body, bronze trim, 45-degree swing disc, renewable disc and seat, and flanged ends.

C. Mark manufacturer's name and pressure rating on valve body.

2.6 BUTTERFLY VALVES

A. Furnish materials according to Cedar Key Water and Sewer standards.

B. 2 Inches to 24 Inches: AWWA C504, iron body, bronze disc, resilient replaceable seat, water or lug ends, 10-position lever handle.

- C. Mark manufacturer's name and pressure rating on valve body.

2.7 POSITIVE DISPLACEMENT METERS

- A. Furnish materials according to Cedar Key Water and Sewer standards.

- B. Description:

1. Comply with AWWA C700 C701 or C702.
2. Type: Positive displacement disc.
3. Case Material: Bronze.
4. Bottom Cap:
 - a. Material: Cast iron.
 - b. Type: Frost-proof, breakaway.
5. Register: Hermetically sealed.
6. Remote Reading: Comply with AWWA C706.

- C. Meter:

1. Description: Brass body turbine meter with magnetic drive register.
2. Service: Cold water, 122 degrees F.

2.8 REDUCED-PRESSURE BACKFLOW PREVENTERS

- A. Furnish materials according to Cedar Key Water and Sewer standards.

- B. Description:

1. Comply with ASSE 1013.
2. Materials:
 - a. Body: Bronze.
 - b. Internal Parts: Bronze.
 - c. Springs: Stainless steel.
3. Check Valves:
 - a. Quantity: Two.
 - b. Description: Independently operating, spring-loaded.
 - c. Type: Diaphragm type, differential pressure relief, located between check valves.
 - d. Provide third check valve opening under back pressure in case of diaphragm failure.
 - e. Vent Outlet: Non-threaded.
4. Provide two gate valves, one strainer, and four test cocks.

C. Double Check Valve Assemblies:

1. Comply with ASSE 1012.
2. Description: Two independently operating check valves, with intermediate atmospheric vent.
3. Materials:
 - a. Body: Bronze.
 - b. Internal Parts: Corrosion resistant.
 - c. Springs: Stainless steel.

2.9 UNDERGROUND PIPE MARKERS

A. Pipe markers shall be per Cedar Key Water and Sewer standard detail.

B. Polyethylene Tape:

1. Conform to ASTM D1248 – Type I Class A, Grade E-1 for polyethylene plastic molding and extrusion material.
2. Brightly colored, continuously printed.
3. Minimum 6 inches wide by 4 mil thick.
4. Manufactured for direct burial service.

2.10 VALVE BOXES

A. Approved Manufacturer: Clow, Mueller, Tyler or Bailey.

B. Furnish materials according to Cedar Key Water and Sewer standards.

C. Description:

1. Valve boxes and covers, including position indicators and valve extensions, and as indicated on Drawings.
2. Material: Cast iron with a minimum diameter of 4.5 inches.
3. Type: Extension, with slide adjustment.
4. Covers marked water to indicate utility.

2.11 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type A1 A2 or A3, as specified in Section.
2. Cover: Fill Type A1 A2 or A3, as specified in Section.
3. Soil Backfill from Above Pipe to Finish Grade:
 - a. Soil Type S1, as specified in Section.
 - b. Subsoil with no rocks over 6 inches in diameter, frozen earth, or foreign matter.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify the existing utility water main sizes, locations, and elevations are as indicated on Drawings. Water main valve size shall be verified before product submittals are submitted to the Engineer.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
- C. Remove scale and dirt on inside and outside before assembly.
- D. Prepare pipe connections to equipment with flanges or unions.
- E. Protect and support existing distribution piping and appurtenances as Work progresses.

3.3 INSTALLATION

- A. Bedding:
 - 1. Excavate pipe trench as specified in Section 31 23 17 - Trenching.
 - 2. Place bedding material at trench bottom.
 - 3. Level fill materials in continuous layers not exceeding 8 inches compacted depth.
 - 4. Compact to 95 percent of maximum density.
 - 5. Backfill around sides and to top of pipe with cover fill, tamp in place, and compact to 95 percent of maximum density.
- B. Piping:
 - 1. Maintain separation of water main from sewer piping according to code.
 - 2. Group piping with other Site piping work whenever practical.
 - 3. Install pipe to elevations indicated on Drawings.
 - 4. Install piping and fittings according to AWWA C600.
 - 5. Route pipe in straight line.
 - 6. Install access fittings to permit disinfection of water system performed under Section 33 13 00 - Disinfecting of Water Utility Distribution.
 - 7. Establish elevations of buried piping with not less than 3 feet of cover.

8. Pipe Markers:

- a. Install plastic ribbon tape and trace wire continuous over top of pipe.
- b. Coordinate with trench Work as specified in Section 31 23 17 - Trenching.

9. Installation Standards: Install Work according to Cedar Key Water and Sewer standards.

C. Meters:

1. Install positive displacement meters according to AWWA M6 with isolating valves on inlet and outlet.
2. Installation Standards: Install Work according to Cedar Key Water and Sewer standards.

D. Service Connections:

1. Install water service according to utility company requirements with reduced-pressure backflow preventer double check valve backflow preventer, and water meter with bypass valves as required.
2. Install water meter and backflow preventer in concrete vault located on Site as specified in Section as shown on drawings.
3. Installation Standards: Install Work according to Cedar Key Water and Sewer standards.

E. Disinfection:

1. Flush and disinfect system as specified in Section 33 13 00 - Disinfecting of Water Utility Distribution.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.

B. Install pipe within tolerance of 5/8 inch.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

B. Pressure test system according to AWWA C600 and following:

1. Test Pressure: Not less than 150 psig or 50 psi in excess of maximum static pressure, whichever is greater.
2. Conduct hydrostatic test for at least two hours.
3. Slowly fill with water section to be tested and expel air from piping by installing corporation cocks at high points.
4. Close air vents and corporation cocks after air is expelled and raise pressure to specified test pressure.
5. Observe joints, fittings, and valves under test. Remove and renew cracked pipes, joints, fittings, and valves showing visible leakage and retest.
6. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.

7. Maintain pressure within plus or minus 5 psi of test pressure.
8. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
9. Compute maximum allowable leakage using following formula:

$L = SD \times \sqrt{P}/C$
L = testing allowance, in gph
S = length of pipe tested, in feet
D = nominal diameter of pipe, in inches
P = average test pressure during hydrostatic test, in psig
C = 148,000
When pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.

10. When test of pipe indicates leakage greater than allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
 11. Correct visible leaks regardless of quantity of leakage.
 12. Testing shall be in accordance with Cedar Key Water and Sewer standards.
- C. Compaction Testing for Bedding: Comply with ASTM D1557.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Frequency of Compaction Tests: 1 every 2,000 Sq. Ft but not less than three.

END OF SECTION 33 11 16

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SECTION 33 13 00 - DISINFECTING OF WATER UTILITY DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Disinfection of potable water distribution system.
 - 2. Testing and reporting of results.

1.2 REFERENCE STANDARDS

- A. American Water Works Association:
 - 1. AWWA B300 - Hypochlorites.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Contractor must submit plan for testing to the ENGINEER for review at least 10 days before start of testing.
- C. Product Data: Submit procedures, proposed chemicals, and treatment levels.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 - Closeout Procedures: Requirements for submittals.
- B. Disinfection Report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Name of person collecting samples.
 - 5. Initial and 24-hour disinfectant residuals in treated water in ppm for each outlet tested.
 - 6. Date and time of flushing start and completion.
 - 7. Disinfectant residual after flushing in ppm for each outlet tested.
- C. Bacteriological Report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.
 - 4. Test locations.
 - 5. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
 - 6. Coliform bacteria test results for each outlet tested.
 - 7. Submit bacteriologist's signature and authority associated with testing.

1.5 QUALITY ASSURANCE

- A. Perform Work according to AWWA C651.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Chemicals:
 - 1. Hypochlorite: Comply with AWWA B300.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 73 00 - Execution: Requirements for installation examination.
- B. Verify that piping system has been cleaned, inspected, and pressure tested.
- C. Perform scheduling and disinfecting activity with startup, water pressure testing, adjusting and balancing, and demonstration procedures, including coordination with related systems.

3.2 INSTALLATION

- A. Provide and attach required equipment to perform Work of this Section.
- B. Introduce treatment into piping system.
- C. Maintain disinfectant in system for 24 hours.
- D. Flush, circulate, and clean until required cleanliness is achieved using municipal domestic water.
- E. Replace permanent system devices that were removed for disinfection.

3.3 FIELD QUALITY CONTROL

- A. Disinfection, Flushing, and Sampling:
 - 1. Disinfect pipeline installation according to AWWA C651.
 - 2. Use of liquid chlorine is not permitted.
 - 3. Upon completion of retention period required for disinfection, flush pipeline until chlorine concentration in water leaving pipeline is no higher than that generally prevailing in existing system or is acceptable for domestic use.
 - 4. Disposal:
 - a. Legally dispose of chlorinated water.
 - b. When chlorinated discharge may cause damage to environment, apply neutralizing chemical to chlorinated water to neutralize chlorine residual remaining in water.

- c. All treated water flushed from the lines will be disposed by discharging to the nearest sanitary storm sewer, or other approved methods.

END OF SECTION 33 13 00

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SECTION 33 32 13 - SUBMERSIBLE CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Contractor shall furnish and install the submersible non-clog pumps, related piping, supports, and all other necessary appurtenances as shown on the drawings and specified in these specifications.

1.2 SUBMITTALS

- A. Submit shop drawings, technical data, and pump curves in accordance with Section 01 33 00. Submit operation and maintenance data in accordance with Section 01 78 23.

1.3 QUALITY ASSURANCE

A. Reference Standards

1. American Iron & Steel Institute (AISI)
2. American Society for Testing and Materials (ASTM)
3. Factory Mutual (FM)
4. Hydraulic Institute Standards for Centrifugal, Rotary, and Recip Pumps (HI)
5. National Fire Protection Agency (NFPA)
6. National Electric Code(NEC)
7. National Electrical Manufacturers Association(NEMA)
8. Anti-Friction Bearing Manufacturers Association(AFBMA)
9. International Standards Organization (ISO) - ISO9001

1.4 PUMP WARRANTY

- A. The pump manufacturer shall warrant the pump, motor and guide system to the Owner against defects in workmanship and materials for a period of seven (7) years under normal use and service. A copy of each warranty shall be provided to the Owner at startup.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The Contractor shall furnish and install two (2) submersible non-clog sewage pumps for the existing lift station. Each pump shall be furnished with a stainless steel lifting cable per manufacturers recommendations.

2.2 MANUFACTURER

A. KSB

B. Approved Equal

1. All products, whether named as "acceptable" or proposed as "equal" must fully comply with these specifications. Standard product must be modified, if required, for compliance. The contractor shall base his bid price on product offered by KSB, Inc. for purposes of determining the successful bidder on this project. The contractor may submit, with the bid, an alternate proposal with applicable deduct if any for supplying product other than KSB. Alternate proposals must include a clear statement of each point of difference between the proposed alternate product and these specifications. The Owner and Engineer reserve the right to reject any bid not based on KSB product.

2.3 REQUIREMENTS

A. Lift Station #1 System Description

1. Operating Conditions - Design: 432 GPM @ 36 FT TDH @ 71.3%
2. Secondary: 124 GPM @ 56 FT TDH @ 37%
3. 3rd Condition Point: 700 GPM @ 21 FT TDH @ 54%
4. Minimum Shutoff head: 73 FT
5. Maximum Motor HP: 8.7 HP
6. Minimum Hydraulic Efficiency (at design): 70%
7. Maximum Motor RPM: 1800 RPM

B. Lift Station #6 System Description

1. Operating Conditions - Design: 200 GPM @ 54 FT TDH @ 65%
2. Secondary: 330 GPM @ 47 FT TDH @ 53%
3. Minimum Shutoff head: 85 FT
4. Maximum Motor HP: 8.7 HP
5. Minimum Hydraulic Efficiency (at design): 60%
6. Maximum Motor RPM: 1800 RPM

C. Lift Station #7 System Description

1. Operating Conditions - Design: 100 GPM @ 55 FT TDH @ 29.2%
2. Secondary: 50 GPM @ 70 FT TDH @ 18%
3. 3rd Condition Point: 280 GPM @ 20 FT TDH @ 22%
4. Minimum Shutoff head: 75 FT
5. Maximum Motor HP: 6.3 HP
6. Minimum Hydraulic Efficiency (at design): 28%
7. Maximum Motor RPM: 3600 RPM

D. Lift Station #9 System Description

1. Operating Conditions - Design: 240 GPM @ 52 FT TDH @ 67%
2. Secondary: 120 GPM @ 70 FT TDH @ 36.4%

3. Minimum Shutoff head: 77 FT
4. Maximum Motor HP: 8.7 HP
5. Minimum Hydraulic Efficiency (at design): 55%
6. Maximum Motor RPM: 1800 RPM

E. Lift Station #10 System Description

1. Operating Conditions - Design: 200 GPM @ 61 FT TDH @ 64.3%
2. Secondary: 290 GPM @ 51 FT TDH @ 53%
3. Minimum Shutoff head: 85 FT
4. Maximum Motor HP: 8.7 HP
5. Minimum Hydraulic Efficiency (at design): 63%
6. Maximum Motor RPM: 1800 RPM

2.4 MATERIALS

A. Submersible Sewage Pumps

1. Pump Case: Cast Iron, ASTM A48, Class 35B
2. Motor Housing: Cast Iron, ASTM A48, Class 35B
3. Impeller: High Chrome white iron, A532 IIC, 15% CrMo-Hc (semi-open) or Grey cast iron EN-GJL-250 (A 48 Class 35B) (vortex)
4. Intermediate Housing (Backplate): Cast Iron, ASTM A48, Class 35B
5. Discharge Base Elbow: Cast Iron, ASTM A48, Class 35B, Nitrided for wear and corrosion resistance.
6. Pump/Motor Shaft: Carbon Steel, C 45 N with replaceable ASTM A276 Type 420 shaft protection sleeve or entire shaft to be ASTM A276 Type 420 stainless steel with an ASTM A276 Type 420 shaft protection sleeve.
7. Shaft Sleeve (if applicable): Stainless Steel, ASTM A276 Type 420
8. Wear Plate: Ductile cast iron EN-GJS-600-3 (semi open only)
9. O-Rings: Nitrile Rubber (NBR)
10. Fasteners (including impeller fastener): Stainless Steel, ASTM A276 Type 316Ti.
11. Lower Seal Faces: Silicon Carbide/Silicon Carbide
12. Upper Seal Faces: Silicon Carbide stationary/Carbon rotating
13. Guide rails/cables and mounting brackets: Stainless Steel, ASTM A276 Type 304 or 316
14. Lifting Chain or cable: Stainless Steel, ASTM A276 Type 316
15. Oil-all uses (seal lubrication, etc): Ecologically safe, parifin or mineral base
16. Power/Control Cable Jacket: Chloroprene with non-wicking fillers

2.5 ACCESSORIES

A. Power Cable

1. Provide 50 ft of power/control cable with each Lift Station #6 pump, Lift Station #7 pump, Lift Station #9 pump, and Lift Station #10 pump. Provide 100 ft of power/control cable with each Lift Station #1 pump. The power cable shall be suitable for submersible wastewater application, sized in accordance with NEC requirements. Provide cable terminal box on side of motor housing, with cable entry sealed to ensure that no entry of moisture is possible into the high-voltage motor/ terminal area even if the cable is

damaged or severed below water level. Cable seal shall include a compressed rubber grommet to seal the cable exterior and epoxy fill to seal the interior passages. A strain relief device, in direct contact with both the cable and the cast iron entry housing, shall be provided. The cable entry shall be rated by Factory Mutual (or UL) for submerged operating depths to 85 feet.

B. Temperature Protection

1. Furnish temperature monitoring devices in motor windings for use in conjunction with and supplemental to external motor overload protection. Arrange controls to shut down pump should any of the monitors detect high temperature and automatically reset once motor temperature returns to normal. Set temperature monitors at levels recommended by pump manufacturer.

C. Seal Leak Detection

1. Provide a detector in the motor's stator cavity which allows a control panel mounted relay to indicate leakage into the motor. In addition, on motors 80HP and larger provide a stainless steel float switch in a separate leakage collection chamber to indicate leakage past the inner mechanical seal prior to its entrance into either the motor stator cavity or the lower bearing. Electronic probes which depend on sensing resistance value changes in seal oil will not be acceptable as seal leak indicators.

D. "PumpSafe" Motor Sensor Monitoring Relay

1. The pump supplier shall furnish all relays required for monitoring all motor sensors. The relays shall be installed by others in the motor control panel and properly wired in accordance with pump manufacturer's instructions. Relays shall mount in standard 12-pin socket bases (provided) and shall operate on available control voltage of 24-240 VAC. If relays require an input voltage that is not available in the motor control panel an adequate transformer (with fused input) shall be provided by the pump supplier. Relays shall have a power consumption of no more than 2.8 watt, and shall be UL approved. Relays shall be modular in design, with each relay monitoring no more than two motor sensor functions.
2. Each relay module shall include a dual color (red/green) LED to indicate the status of each monitored sensor. Green will indicate "status OK"; red will indicate a failure or alarm condition. A self-corrected fault will allow the relay output contacts to reset and cause the LED to change from a steady alarm indication to a flashing signal. The LED shall continue to flash until locally cleared, providing the operator an indication of a potential intermittent fault. Each relay shall also include a power-on LED and both "test" and "reset" pushbuttons.
3. An independent fail-safe (switch on power loss) form-C output contact shall be included for each monitored sensor to provide a normally-open / normally-closed dry contact to initiate a remote alarm device or shut down the motor. Contacts shall be rated for 5 amps at 120 volt.

2.6 FABRICATION

A. General

1. Provide pumps capable of handling raw unscreened wastewater. Design pumps to allow for removal and reinstallation without the need to enter the wet well and without removal of bolts, nuts, or other fasteners. Provide a pump which connects to a permanently mounted discharge connection by simple downward motion, without rotation, guided by at least two non-load-bearing guides. All system components for guide cable systems, including cable, shall be supplied, and warranted by the pump manufacturer. For guide pipe systems the pipe shall be supplied and warranted by the installing contractor. Final connection shall ensure zero leakage between pump and discharge connection flange. Provide a discharge connection/ guide system so that no part of the pump bears directly on the floor of the wet well. Provide Type 316 stainless steel chain of sufficient length to lift pumps properly and safely from the wet well. All exposed cast iron and ferrous surfaces shall be cleaned of dirt and grease, sandblasted to near white finish, and coated with an anti-corrosion reaction primer. The pump shall then be coated with two-component thick coat paint, with an epoxy resin base, having at minimum 83% solids by volume. This coating shall be non-toxic and approved for both wastewater and water applications.

B. Major Components

1. Furnish major components (pump case, impeller, intermediate housing, motor housing) of cast material as specified with smooth surfaces devoid of blow holes and other irregularities. Pump case design shall incorporate a centerline discharge for stability when mounted on the base elbow.
2. Dual Vane, Semi Open
 - a. Provide non-clog, dual vane, self-cleaning type impeller capable of handling soils, fibrous materials, heavy sludge and other matter found in wastewater. Statically and dynamically balance the impeller. On semi-open impeller designs, provide wear plate of material hardness specified, to ensure maximum pump/impeller life and continuing high efficiencies. Impellers must incorporate back vanes which reduce axial loads and propel solids away from the seal area. Do not use soft metals (i.e. bronze, cast iron, 304 or 316 stainless) or elastomers as wear plate material.
 - b. The impeller(s) shall be of the specified material, dynamically balanced, recessed, non-clogging design capable of handling soils, fibrous materials, heavy sludge and other matter found in wastewater. The impeller(s) shall have a back shroud only with back pump-out vanes to equalize axial thrust, and curved blades which protrude into the pump casing for maximum efficiency. The impeller will create a vortex which carries solids through the pump casing without passing through the blades.

C. Shaft

1. Provide common pump/motor shaft of sufficient size to transmit full driver output with a maximum deflection of 0.002 inches measured at the lower mechanical seal. Machine the shaft of carbon steel or stainless steel and isolate the shaft from the pumped media with a replaceable Type 420 stainless steel shaft sleeve under the lower mechanical seal. Pump shafts without shaft sleeves are not acceptable due to higher maintenance costs associated with repairing shafts / rotor assemblies that are left unprotected.

D. Shaft Seal

1. Provide two totally independent mechanical shaft seals, installed in tandem, each with its own independent single spring system acting in a common direction. Install the upper seal in an oil-filled chamber with drain and inspection plug (with positive anti-leak seal) for easy access from external to the pump. Provide seals requiring neither routine maintenance nor adjustment, but capable of being easily inspected and replaced. Provide seals which are non-proprietary in design, with replacements available from a source other than the pump manufacturer or its distributors. Do not provide seals with the following characteristics: conventional double mechanical seals with single or multiple springs acting in opposed direction; cartridge-type mechanical seals; seals incorporating coolant circulating impellers, seals with face materials other than those specified.

E. Bearings

1. Furnish upper and lower bearings, single row or double row as needed to provide a B10 life of, at minimum, 100,000 hours at all anticipated axial and radial loadings. Provide sealed/shielded (permanently lubricated) bearings. If open-type (non-shielded) bearings are used, provide re-lubrication ports with positive anti-leak plugs for periodic addition of lubrication from external to the pump.

F. Motor

1. Provide a motor which is squirrel cage, induction in design, housed in a completely watertight and air-filled chamber, with a min 1.15 service factor. The motor shall be adequately sized and rated for continuous operation at a maximum fluid temperature of 104° F (40° C). Allowable maximum submergence shall not be less than 100 ft (30 m). Insulate the motor stator with, at minimum, Class H insulation rated for 180 Degrees C. Windings shall be insulated using trickle impregnation process to ensure uniformity with a winding fill factor of at least 95%. The use of multiple step “dip and bake” type stator insulation method shall not be acceptable. The rotors bars and short circuit rings shall be made of cast aluminum. The motor and pump set complete shall be designed and manufactured by the same company. Provide temperature protection and seal leak detection as described in above. Provide adequately rated motor with sufficient surface area for ambient only cooling suited for the intermittent mode of operation in wet well wastewater applications, submerged or partially submerged, without damage. Motors containing di-electric oils used for motor cooling and/or bearing lubrication or motors where the pumped media or externally provided fresh water is directed through the motor shell for cooling is not acceptable.
2. Provide motors which are FM listed for use in Class I Division 1 Groups C&D hazardous locations as defined by the National Electric Code.

PART 3 - EXECUTION

3.1 INSTALLATION OF EQUIPMENT

- A. The Contractor shall install equipment as required by the manufacturer's written installation instructions and approved shop drawings unless otherwise directed by the Engineer.
- B. Excess motor and control wire shall be carefully coiled and hung inside the wet well. These wires shall not be cut, and all identification tags shall be in place. Cables shall be supported

with S.S. basket weave type strain reliefs hung in wet well and be routed in a manner that will not interfere with access to any equipment or terminals in the control panels.

3.2 SPARE PARTS

A. The following spare parts shall be supplied by the contractor for each of the pump stations:

1. (1) Set of upper and lower shaft seals
2. (1) Set of upper and lower bearings
3. (1) O-ring kit
4. Semi Open Impeller Pumps Only – (1) wear plate

3.3 PUMP TEST

A. The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:

1. Impeller, motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
2. A motor and cable insulation test for moisture content or insulation defects shall be made.
3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
4. The pump shall be run for 30 minutes submerged under a minimum of six (6) feet under water.
5. After operational test No. 4, the insulation test (No. 2) is to be performed again.

B. A written report stating the foregoing steps have been done shall be supplied with each pump at the time of shipment upon request.

C. The pump cable end will be sealed with a high quality protective covering, to make it impervious to moisture or water seepage prior to electrical installation.

END OF SECTION 33 32 13

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SECTION 40 05 13 – DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to install ductile iron pipe and fittings complete, tested, and ready for use, as shown on the Drawings and/or as specified herein.

1.2 RELATED WORK (REQUIREMENTS)

- A. Construction Drawings, Agreement Declarations, Exhibits and other Technical Specification Sections apply to this Section.

1.3 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER, within twenty (20) calendar days after receipt of Notice to Proceed, a list of materials to be furnished, and the names of the suppliers and the date of delivery of materials to the site.
- B. Submit shop drawings to the ENGINEER for review in accordance with Section 01300, showing the complete laying plan of all pipe, including all fittings, adapters, valves, and specials along with the MANUFACTURER's drawings and specifications indicating complete details of all items. The pipe details shall include a **pipe class laying schedule** which specifies pipe class, class coding, joints, station limits, and transition stations, and a list of abbreviated terms with their full meaning. The pipe class laying schedule shall also show the required bedding class as required for the pipes pressure class and bury depth. The CONTRACTOR shall provide details of fittings to be furnished. The above shall be submitted to the ENGINEER for approval before fabrication and shipment of these items. The locations of all pipes shall conform to the locations indicated on the Drawings. In most cases, a certain amount of flexibility in the positioning of pipes will be allowed. Horizontal and vertical deflections may require beveled, special deflection; or short pipes. The deflections at joints shall not exceed 75 percent of that recommended by the MANUFACTURER.
- C. Furnish in duplicate to the ENGINEER, prior to each shipment of pipe, submit MANUFACTURER's certification and certified test reports that the pipe and linings and coating for this contract was manufactured and tested in accordance with the ASTM and ANSI/AWWA Standards specified herein.

1.4 QUALIFICATIONS

- A. All ductile iron pipe and fittings shall be furnished by MANUFACTURER's who are fully experienced in the U.S. for the manufacture of the material to be furnished. The pipe and fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these Specifications.

1.5 QUALITY ASSURANCE

- A. All ductile-iron pipe and fittings shall be from a single MANUFACTURER. All ductile-iron pipe to be installed under this contract may be inspected at the foundry for compliance with these specifications by an independent testing laboratory provided by the OWNER. The CONTRACTOR shall require the MANUFACTURER's cooperation in these inspections. The cost of foundry inspection of all pipe approved for this contract will be borne by the OWNER.
- B. Inspection of the pipe will also be made by the ENGINEER or other representatives of the OWNER after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.
- C. Each joint of ductile iron pipe 30" and larger shall be hydrostatically tested at the point of manufacture to 75% of the 42,000 psi minimum yield strength for ductile iron pipe for a duration of at least ten (10) seconds. Testing may be performed prior to machining bell and spigot. Failure of ductile iron pipe shall be defined as any rupture of pipe wall. Certified test certificates shall be furnished in duplicate to the ENGINEER prior to time of shipment. The standard 500 psi hydro test will be performed on 24" and smaller pipe.

1.6 CONNECTION TO EXISTING LINES

- A. For connections to the existing lines to which the piping of this Contract must connect, the following work shall be performed:
 - 1. Exposed buried lines to confirm or determine end connection, pipe material, and diameter.
 - 2. Furnish and install appropriate piping and make proper connections.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE

- A. Ductile iron pipe and fittings 3-inches through 54-inches for buried service shall meet the following requirements:
 - 1. Ductile iron pipe shall conform to ANSI A21.51 and AWWA C151. Ductile iron pipe shall have a minimum tensile strength of 60,000 psi with a minimum yield strength of 42,000 psi and a minimum elongation of 10 percent. Thickness of pipe supplied shall not be less than Pressure Class 150 unless specifically indicated on the Drawings or specified herein. The CONTRACTOR may substitute a lower pressure class pipe by using a more conservative bedding class type as determined by the Ductile Iron Pipe Design Manual Revision 2.04 or latest. Ductile Iron Pipe shall be Pressure Class 350 for all pipe 12" in diameter and smaller. For pipe over 12" in diameter, the pressure class shall be as determined from Table 4 of the Ductile Iron Pipe Design Manual, latest edition, utilizing a minimum Type 4 Laying Condition

2. Unrestrained joint pipe shall be supplied in lengths not in excess of 20 feet. Unrestrained joint pipe shall be either the rubber-ring type, push-on joint, or standard mechanical joint pipe as manufactured by the American Cast Iron Pipe Co., U.S. Pipe and Foundry, or equal.
3. Rubber gaskets shall conform to ANSI A21.11 for mechanical and push-on type joints. Mechanical joint fittings and restrained joint pipe shall be furnished with sufficient quantities of accessories as required for each joint.
4. All below ground fittings shall be restrained mechanical or restrained push-on joints and shall be manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51, C110/A21.10, ANSI/AWWA C153/A21.53 or C111/A21.11 where applicable. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A21.11. Pipe thickness shall be designed in accordance with ANSI/AWWA C150/A21.50 and C151/A21.51. Restrained joints shall be designed to withstand vertical and longitudinal forces and be capable of holding against withdrawal with no axial movement resulting from an internal hydrostatic pressure of 150 psi.
5. Restrained pipe joints that achieve restraint by incorporating cut out sections in the wall of the pipe shall have a minimum wall thickness at the point of cut out that corresponds with the minimum specified wall thickness for the rest of the pipe.
6. Mechanical joint fittings (4"-14") shall be restrained with Series 1100 Megalug mechanical joint restraints by EBAA Iron Inc. or approved equal.
7. Restrained push-on type pipe joints and fittings shall be suitable for 150 psi working pressure for purpose as specified above and fabricated of heavy section ductile iron casting. Gaskets shall meet the material requirements of ANSI/AWWA C111 for mechanical joint gaskets. Bolts and nuts on mechanical joint pipe and fittings, below ground shall be low alloy, high strength steel equal to "Corten" conforming to ANSI A21.11 and A21.15 for Class 125 ANSI B16.1 for the purpose intended. Bolts and nuts on flanged joint pipe and fittings shall be 316 stainless steel. Restrained push-on type joints and fittings for buried pressure piping shall be as listed below:
 - a. Clow Corporation – Super-Lock: 6" – 30"
 - b. American Cast Iron Pipe – Flex Ring: 4" – 48"
 - c. American Cast Iron Pipe – Lok Ring: 42" – 64"
 - d. U.S. Pipe and Foundry – TR Flex: 4" – 64"
 - e. U.S. Pipe and Foundry -- U.S. Pipe HP Lok: 30"-64"
 - f. Engineer Approved Equal

The minimum number of restrained joints required for resisting forces at fittings and changes in direction of pipe shall be determined from the length of restrained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil as shown on the drawings.

8. Adapters to connect ductile iron fittings to pipe or fittings of dissimilar materials shall be supplied by the CONTRACTOR in accordance with the pipe MANUFACTURER recommendations, and as approved by the ENGINEER.
9. Pipe outlets where shown shall be made with tees, or factory welded-on outlets for above ground piping. Welded-on outlets shall be ductile iron, factory welded on ductile iron pipe having a minimum Pressure Class 250 for 6-inch to 12-inch sizes, Pressure Class 250 for 16-inch to 36-inch sizes, and Pressure Class 250 for 42-inch to 64-inch sizes.
10. Flexible joint pipe shall be ball and socket type self-restraining without the use of bolts and designed for a maximum working pressure of 250 psi having a class rating as recommended by the MANUFACTURER, but a minimum Class 56 for 4-inch to 24-inch sizes. Boltless restraint shall be achieved by external lugs interlocked into a retainer gland. Each joint shall be capable of a maximum deflection of 15 deg. Flexible joint pipe

shall be USIFLEX by U.S. Pipe and Foundry Company, Flex-Lok Boltless Ball Joint Pipe by American Cast Iron Pipe Company or equal. Subaqueous canal crossings shall be either flexible ball-and-joint pipe or Class 53 factory restrained joint pipe, fitting and accessories.

11. All fittings shall be cast and machined at one foundry location to assure quality control and test data. The standard grade of iron shall be 70-50-05. Analyses of the ductile iron shall be made with the chemical limits set in this standard (C110 and/or C153). Results of chemical analyses shall be provided to the ENGINEER as part of the shop drawings.

B. Ductile iron pipe and fittings 3-inches through 54-inches for above ground service or in below ground concrete pits shall meet the following requirements:

1. Ductile iron pipe shall conform to ANSI A21.51 and AWWA C151. Thickness of pipe shall be a minimum of Class 53 for all sizes of flanged pipe.
2. Flanged ductile-iron pipe shall conform to current AWWA/ANSI Specification C115/A21.15 and C110/A21.10 with factory-applied screwed long hub flanges except as otherwise specified hereinafter. Flanges shall be fully machined faced and drilled after being screwed tight on the pipe, with flanges true to 90 degrees with the pipe axis and shall be flush with end of pipe conforming to ANSI B61.1, 125 pound std. or Class 250, for the purpose intended.
3. Wall sleeve with integral water stops, or wall pipe casings with integral thrust collars shall be continuously welded on each side of the waterstop or thrust collar and shall be of the sizes and types as shown on the Drawings. Wall sleeves, where specified, shall be fabricated of Schedule 40 Type 316 stainless steel or PVC and shall have integral water stops continuously welded on each side of the waterstop. Seal strips for wall shall be included with all sleeves and shall be Link Seal as manufactured by Thunderline Corp., Wayne, Michigan, or equal. For wall sleeves over 36 inches in diameter dual sealstrips shall be provided.
4. Full face type 1/16-inch thick red rubber ring gaskets shall conform to ANSI A21.11. Ring gaskets shall be of approved composition suitable for the required service.
5. Pipe and fittings exposed to view in the finished work and to be exterior painted in accordance with Division 9 shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed on the outside in accordance with SECTION 099636 – CHEMICAL RESISTANT COATINGS FOR METALS IN WASTEWATER FACILITIES. Should portions of the pipe inadvertently be given the outside bituminous coating instead of the rust inhibitive primer as required for exposed piping the surfaces shall be sealed with a non-bleeding sealer coat compatible with the specified primer as evidenced by the Manufacturer's published information. Sealing shall be a part of the work of this section.
6. Bolts and nuts on flanged pipe and fittings shall be 316 stainless steel and shall be drilled to match ANSI B16.1 Class 125 or 250 flanges for the purpose intended.

2.2 LINING AND COATINGS

- A. All ductile iron pipe and fittings for wastewater service (including but not limited to raw sewage lines, and all process lines up to the filters including pressure and gravity mains, unless otherwise noted, shall have a ceramic epoxy lining on the interior and bituminous coating on the exterior except for 6 inches back from the spigot end. The bituminous coating shall not be applied to the first 6 inches of the exterior of the spigot ends. All pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the

interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of the pipe and fittings shall be as cast without ever having been lined with any substance prior to the application of the specified lining. Any pipe or fittings furnished for this project must not have been lined prior to the awarding of the contract for this project.

1. Lining Material - The material used for the lining shall be a two component amine cured epoxy of at least 87 percent solids. Paremax-CTF, Type II Glass Filled Epoxy by Permite Corporation, Atlanta, Georgia is the Standard of Quality. The following test requirements shall be certified by the material supplier, and a history of satisfactory performance for the material in the service required and upon the surface specified shall be submitted. The following are the minimum requirements to be met:
 - a. A permeability rating of zero permeance when a film of at least 40 mils is tested according to ASTM D1653 or a permeability rating of 0.0 perms when measured using Method A of ASTM E66 procedure A with a test duration of 42 days.
 - b. The material shall contain at least 20 percent by volume of ceramic quartz pigment in the dried film.
 - c. The following test and rating/method must be run on ductile iron panels with the results certified by the lining material supplier of the material being submitted.
 - 1) Direct Impact: ASTM D2794
 - 2) 3% Sulfuric Acid Immersion @ 120/F: ASTM D714
 - 3) 25% Sodium Hydroxide Immersion @ 140/ F: ASTM D714
 - 4) Deionized Water Immersion @ 160/ F: ASTM D714
 - 5) Moisture and Ultraviolet Light Cycle 8 Hours Light / 4 Hours 100% Humidity: ASTM G5377
2. Application of Lining – The lining shall be applied by a competent firm with at least a five-year history of applying linings to the interior of ductile pipe and fittings.
 - a. Surface Preparation: Prior to abrasive blasting the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease, or any substance which can be removed by solvent is present shall be solvent cleaned using the guidelines outlined in SSPC-SP-1 Solvent Cleaning. After the surface has been made free of grease, oil, or other substances, all areas which are to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The blast media shall strike 100 percent of the surface area at sufficient force to remove rust and oxides. The entire surface to be lined shall be struck with the blast media so that all rust, loose, oxides, etc., are removed from the surface. Only slight stains and specks of tightly adhering oxides may be left on the surface. Any area where rust appears before coating must be re-blasted to remove all rust.
 - b. Lining: After surface preparation and within 8 hours of surface preparation of the barrel of the pipe from the inside shoulder of the gasket groove to the end of the interior spigot shall receive a minimum coating of 40 mils dry film thickness of the protective lining. If flange fittings or pipe are included in the project the linings must not be used on the face of the flange; however, full face gaskets must be used to protect the ends of the pipe. All fittings shall be lined with a minimum of 40 mils of the protective lining. Push-on type fittings shall be lined from the gasket groove to the gasket groove. The 40 mils system shall not be applied in the gasket grooves.
 - c. Coating of Gasket Groove and Spigot Ends: Due to the tolerances involved, the gasket groove and spigot end up to 6 inches back from the end of the spigot end must be coated with a minimum of 10 mils dry of Joint Compound. This coating

shall be applied by brush to ensure coverage. Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All materials for the gasket groove and spigot end shall be applied after the application of the lining.

- d. Number of Coats: The number of coats of lining material applied shall be as recommended by the lining MANUFACTURER. However, in no case shall the material be applied above the dry thickness per coat recommended by the lining MANUFACTURER in printed literature. The time between coats shall never exceed that time recommended by the lining material MANUFACTURER. If at any time the lining must be recoated beyond the lining material MANUFACTURER's recommended recoat time, the surface of the existing lining shall be roughened sufficiently to prevent delamination between coats.
3. Inspection:
 - a. All pipe shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2, Level 3 film thickness testing.
 - b. The barrel of all pipe and fittings shall be pinhole detected with a nondestructive 2,500-volt pinhole test.
 - c. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on that date.
 4. Certification: The pipe or fitting MANUFACTURER must supply a certificate attesting to the fact that the Applicator met the requirements of this specification, that the material used was as specified, and that the material was applied as required by the specification.
 5. Repair: All pinholes and damaged lined areas shall be repaired in accordance with written repair procedure furnished by the MANUFACTURER of the lining material so that the repaired area is equal in performance to the undamaged lined areas.
 6. Pipe and fittings exposed to view in the finished work and to be painted in accordance with Section 09900 shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed on the outside in accordance with Section 09 90 0. Should portions of the pipe inadvertently be given the outside bituminous coating instead of the rust inhibitive primer as required for exposed piping the surfaces shall be sealed with a non-bleeding sealer coat compatible with the specified primer as evidenced by the Manufacture's published information. Sealing shall be a part of the work of this section.
 7. All exposed pipe and fittings shall be painted with the Owner's standard color for each type of process pipe and labeled with the type of process flow (WAS, RAS, MLR, AIR, etc.) along with a flow directional arrow at a maximum spacing of every 10 feet in plain view.

2.3 IDENTIFICATION

- A. Each length of pipe and each fitting shall be marked with the name of the MANUFACTURER, size, and class. All gaskets shall be marked with the name of the MANUFACTURER, size, and proper insertion directions.
- B. All below ground ductile iron pipe and fittings shall have an identification color code.
 1. Raw sewage force mains and gravity sewer pipe - Green.
 2. Reclaimed water irrigation reuse mains and service tubing - Purple, shall be Pantone 522C. Marking tape color shall be red.

- C. All buried ductile iron pipe shall be painted along its entire length with 2-inch stripes on at least three quarter points for pipe sizes 12-inches and larger. For pipe sizes smaller than 12-inches, a single 2-inch wide stripe along the top of the pipe shall be provided. Paint and marking tape colors shall be as described above.

2.4 FUTURE STRUCTURE AND MANHOLE CONNECTIONS

- A. Pipe stubs for all future manhole connections shall not be less than 24-inches in length. Watertight plugs or caps shall be furnished.

PART 3 - EXECUTION

3.1 INSTALLING DUCTILE IRON PIPE AND FITTINGS

- A. All mains shall be installed in accordance with recommendations of the pipe MANUFACTURER and as specified herein.
- B. Care shall be taken in the handling, storage, and installation of pipe and fittings to prevent injury to the pipe or coatings. All pipe and fittings shall be examined before installing, and no pipe shall be installed which is found to be defective. Pipe or fittings shall not be dropped. All damage to the pipe coatings shall be repaired according to the MANUFACTURER's recommendations.
- C. All pipe and fittings shall be kept clean and shall be thoroughly cleaned before installation.
- D. Pipe shall be laid to the lines and grades shown on the Drawings with bedding and backfill as shown on the Drawings. Blocking under the pipe will not be permitted.
- E. When installation is not in progress, including lunchtime, or the potential exists for dirt or debris to enter the pipe, the open ends of the pipe shall be closed with watertight plugs or other approved means.
- F. Under no circumstances shall the pipe or accessories be dropped into the trench.
- G. All plugs, caps, bends and other locations where unbalanced forces exist shall be anchored by restrained joints. The length of pipe for which restrained joints shall be used are shown on the Drawings.
- H. In all cases where ductile iron pipe is installed, a marking tape shall be located above the top of the pipe.
- I. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be jointed with a bell shall be beveled to conform to the manufactured spigot end. All coatings shall be repaired at cut ends.

3.2 PUSH-ON JOINTS

- A. Push-on joints shall be made in accordance with the MANUFACTURER's instructions. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated. The plain end of the pipe to be laid shall then be aligned and inserted in the bell of the pipe to which it is to be joined, and pushed home with a jack or by other means. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.

3.3 MECHANICAL JOINTS

- A. Mechanical joints 14" and smaller shall be made in accordance with Appendix A of ANSI/AWWA C111 and the MANUFACTURER's instructions. Thoroughly clean and lubricate the joint surfaces and rubber gasket with soapy water before assembly. Bolts shall be tightened to the specified torques. Under no conditions shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.

3.4 FLANGED JOINTS

- A. Flanged joints shall be installed where shown on the Drawings and as specified herein. Extreme care shall be exercised to insure that there is no restraint on opposite ends of pipe or fitting which will prevent uniform gasket compression, cause unnecessary stress, bending or torsional strains to flanges or flanged fittings. Adjoining push-on joints shall not be assembled until flanged joints have been tightened. Bolts shall be tightened alternately and evenly.

3.5 RESTRAINED JOINTS

- A. Restrained joints shall be installed at all fittings as shown on the Drawings and specified herein. The joint assemblies shall be made in accordance with the MANUFACTURER's recommendations. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.6 FLEXIBLE JOINT PIPE

- A. The flexible joint pipe shall be installed in accordance with the MANUFACTURER's recommendations. In addition, the installed deflection shall be limited to 15 deg. per joint and provisions shall be made where required to prevent flotation or buoyancy of the pipe.

3.7 SLEEVE TYPE COUPLINGS

- A. Couplings shall be installed where shown. Couplings shall not be assembled until adjoining push-on joints have been assembled. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.8 TESTING (PRESSURE PIPING INCLUDING INTRABASIN PIPING)

- A. All pressure mains shall be field tested. Hydrostatic pressure and leakage tests shall conform to Section 4 of AWWA C600. Specification with the exception that the CONTRACTOR shall furnish all gauges, meters, pressure pumps and other equipment needed to test the line.
- B. The pressure required for the field hydrostatic pressure test shall be 150 psi for all pressure mains and 50 psi for all intrabasin mains, unless otherwise noted. The CONTRACTOR shall provide temporary plugs and blocking necessary to maintain the required test pressure. Fill line slowly with water. Maintain flow velocity of less than 2.0 feet per second. Corporation cocks at least 1-inch in diameter, pipe riser and angle globe valves shall be provided at each pipe dead-end in order to bleed air from the line. Duration of pressure test shall be at least 2 hours. The cost of these items shall be included as a part of testing.
- C. The leakage test shall be a separate test at the maximum operating pressure as determined by the ENGINEER following the pressure test and shall be of not less than 2 hours duration. All leaks evident at the surface shall be repaired and leakage eliminated regardless of total leakage as shown by test. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with. Defective materials, pipes, valves and accessories shall be removed and replaced. The pipe lines shall be tested in such sections as may be approved by the ENGINEER by shutting valves or installing temporary plugs as required. The line shall be filled with water and all air removed and the test pressure shall be maintained in the pipe for the entire test period by means of a force pump to be furnished by the CONTRACTOR. Accurate means shall be provided for measuring the water required to maintain this pressure. The amount of water required is a measure of the leakage.
- D. The amount of leakage which will be permitted shall be in accordance with AWWA C600 Standards for all pressure. No pipe installation shall be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

In which L is the allowable leakage in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge.

- E. The CONTRACTOR must submit his plan for testing to the ENGINEER for review at least ten (10) days before starting the test. The CONTRACTOR shall remove and adequately dispose of all blocking material and equipment after completion and acceptance of the field hydrostatic test, unless otherwise approved by the ENGINEER. Any damage to the pipe coating shall be repaired by the CONTRACTOR. Lines shall be totally free and clean prior to final acceptance.

3.9 CLEANING

- A. At the conclusion of the work the CONTRACTOR shall thoroughly clean all of the new pipelines.

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SECTION 40 05 14 - LIFT STATION PROCESS PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to install ductile iron pipe and fittings complete, tested, and ready for use, as shown on the Drawings and/or as specified herein.

1.2 RELATED WORK (REQUIREMENTS)

- A. Construction Drawings, Agreement Declarations, Exhibits and other Technical Specification Sections apply to this Section.

1.3 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER, within twenty (20) calendar days after receipt of Notice to Proceed, a list of materials to be furnished, and the names of the suppliers and the date of delivery of materials to the site.
- B. Submit shop drawings to the ENGINEER for review in accordance with Section 01 33 00 Submittal Procedure, showing the complete laying plan of all pipe, including all fittings, adapters, valves, and specials along with the MANUFACTURER's drawings and specifications indicating complete details of all items. The pipe details shall include a **pipe class laying schedule** which specifies pipe class, class coding, joints, station limits, and transition stations, and a list of abbreviated terms with their full meaning. The pipe class laying schedule shall also show the required bedding class as required for the pipes pressure class and bury depth according to the drawings and specifications herein. The CONTRACTOR shall provide details of fittings to be furnished. The above shall be submitted to the ENGINEER for approval before fabrication and shipment of these items. The locations of all pipes shall conform to the locations indicated on the Drawings. In most cases, a certain amount of flexibility in the positioning of pipes will be allowed. Horizontal and vertical deflections may require beveled, special deflection; or short pipes. The deflections at joints shall not exceed 75 percent of that recommended by the MANUFACTURER.
- C. Furnish in duplicate to the ENGINEER, prior to each shipment of pipe, submit MANUFACTURER's certification and certified test reports that the pipe and linings and coating for this contract was manufactured and tested in accordance with the ASTM and ANSI/AWWA Standards specified herein.

1.4 QUALIFICATIONS

- A. All HDPE DR11 pipe and fittings shall be furnished by MANUFACTURER's who are fully experienced in the U.S. for the manufacture of the material to be furnished. The pipe and

fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these Specifications.

- B. All stainless steel pipe and fittings shall be furnished by MANUFACTURER's who are fully experienced in the U.S. for the manufacture of the material to be furnished. The pipe and fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these Specifications.

1.5 QUALITY ASSURANCE

- A. All HDPE DR11 pipe, PVC Schedule 80 pipe, and fittings shall be from a single MANUFACTURER. All HDPE DR11 pipe and PVC Schedule 80 pipe to be installed under this contract may be inspected at the foundry for compliance with these specifications by an independent testing laboratory provided by the OWNER. The CONTRACTOR shall require the MANUFACTURER's cooperation in these inspections. The cost of foundry inspection of all pipe approved for this contract will be borne by the OWNER.
- B. Inspection of the pipe will also be made by the ENGINEER or other representatives of the OWNER after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.
- C. Testing may be performed prior to machining bell and spigot. Failure of HDPE DR11 pipe and PVC Schedule 80 pipe shall be defined as any rupture of pipe wall. Certified test certificates shall be furnished in duplicate to the ENGINEER prior to time of shipment. The standard 500 psi hydro test will be performed on 24" and smaller pipe.

1.6 CONNECTION TO EXISTING LINES

- A. For connections to the existing lines to which the piping of this Contract must connect, the following work shall be performed:
 - 1. Exposed buried lines to confirm or determine end connection, pipe material, and diameter.
 - 2. Furnish and install appropriate piping and make proper connections.
 - 3. Coordinate with OWNER prior to connection to existing lines.

PART 2 - PRODUCTS

2.1 HDPE DR11

- A. Discharge Piping:
 - 1. Pipe and fittings shall be high-density polyethylene manufactured from NSF approved PLEXCO P34CH compound, PE 4710, or equal.

2. Pipe shall meet AWWA C-906, PE Pressure Pipe and Fittings 4” – 53” for Distribution and shall be marked with the NSF-pw logo. Force main shall be impregnated with three, 1” green stripes the length of the pipe, both equally spaced around the pipe.
3. Hydrostatic design stress (HDS) shall be 800 psi at 73.4°F with a minimum pipe DR of 11 and operating pressure of 160 psi at 73.4°F.
4. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this specification.
5. Molded fittings shall meet the requirements of ASTM D-3261 and this specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714 for the same size of pipe.
6. Pipe shall be manufactured in accordance with ASTM F-714, ASTM D-3035, or the applicable dedicated service specification. Print line markings shall include a production code from which the location and date of manufacture can be identified. Upon request, the manufacturer shall provide an explanation of his production code.
7. Pipe Marking: HDPE color coding shall be in accordance with the marking requirements specified herein.

Base Bid – High Density Polyethylene Pipe (HDPE) Pipe						
<u>Pipe Description</u>	<u>AWWA</u>	<u>Outside Di- ameter (in.)</u>	<u>DR</u>	<u>Color</u>	<u>Pressure Class (psig)</u>	<u>Inner Diameter (in.)</u>
4” HDPE FM (DIPS)	C-906	4.80	11	Green	200	3.875
6” HDPE FM (DIPS)	C-906	6.90	11	Green	200	5.570

B. ACCEPTABLE PIPE MANUFACTURER

1. Performance Pipe, Driscoplex 4000, PE 3408, AWWA C-906, DIPS sizing, Richardson TX, (800) 527-0662; Supplier: ISCO Industries, Grand Bay, AL, 1-800-345-4726
2. JM Eagle, 5200 West Century Blvd, Los Angeles, CA 90045, 1-800-621-4404
3. Engineer approved equal.

C. Butt fusion Fittings: HDPE fittings shall be PE 4710 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99, and approved for AWWA use. Butt fusion fittings shall have a manufacturing standard of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. Fabricated fittings shall be manufactured using Data Loggers. Temperature, fusion pressure, and a graphic representation of the fusion cycle shall be part of the Quality Control records. Fittings shall be suitable for use as pressure conduits, and per AWWA C906, shall have nominal burst values of three and one-half times the working pressure rating of the fitting.

D. Transition Fittings: Terminate HDPE pipe with fusion welded flanges (125 lb bolt pattern). See below for alternate fusion procedures.

2.2 JOINING METHODS

A. Butt fusion joining: Plain end pipe and fittings shall be made using butt fusion. The butt fusion procedures shall be in accordance with the manufacturer or the PPI. The fusion equipment

operator shall receive training using the recommended procedure. Contractor shall verify that the fusion equipment is in good operating condition and that the operator has been trained within the past twelve months. Fusion equipment shall be equipped with a Data Logger. Records of the welds (heater temperature, fusion pressure, and a graph of the fusion cycle) shall be maintained for five (5) years. Fusion beads shall not be removed.

- B. Mechanical Joining: Polyethylene pipe and fittings shall be joined together using flanges or mechanical joint adapters. These fittings shall be made from PE 3048 HDPE, with a Cell Classification of 345464C as determined by ASTM D3350-99. Flanged and MJ adapters shall have a manufacturing standard of ASTM D3261. They shall have a pressure rating equal to the pipe unless otherwise specified on the plans.
- C. Electrofusion couplings: Polyethylene pipe and fittings shall be joined using approved electrofusion couplings. Fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Electrofusion fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. Electrofusion fittings shall be suitable for use as pressure conduits, and per AWWA C906, shall have nominal burst values of three and one-half times the working pressure rating of the fitting.

2.3 Stainless Steel Process Piping

A. Stainless Steel Process Piping

- 1. Piping within the wet well shall be flanged schedule 10 316 stainless steel, (intermediate joints shall be welded). Fittings within the wet well shall be flanged 316 stainless steel. All nuts, bolts and accessories within the wet well shall be 316 stainless steel. All stainless steel bolts, washers and nuts shall be coated with anti-seize compound.
- 2. Pipe and fittings outside of the wet well and above ground shall be 316 stainless steel (flanged, schedule 10). All fabricated fittings shall be constructed to ANSI dimensions. If a spool piece is required, the length of the "run" or "through" dimension of a standard tee fitting of equal diameter to facilitate emergency replacement. Any variance shall be pre-approved by the OWNER prior to installation. All bolts, washers and nuts shall be coated with anti-seize compound.

2.4 Polyvinyl Chloride (PVC) Pipe Schedule 80

- A. Polyvinyl Chloride (PVC) Pipe (Class-Rated): PVC pressure pipe and accessories two to twelve inches (2"-12") in diameter, where shown or as specified on the Drawings, shall meet the requirements of AWWA Specification C-900 (DR 18) "Polyvinyl Chloride (PVC) Pressure Pipe". Each length of pipe shall be hydrotested to four (4) times its class pressure by the MANUFACTURER in accordance with AWWA C 900 and C 905. Pipe shall be listed by Underwriters Laboratories. Provisions shall be made for expansion and contraction at each joint with a elastomeric ring, and shall have an integral thickened bell as part of each joint. PVC Class pipe shall be installed in accordance with the Uni-Bell Plastic Pipe Association Guide Specification UNI-B-3-76, and as recommended by the MANUFACTURER. Pipe shall be furnished in nominal lengths of approximately 20 feet, unless otherwise approved by the ENGINEER. Pipe and accessories shall bear the mark indicating pipe size, MANUFACTURER's name, AWWA and/or ASTM Specification number, working pressure,

and production code. Pipe and couplings shall be made from Class 12454-A or Class 12454-B virgin compound, as designed in ASTM D 1784.

B. Joints:

1. The PVC line joints for below ground piping four to thirty-six inches (4"-36") in diameter shall be of the push-on type unless otherwise approved by the ENGINEER so that the pipe and fittings may be connected on the job without the use of solvent cement or any special equipment. The push-on joint shall be a single rubber gasket joint designed to be assembled by the positioning of a continuous, molded rubber ring gasket in annular recess in the pipe or fitting socket and the forcing of the plain end of the entering pipe into the socket, thereby compressing the gasket radially to the pipe to form a positive seal. The gasket and annular recess shall be designed and shaped so that the gasket is locked in place against displacement as the joint is assembled. The rubber ring joint shall be designed for thermal expansion or contraction with a total temperature change of at least 75°F in each joint per length of pipe. The bell shall consist of an integral wall section with a solid cross section elastomeric ring which shall meet requirements of ASTM D 1869. The thickened bell section shall be designed to be at least as strong as the pipe wall. Lubricant furnished for lubricating joints shall be nontoxic, shall not support the growth of bacteria, shall have no deteriorating effects on the gasket or pipe material, and shall not impart color, taste, or odor to the water.

C. Fittings: All fittings for pressure or class-rated PVC pipe for below ground piping of three to thirty-six inches (3"-36") in diameter shall be ductile iron with mechanical joints and shall conform to AWWA/ANSI specifications C110/A21.10 or C153/A21.53 for ductile iron fittings, unless otherwise approved by the ENGINEER.

1. The MANUFACTURER of the pipe shall supply all polyvinyl chloride accessories as well as any adaptors and/or specials required to perform the work as shown on the drawings and specified herein. Standard double bell couplings will not be accepted where the pipe will slip completely through the coupling.

D. Restrained Joints: Restrained joints and fittings for PVC reclaimed water irrigation mains, sewer force mains and water mains shall be EBAA Iron, Inc., Megalug Retainer Glands, Series 1600 for bell and spigot pipe (4-inch through 12-inch sizes) and Series 2000 PV for mechanical joint fittings (4-inch through 36-inch sizes). After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories. Romac 600 Series pipe restraining systems can be used (4-inch through 12-inch sizes). The minimum number of restrained joints required for resisting forces at fittings and changes in direction of pipe shall be determined from the length of restrained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil as shown on the drawings. All bolts and nuts for restrained joints shall be 304 Stainless Steel.

2.5 LINING AND COATINGS

- A. All ductile fittings for wastewater service lines shall have a Sherwin Williams or Permax lining on the interior and bituminous coating on the exterior except for 6 inches back from the spigot end. The bituminous coating shall not be applied to the first 6 inches of the exterior of the spigot ends. All fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the interior surface. Because removal of old linings may not be

possible, the intent of this specification is that the entire interior of the fittings shall be as cast without ever having been lined with any substance prior to the application of the specified lining. Any fittings furnished for this project must not have been lined prior to the awarding of the contract for this project.

1. Lining Material – Refer to Specification 33 31 00 – Sanitary Sewerage Piping, Section 2.1.C. The following test requirements shall be certified by the material supplier, and a history of satisfactory performance for the material in the service required and upon the surface specified shall be submitted. The following are the minimum requirements to be met:
 - a. A permeability rating of zero permeance when a film of at least 40 mils is tested according to ASTM D1653 or a permeability rating of 0.0 perms when measured using Method A of ASTM E66 procedure A with a test duration of 42 days.
 - b. The material shall contain at least 20 percent by volume of ceramic quartz pigment in the dried film.
 - c. The following test and rating/method must be run on ductile iron panels with the results certified by the lining material supplier of the material being submitted.
 - 1) Direct Impact: ASTM D2794
 - 2) 3% Sulfuric Acid Immersion @ 120/F: ASTM D714
 - 3) 25% Sodium Hydroxide Immersion @ 140/ F: ASTM D714
 - 4) Deionized Water Immersion @ 160/ F: ASTM D714
 - 5) Moisture and Ultraviolet Light Cycle 8 Hours Light / 4 Hours 100% Humidity: ASTM G5377
2. Application of Lining – The lining shall be applied by a competent firm with at least a five-year history of applying linings to the interior of ductile pipe and fittings.
 - a. Surface Preparation: Prior to abrasive blasting the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease, or any substance which can be removed by solvent is present shall be solvent cleaned using the guidelines outlined in SSPC-SP-1 Solvent Cleaning. After the surface has been made free of grease, oil, or other substances, all areas which are to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The blast media shall strike 100 percent of the surface area at sufficient force to remove rust and oxides. The entire surface to be lined shall be struck with the blast media so that all rust, loose, oxides, etc., are removed from the surface. Only slight stains and specks of tightly adhering oxides may be left on the surface. Any area where rust appears before coating must be re-blasted to remove all rust.
 - b. Lining: After surface preparation and within 8 hours of surface preparation, the fitting shall receive a minimum coating of 40 mils dry film thickness of the protective lining. If flange fittings are included in the project the linings must not be used on the face of the flange; however, full face gaskets must be used to protect the ends of the pipe. All fittings shall be lined with a minimum of 40 mils of the protective lining. Push-on type fittings shall be lined from the gasket groove to the gasket groove. The 40 mils system shall not be applied in the gasket grooves.
 - c. Coating of Gasket Groove and Spigot Ends: Due to the tolerances involved, the gasket groove and spigot end up to 6 inches back from the end of the spigot end must be coated with a minimum of 10 mils dry of the lining product. This coating shall be applied by brush to ensure coverage. Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All

materials for the gasket groove and spigot end shall be applied after the application of the lining.

- d. Number of Coats: The number of coats of lining material applied shall be as recommended by the lining MANUFACTURER. However, in no case shall the material be applied above the dry thickness per coat recommended by the lining MANUFACTURER in printed literature. The time between coats shall never exceed that time recommended by the lining material MANUFACTURER. If at any time the lining must be recoated beyond the lining material MANUFACTURER's recommended recoat time, the surface of the existing lining shall be roughened sufficiently to prevent delamination between coats.
3. Inspection:
 - a. All fittings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 film thickness testing.
 - b. The fittings shall be pinhole detected with a nondestructive 2,500-volt pinhole test.
 - c. Each fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on that date.
 4. Certification: The pipe or fitting MANUFACTURER must supply a certificate attesting to the fact that the Applicator met the requirements of this specification, that the material used was as specified, and that the material was applied as required by the specification.
 5. Repair: All pinholes and damaged lined areas shall be repaired in accordance with written repair procedure furnished by the MANUFACTURER of the lining material so that the repaired area is equal in performance to the undamaged lined areas.
 6. Fittings exposed to view in the finished work and to be painted shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed on the outside.
 7. All exposed fittings shall be painted with the Owner's standard color for sewer or water.

2.6 IDENTIFICATION

- A. Each length of pipe and each fitting shall be marked with the name of the MANUFACTURER, size, and class. All gaskets shall be marked with the name of the MANUFACTURER, size, and proper insertion directions.
- B. All below ground PVC Schedule 80 pipe and fittings shall have an identification color code.
 1. Raw sewage force mains and gravity sewer pipe - Green.

PART 3 - EXECUTION

3.1 INSTALLING OF PROCESS PIPE AND FITTINGS

- A. All mains shall be installed in accordance with recommendations of the pipe MANUFACTURER and as specified herein.
- B. Care shall be taken in the handling, storage, and installation of pipe and fittings to prevent injury to the pipe or coatings. All pipe and fittings shall be examined before installing, and no pipe shall be installed which is found to be defective. Pipe or fittings shall not be dropped. All

damage to the pipe coatings shall be repaired according to the MANUFACTURER's recommendations.

- C. All pipe and fittings shall be kept clean and shall be thoroughly cleaned before installation.
- D. Pipe shall be laid to the lines and grades shown on the Drawings with bedding and backfill as shown on the Drawings. Blocking under the pipe will not be permitted.
- E. When installation is not in progress, including lunchtime, or the potential exists for dirt or debris to enter the pipe, the open ends of the pipe shall be closed with watertight plugs or other approved means.
- F. Under no circumstances shall the pipe or accessories be dropped into the trench.
- G. All plugs, caps, bends and other locations where unbalanced forces exist shall be anchored by restrained joints. The length of pipe for which restrained joints shall be used are shown on the Drawings.
- H. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be jointed with a bell shall be beveled to conform to the manufactured spigot end. Lining shall be undamaged.

3.2 PUSH-ON JOINTS

- A. Push-on joints shall be made in accordance with the MANUFACTURER's instructions. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated. The plain end of the pipe to be laid shall then be aligned and inserted in the bell of the pipe to which it is to be joined, and pushed home with a jack or by other means. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.

3.3 MECHANICAL JOINTS

- A. Thoroughly clean and lubricate the joint surfaces and rubber gasket with soapy water before assembly. Bolts shall be tightened to the specified torques. Under no conditions shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.

3.4 FLANGED JOINTS

- A. Flanged joints shall be installed where shown on the Drawings and as specified herein. Extreme care shall be exercised to insure that there is no restraint on opposite ends of pipe or fitting which will prevent uniform gasket compression, cause unnecessary stress, bending or torsional strains to flanges or flanged fittings. Adjoining push-on joints shall not be assembled until flanged joints have been tightened. Bolts shall be tightened alternately and evenly.

3.5 RESTRAINED JOINTS

- A. Restrained joints shall be installed at all fittings as shown on the Drawings and specified herein. The joint assemblies shall be made in accordance with the MANUFACTURER's recommendations. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.6 FLEXIBLE JOINT PIPE

- A. The flexible joint pipe shall be installed in accordance with the MANUFACTURER's recommendations. In addition, the installed deflection shall be limited to 15 deg. per joint and provisions shall be made where required to prevent flotation or buoyancy of the pipe.

3.7 SLEEVE TYPE COUPLINGS

- A. Couplings shall be installed where shown. Couplings shall not be assembled until adjoining push-on joints have been assembled. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.8 CLEANING

- A. At the conclusion of the work the CONTRACTOR shall thoroughly clean all of the new pipelines.

END OF SECTION 40 05 13

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SECTION 40 05 23.21 - PLUG VALVES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Eccentric plug valves.

1.2 REFERENCE STANDARDS

- A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.
2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard.
3. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.
4. ASME B1.20.1 - Pipe Threads, General Purpose Inch.

- B. ASTM International:

1. ASTM A536 - Standard Specification for Ductile Iron Castings.
2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

- C. American Water Works Association:

1. AWWA C517 - Resilient-Seated Cast-Iron Eccentric Plug Valves.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Product Data:

1. Submit catalog information, indicating materials of construction and compliance with indicated standards.

- C. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

PART 2 PRODUCTS

2.1 ECCENTRIC PLUG VALVES

- A. Manufacturers:

1. Dezurik
2. Val-Matic
3. American Flow Control.
4. Clow
5. Kennedy
6. M&H
7. Mueller
8. Substitutions: Section 01 60 00 – Product Requirements

B. Description:

1. Type: Non-lubricated, eccentric.
2. Minimum Working Pressure:
 - a. Sizes through 12 inches: 175 psi at 300 degrees F.
 - b. Sizes through 14 inches thought 72 inches: 150 psi at 300 degrees F.
3. Ports: Port area 100 percent of nominal pipe area .
4. Stem Bearings: Self-lubricating.
5. Stem Seals: Neoprene; V-ring type.
6. Packing and Gland: Accessible and externally adjustable.
7. End Connections: ASME B16.1, ASME B16.5, ASME B16.42, flanged.

C. Operation:

1. 3 inches and Smaller: Lever.
2. Greater than 3 inches: Worm gear manual operators with handwheel.
3. Furnish gear operators for valves 8 inches and larger, and chainwheel operators for valves mounted over 5 feet above floor.

D. Materials:

1. Body: AWWA C517, cast iron.
2. Plug: Hard Rubber, lined with resilient coating as recommended by valve manufacturer for service conditions.
3. Seats: Nickel.
4. Stem: Type 316 stainless steel.
5. Stem Bearings: Stainless steel.
6. Seals: PTFE.
7. Connecting Hardware: Type 316 stainless steel.

E. Finishes: As specified in Section 099636. Finishes are applicable for all valves.

2.2 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Performance Testing:

1. Operate each valve and actuator from fully CLOSED to fully OPEN to fully CLOSED under no-flow conditions.
- C. Leakage Testing:
1. Test at indicated working pressure to ensure valves are drip-tight. Test with pressure in both directions for five minutes each way.
- D. Hydrostatic Testing:
1. Perform test at twice rated pressure. Test for at least one minute to ensure no leakage.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install valves according to AWWA C517 and as recommended by manufacturer.
- B. Install plug valves in horizontal piping with stem horizontal; install plug valves in vertical piping with plug at top when closed.
- C. Install such that plugs are on top when OPEN and on pressure side when CLOSED.

END OF SECTION 40 05 23.21

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SECTION 40 05 23.72 - MISCELLANEOUS PROCESS VALVES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Horizontal Swing Check Valves
2. Air & Vacuum Valves

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.
2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard.
3. ASME B16.11 - Forged Fittings, Socket-Welding and Threaded.
4. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.
5. ASME B1.20.1 - Pipe Threads, General Purpose Inch.

B. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
2. ASTM A536 - Standard Specification for Ductile Iron Castings.
3. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
4. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit catalog information, indicating materials of construction and compliance with indicated standards.

C. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

1.4 WARRANTY

- A. Section 01 77 00 – Closeout Procedures.
- B. Furnish five-year manufacturer's warranty for pressure-reducing and pressure-sustaining valves, against cavitation damage.

PART 2 PRODUCTS

2.1 HORIZONTAL SWING CHECK VALVES

A. Manufacturers.

- 1. Val-Matic
- 2. American Flow Control.
- 3. Clow
- 4. Kennedy
- 5. M&H
- 6. Dezurik
- 7. Substitutions: Section 01 60 00 - Product Requirements.

B. Description:

- 1. AWWA C508.
- 2. Type: Swing, resilient-seated, with outside lever and adjustable weight.
- 3. Working Pressure: 150 psig at 100 degrees F.
- 4. Flow Area: Full open, equal to connecting nominal pipe diameter.
- 5. Provide check valves 6 inches and larger with adjustable air cushion chambers.
- 6. Mounting: Horizontal or vertical.
- 7. End Connections: ASME B16.1, flanged ASME B16.42, or flanged Mechanical joint.

C. Materials:

- 1. Body and Cover: ASTM A536, ductile iron.
- 2. Disc: ASTM B62, bronze.
- 3. Shaft: Type 316 Stainless Steel.
- 4. Spring: Type 316 Stainless Steel.
- 5. Seat: Field-replaceable, ASTM B62, bronze.
- 6. Chamber and Plunger: ASTM B62, bronze.
- 7. Hinge Pin and Key: Type 316 Stainless steel.
- 8. Packing and O-Ring: Buna-N.
- 9. Rubber Components: Buna-N.
- 10. Connecting Hardware: Type 316 stainless steel

2.2 AIR & VACUUM VALVES

A. Manufacturers

1. ARI Flow Control Accessories, Product D-0205 with Nylon Body.
2. Bermad, Product WW2C50SPPDEV5

B. Product

1. The valve shall be designed to operate with liquids carrying solid particles such as raw sewage. The air and vacuum air valve shall discharge air at high flow rates during the filling of the system and admit air into the force main at high flow rates during its drainage. High velocity air cannot blow the float shut. Sewage entry to the lower portion of the valve will cause the sealing of the valve. At any time during system operation, should internal pressure of the system fall below atmospheric pressure, air will re-enter the system. The smooth release of air shall prevent pressure surges and other destructive phenomena to the force main. Admitting air in response to negative pressure protects the force main from destructive vacuum conditions and prevents damage caused by water column separation. Air re-entry is essential to efficiently drain the force main.
2. Working pressure range: 3 – 230 psi. Testing Pressure: 360 psi.
3. The valve's design shall prevent any contact between sewage and the sealing mechanism by creating an air gap at the top of the valve, under all operating conditions.
4. The conical body shape shall be designed to maintain the maximum distance between the liquid and the sealing mechanism.
5. A spring-loaded joint is to be furnished between the stem and the upper float. Vibrations of the lower float will not unseal the automatic valve. Release of air will occur only after enough air accumulates.
6. The funnel-shaped lower body shall be designed to ensure that residue sewage matter will re-enter the force main and will not remain in the valve.
7. Maintenance flushing shall be provided while the valve is under pressure, by opening a full port type 316 S.S. ball valve in the valve's lower body.
8. All inner metal parts of the valve shall be made of stainless steel SAE 316.
9. The valve shall be provided with an AWWA/ANSI C115 flanged joint at the base of the body. Option for threaded connections to comply per recommendations/specifications of the manufacturer.

C. Materials:

1. Body and Cover: Nylon.
2. Float, Seat, and Trim: Type 316 stainless steel.
 - a. Working Pressure: 150 psig.
 - b. Size: As indicated on Drawings.
 - c. End Connections:
 - d. Size 1/2 to 3 Inches: Threaded.
 - e. Size 4 Inches and Larger: Flanged.

D. Insulation

1. As indicated on Drawings.

E. Finishes

1. Prepare piping appurtenances for field finishes as specified in Specification 099636.

2.3 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Pressure and Leakage Testing:

1. Leakage Testing:

- a. Test each assembled valve hydrostatically at 1-1/2 times rated working pressure for a minimum five minutes.
- b. Test each valve for leakage at rated working pressure against closed valve.
- c. Permitted Leakage: None.

2. Functional Testing:

- a. Test each valve to verify specified performance.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with the drawings and manufacturer's recommendations and instructions.

B. Install pipe supports as indicated and as required such that pipe loads are not transferred to the valve nor valve loads transferred to the piping.

END OF SECTION 40 05 23.72

SECTION 40 05 70
MODULA PIPE SEALS

PART 1 GENERAL

1.1 SUMMARY

- A. Provide modular link type pipe wall penetration seals as indicated on the contract drawings or as needed.

1.2 REFERENCE STANDARDS

- A. ASTM F593 – Type 316 Stainless Steel hardware

1.3 SUBMITTALS

- A. All materials and procedures required to establish compliance with the specifications shall be submitted upon request to the owner/engineer for review/approval. Submittals shall include at least the following:
 - 1. Technical Data Sheet on each product used.
 - 2. Safety Data Sheet (SDS) for each product used.
 - 3. Manufacturer's Certification of Applicator.
 - 4. Descriptive literature, bulletins and or catalogs of materials.

1.4 QUALITY ASSURANCE

- A. Pipe seals shall be suitable for corrosive environments for temperatures from -40° F to +255° F.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Modular pipe seal shall consist of interlocking links of EPDM elastomer selected for the application.
- B. Modular pipe seal shall be suitable for installation into core drilled openings or into a wall sleeve.
- C. Modular link seal shall be rated for 20 PSI.
- D. Hardware shall be Type 316 Stainless Steel.
- E. Pressure Plates shall be fiberglass reinforced plastic.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Rubber modular link type pipe wall penetration seals joints shall be installed per manufacturer's instructions.
- B. Use manufacturer's documentation to properly select the correct size and number of links.

END OF SECTION

10/27/2023

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123503.01

MODULAR PIPE SEALS

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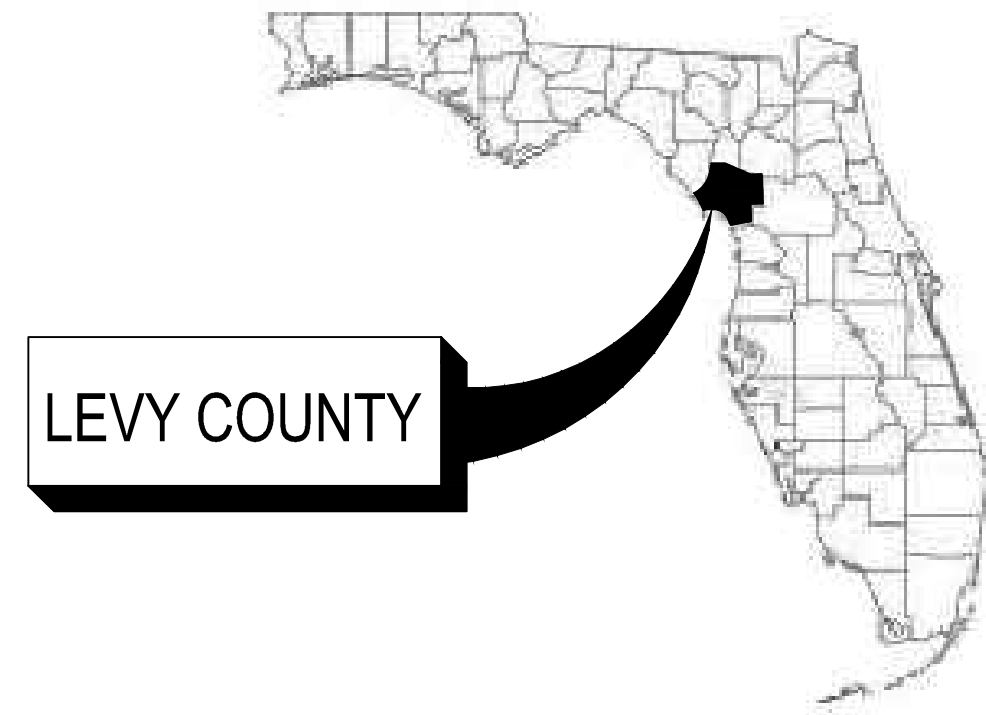
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APPENDIX H
CONSTRUCTION PLANS

CONSTRUCTION PLANS FOR CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION

PREPARED FOR
CEDAR KEY WATER & SEWER DISTRICT

510 3RD STREET
P.O. BOX 309
CEDAR KEY, FL 32625



**Cedar Key
Water & Sewer District**

BOARD MEMBERS

STEPHEN ROSENTHAL	BOARD MEMBER
MICHAEL BORELLI	BOARD MEMBER
JOE HAND	BOARD MEMBER
LESLIE STURMER	BOARD MEMBER
JOHNATHAN FERGUSON	BOARD MEMBER
JAMES McCAIN	GENERAL MANAGER

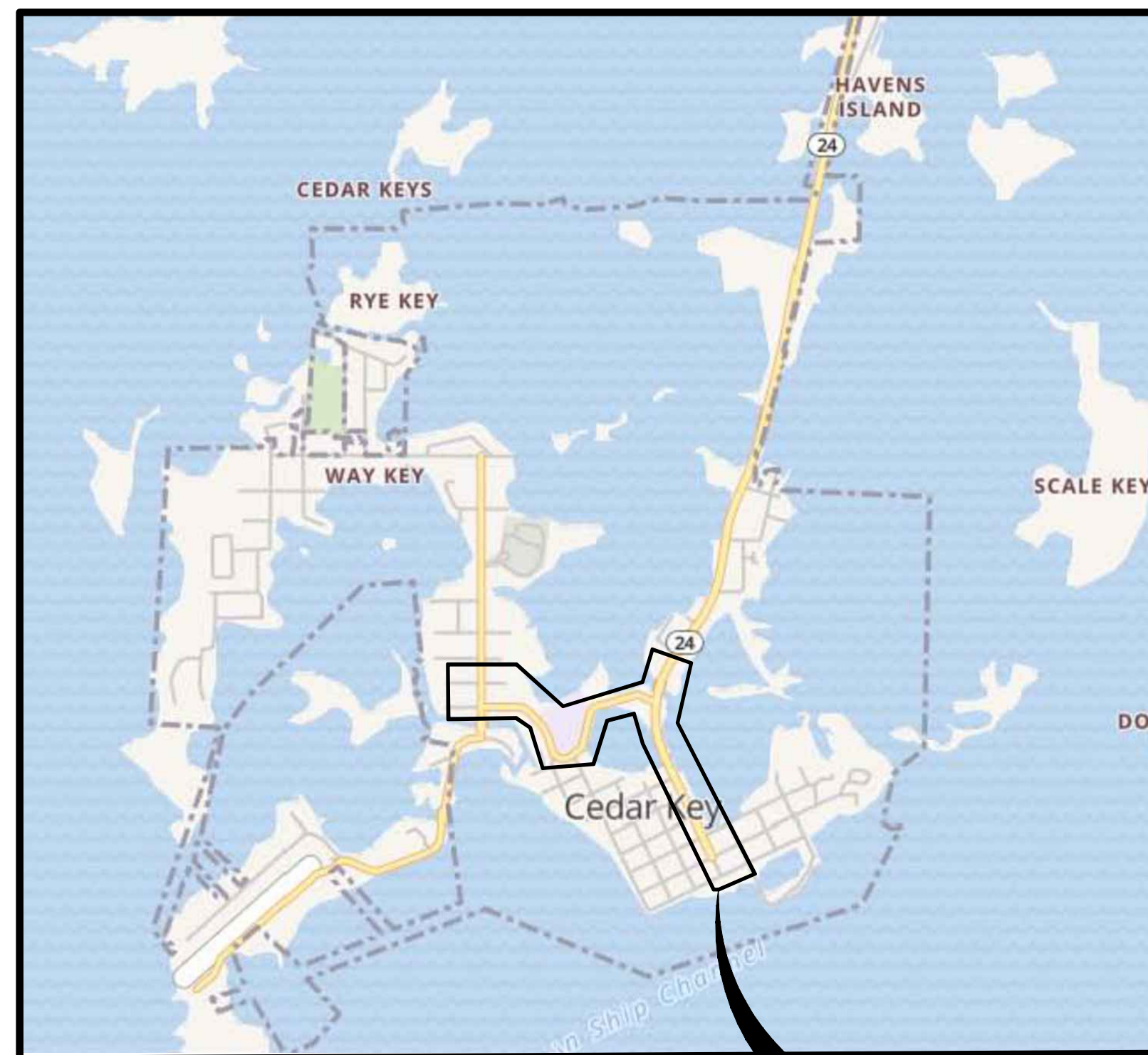
BASKERVILLE-DONOVAN, INC.
ENGINEERING THE SOUTH SINCE 1927

449 WEST MAIN ST.
PENSACOLA, FLORIDA 32502
(850)438-9661

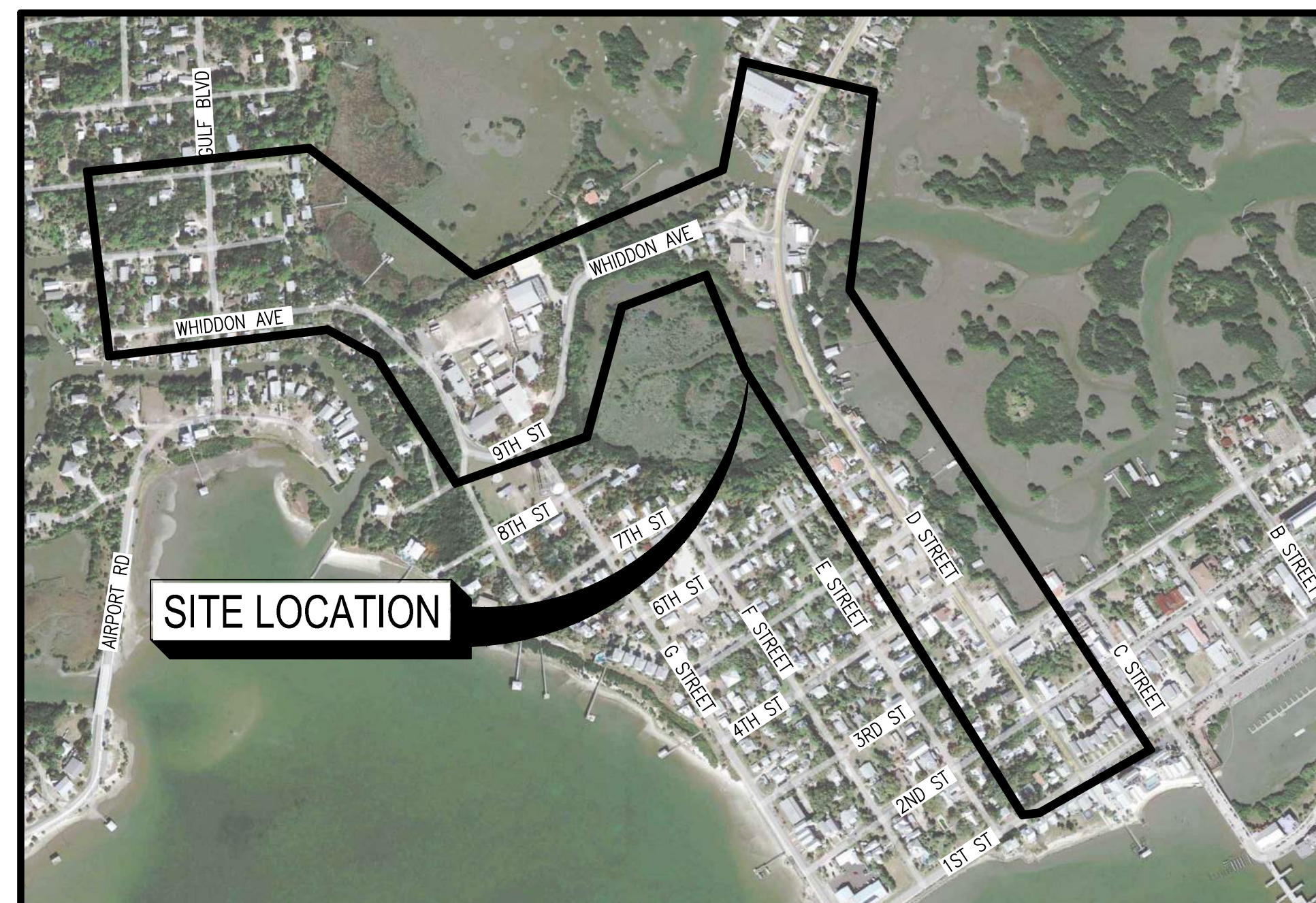
ENGINEERING BUSINESS: EB-0000340

PROJECT NO. 123503.01
JANUARY 2024

VICINITY MAP

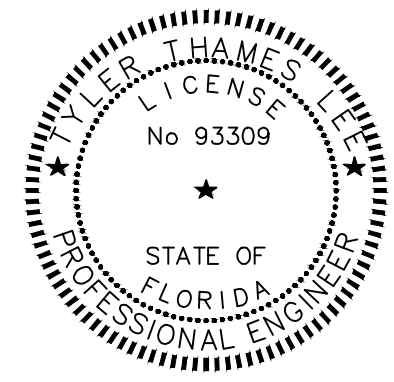


PROJECT LOCATION



LOCATION MAP

RELEASE FOR BID



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

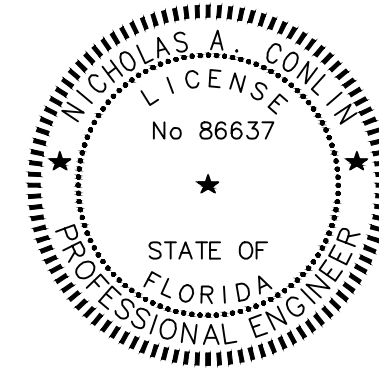
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

BASEKRVILLE-DONOVAN, INC.
449 W. MAIN STREET
PENSACOLA, FL 32501
TYLER THAMES LEE, P.E. NO. 93309

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

SHEET No. SHEET TITLE

G-000	COVER SHEET
G-00A	SIGNATURE SHEET
G-001	GENERAL NOTES
C-001	CIVIL LEGEND AND SYMBOLS
C-100	LS 1 - EXISTING & DEMOLITION PLAN
C-101	LS 1 - PROPOSED SITE PLAN
C-102	LS 6 - EXISTING & DEMOLITION PLAN
C-103	LS 6 - PROPOSED SITE PLAN
C-104	LS 7 - EXISTING & DEMOLITION PLAN
C-105	LS 7 - PROPOSED SITE PLAN
C-106	LS 9 - EXISTING & DEMOLITION PLAN
C-107	LS 9 - PROPOSED SITE PLAN
C-108	LS 10 - EXISTING & DEMOLITION PLAN
C-109	LS 10 - PROPOSED SITE PLAN
C-900	STANDARD DETAILS
C-901	STANDARD DETAILS
C-902	STANDARD DETAILS
C-905	FDOT STANDARD DETAILS
C-906	FDOT STANDARD DETAILS
C-907	FDOT STANDARD DETAILS
C-908	FDOT STANDARD DETAILS
C-909	FDOT STANDARD DETAILS
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C-913	FDOT STANDARD DETAILS
C-914	FDOT STANDARD DETAILS
C-915	FDOT STANDARD DETAILS
C-916	FDOT STANDARD DETAILS
C-917	FDOT STANDARD DETAILS
C-918	FDOT STANDARD DETAILS
M-900	STANDARD DETAIL FOR LIFT STATION DEMOLITION
M-901	STANDARD DETAIL FOR LIFT STATION 6, 9, & 10 IMPROVEMENTS
M-902	STANDARD DETAIL FOR LIFT STATION 1 & 7 IMPROVEMENTS
M-903	STANDARD DETAILS



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

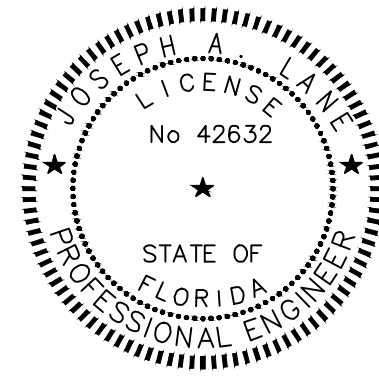
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EBBSTONE, INC.
3370 CAPITAL CIRCLE NE, SUITE J
TALLAHASSEE, FL 32308
NICHOLAS A. CONLIN, P.E. NO. 86637

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

SHEET No. SHEET TITLE

G-000 A	SIGNATURE SHEET
S-100	STRUCTURE NOTES
S-101	LIFT STATION PLAN
S-102	STRUCTURE PLANS
S-103	STRUCTURE DETAILS
S-104	STRUCTURE DETAILS



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

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NHWL ENGINEERING, INC.
2888 REMINGTON GREEN LANE
TALLAHASSEE, FL 32308
JOSEPH A. LANE, P.E. NO. 42632

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

SHEET No. SHEET TITLE

G-000 A	SIGNATURE SHEET
E-101	LS1 SITE
E-102	LS1 DIAGRAMS
E-103	LS1 CTRL PANEL
E-104	LS1 WIRING
E-105	LS6 SITE
E-106	LS6 DIAGRAMS
E-107	LS6 CTRL PANEL
E-108	LS6 WIRING
E-109	LS7 SITE
E-110	LS7 DIAGRAMS
E-111	LS7 CTRL PANEL
E-112	LS7 WIRING
E-113	LS9 SITE
E-114	LS9 DIAGRAMS
E-115	LS9 CTRL PANEL
E-116	LS9 WIRING
E-117	LS10 SITE
E-118	LS10 DIAGRAMS
E-119	LS10 CTRL PANEL
E-120	LS10 WIRING

BASKERVILLE-DONOVAN, INC.
ENGINEERING THE SOUTH SINCE 1927
449 W. MAIN ST. PENSACOLA, FL 32502 (850)438-8661
ENGINEERING BUSINESS EB-000340
Pensacola - Panama City Beach - Tallahassee - Mobile
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TYLER T. LEE
FL. Reg. Engineer #93309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO:	123503.01
DESIGNED BY:	TTL
DRAWN BY:	RGG
CHK'D BY:	RWD
PROJ. MGR:	JWJ
DATE:	FEBRUARY 2023
NO.	
DATE	
APPR.	
REVISION/ACTION TAKEN	

SIGNATURE SHEET

G-00A

GENERAL NOTES

1. THE CONTRACTOR IS REQUIRED TO VISIT THE SITE AND COMPLETELY FAMILIARIZE HIMSELF WITH THE PROJECT PRIOR TO BIDDING.
2. THE INFORMATION PROVIDED IN THESE DRAWINGS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS WHICH WILL BE ENCOUNTERED DURING THE COURSE OF WORK. THE BIDDERS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSION REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH BIDS WILL BE BASED.
3. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES AND DETERMINE IF OTHER UTILITIES WILL BE ENCOUNTERED DURING THE COURSE OF THE WORK AND TAKE WHATEVER STEPS NECESSARY TO PROVIDE FOR THEIR PROTECTION. LOCATION EFFORTS SHALL INCLUDE SUNSHINE ONE CALL LOCATIONS AND SPOT DIGGING AS NECESSARY TO LOCATE ALL UTILITIES WITHIN THE WORK AREA. CONTRACTOR SHALL REPAIR ANY DAMAGE TO THE UTILITIES ARISING FROM HIS WORK IN ACCORDANCE WITH UTILITY STANDARDS AT NO COST TO THE OWNER. CONTRACTOR SHALL REIMBURSE ALL OTHER UTILITIES FOR REPAIR OF DAMAGES TO THEIR UTILITIES AT NO ADDITIONAL COST TO THE OWNER.
4. ALL SITE WORK, MATERIAL AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH UTILITY STANDARDS, AND THE FDOT AND FDEP REQUIREMENTS. IN THE EVENT OF CONFLICTS OR OMISSIONS FROM THE CONSTRUCTION DOCUMENTS, UTILITY STANDARDS SHALL PREVAIL.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL STRUCTURES, EQUIPMENT, AND UTILITIES NOT MARKED FOR REMOVAL OR DEMOLITION AND SHALL PROMPTLY REPAIR ANY DAMAGE AS DIRECTED BY THE ENGINEER.
6. ALL DISTURBED ROADWAYS AND DRIVEWAYS SHALL BE RESTORED TO THEIR EXISTING PRE CONSTRUCTION CONDITION OR BETTER.
7. NO BURNING WILL BE ALLOWED AT ANY SITE.
8. CONTRACTOR TO DISPOSE OF EXCESS EXCAVATED MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
9. ANY DEVIATIONS FROM THE APPROVED PLANS WILL REQUIRE APPROVAL FROM THE OWNER, THE PROJECT ENGINEER AND FDOT (IF WITHIN THE FDOT RIGHT OF WAY)
10. ALL TREES OUTSIDE OF EASEMENTS OR NOT LABELED FOR REMOVAL SHALL BE PROTECTED.
11. B.M. DATUM IS NAD83.
12. ADEQUATE PROVISIONS SHALL BE MADE FOR THE FLOW OF SEWERS, DRAINS, WATER COURSES AND OTHER UTILITIES ENCOUNTERED DURING CONSTRUCTION.
13. ALL PAVEMENT CUTS SHALL BE SAW CUT.
14. ALL TREES IN THE PROJECT AREA ARE TO REMAIN UNDAMAGED UNLESS NOTED FOR REMOVAL OR APPROVED BY THE ENGINEER.
15. THE CONTRACTOR IS TO REPLACE TO EXISTING CONDITIONS OR BETTER ANY FENCES, SPRINKLER SYSTEMS, TREES AND SHRUBS, MAINTAINED FLOWER BEDS, OR OTHER EXISTING IMPROVEMENTS IMPACTED DURING CONSTRUCTION, WHETHER DEPICTED IN THE PLANS OR NOT.
16. ALL NEW CONCRETE FOR SITE WORK SHALL ACHIEVE A 28 DAY STRENGTH OF 3000 PSI (MIN.), UNLESS OTHERWISE SPECIFIED.
17. ALL EXISTING CONCRETE, ASPHALT, TREES, STUMPS AND OTHER DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH FLORIDA LAWS.
18. A TWO AND ONE HALF FOOT STRIP OF SOD SHALL BE INSTALLED ON THE EDGE OF ALL ASPHALT AREAS AND AROUND ALL ABOVE GROUND CONCRETE STRUCTURES INCLUDING BUT NOT LIMITED TO VALVE PADS, BLOW OFF VAULTS, AND AIR RELEASE VAULTS. ALL OTHER DISTURBED AREAS SHALL BE RESTORED WITH SEED AND MULCH UNLESS OTHERWISE SPECIFIED IN PLANS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BY-PASS PUMPING AND SHALL BE INCLUDED IN THE BID PRICE.
20. CONTRACTOR SHALL PROVIDE ALL DEWATERING FOR CONSTRUCTION AND SHALL BE INCLUDED IN THE BID PRICE.

EROSION CONTROL NOTES

1. CONTRACTOR SHALL SAFETY-BARRICADE ALL OPEN EXCAVATIONS AND OTHER HAZARDS.
2. THE CONTRACTOR SHALL EMPLOY THE USE OF SILT FENCES, HAY BALES, DITCHES OR WHATEVER MEANS NECESSARY TO CONTROL EROSION AND SEDIMENTATION AT ALL TIMES. WATERS OF THE STATE, ADJACENT PROPERTIES, AND ANY NEW DRAINAGE CONSTRUCTION SHALL BE PROTECTED DURING THE CONSTRUCTION PERIOD. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND SHALL REMAIN UNTIL THE COMPLETION OF CONSTRUCTION AND ACCEPTANCE BY THE OWNER.
3. NO SITE WORK ACTIVITIES SHALL TAKE PLACE WITHOUT COUNTY SITE REVIEW/APPROVAL OF PROPOSED EROSION CONTROL MEASURES AND ADVANCED NOTIFICATION OF THE REQUESTED INSPECTION IS REQUIRED.

FORCE MAIN NOTES

1. DEFLECTIONS AT PIPE JOINTS SHALL NOT EXCEED THOSE RECOMMENDED BY THE PIPE MANUFACTURER.
2. VALVES SHALL BE EQUIPPED WITH AN ADJUSTABLE CAST IRON VALVE BOX WITH COVER, WITH THREADED EXTENSIONS WHERE NEEDED, UNLESS OTHERWISE NOTED.
3. HYDROSTATIC & LEAKAGE TESTING OF THE FORCE MAIN SHALL BE DONE IN ACCORDANCE WITH THE AWWA STANDARDS. HYDROSTATIC TESTING TO BE DONE IN ACCORDANCE WITH AWWA C-600.
4. AIR RELEASE VALVES SHALL BE REQUIRED AT ALL HIGH POINTS IN THE PROPOSED FORCE MAIN AS SHOWN ON PLANS.
5. ALL FORCE MAINS TO BE CONSTRUCTED WITH A MINIMUM OF 30 INCHES OF COVER IN UNPAVED AREAS AND MINIMUM 36" IN PAVED AREAS

COORDINATING/PERMITTING NOTES

1. ALL WORK WITHIN THE FDOT RIGHT OF WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE FDOT UTILITY PERMIT AS OBTAINED BY THE OWNER.
2. NOTIFY SUNSHINE STATE ONECALL 48 HOURS IN ADVANCE PRIOR TO DIGGING WITHIN R/W; 1-800-432-4770.
3. THE CONTRACTOR SHALL REMOVE ALL DEMOLITION DEBRIS, AND WASTE FROM THE SITE AND DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
4. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM LEVY COUNTY, FLORIDA. CONTRACTOR SHALL PROVIDE PROPER NOTICE TO THE COUNTY IN ACCORDANCE WITH THE PERMIT REQUIREMENTS.
5. TRAFFIC MUST BE MAINTAINED DURING CONSTRUCTION AT ALL TIMES, AS APPROVED BY LEVY COUNTY, AND THE FLORIDA DEPARTMENT OF TRANSPORTATION AT NO ADDITIONAL COST TO THE OWNER.
6. DEWATERING DURING EXCAVATION AND BACKFILLING OPERATIONS SHOULD BE ANTICIPATED. SHOULD CONTINUOUS DEWATERING BECOME NECESSARY, A WELL POINT SYSTEM MAY BE REQUIRED. CONTRACTOR IS RESPONSIBLE FOR PROCURING ALL PERMITS ASSOCIATED WITH DEWATERING DURING CONSTRUCTION.
7. FOR WORK IN OR NEAR EXISTING UTILITY EASEMENTS OR FOR WORK NEAR OTHER UTILITIES, AND IN ORDER TO DETERMINE THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES:
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL MECHANICAL AND ELECTRICAL EQUIPMENT REMOVED FROM THE EXISTING STATION. CONTRACTOR SHALL TURN OVER SELECTED COMPONENTS TO THE OWNER ON SITE INCLUSIVE OF LOADING ONTO OWNER'S TRANSPORTATION.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN CONTRACT DOCUMENTS AND EXISTING CONDITIONS. THESE DRAWINGS REPRESENT KNOWN STRUCTURES AND UTILITIES LOCATED IN THE PROJECT AREA. THE CONTRACTOR IS CAUTIONED THAT OTHER STRUCTURES AND UTILITIES, ABOVE OR BELOW GROUND, MAY BE ENCOUNTERED DURING THE COURSE OF THE PROJECT. THE CONTRACTOR SHOULD NOTIFY THE UTILITY, THEN THE ENGINEER, IMMEDIATELY UPON ENCOUNTERING ANY UNEXPECTED STRUCTURE, UTILITY LINE, OR OTHER UNUSUAL CONDITION. EXISTING CONDITIONS ARE BASED ON SURVEYS BY BASKERVILLE-DONOVAN, INC.
10. CONTRACTOR SHALL PROVIDE ACCESS TO PROPERTIES ADJACENT TO THE CONSTRUCTION AREAS. ADEQUATE BARRICADES, CONSTRUCTION SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES SHALL BE PROVIDED IN ACCORDANCE WITH FDOT CONSTRUCTION STANDARDS.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LEARN, KNOW, AND COMPLY WITH THE REGULATIONS, ORDINANCES, PERMIT AND INSPECTION REQUIREMENTS OF THE VARIOUS GOVERNMENTAL AGENCIES HAVING JURISDICTION. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND COMPLY WITH THE CONDITIONS OF THE VARIOUS PERMITS OF THE GOVERNMENTAL AGENCIES. THE CONTRACTOR SHALL SCHEDULE THE REQUIRED INSPECTIONS AND APPROVALS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERMIT CONDITIONS. THE CONTRACTOR SHALL NOTIFY THE NECESSARY AGENCIES OF CONSTRUCTION COMMENCEMENT.
12. CONTRACTOR SHALL HAVE COPIES OF ALL PERMITS IN POSSESSION AT ALL TIMES DURING CONSTRUCTION. ANY INDIVIDUAL CREW OR INDIVIDUAL PERSON WORKING ON THE INSTALLATION OF ANY PART OF THIS PROJECT SHALL HAVE A SET OF PLANS AND SPECIFICATIONS WITH THEM AT ALL TIMES.
13. TESTING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE TESTING SCHEDULE CONTAINED WITHIN THESE PLANS. SELECTION AND CONTRACTING WITH THE TESTING FIRMS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE AND SCHEDULE ALL TEST.

AS-BUILT NOTES

1. CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS DURING CONSTRUCTION WHICH SHOW "AS-BUILT" CONDITIONS OF ALL WORK. RECORD DRAWINGS SHALL BE PROVIDED TO THE ENGINEER OF RECORD PRIOR TO REQUESTING FINAL INSPECTION. RECORD DRAWINGS SHALL INCLUDE X, Y, & Z COORDINATES OF ALL MANHOLES, FITTINGS, VALVES, & OTHER BURIED COMPONENTS ON THE SAME COORDINATE SYSTEM AS THE CONTRACT DRAWINGS SUFFICIENT TO IDENTIFY THEIR LOCATIONS.
2. AS A PRECONDITION TO THE PROCESSING OF EACH MONTHLY PAYMENT REQUEST, THE ENGINEER OR CITY INSPECTOR SHALL REVIEW THE CONSTRUCTION RECORD DRAWINGS AND CONFIRM THAT THEY ARE MARKED TO REFLECT ALL CURRENTLY AVAILABLE INFORMATION.
3. THE CENTERLINE FOR ALL PIPING INSTALLED ABOVE OR BELOW GRADE SHALL BE REPRESENTED ON THE CONTRACTOR'S AS-BUILT DRAWINGS.
4. ALL ELECTRICAL CONDUITS, PULL BOXES, AND CONDUIT ELEVATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S AS-BUILT DRAWINGS.
5. ONCE THE PROJECT IS COMPLETE, THE CONTRACTOR SHALL SUBMIT A FINAL AS-BUILT PDF AND/OR AUTOCAD 2023 FILE TO THE ENGINEER.

SAFETY AND SECURITY REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING SITE.
2. KEEP ALL ACCESS POINTS LOCKED EXCEPT WHEN WORK IS ONGOING ON THE SITE.
3. PRIOR TO REMOVING ANY FENCING UTILIZED IN MAINTENANCE OF SITE SECURITY, CONTRACTOR SHALL INSTALL ADDITIONAL SILT FENCING AND GATES AS REQUIRED TO MAINTAIN A SECURE PERIMETER.
4. CONTRACTOR SHALL PROVIDE ADDITIONAL FENCING AS REQUIRED TO PROTECT THE WORK, STORAGE FACILITIES, AND TEMPORARY SITE OFFICES.
5. CONTRACTOR MAY ELECT TO UTILIZE THE CEDAR KEY WATER RECLAMATION FACILITY (WRF) SITE FOR MATERIAL LAY DOWN AND STORAGE.
6. CONTRACTOR SHALL NOT ENTER ANY CONFINED SPACE UNLESS FEDERAL AND STATE O.S.H.A. SAFETY PROCEDURES HAVE BEEN FOLLOWED.

BYPASS PUMPING NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BY-PASS PUMPING AND SHALL BE INCLUDED IN THE BID PRICE.
2. CONTRACTOR TO UTILIZE THE TWO (2) UPSTREAM SEWER MANHOLES TO BYPASS THE EXISTING LIFT STATION.
3. CONTRACTOR TO SUBMIT BYPASS PUMPING PLAN TO OWNER AND ENGINEER FOR REVIEW AND APPROVAL. A BYPASSING PLAN IS REQUIRED FOR EACH LIFT STATION SITE. CONTRACTOR SHALL NOT PERFORM ANY BYPASS PUMPING UNTIL THE PLAN IS APPROVED.

MAINTENANCE OF TRAFFIC (MOT)

1. CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING A MAINTENANCE OF TRAFFIC (MOT) PLAN AND SHALL BE INCLUDED IN THE BID PRICE.
2. CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC (MOT) PLAN TO OWNER AND ENGINEER TO REVIEW. CONTRACTOR SHALL NOT ATTEMPT ANY CHANGES TO TRAFFIC IN PUBLIC ROADWAYS UNTIL PLAN IS APPROVED.

LIFT STATION NOTES

1. TO PROTECT RISER PIPE FROM SWAY BRACE, EITHER WRAP PIPE WITH RUBBER SHEETING OR INSERT ALL U-BOLTS THROUGH RUBBER HOSE.
2. PIPING WITHIN THE WET WELL SHALL BE DR11 HDPE PIPING. INTERMEDIATE JOINTS SHALL BE WELDED. FITTINGS WITHIN THE WET WELL SHALL BE FLANGED 316 STAINLESS STEEL. ALL NUTS, BOLTS & ACCESSORIES WITHIN THE WET WELL SHALL BE 316 STAINLESS STEEL.
3. PIPE AND FITTINGS OUTSIDE OF THE WET WELL AND ABOVE GROUND SHALL BE 316 STAINLESS STEEL. ALL BOLTS, WASHERS AND NUTS SHALL BE 316 STAINLESS STEEL AND SHALL BE COATED WITH "NEVER SEIZE" COMPOUND.
4. THE ANNULAR SPACE BETWEEN CONCRETE WET WELL AND RISER PIPE SHALL BE SEALED VIA KOR-N-BOOT.
5. INTERIOR SURFACES OF PUMP IMPELLER, VOLUTE, AND BACKPLATE SHALL BE COATED WITH BELZONA 1321 CERAMIC S-METAL. (UNLESS OTHERWISE SPECIFIED BY OWNER)
6. PLUG VALVES SHALL HAVE AN ALLOWABLE FLOW CAPACITY EQUAL TO 100% OF THE ADJACENT PIPE AREA, AND SHALL ALLOW "PIGGING".
7. THE INTERIOR OF ALL VALVES SHALL BE COATED PER MANUFACTURER RECOMMENDATION.
8. EXHAUST OF ARV'S TO BE FIELD LOCATED, PROVIDE FITTINGS AS NECESSARY.
9. LOW LEVEL ALARM ELEV. TO BE SET IN COORDINATION WITH THE OWNER AND PUMP MANUFACTURER.
10. CONNECTION OF SWAY BRACE MOUNTING PLATE SHALL BE COORDINATED WITH PUMP MANUFACTURER.
11. A SECOND BRACE IS TO BE INSTALLED WHEN THE DEPTH OF WET WELL IS GREATER THAN 10' DEEP OR WHEN THE PUMPS ARE GREATER THAN 10 HP.
12. UNDERGROUND ELECTRICAL CONDUIT SHALL BE RIGID PER ELECTRICAL CODE. CONTRACTOR SHALL ACHIEVE THIS VIA THE USE OF METAL CONDUIT, OR PVC ENCASED IN CONCRETE, OR ALTERNATE METHOD AT THE OWNER'S APPROVAL TO MEET CODE.
13. FOR ALL SYSTEMS REQUIRING BRACES: PROVIDE MINIMUM OF THREE (3) 316 STAINLESS STEEL BRACES, EVENLY SPACED. ADD ADDITIONAL BRACES IF BRACE SPACING EXCEEDS 10'.
14. DO NOT ENTER TANK UNLESS FEDERAL AND STATE O.S.H.A. TANK ENTRY PROCEDURES HAVE BEEN FOLLOWED.
15. CONTRACTOR SHALL SUBMIT A SUBMITTAL FOR ALL PIPING, VALVES AND APPURTENANCES ASSOCIATED WITH THE PUMP STATION.
16. PRESSURE GAUGE SHALL HAVE STAINLESS STEEL TAP & ISOLATION BALL VALVE.
17. ARV SHALL HAVE STAINLESS STEEL TAP & ISOLATION BALL VALVE.
18. ALL PENETRATIONS IN WET WELL FOR PIPING, ELECTRICAL, ETC. SHALL BE SEALED & SLEEVED. ALL VISIBLE PENETRATION SHALL BE SEALED WITH LINKSEAL. ALL BELOW GRADE SHALL BE SEALED WITH AN FRP SLEEVE WITH KOR-N-SEAL.
19. LARGER PUMP SPACING SHALL BE PROVIDED IF RECOMMENDED BY PUMP MANUFACTURER. ADJUST ALL IMPACTED COMPONENTS TO ACCOMMODATE LARGER PUMP SPACING.
20. IT SHALL BE THE PUMP SUPPLIER AND CONTRACTOR'S RESPONSIBILITY TO CONFIRM THE ADEQUACY OF THE SPECIFIED MINIMUM HATCH SIZE TO ENABLE THE PUMP(S) TO BE EASILY REMOVED FROM THE WET WELL THROUGH THE HATCH WITHOUT DISASSEMBLY WITH A MINIMUM 4" CLEAR. UPSIZE HATCHES AS NEEDED.

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR.:	DATE:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023				

K:\1235 Cedar Key\123503.01 Sanitary Sewer Lift Station Rehabilitation\DWG\C-001.dwg, Jan 31, 2024 - 2:59:05PM, jwiesner

BOUNDARY AND MARKER SYMBOLS

PROPOSED	FEATURE	EXISTING
	CHAIN LINK FENCE AND HEIGHT	
	PROPERTY LINE (R)	
	RIGHT OF WAY (R/W)	
	SITE CLEARING LIMITS	
	IRON PIPE BOUNDARY MARKER (IP)	
	IRON ROD BOUNDARY MARKER (IR)	
	CONCRETE MONUMENT BOUNDARY MARKER (MON)	
	EXISTING EASEMENT	
	EXISTING GAS EASEMENT	
	BENCH MARK (BM) AND NUMBER	
	CONTROL POINT IDENTIFIER	
	CAPPED IRON ROD (NAIL SET BY BDI)	
	EDGE OF PAVEMENT	
	BACK OF CURB	
	RIGHT OF WAY	
	PROPERTY LINE	

LANDSCAPE AND DRAINAGE SYMBOLS

PROPOSED	FEATURE	EXISTING
	BUILDING OR STRUCTURE FOOTPRINT	
	TREE, SIZE & TYPE	
	HEDGE	
	EDGE OF WOODS	
	STORMWATER SURFACE FLOW	
	SPOT ELEVATION	
	SILT FENCE	
	CONTOUR LINE	
	WETLANDS	
	STORM DRAIN	

UNDERGROUND/OVERHEAD UTILITY SYMBOLS

PROPOSED	FEATURE	EXISTING
	BURIED ELECTRIC	
	OVERHEAD ELECTRIC	
	FORCE MAIN	
	SANITARY SEWER	
	FIBER OPTIC CABLE	
	WATER LINE	
	GAS LINE	
	CHAIN LINK FENCE	
	CONTOUR W/ ELEVATION	
	POWER POLE	
	POWER POLE W/ GUY	
	LIGHT POLE	
	STORM DRAIN MANHOLE	
	SANITARY SEWER MANHOLE	
	COMMUNICATION MANHOLE	
	ELECTRIC MANHOLE	
	MANHOLE	
	BOLLARD	
	AIR CONDITIONER	
	BACKFLOW PREVENTER	
	CLEANOUT	
	ELECTRIC OUTLET	
	FLOOD LIGHT	
	FIRE HYDRANT	
	GAS METER	
	GAS VALVE COVER	
	GENERATOR	
	GUY WIRE ANCHOR	
	HOSE BIB	
	POWER POLE WITH LIGHT	
	SIGNAL CONTROLLER	
	SIGNAL SPAN POLE	
	SINGLE SUPPORT SIGN	
	STAND PIPE	
	STORM DRAIN INLET	
	TELEPHONE PEDESTAL	
	UTILITY POLE	
	WATER METER	
	WATER VALVE COVER	
	WIRE PULL BOX	

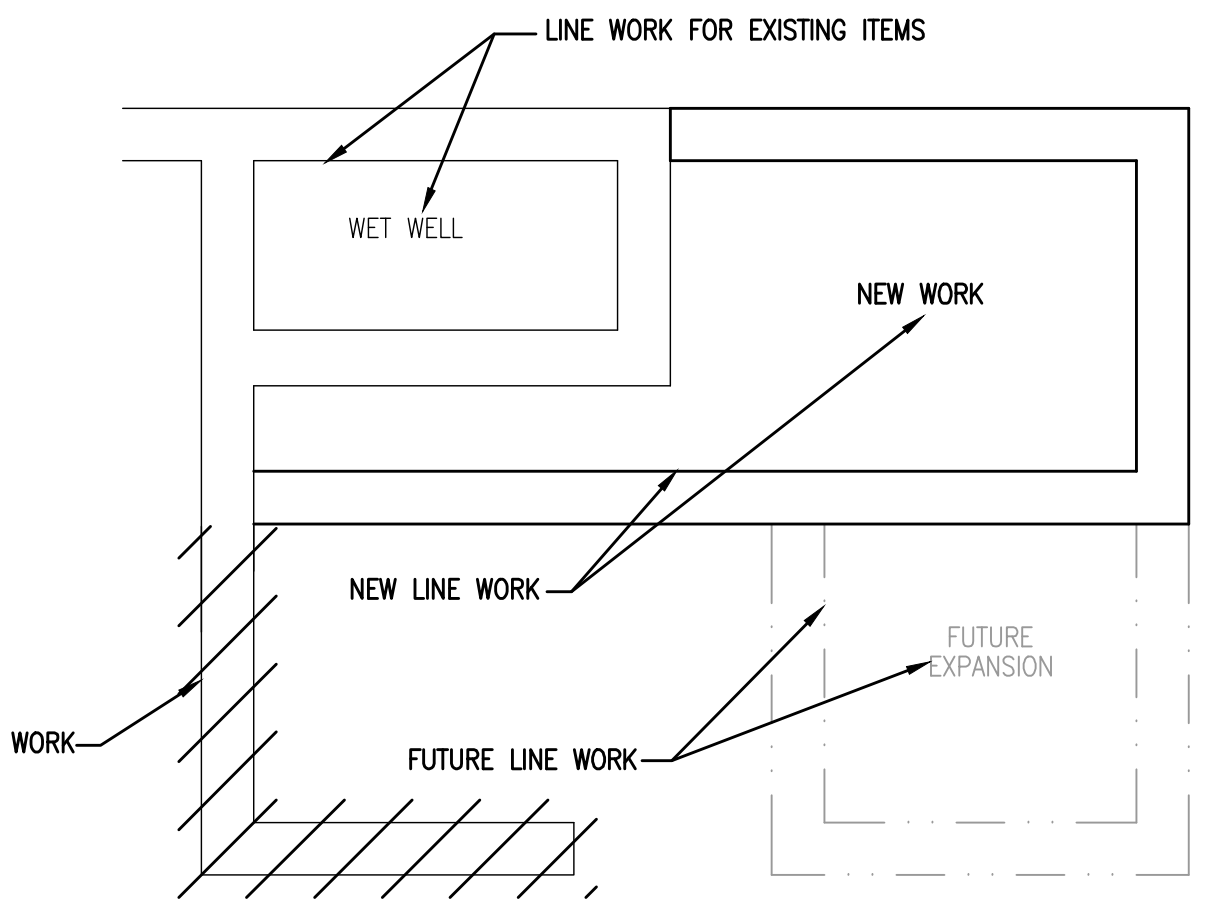
CIVIL LEGEND

NEW	FEATURE	EXISTING
	SANITARY SEWER, MANHOLE AND DIRECTION OF FLOW	
	UNDERDRAIN w/CLEANOUT	
	STORM DRAIN, MANHOLE, CATCH BASIN AND DIRECTION OF FLOW	
	FIRE LINE W/ FIRE HYDRANT ASSEMBLY (INCLUDES VALVE)	
	POTABLE WATER MAIN AND PIPE MATERIAL	
	FORCE MAIN (FM) AND DIRECTION OF FLOW	
	RECLAIMED WATER MAIN (RCW)	
	PIPE MATERIAL (OPTIONAL)	
	ABBREVIATED PROCESS LINE DESCRIPTION	
	PIPE DIAMETER	
	AIR RELEASE VALVE	
	GALVANIZED IRON PIPE	
	DIRECTION OF FLOW	

YARD PIPING SYMBOLS

NEW	FEATURE	EXISTING
	SANITARY SEWER, MANHOLE AND DIRECTION OF FLOW	
	UNDERDRAIN w/CLEANOUT	
	STORM DRAIN, MANHOLE, CATCH BASIN AND DIRECTION OF FLOW	
	FIRE LINE W/ FIRE HYDRANT ASSEMBLY (INCLUDES VALVE)	
	POTABLE WATER MAIN AND PIPE MATERIAL	
	FORCE MAIN (FM) AND DIRECTION OF FLOW	
	RECLAIMED WATER MAIN (RCW)	
	PIPE MATERIAL (OPTIONAL)	
	ABBREVIATED PROCESS LINE DESCRIPTION	
	PIPE DIAMETER	
	AIR RELEASE VALVE	
	GALVANIZED IRON PIPE	
	DIRECTION OF FLOW	

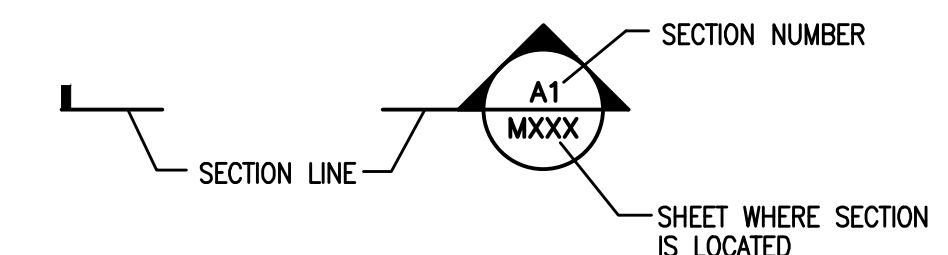
	90° BEND (FLANGE SHOWN)
	90° BEND TURNED DOWN (FLANGE SHOWN)
	90° BEND TURNED UP (FLANGE SHOWN)
	45° BEND (FLANGE SHOWN)
	45° BEND TURNED DOWN (FLANGE SHOWN)
	45° BEND TURNED UP (FLANGE SHOWN)
	22 1/2° BEND (FLANGE SHOWN)
	22 1/2° BEND TURNED DOWN (FLANGE SHOWN)
	22 1/2° BEND TURNED UP (FLANGE SHOWN)
	CONCENTRIC REDUCER (FLANGE SHOWN)
	ECCENTRIC REDUCER (FLANGE SHOWN)
	PLUG OR BLIND FLANGE
	TEE (FLANGE SHOWN)
	TEE TURNED DOWN (FLANGE SHOWN)
	TEE TURNED UP (FLANGE SHOWN)
	CROSS (FLANGE SHOWN)
	WYE (FLANGE SHOWN)
	WYE TURNED DOWN (FLANGE SHOWN)
	WYE TURNED UP (FLANGE SHOWN)



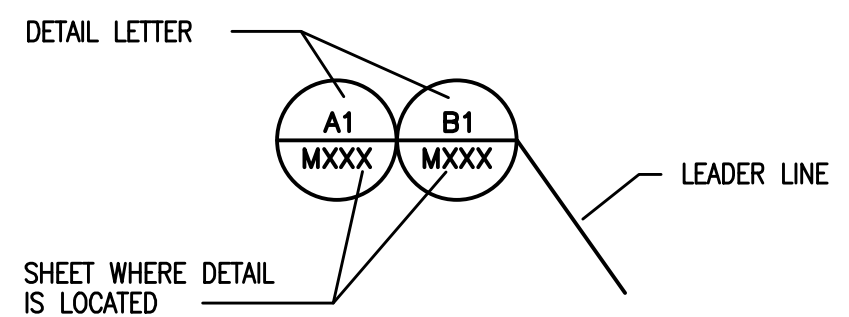
EXISTING, FUTURE OR DEMOLISHED CONDITION DESIGNATION

	NEW ASPHALT PAVEMENT
	NEW ASPHALT OVERLAY
	NEW CONCRETE PAVEMENT

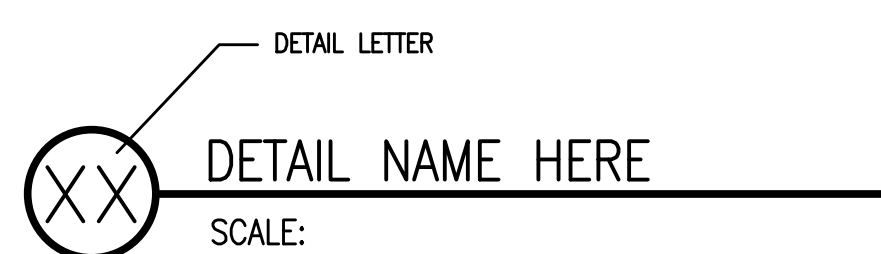
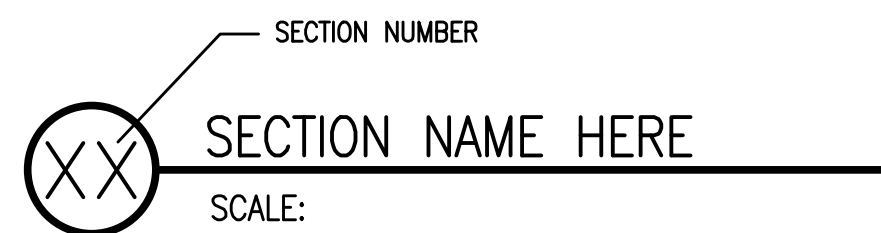
PAVEMENT SYMBOLS



SECTION CUT SYMBOLS



DETAIL CALL OUT SYMBOLS



DRAWING, SECTION AND DETAIL TITLES

BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST., PENSACOLA, FL 32502 (850) 438-9861
 ENGINEERING BUSINESS: EB-00000340
 Pensacola - Panama City Beach - Tallahassee - Mobile

TYLER T. LEE
 FL Reg. Engineer #83309

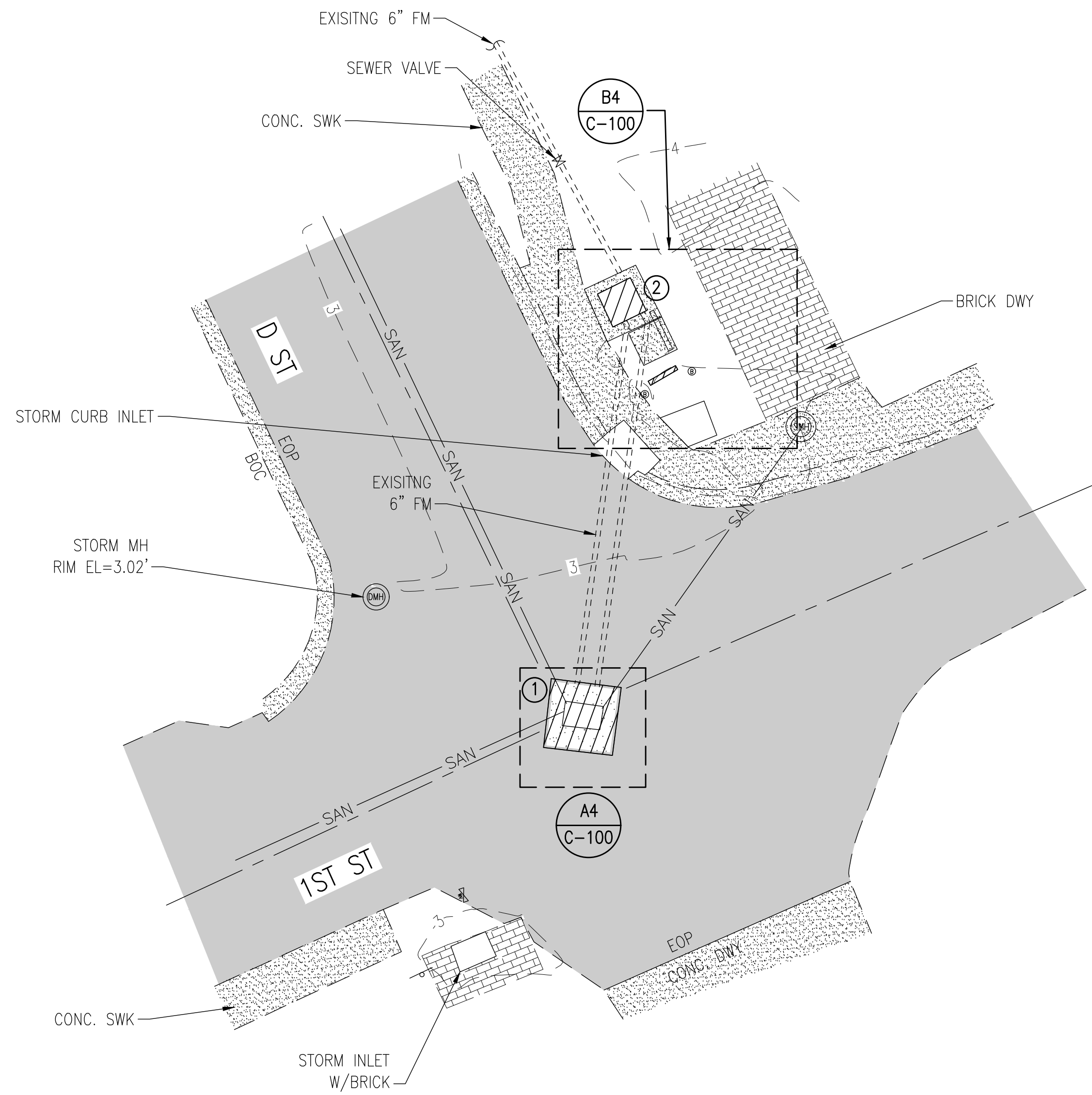
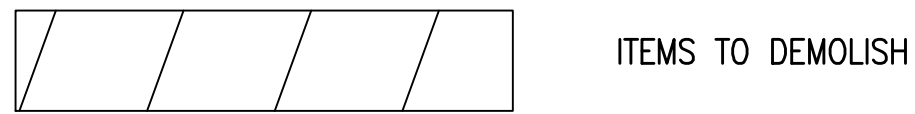
CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

PROJECT NO.	DESIGNED BY	DRAWN BY	CHK'D BY	PROJ. MGR.	DATE
123503.01	TTL	RCG	RWD	JWL	FEBRUARY 2023

CIVIL
LEGEND AND
SYMBOLS
C-001

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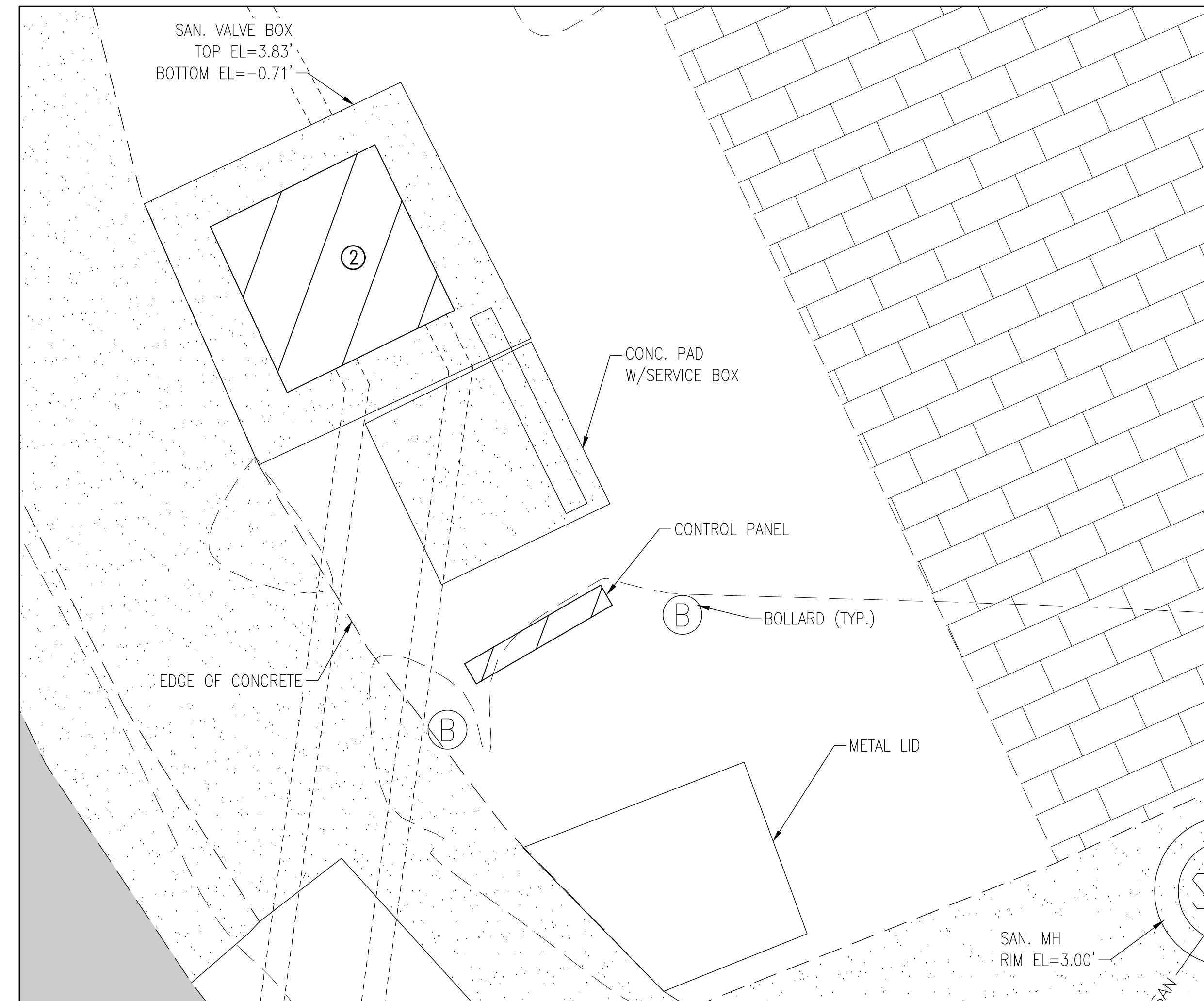
LEGEND



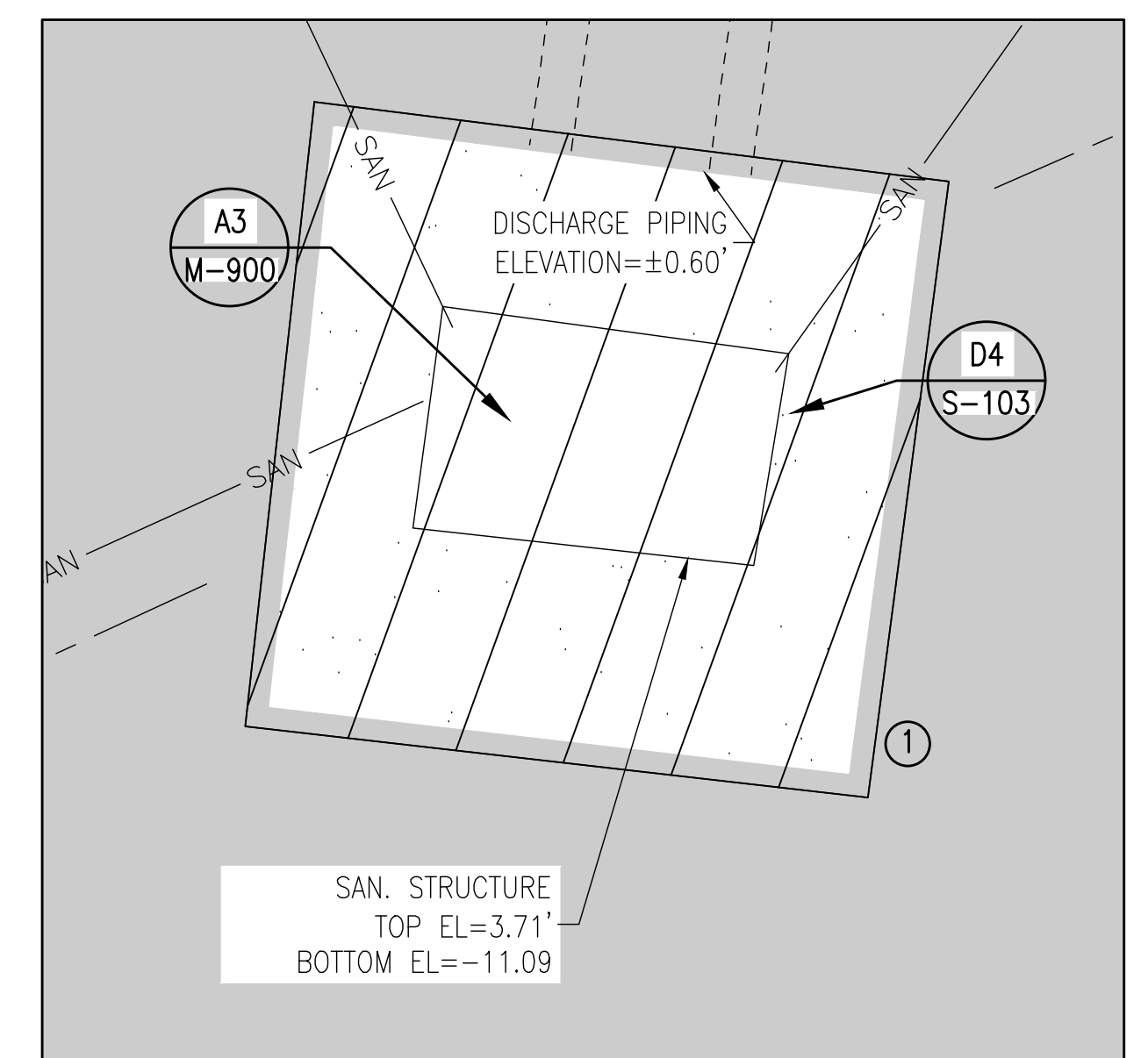
A1 LS 1 EXISTING & DEMOLITION PLAN
SCALE: 1" = 10'
0 5' 10' 20'

CONSTRUCTION KEY NOTES:

- ① CONTRACTOR TO SAW CUT EXISTING CONCRETE AS NEEDED TO REPLACE LIFT STATION HATCH.
- ② CONTRACTOR TO REMOVE AND REPLACE ALL PIPING, FITTINGS, AND VALVES INSIDE THE EXISTING LIFT STATION VALVE BOX.



B4 LS 1 EXISTING & DEMOLITION PLAN
SCALE: 1" = 2'
0 1' 2' 4'



A4 LS 1 EXISTING & DEMOLITION PLAN
SCALE: 1" = 2'
0 1' 2' 4'

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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

NO.	DATE	APPR.	REVISION/ACTION TAKEN

**LS 1
EXISTING & DEMOLITION
PLAN**

C-100

PROJECT NO: 123503.01
DESIGNED BY: TTL
DRAWN BY: RCG
CHKD BY: RWD
PROJ. MGR.: JWL
DATE: FEBRUARY 2023
NOT RELEASED FOR CONSTRUCTION BY: DATE

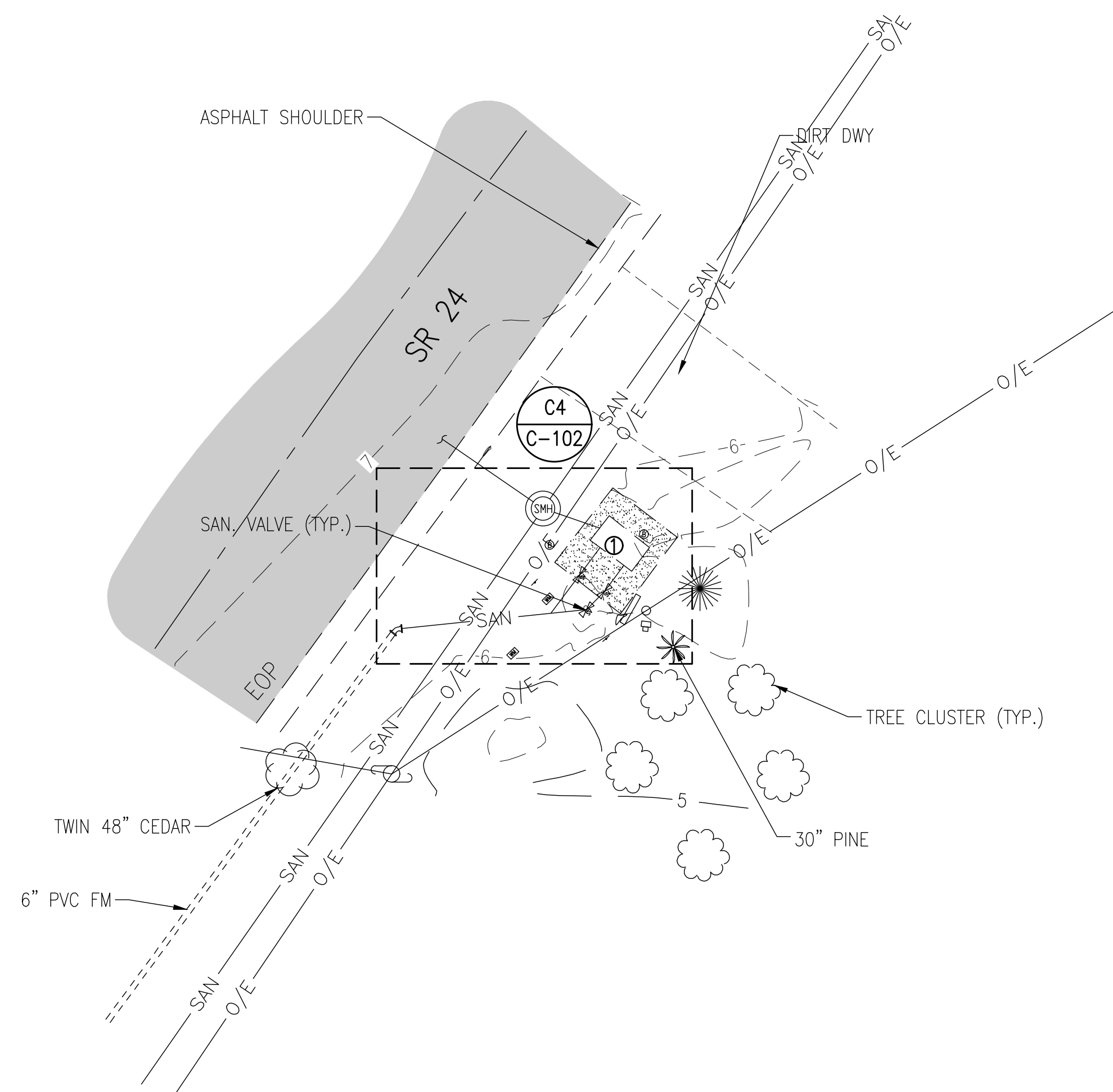
1
LEGEND



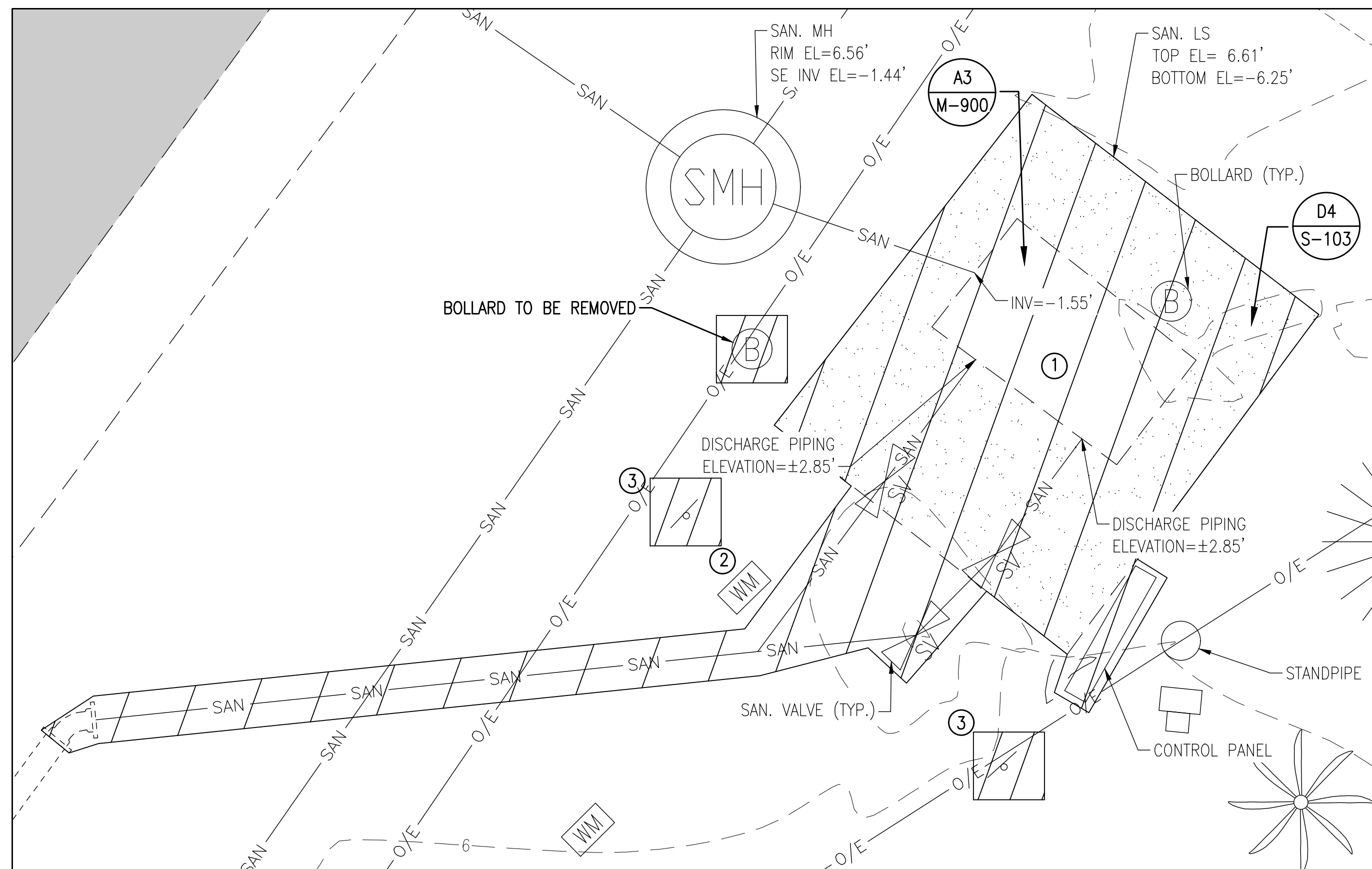
ITEMS TO DEMOLISH

5
CONSTRUCTION KEY NOTES:

- ① IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE SURE ADEQUATE CLEARANCE ROOM IS PROVIDED ABOVE THE LIFT STATION HATCH TO REMOVE ALL PUMPS AND PIPING.
- ② CONTRACTOR TO RELOCATE EXISTING WATER METER. CONTRACTOR TO FIELD LOCATE WATER METER WITH OWNER.
- ③ CONTRACTOR SHALL REMOVE EXISTING SIGNS AND INSTALL OUTSIDE THE PROPOSED FENCE LINE. SEE C-103 FOR SIGN LOCATION.



B3 LS 6 EXISTING & DEMOLITION PLAN
SCALE: 1" = 10'
0 5' 10' 20'



C4 LS 6 EXISTING & DEMOLITION PLAN
SCALE: 1" = 2'
0 1' 2' 4'

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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN

**LS 6
EXISTING & DEMOLITION
PLAN**

C-102

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CONTROL COORDINATE TABLE			
CONTROL POINT	DESCRIPTION	NORTHING	EASTING
FP1	FENCE POST 1	1749632.3660	325882.3272
FP2	FENCE POST 2	1749620.2300	325873.7050
FP3	FENCE POST 3	1749610.2316	325887.7780
FP4	FENCE POST 4	1749622.3676	325896.4003

- CONSTRUCTION KEY NOTES**
- CONNECT THE PROPOSED 6" DISCHARGE PIPING TO EXISTING 6" PVC FM. COORDINATE WITH OWNER WHEN MAKING THE CONNECTION
 - CONTRACTOR TO RELOCATE EXISTING WATER METER. CONTRACTOR TO FIELD LOCATE WATER METER WITH OWNER.
 - THE CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ADEQUATE CLEARANCE ROOM IS PROVIDED ABOVE THE LIFT STATION HATCH TO INSTALL PUMPS AND PIPING.
 - 6" OF GRANITE #57 STONE PLACED ON MIRAFI 140-N GEOTEXTILE FABRIC OR APPROVED EQUAL.
 - CONTRACTOR TO COORDINATE WITH THE OWNER WHEN CLOSING THE VALVES TO MAKE SURE THE CLOSED VALVES DO NOT IMPACT THE COLLECTION SYSTEM OPERATION.

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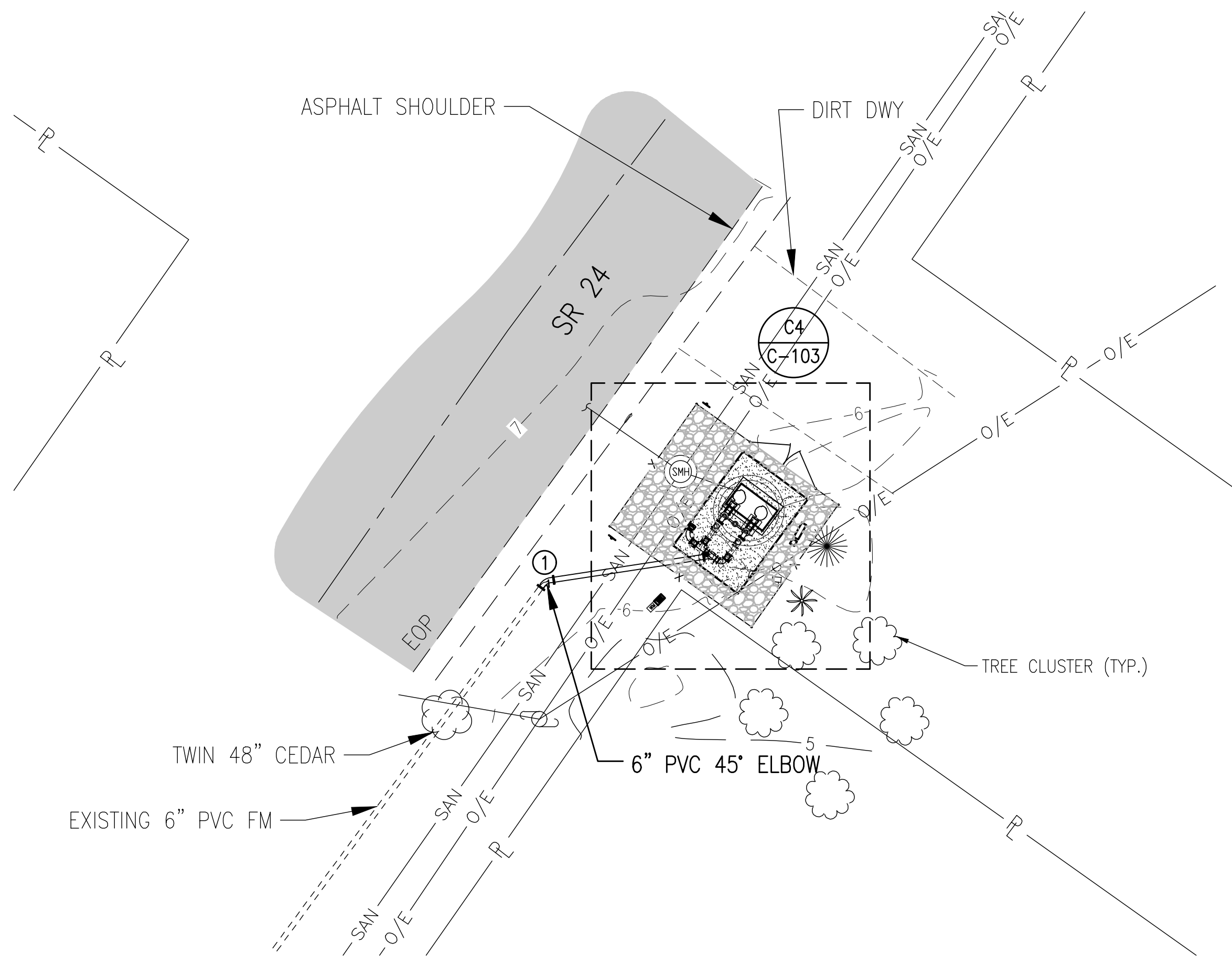
TYLER T. LEE
 FL Reg. Engineer #93309

**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

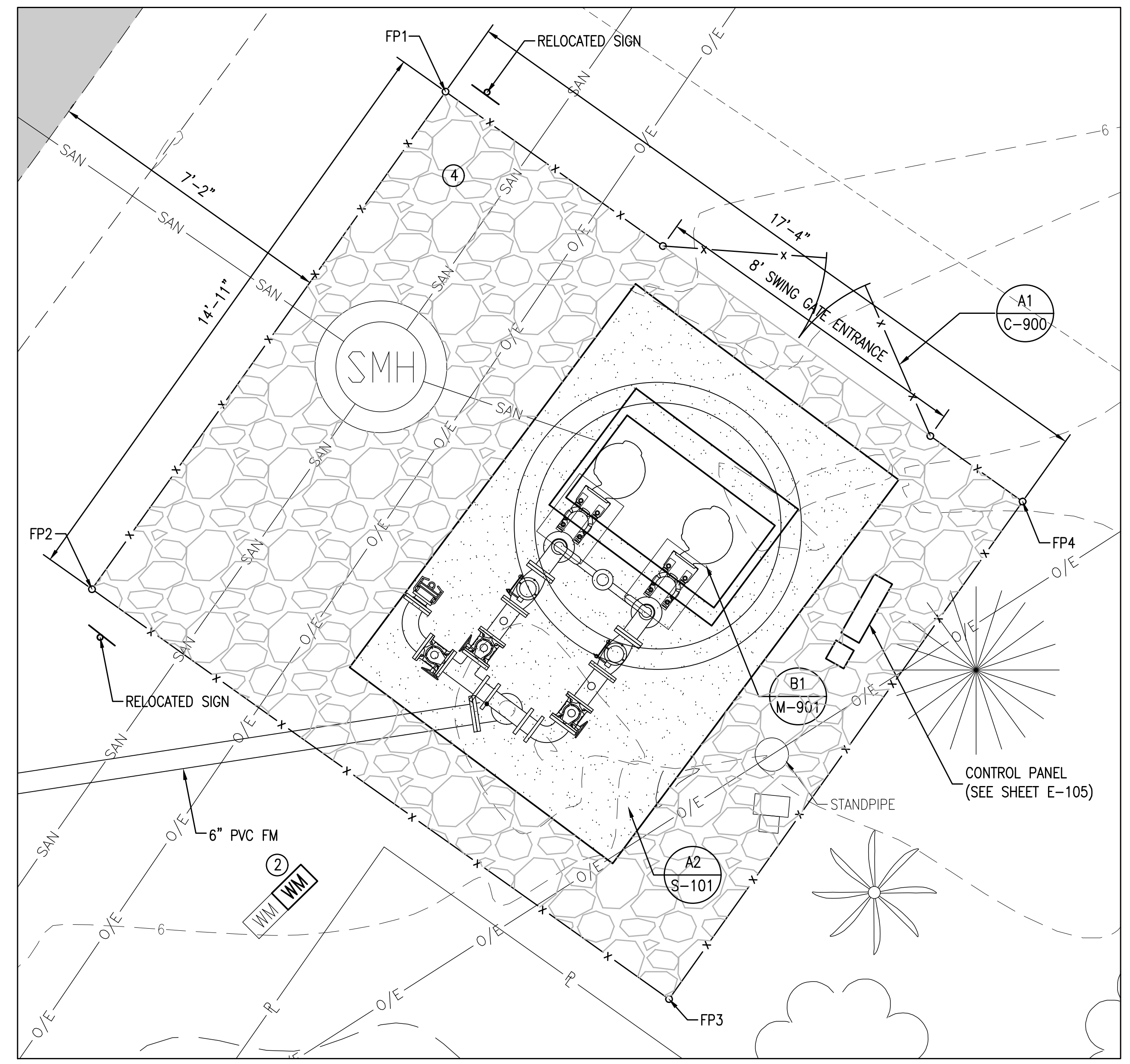
PROJECT NO.	DESIGNED BY	DRAWN BY	CHKD BY	PROJ. MGR.	DATE
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**LS 6
 PROPOSED SITE
 PLAN**

C-103

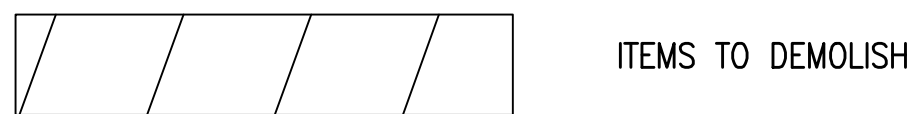


B3 LS 6 PROPOSED SITE PLAN
 SCALE: 1" = 10'
 0 5' 10' 20'



C4 LS 6 PROPOSED SITE PLAN
 SCALE: 1" = 2'
 0 1' 2' 4'

1
LEGEND



5
CONSTRUCTION KEY NOTES:

- ① CONTRACTOR TO CUT EXISTING FORCE MAIN AND INSTALL A 4" MJ PLUG. CONTRACTOR TO FIELD VERIFY EXISTING FORCE MAIN SIZE BEFORE INSTALLING MJ PLUG.
- ② CONTRACTOR TO SAW CUT EXISTING ASPHALT AS NEEDED TO INSTALL 6" TAPPING SLEEVE AND VALVE. SEE SHEET C-105
- ③ CONTRACTOR TO REMOVE AND PROTECT GUARDRAIL AS NEEDED TO INSTALL 6" FM
- ④ ENGINEER AND OWNER TO REVIEW BYPASSING PLAN WITH CONTRACTOR TO SEE IF ADDITIONAL ISOLATION VALVES ARE REQUIRED TO ISOLATE THE LIFT STATION FROM THE SYSTEM.
- ⑤ CONTRACTOR TO DEMO AND REMOVE EXISTING PUMP OUT PIPING, VALVES, AND FITTINGS.

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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

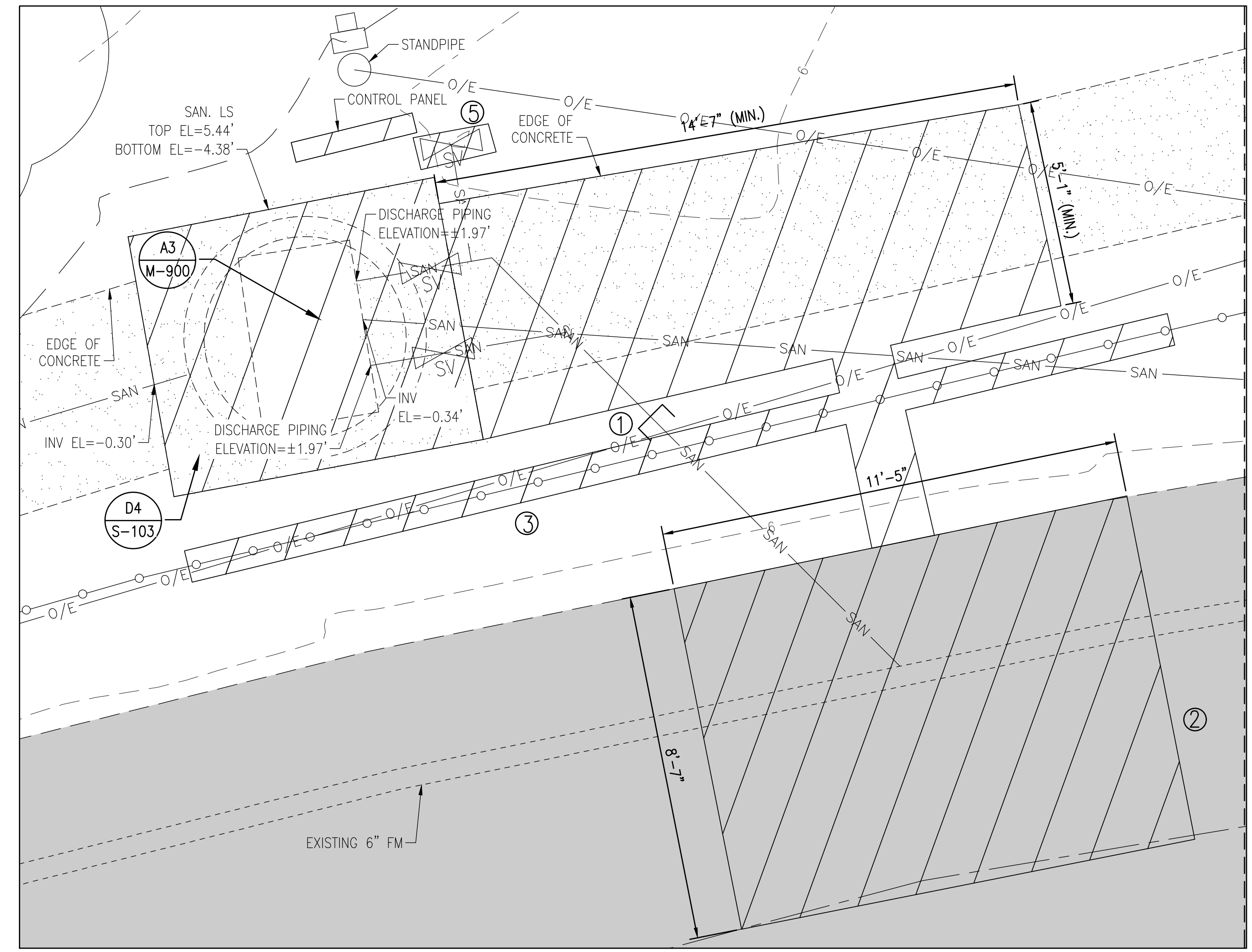
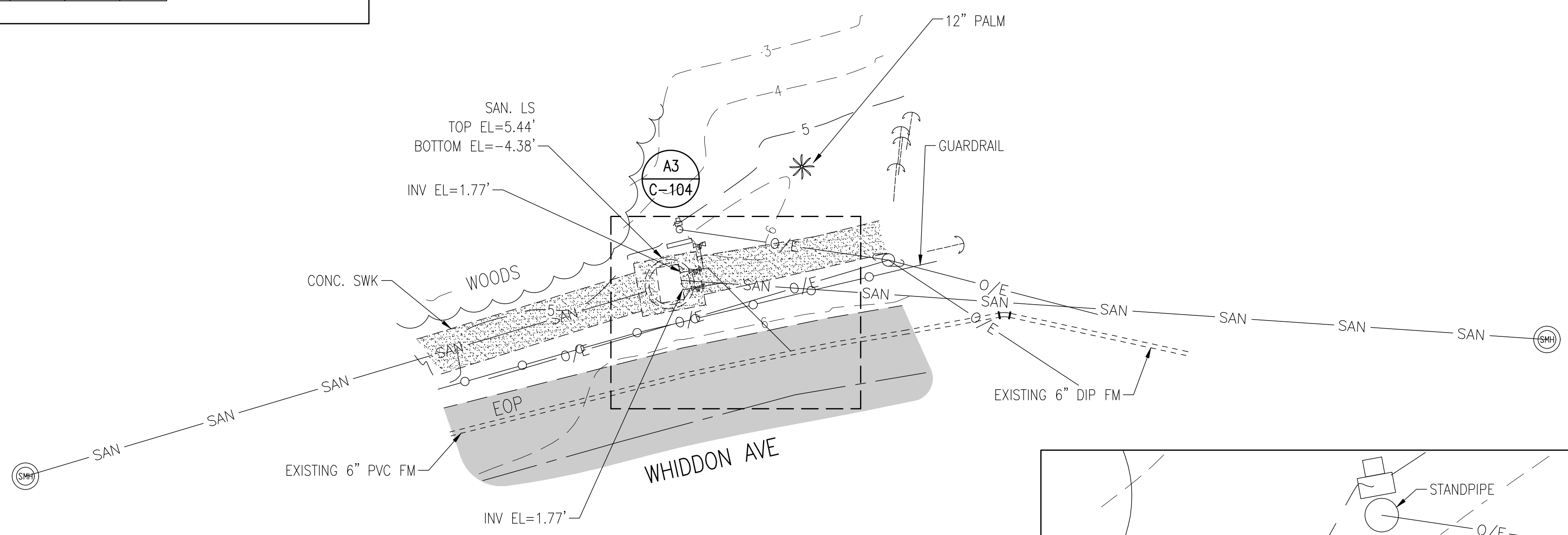
PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RCG	RWD	JWJ	FEBRUARY 2023

**LS 7
EXISTING & DEMOLITION
PLAN**

C-104

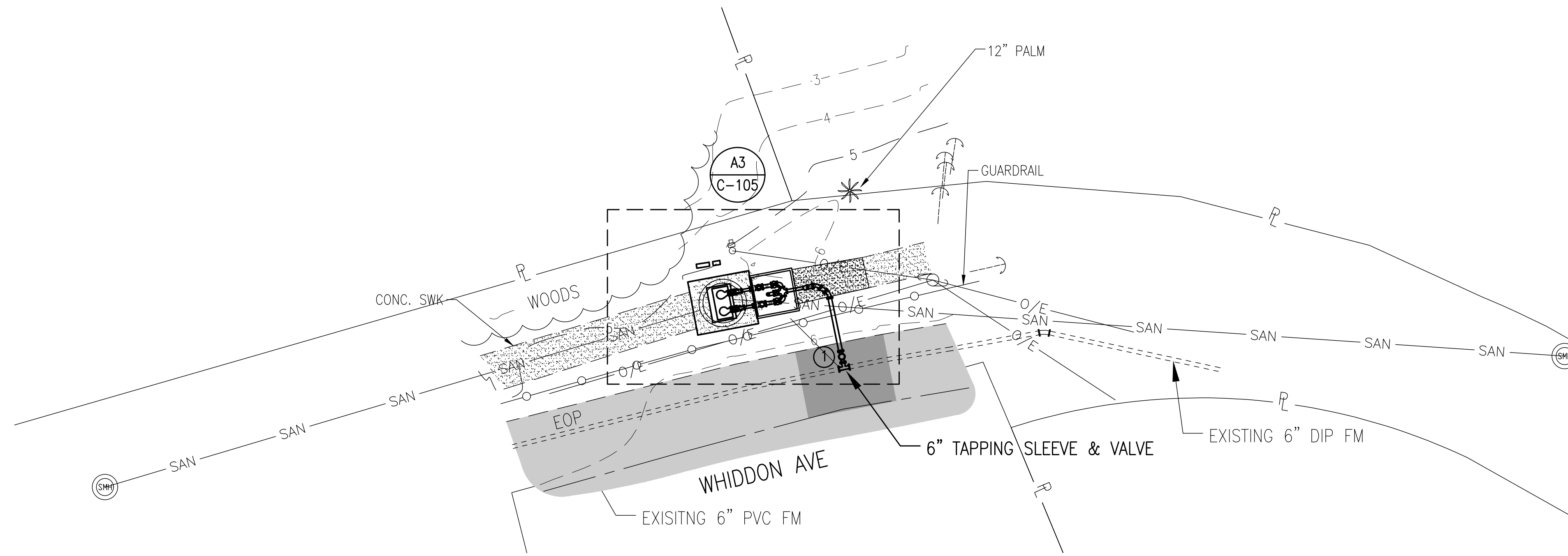
C3 LS 7 EXISTING & DEMOLITION PLAN
SCALE: 1" = 10'
0 5' 10' 20'

A4 LS 7 EXISTING & DEMOLITION PLAN
SCALE: 1" = 2'
0 1' 2' 4'

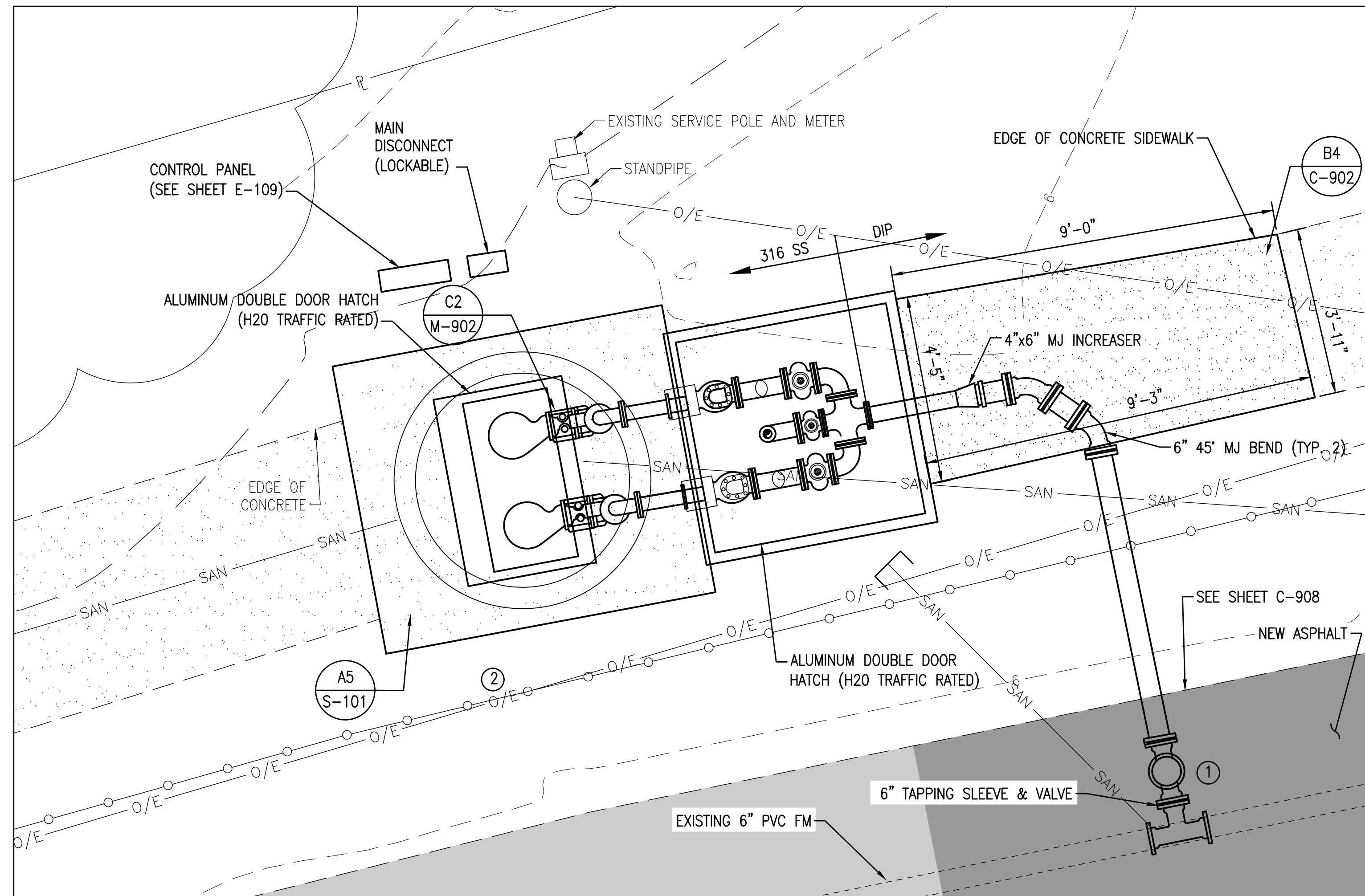


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C3 LS 7 PROPOSED SITE PLAN
SCALE: 1" = 10' 0 5' 10' 20'



A3 LS 7 PROPOSED SITE PLAN
SCALE: 1" = 2' 0 1' 2' 4'

CONSTRUCTION KEY NOTES:

- ① CONNECT THE PROPOSED 6" DISCHARGE PIPING TO EXISTING 6" PVC FM. COORDINATE WITH OWNER WHEN MAKING THE CONNECTION. CONTRACTOR TO FIELD VERIFY FORCE MAIN SIZE, MATERIAL, AND LOCATION BEFORE INSTALLING 6" TAPPING SLEEVE AND VALVE.
- ② CONTRACTOR TO REINSTALL EXISTING GUARDRAILS.

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FL Reg. Engineer #83309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

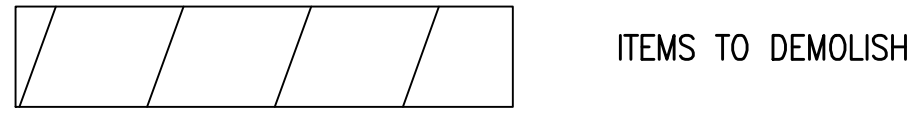
PROJECT NO.	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01				
DESIGNED BY: TTL				
DRAWN BY: RCG				
CHKD BY: RWD				
PROJ. MGR.: JWL				
DATE: FEBRUARY 2023				
				NOT RELEASED FOR CONSTRUCTION BY
				DATE

**LS 7
PROPOSED SITE
PLAN**

C-105

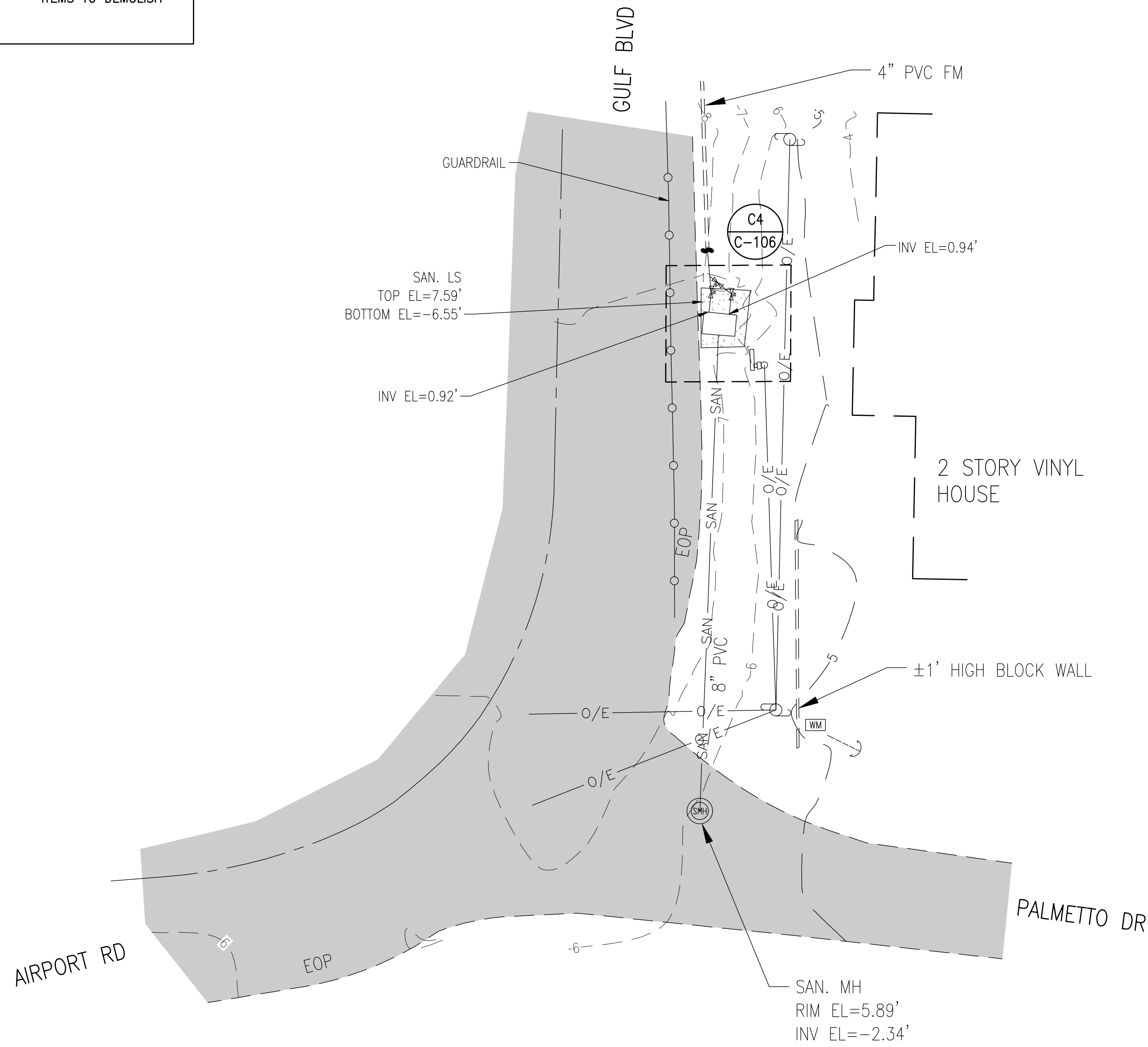
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1 LEGEND

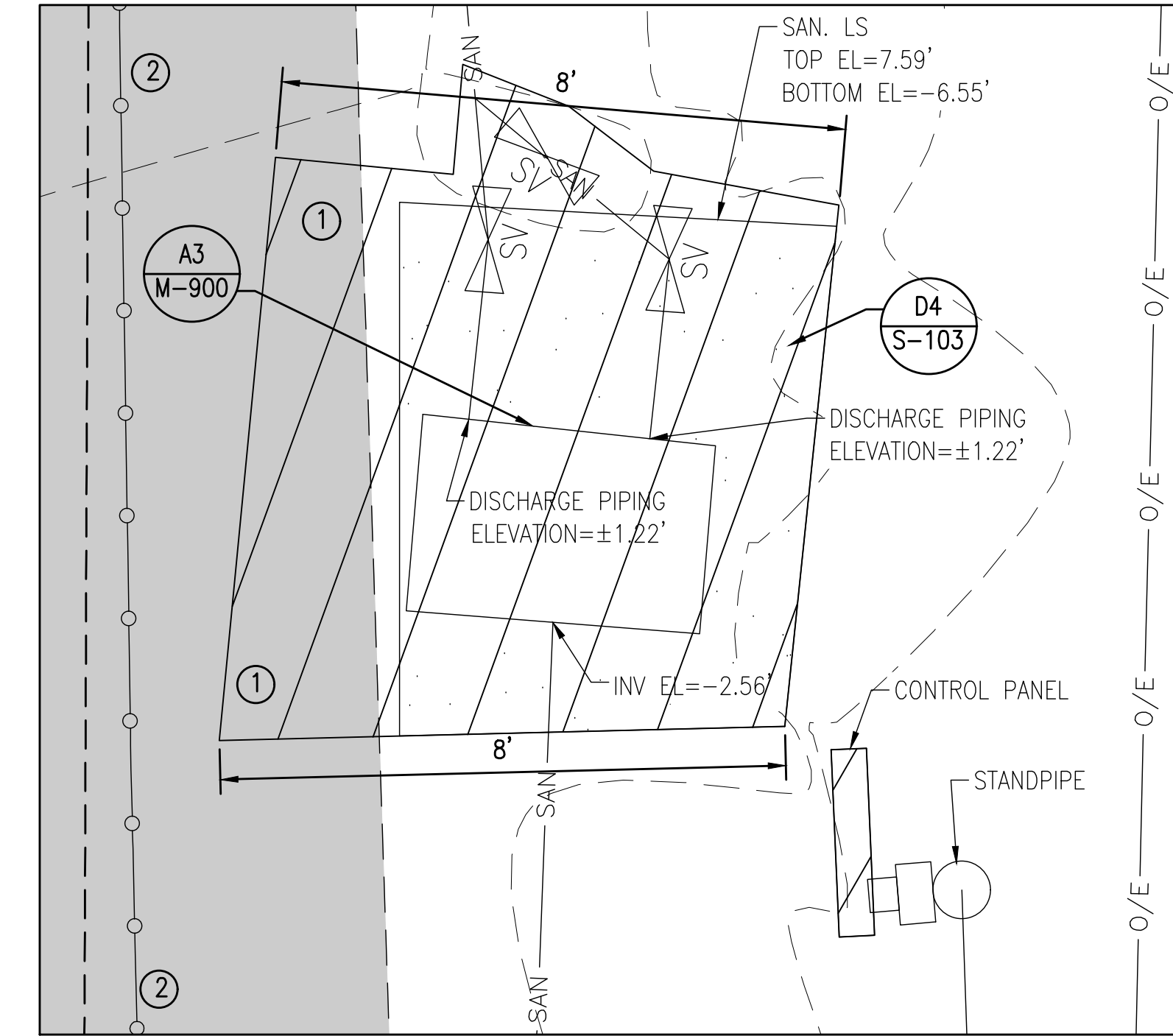


5 CONSTRUCTION KEY NOTES

- ① CONTRACTOR TO SAWCUT EXISTING ASPHALT.
- ② CONTRACTOR TO REMOVE AND PROTECT EXISTING GUARDRAIL AS NEEDED TO REHABILITATE THE LIFT STATION SITE.



C2 LS 9 EXISTING & DEMOLITION PLAN
 SCALE: 1" = 10'



C4 LS 9 EXISTING & DEMOLITION PLAN
 SCALE: 1" = 2'

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**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

PROJECT NO.	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01				
DESIGNED BY: TTL				
DRAWN BY: RCG				
CHKD BY: RWD				
PROJ. MGR.: JWL				
DATE: FEBRUARY 2023				

**LS 9
 EXISTING & DEMOLITION
 PLAN**

C-106

SHEET NOTES:

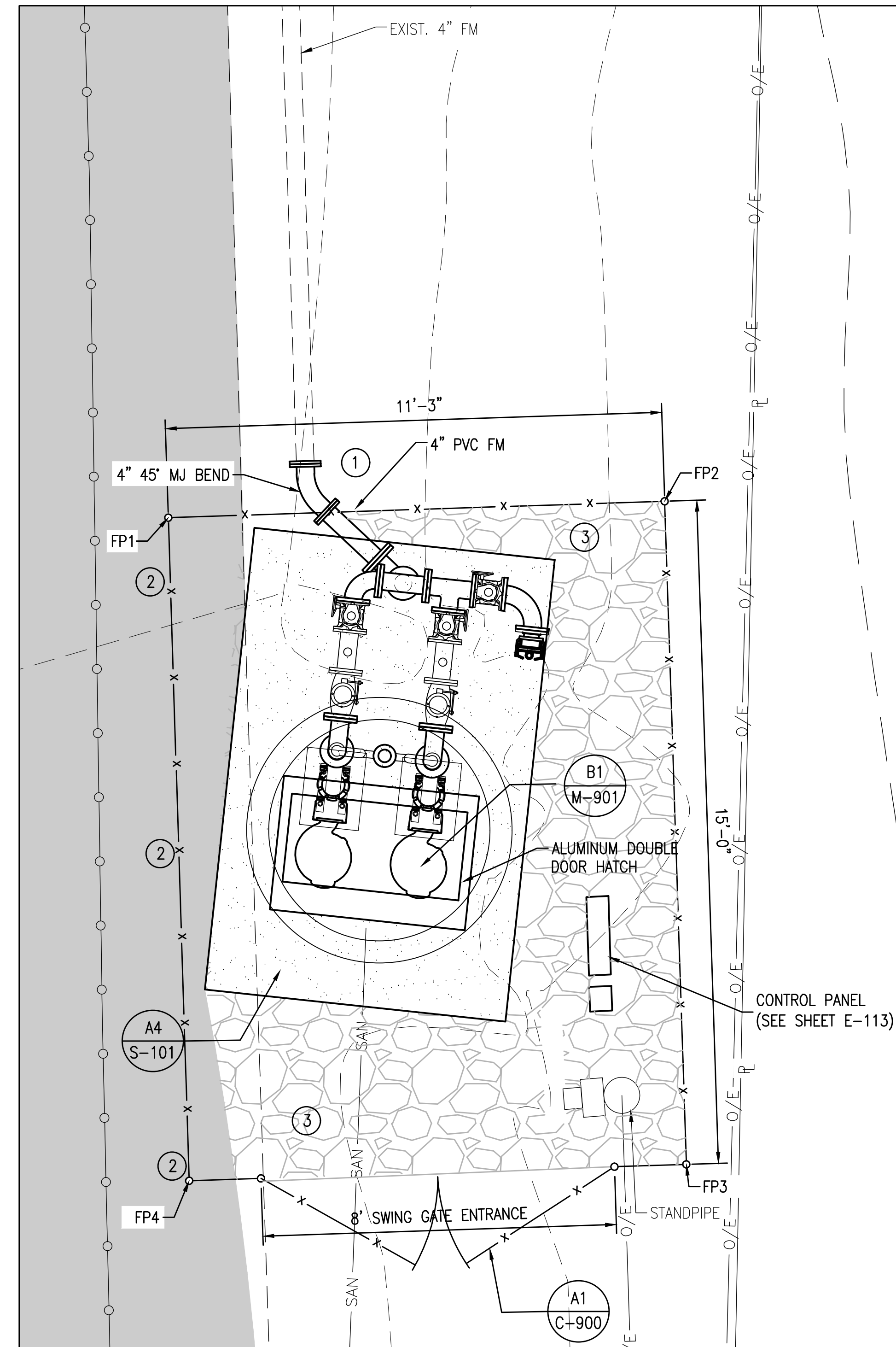
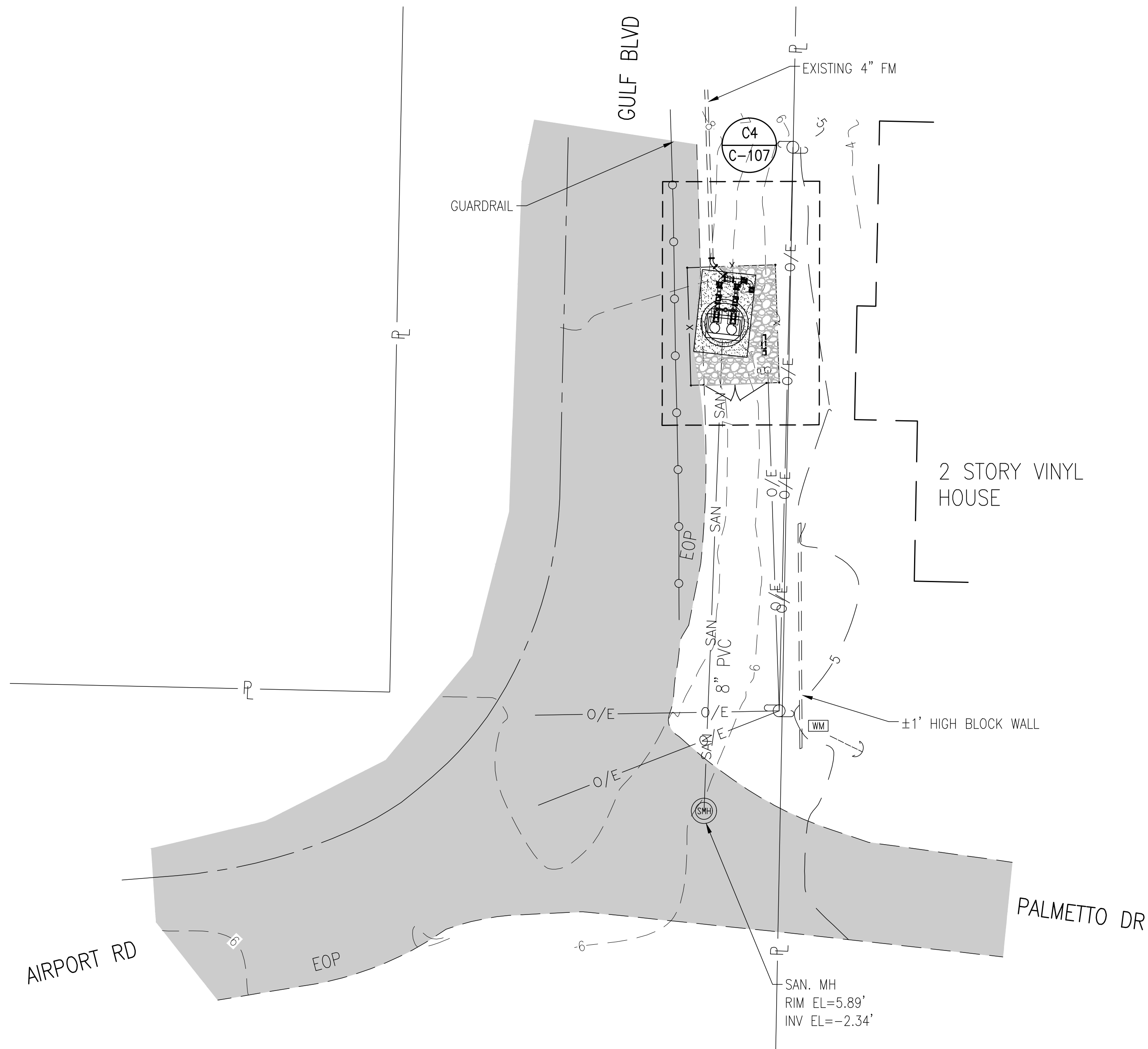
- CONTRACTOR TO PROTECT EXISTING 2 STORY VINYL HOUSE DURING THE LIFT STATION DEMOLITION AND REHABILITATION

CONTROL COORDINATE TABLE

CONTROL POINT	DESCRIPTION	NORTHING	EASTING
FP1	FENCE POST 1	1748735.6987	323512.4877
FP2	FENCE POST 2	1748736.0697	323523.7136
FP3	FENCE POST 3	1748721.0777	323524.2040
FP4	FENCE POST 4	1748720.7061	323512.9585

CONSTRUCTION KEY NOTES:

- CONNECT THE PROPOSED 4" DISCHARGE PIPING TO EXISTING 4" PVC FM. COORDINATE WITH OWNER WHEN MAKING THE CONNECTION
- CONTRACTOR TO INSTALL NEW LIFT STATION FENCE ALONG EXISTING ASPHALT ROADWAY
- 6" OF GRANITE #57 STONE PLACED ON MIRAFI 140-N GEOTEXTILE FABRIC OR APPROVED EQUAL



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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY	PROJ. MGR.	DATE	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	JWL	FEBRUARY 2023				
	DRWN BY: RGD						
	CHKD BY: RWD						

**LS 9
PROPOSED SITE
PLAN**

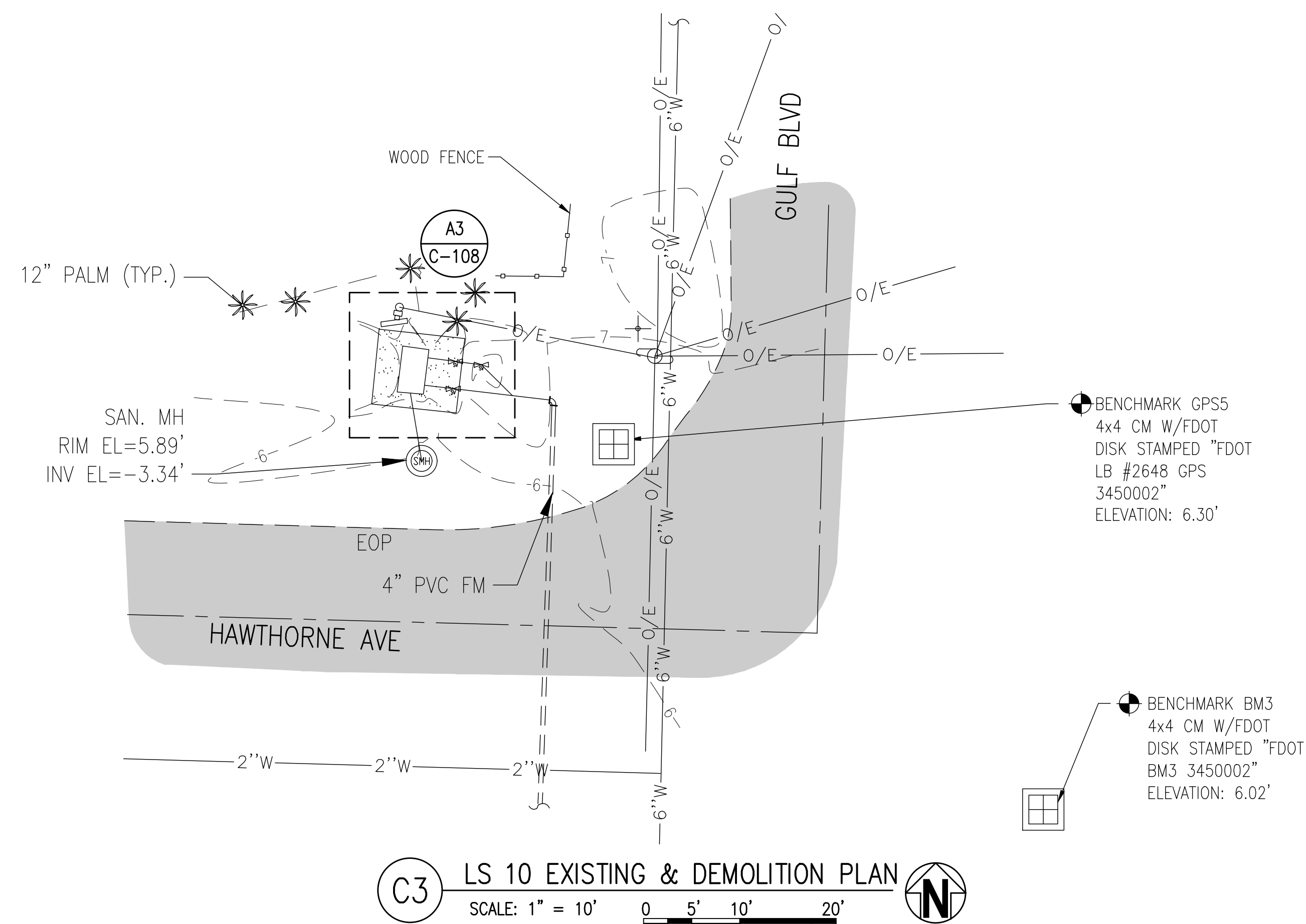
C-107

1
LEGEND

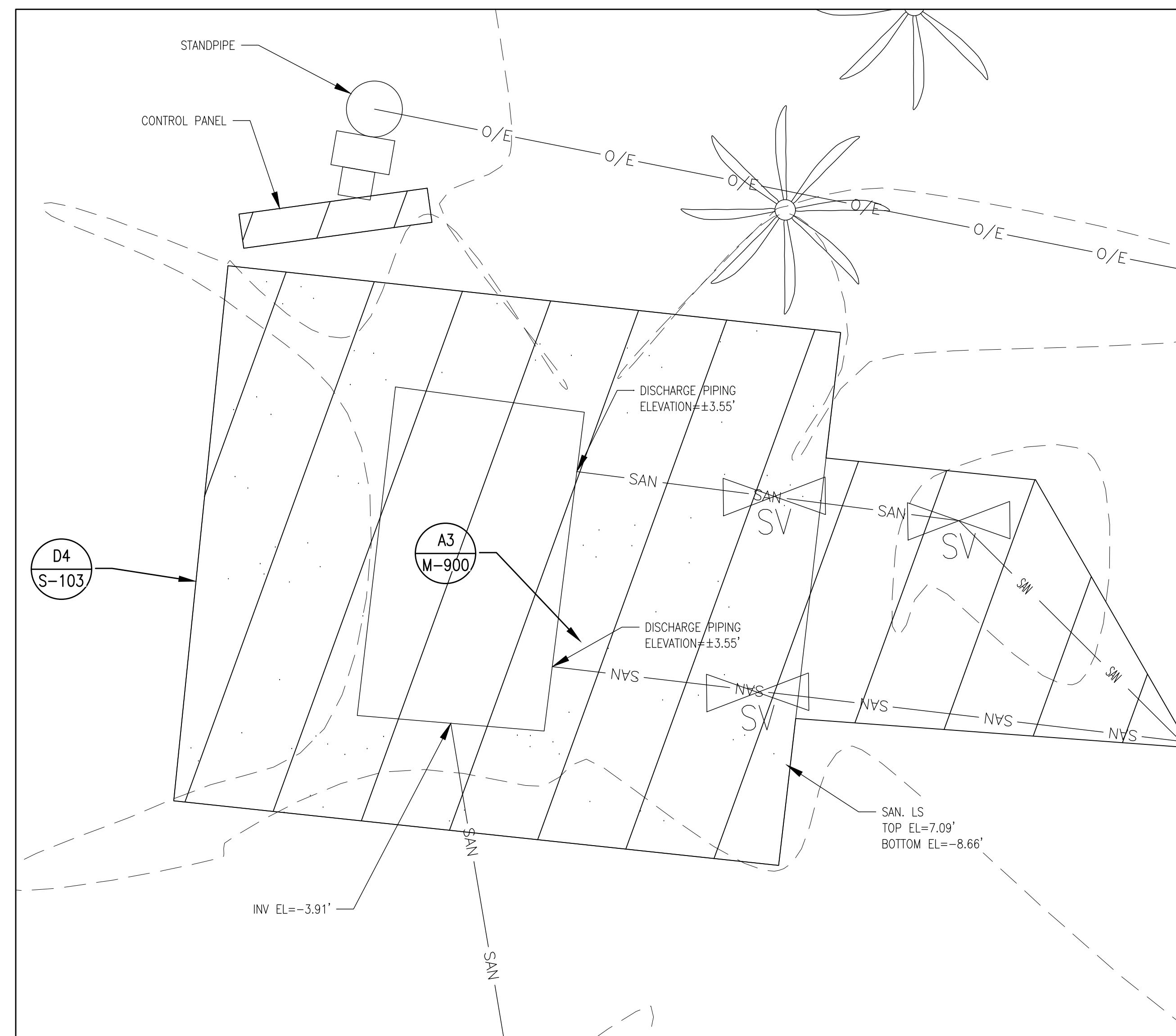


5
SHEET NOTES:

- CONTRACTOR TO PROTECT ALL ABOVE GROUND SHRUBS, FENCING, AND POWER POLES



C3 LS 10 EXISTING & DEMOLITION PLAN
SCALE: 1" = 10'



A3 LS 10 EXISTING & DEMOLITION PLAN
SCALE: 1" = 2'

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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

NO.	DATE	APPR.	REVISION/ACTION TAKEN

**LS 10
EXISTING & DEMOLITION
PLAN**

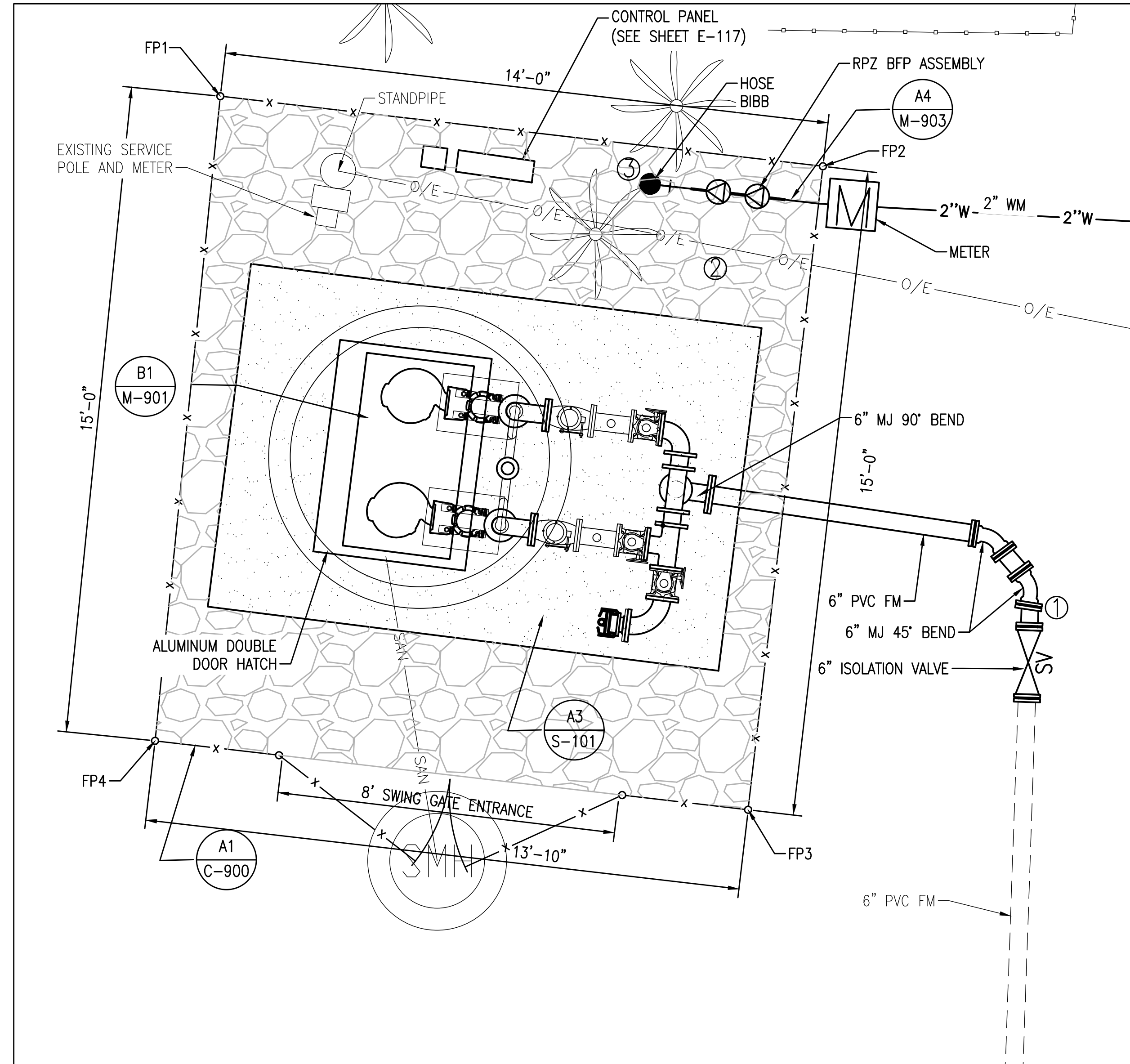
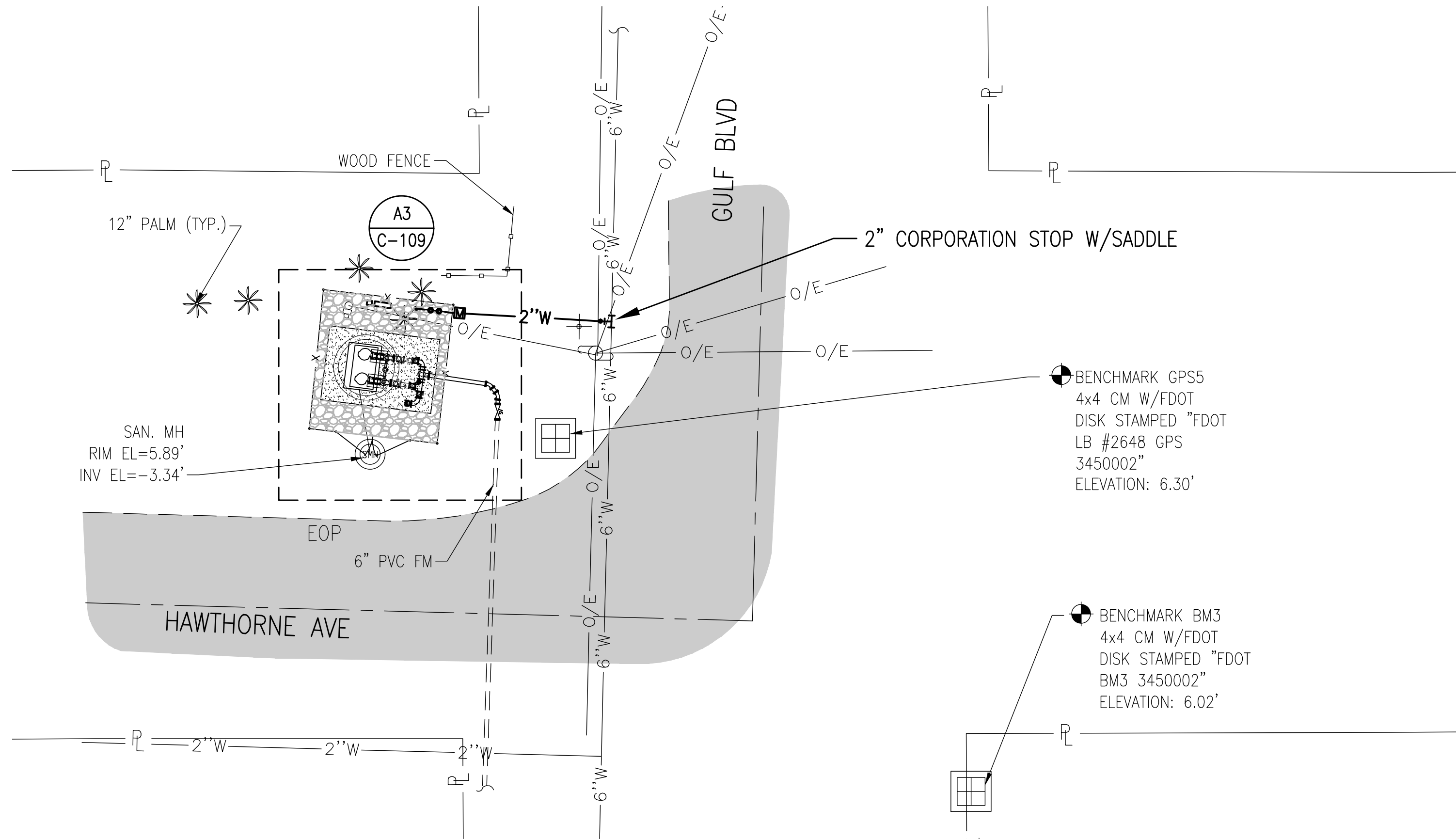
C-108

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CONTROL COORDINATE TABLE			
CONTROL POINT	DESCRIPTION	NORTHING	EASTING
FP1	FENCE POST 1	1749346.1034	323464.9148
FP2	FENCE POST 2	1749344.4811	323478.8706
FP3	FENCE POST 3	1749329.5814	323477.1385
FP4	FENCE POST 4	1749331.1781	323463.4033

CONSTRUCTION KEY NOTES:

- CONNECT THE PROPOSED 6" DISCHARGE PIPING TO EXISTING 6" PVC FM. COORDINATE WITH OWNER WHEN MAKING THE CONNECTION.
- 6" OF GRANITE #57 STONE PLACED ON MIRAFI 140-N GEOTEXTILE FABRIC OR APPROVED EQUAL.
- CONTRACTOR SHALL FIELD VERIFY LOCATION OF THE HOSE BIB WITH OWNER.



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CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

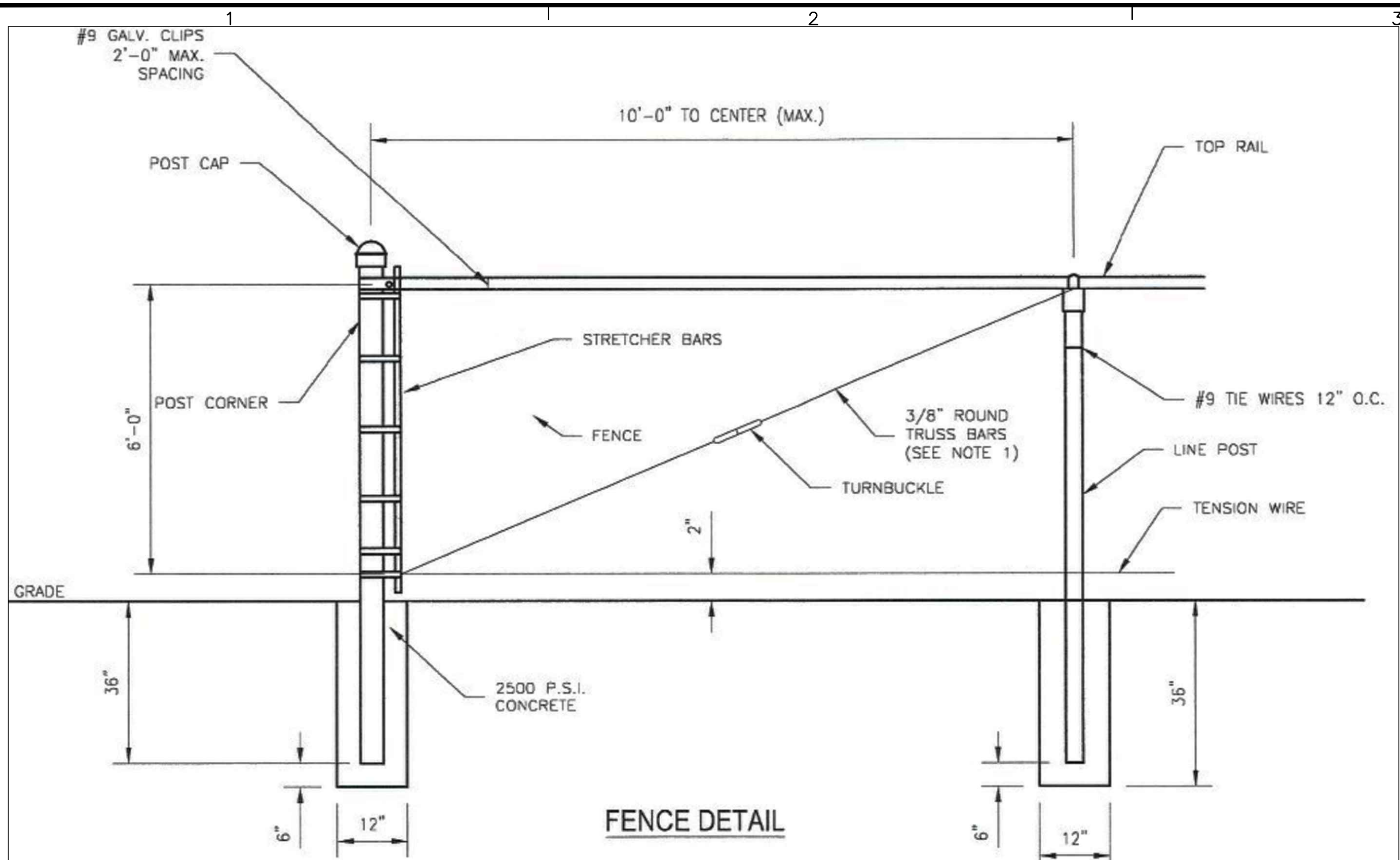
PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RCG	RWD	JWJ	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN

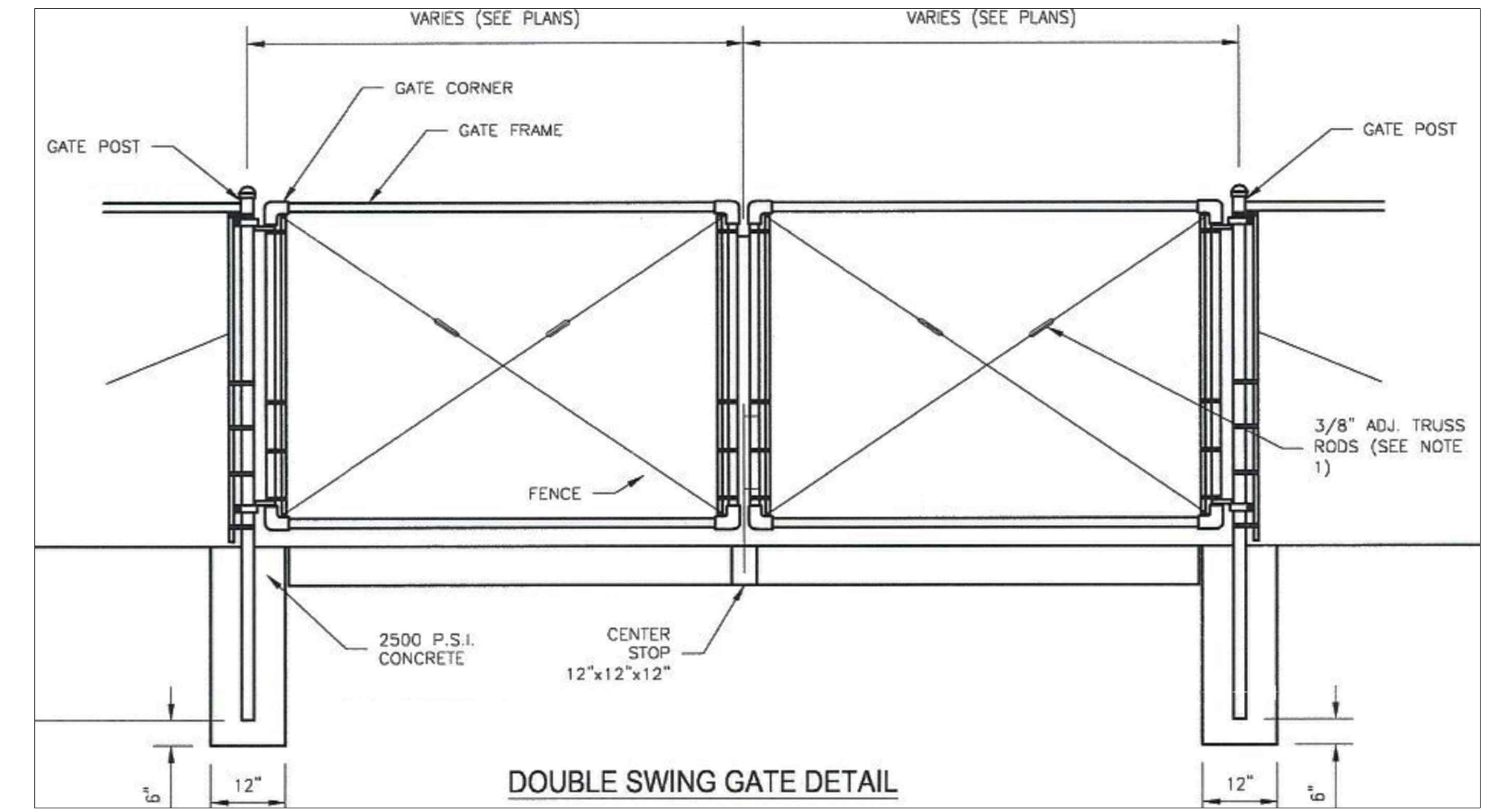
LS 10
PROPOSED SITE
PLAN

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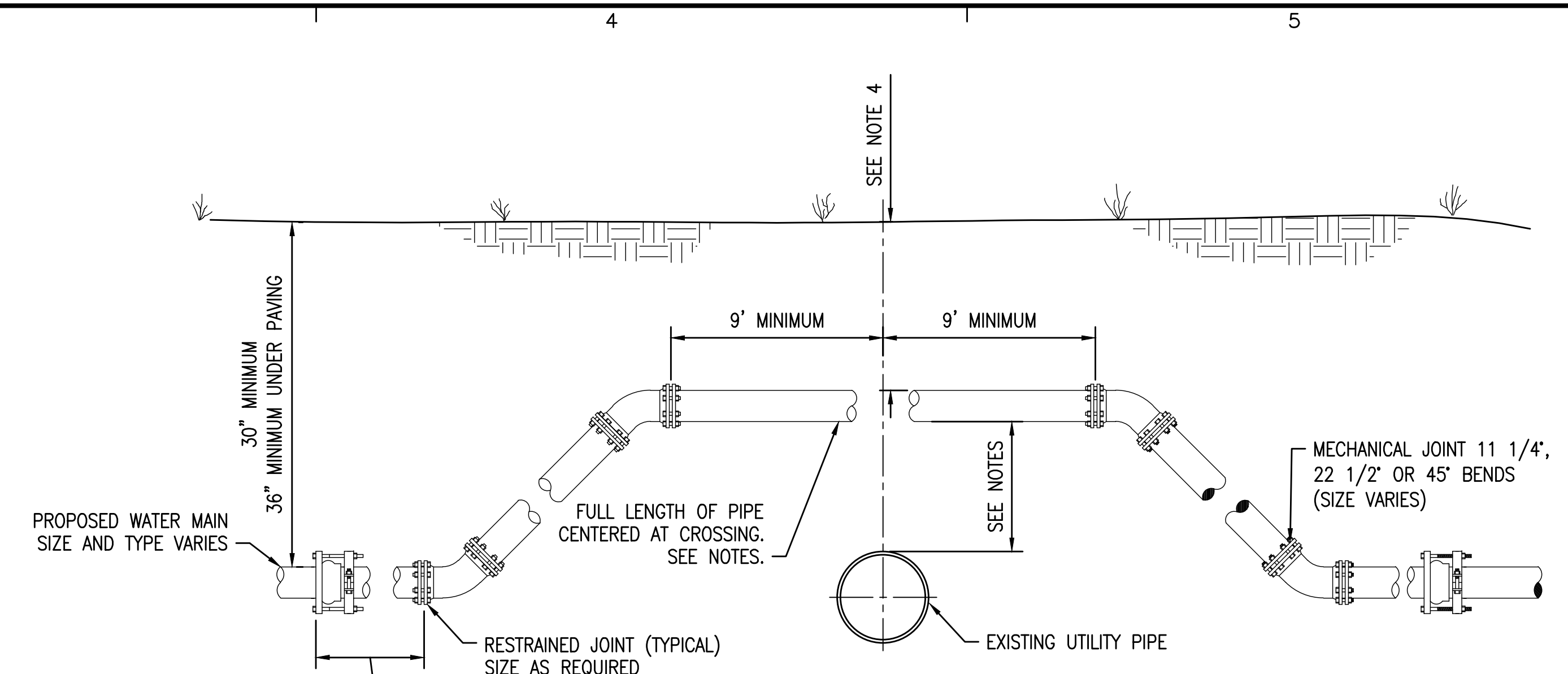
FENCE DETAIL



DOUBLE SWING GATE DETAIL

- FENCE/GATE NOTES:**
- 1.) TRUSS BARS ARE REQUIRED FOR EACH GATE SECTION AND THE FIRST SPAN ON EACH SIDE OF A CORNER POST ONLY.
 - 2.) CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION.
 - 3.) FENCING SHALL BE BLACK VINYL COATED.
 - 4.) TYPICAL GATE IS 16'. VERIFY WITH OWNER PRIOR TO CONSTRUCTION.

A1 CHAIN LINK FENCE DETAIL
NOT TO SCALE

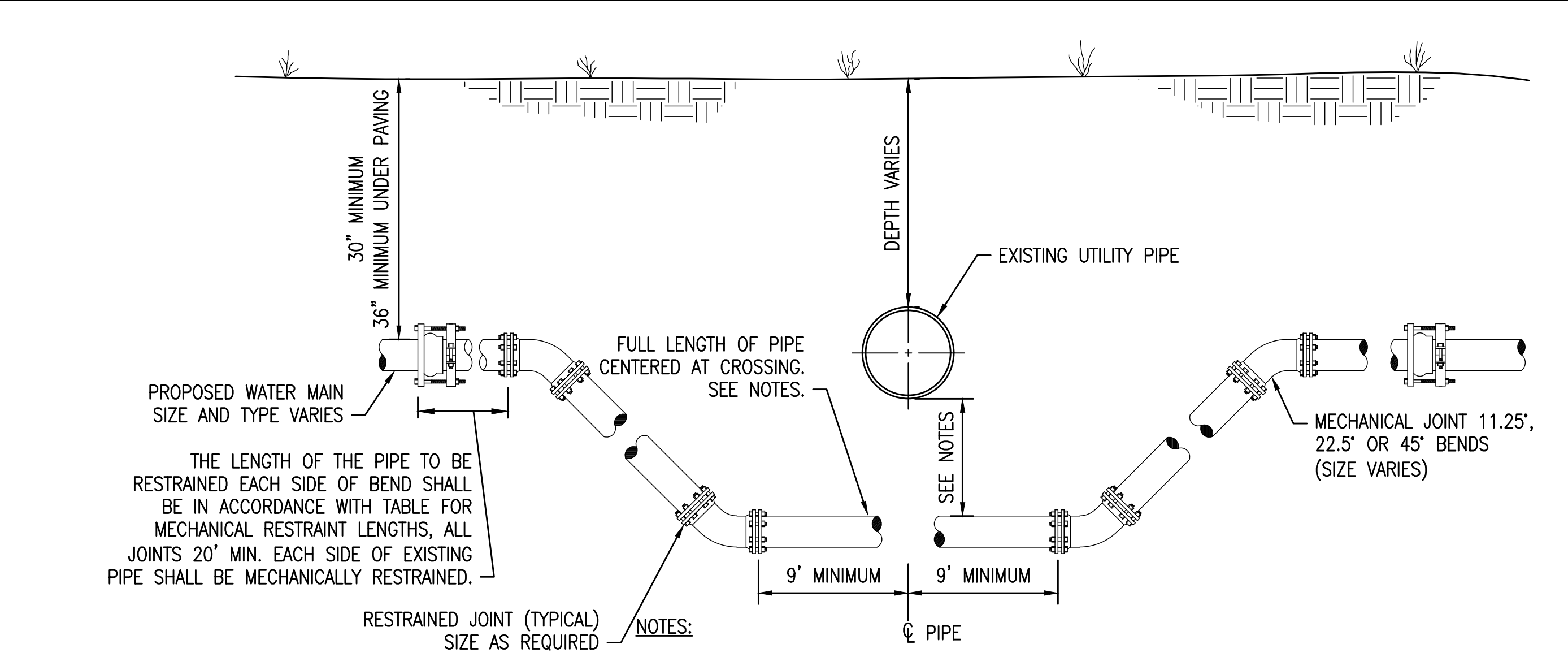


THE LENGTH OF THE PIPE TO BE RESTRAINED EACH SIDE OF BEND SHALL BE IN ACCORDANCE WITH TABLE FOR MECHANICAL RESTRAINT LENGTHS, ALL JOINTS 20' MIN. EACH SIDE OF EXISTING PIPE SHALL BE MECHANICALLY RESTRAINED.

NOTES:

1. IF EXISTING UTILITY PIPE IS A WATER MAIN, 12-INCHES OF SEPARATION IS REQUIRED.
2. IF EXISTING UTILITY PIPE IS A FORCE MAIN, SANITARY SEWER, RECLAIMED WATER MAIN OR STORM SEWER, 18 INCHES OF SEPARATION IS REQUIRED. IF THIS IS IMPRACTICAL AND EXISTING UTILITY MAIN IS C900, C905 OR D.I. PIPE, SEPARATION CAN BE REDUCED TO 6-INCHES. A FULL LENGTH OF PIPE SHALL BE CENTERED OVER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSINGS.
3. LOCATING WIRING REQUIRED.
4. DEPTH OF BURY TO BE 36" MINIMUM IN PAVED AREAS MEASURED FROM FINISHED GRADE. DEPTH OF BURY TO BE 30" MINIMUM IN UNPAVED AREAS.

C4 ADJUSTMENT OVER EXISTING UTILITIES
SCALE: NONE



THE LENGTH OF THE PIPE TO BE RESTRAINED EACH SIDE OF BEND SHALL BE IN ACCORDANCE WITH TABLE FOR MECHANICAL RESTRAINT LENGTHS, ALL JOINTS 20' MIN. EACH SIDE OF EXISTING PIPE SHALL BE MECHANICALLY RESTRAINED.

NOTES:

1. IF EXISTING UTILITY PIPE IS A WATER MAIN, 12-INCHES OF SEPARATION IS REQUIRED.
2. IF EXISTING UTILITY PIPE IS A FORCE MAIN, SANITARY SEWER, RECLAIMED WATER MAIN OR STORM SEWER, 18 INCHES OF SEPARATION IS REQUIRED. IF THIS IS IMPRACTICAL AND EXISTING UTILITY MAIN IS C900, C905 OR D.I. PIPE, SEPARATION CAN BE REDUCED TO 6-INCHES. A FULL LENGTH OF PIPE SHALL BE CENTERED UNDER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSINGS.
3. LOCATING WIRING REQUIRED.

A4 ADJUSTMENT UNDER EXISTING UTILITIES
SCALE: NONE

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TYLER T. LEE
FL Reg. Engineer #033009

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01				
DESIGNED BY: TTL				
DRAWN BY: RGG				
CHK'D BY: RWD				
PROJ. MGR.: JWL				
DATE: FEBRUARY 2023				
				NOT RELEASED FOR CONSTRUCTION BY DATE

**STANDARD
DETAILS**

C-900

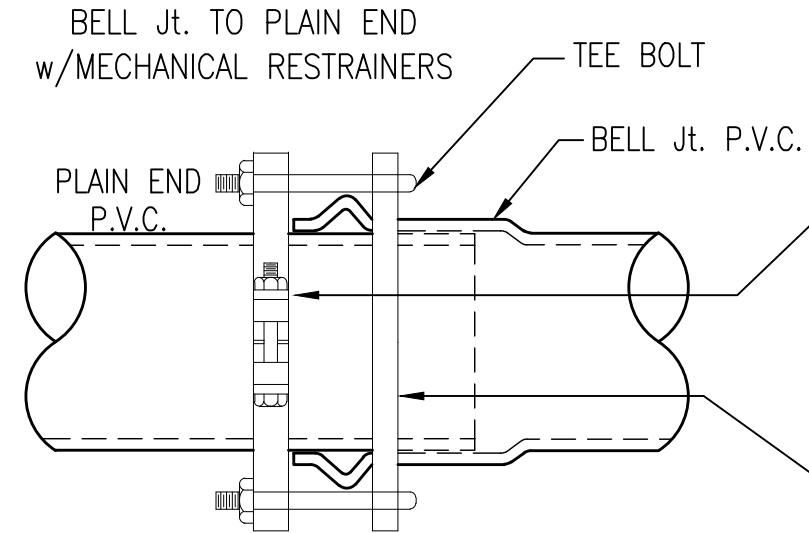
NOTES

- TABLE ASSUMPTIONS: PVC PIPE, SAFETY FACTOR = 1.5, TEST PRESSURE = 150PSI SOIL = GM OR SM, 3 FT. BURY DEPTH TO TOP OF PIPE, TRENCH TYPE 3, BRANCH ON TEE IS ONE SIZE SMALLER THAN RUN OF TEE SIZE AND 20 FEET OF PIPE IS INSTALLED PAST THE TEE ON THE RUN SIDE. (SMALLER BRANCH SIZES MUST BE CALCULATED BY THE ENGINEER). VERTICAL OFFSETS ARE 3 FEET DEEP ON TOP AND 8 FEET DEEP ON BOTTOM. REDUCERS ARE CALCULATED FOR ONE SIZE REDUCTION. OTHER CONDITIONS WILL REQUIRE ADDITIONAL CALCULATIONS.
- ALL FITTINGS MUST BE RESTRAINED. ONE OF THE FOLLOWING METHODS MAY BE USED:
 - MECHANICAL RESTRAINTS AT FITTING AND AT ADJACENT JOINTS TO A LENGTH AS SPECIFIED IN CHART.
 - TIE RODS AT FITTING AND THROUGH JOINTS TO A LENGTH AS SPECIFIED IN CHART.
- NOT APPLICABLE TO IN LINE VALVES UNDER 12 INCHES IN DIAMETER.
- PIPE 54" AND GREATER WILL BE RESTRAINED JOINT PIPE BEING RESTRAINED AT ALL POINTS ALONG THE PIPE.

L=MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTING (FEET)

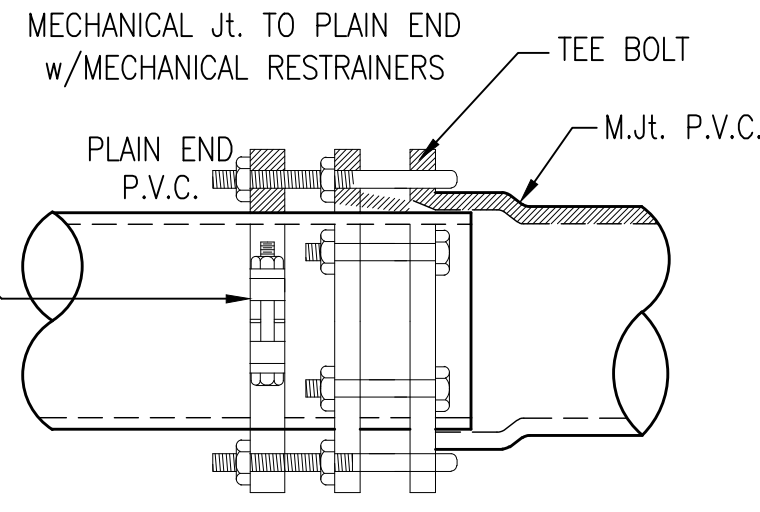
NOMINAL PIPE SIZE (INCHES)	1 1/4" HORIZONTAL ELBOW	2 1/2" HORIZONTAL ELBOW	45° HORIZONTAL ELBOW	90° HORIZONTAL ELBOW	HORIZONTAL TEES	HORIZONTAL PLUGS & VALVES (SEE NOTE 3)	45° VERTICAL OFFSET UPPER LENGTH	45° VERTICAL OFFSET LOWER LENGTH	22 1/2° VERT. OFFSET UPPER LENGTH	22 1/2° VERT. OFFSET LOWER LENGTH	REDUCER TO 1 SIZE SMALLER LENGTH ON LARGER SIZE SIDE
4	2	4	7	18	20 - RUN 1 - BRANCH	39	16 / 3	8 / 1	N/A		
6	2	5	10	25	20 - RUN 1 - BRANCH	55	23 / 4	11 / 2	28		
8	3	6	13	32	20 - RUN 1 - BRANCH	72	30 / 5	14 / 3	30		
10	4	8	16	38	20 - RUN 1 - BRANCH	86	36 / 6	17 / 3	29		
12	4	9	19	45	20 - RUN 1 - BRANCH	102	42 / 8	20 / 4	50		
14	5	10	21	51	20 - RUN 10 - BRANCH	116	48 / 9	23 / 4	30		
16	6	11	23	57	20 - RUN 26 - BRANCH	131	54 / 10	26 / 5	30		

TYPICAL PROFILE*



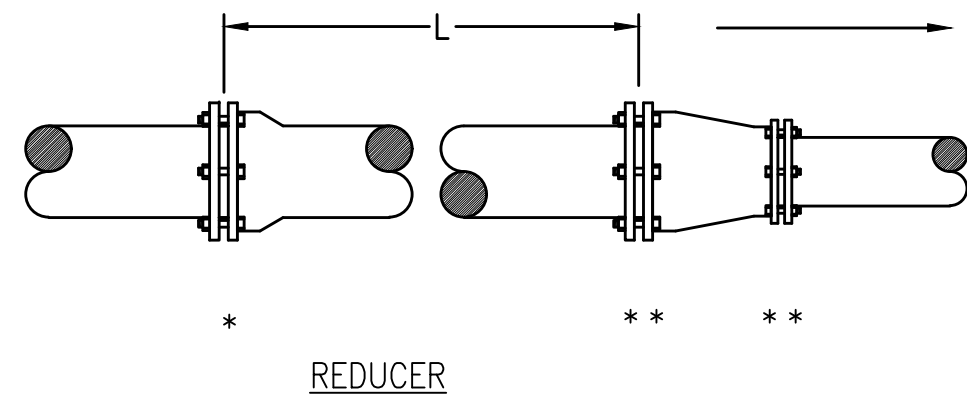
RESTRAINED BELL JOINT

TYPICAL PROFILE**

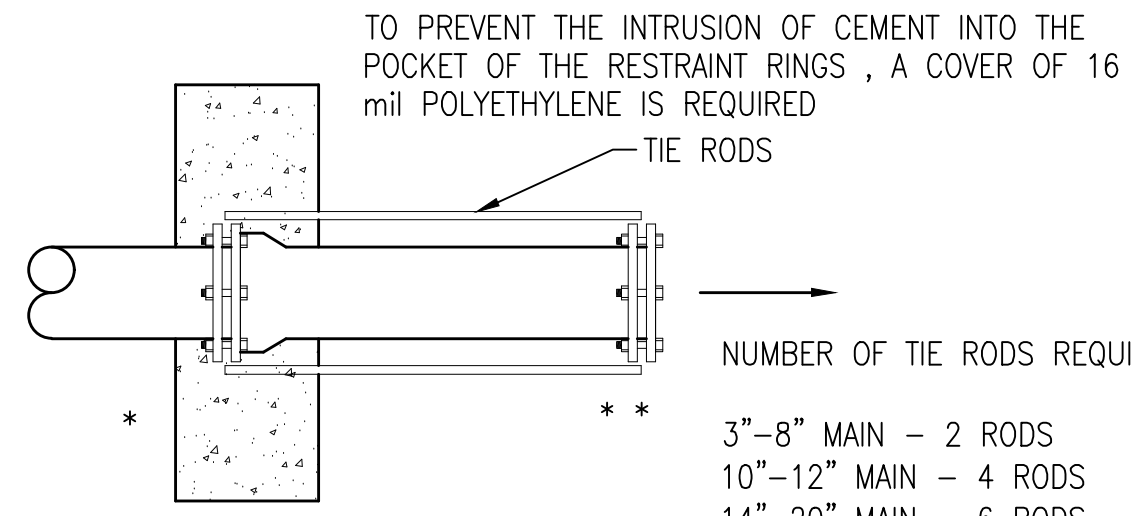


RESTRAINED MECHANICAL JOINT

SECTIONS



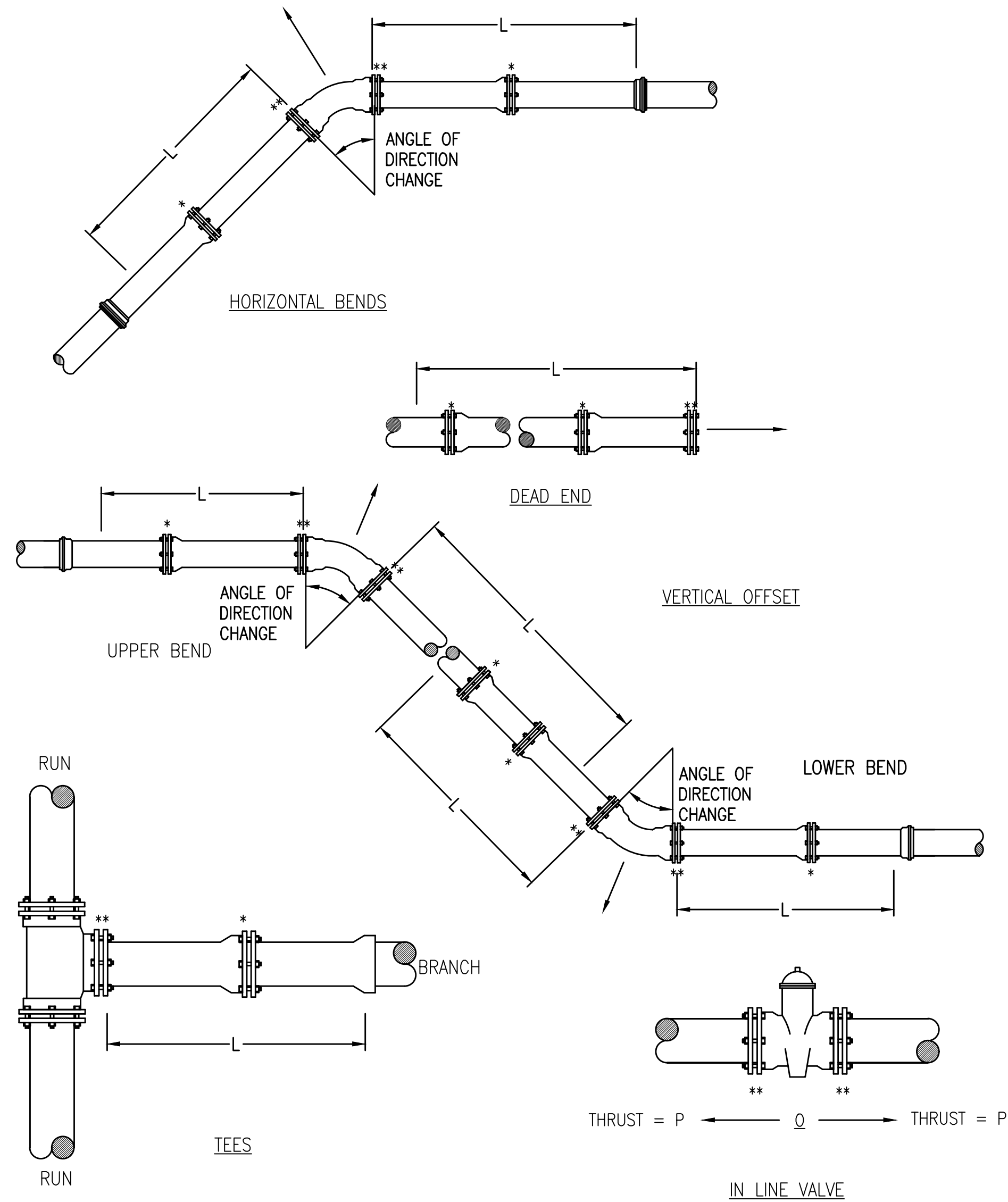
REDUCER



THRUST COLLAR ANCHOR
TO BE USED INSTEAD OF TOTAL RESTRAINED LENGTH (OPTIONAL)

NUMBER OF TIE RODS REQUIRED
3"-8" MAIN - 2 RODS
10"-12" MAIN - 4 RODS
14"-20" MAIN - 6 RODS

B1 MECHANICAL RESTRAINT JOINT DETAILS
NOT TO SCALE



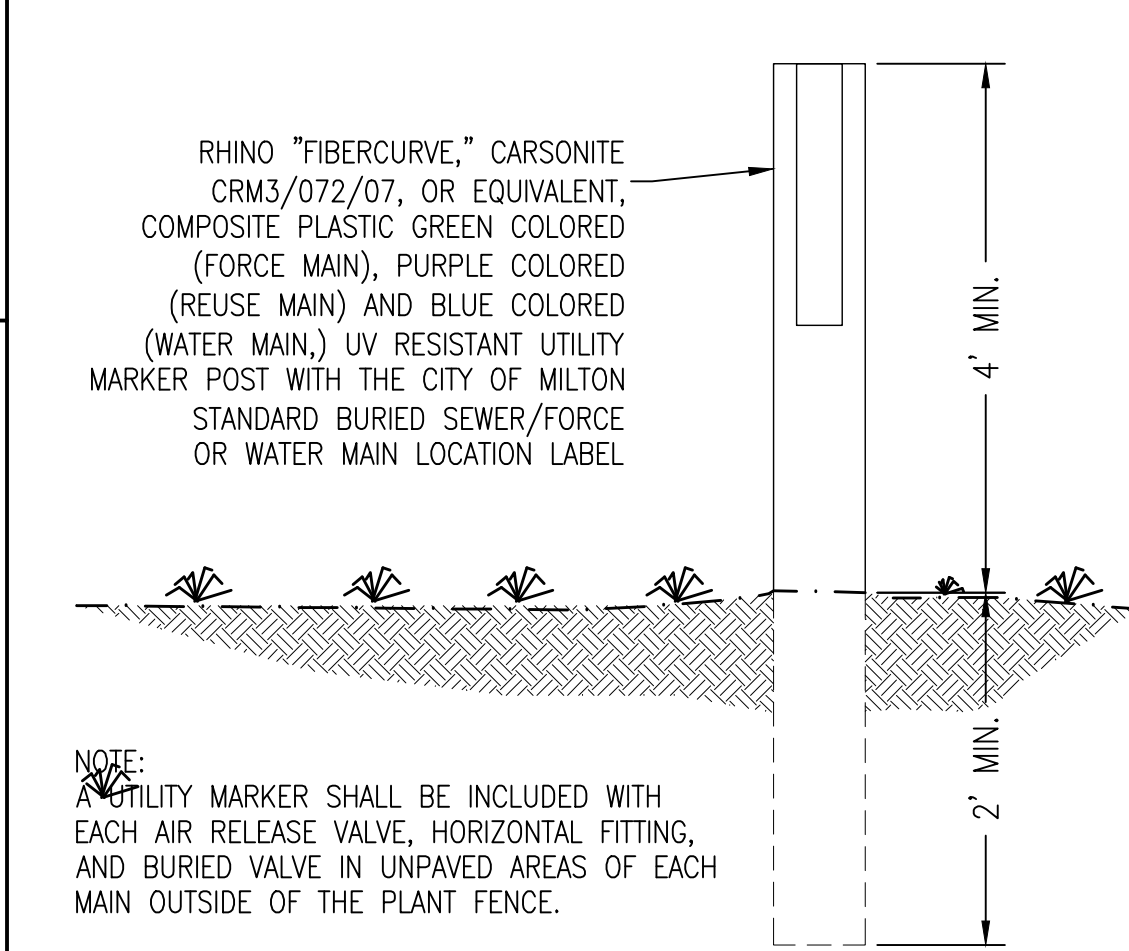
PROJECT NO.	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01				
DESIGNED BY: TTL				
DRAWN BY: RGG				
CHK'D BY: RWD				
PROJ. MGR: JWL				
DATE: FEBRUARY 2023				

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH F.A.C. RULE 62-555.314

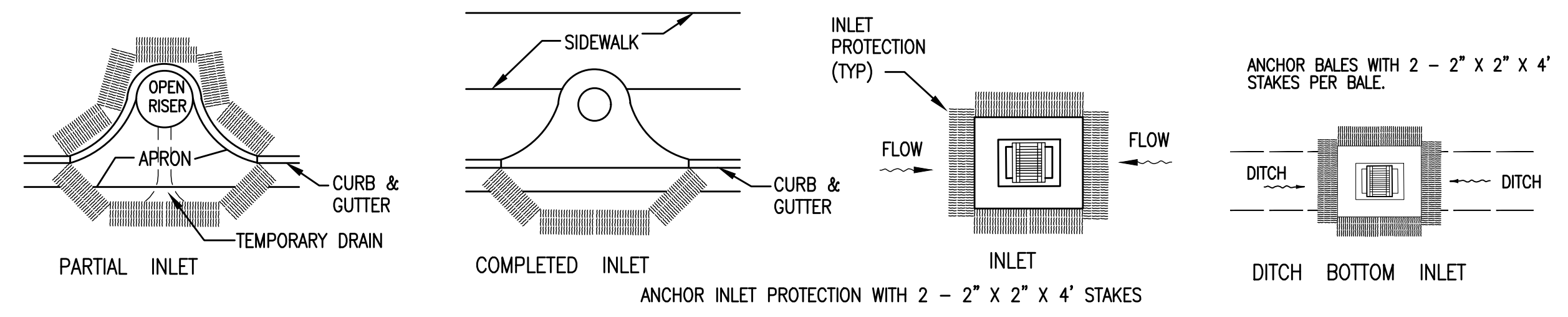
OTHER PIPE	HORIZONTAL SEPARATION	CROSSINGS (1)	JOINT SPACING @ CROSSINGS (FULL JOINT CENTERED)
GRAVITY OR PRESSURE SANITARY SEWER, SANITARY SEWER FORCE MAIN, RECLAIMED WATER (2)	<p>WATER MAIN 10 FT PREFERRED 6 FT. MINIMUM (3)</p>	<p>WATER MAIN 12 INCHES IS THE MINIMUM, EXCEPT FOR GRAVITY SEWER, THEN 6 INCHES IS THE MINIMUM AND 12 INCHES IS THE PREFERRED.</p>	<p>WATER MAIN ALTERNATE 3 FT. MINIMUM</p>
ON-SITE SEWAGE TREATMENT & DISPOSAL SYSTEM	10 FT. MINIMUM	—	—

1. WATER MAIN SHOULD CROSS ABOVE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MINIMUM SEPARATION IS 12 INCHES.
2. RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
3. 3 FT. FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.
4. PLEASE REFER TO F.A.C. RULE 62-555.314 FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.

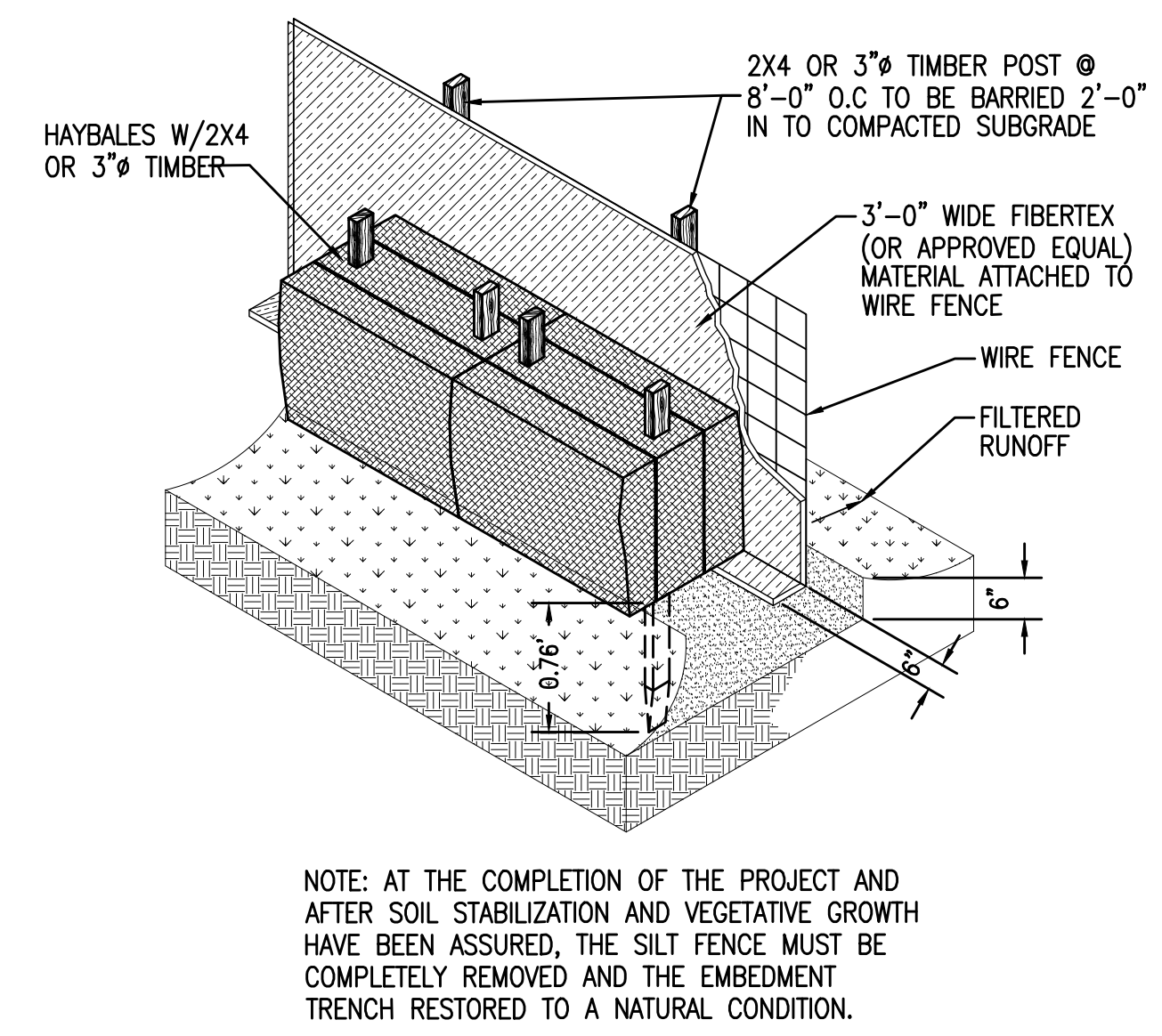
C1 WATER MAIN OFFSET REQUIREMENT
SCALE: NONE



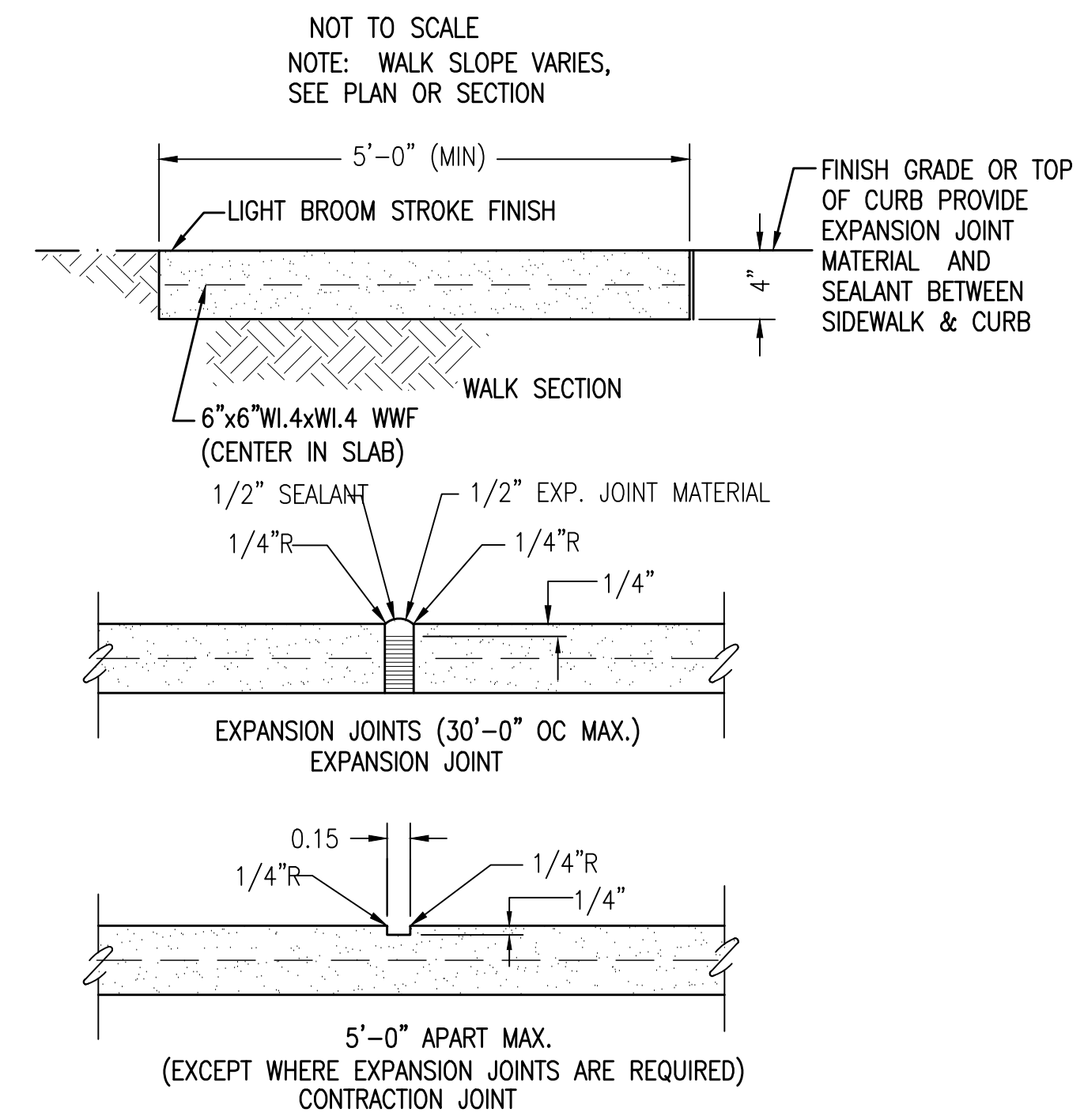
B2 UTILITY MARKER DETAIL
NOT TO SCALE



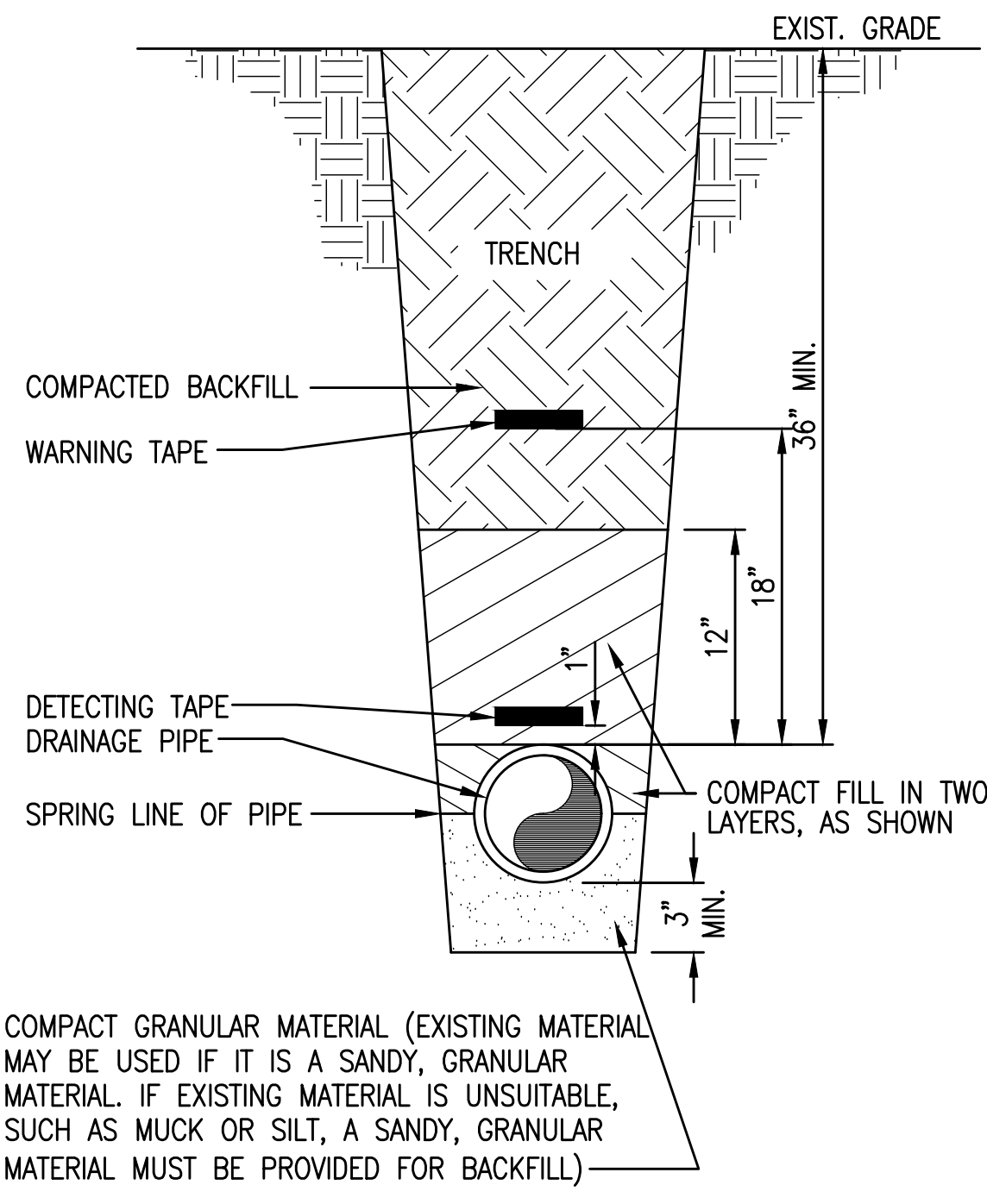
D3 PROTECTION AROUND INLETS OR SIMILAR STRUCTURES
SCALE: NONE



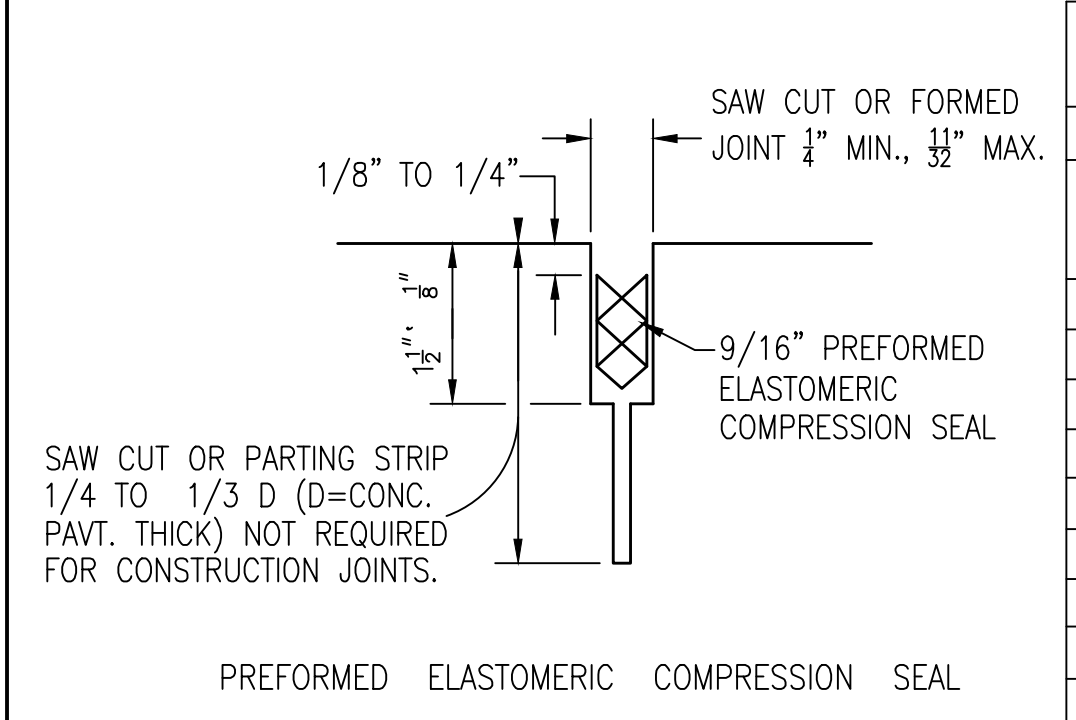
B3 SILT FENCE DETAIL
NTS



B4 TYPICAL CONCRETE SIDEWALK DETAILS
NOT TO SCALE



A1 TYPICAL PIPE BEDDING
NOT TO SCALE



A3 CONCRETE-CONCRETE JOINTS
NOT TO SCALE

BACKER ROD BOND BREAKER (CONCRETE-CONCRETE JOINTS)				
JOINT DIMENSIONS (INCHES)				
JOINT WIDTH	SEALANT BEAD THICKNESS	BACKER ROD DIAMETER	MINIMUM JOINT DEPTH	BACKER ROD PLACEMENT DEPTH
1/4	1/4	3/8	1	1/2
3/8	1/4	1/2	1 1/4	1/2
1/2	1/4	3/8	1 1/2	1/2
5/8	5/16	3/4	1 1/2	5/16
3/4	3/8	1	1 1/2	3/8
7/8	7/16	1 1/8	1 1/2	11/16
1	1/2	1 1/2	2	3/4
>1	1/2	1 1/2 +	2 +	3/4

UNLESS OTHERWISE INDICATED ON THE PLANS THE JOINT WIDTH FOR NEW CONSTRUCTION WILL BE 1/2" FOR CONSTRUCTION JOINTS, 3/8" FOR ALL OTHER JOINTS.

K:\1235 Cedar Key\123503.01 Sanitary Sewer Lift Station Rehabilitation\DWG\C-900-902.dwg, Jan 30, 2024 - 6:52:51 PM, tlee

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ENGINEERING THE SOUTH SINCE 1927
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FL Reg. Engineer #033008

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RWD	RWD	JWJ	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN

**STANDARD
DETAILS**

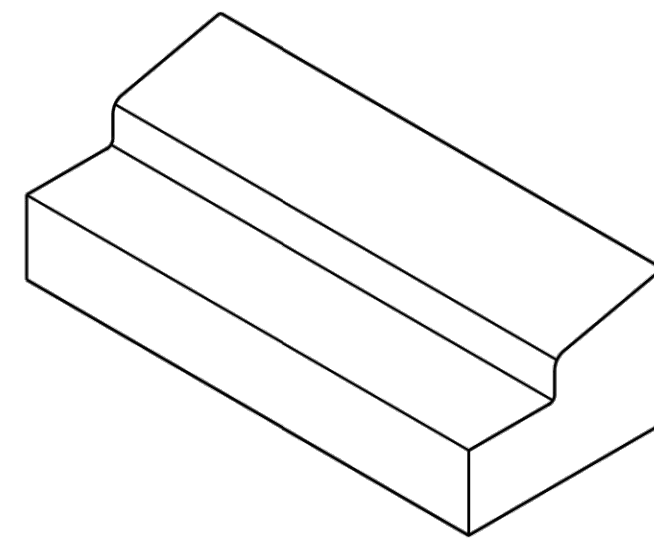
C-902

GENERAL NOTES:

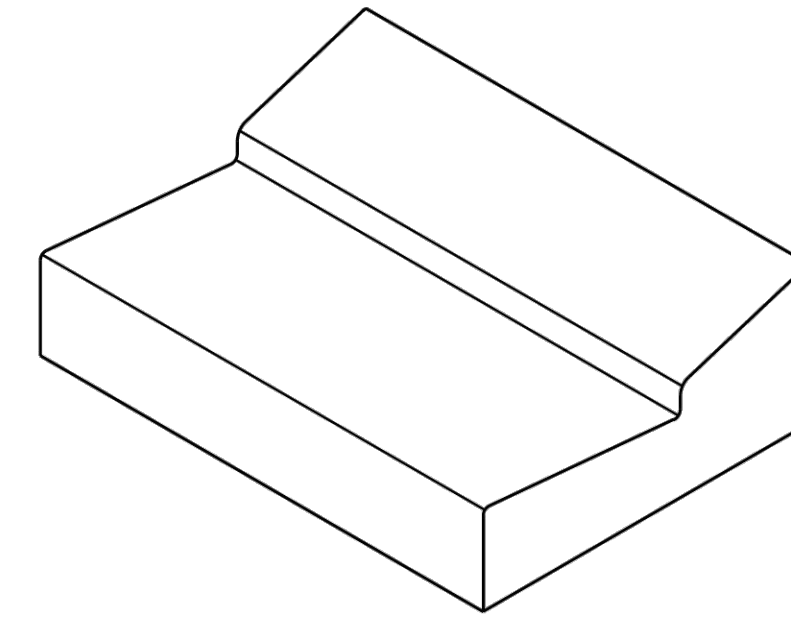
1. For curb, gutter and curb & gutter provide $\frac{1}{8}$ " - $\frac{1}{4}$ " contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.
2. Locate expansion joints for curb, gutter and curb & gutter in accordance with Specification 520.

TABLE OF CONTENTS:

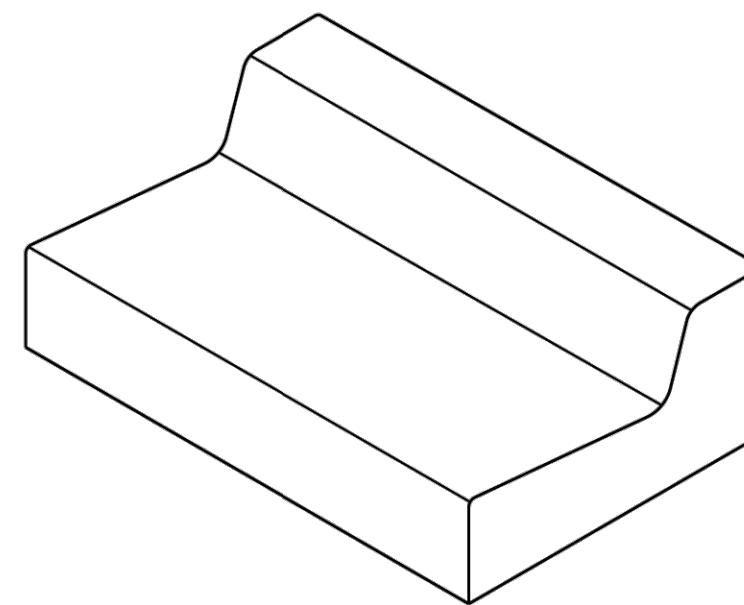
Sheet	Description
1	General Notes and Contents
2	Concrete Curb and Gutter
3	Curb and Gutter Joints and Endings, Concrete Bumper Guard, and Asphaltic Concrete Curb



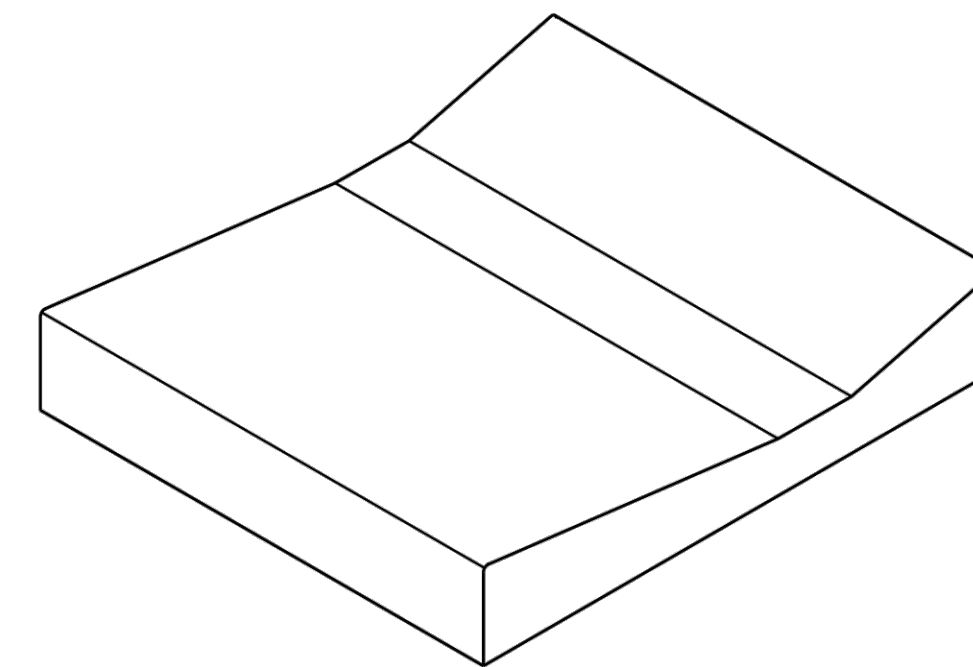
TYPE A



TYPE E

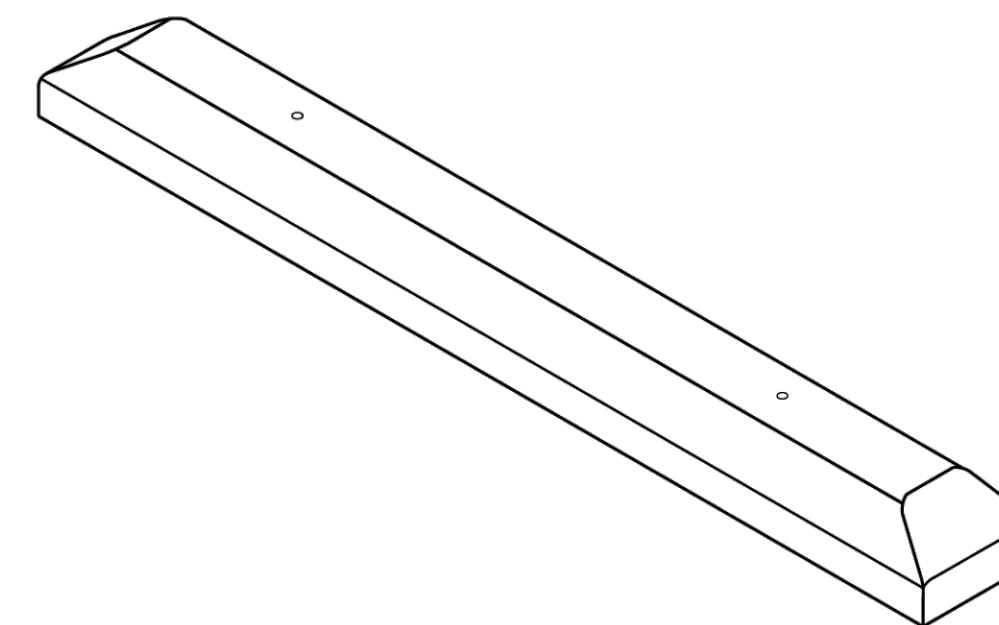


TYPE F



SHOULDER GUTTER

TYPE A, TYPE E, TYPE F, AND SHOULDER GUTTER
(Other Types Similar)



CONCRETE BUMPER GUARD

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LAST REVISION	DESCRIPTION:
11/01/21	



FY 2023-24
STANDARD PLANS

CURB AND GUTTER

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CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	RG	RWD	JWJ	FEBRUARY 2023				

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BASKERVILLE-DONOVAN, INC.
ENGINEERING THE SOUTH SINCE 1927

449 W. MAIN ST., PENSACOLA, FL 32502 (850) 438-9661
ENGINEERING BUSINESS: EB-0000340

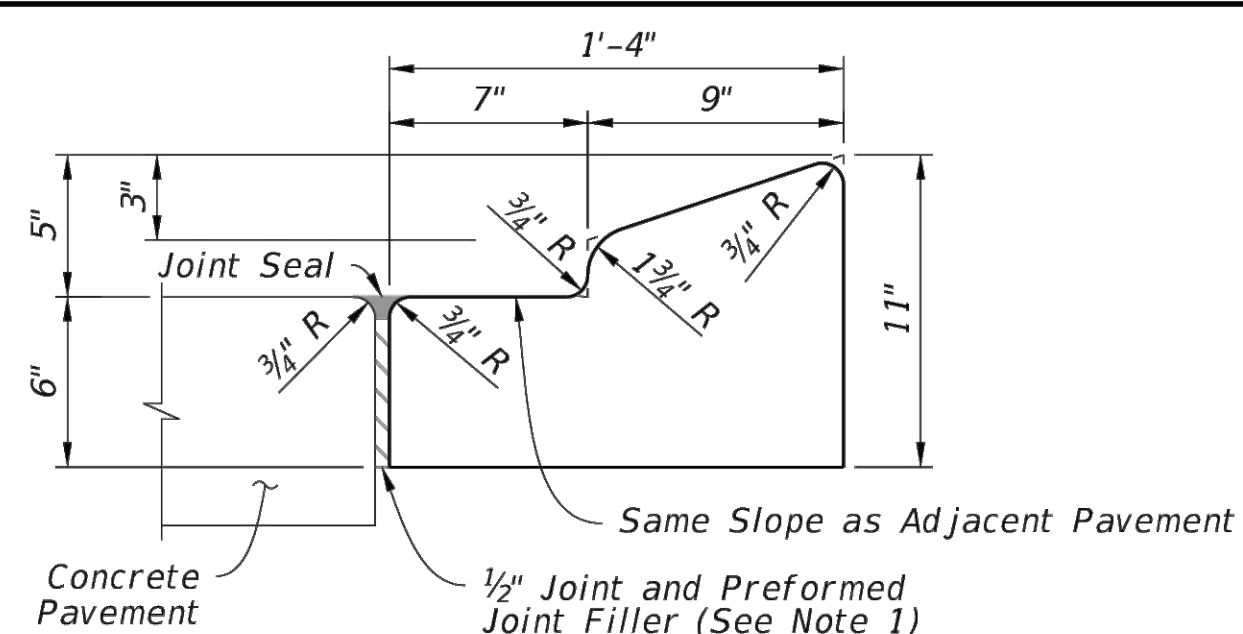
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FL Reg. Engineer #83309

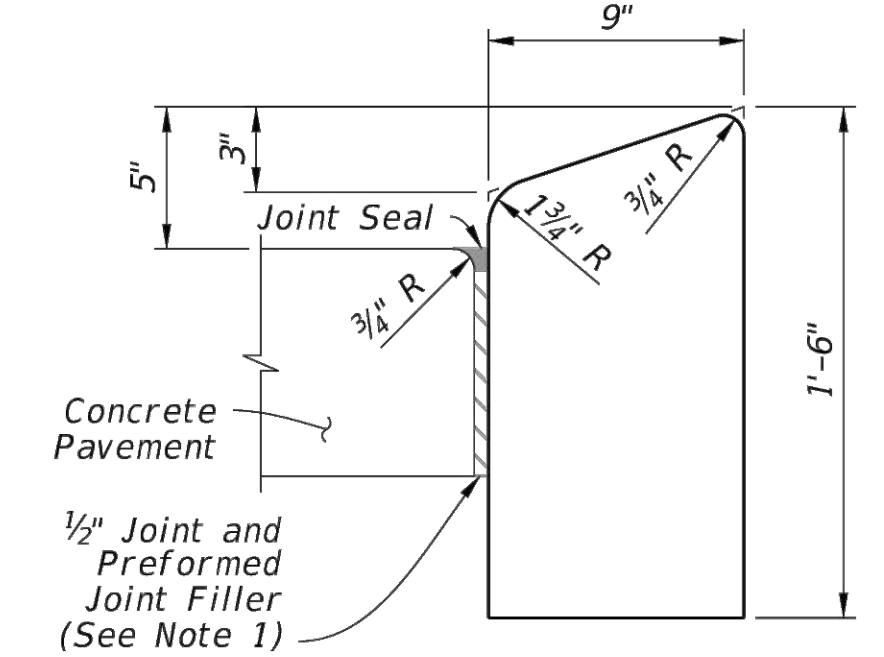
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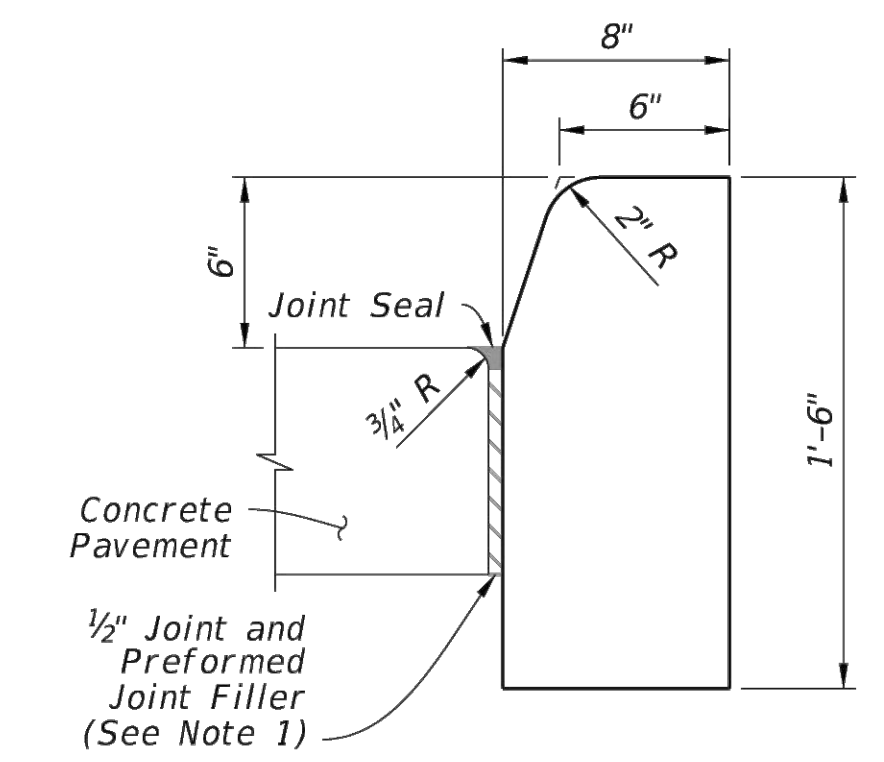
NOTE: For use adjacent to concrete or flexible pavement, concrete shown (See Note 4).

TYPE A



NOTE: For use adjacent to concrete or flexible pavement, concrete shown.

TYPE B

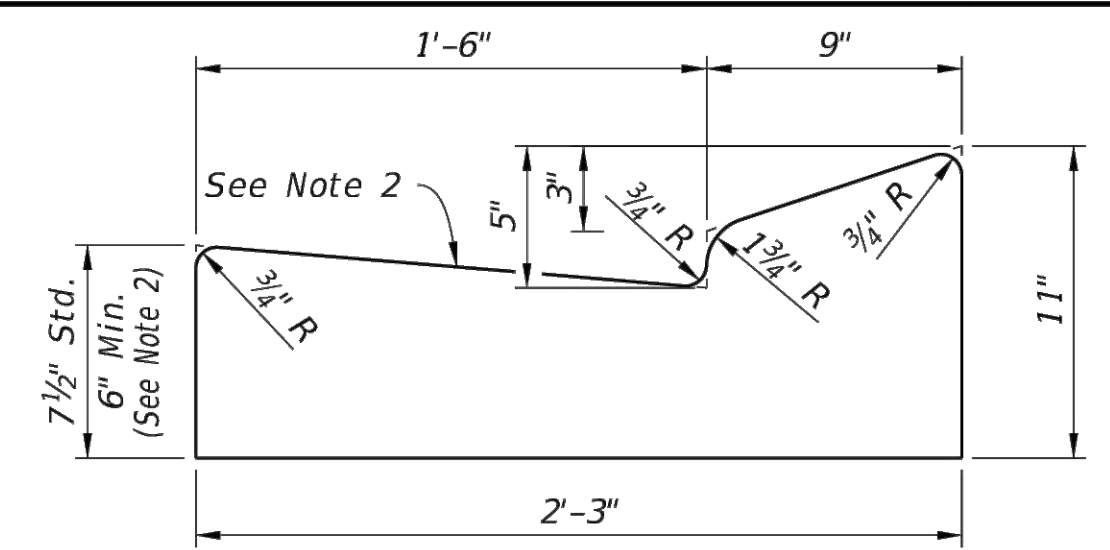


NOTE: For use adjacent to concrete or flexible pavement, concrete shown.

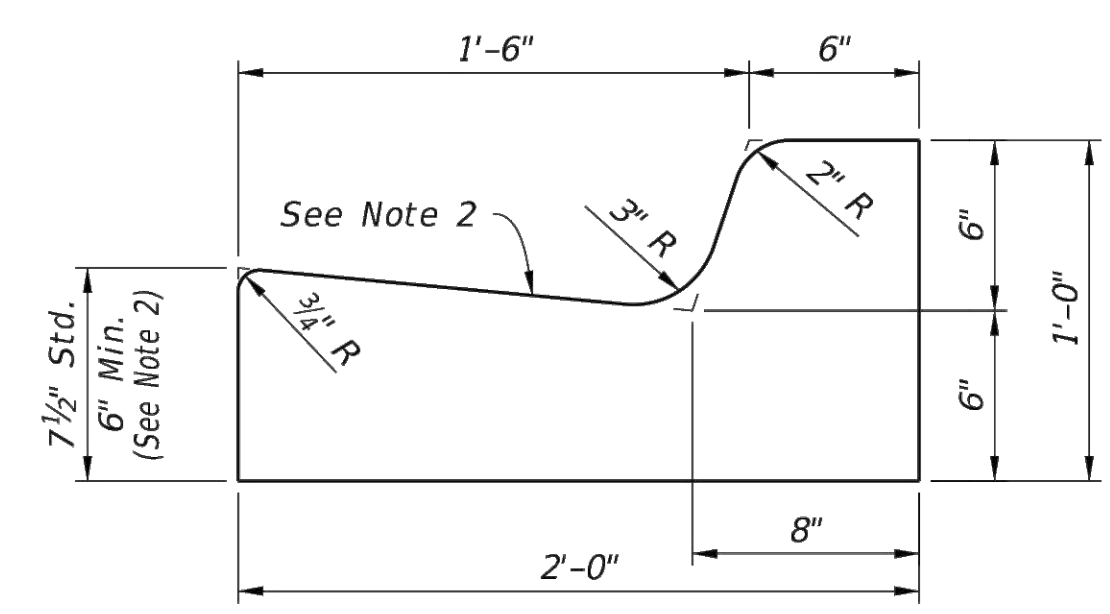
TYPE D

NOTES:

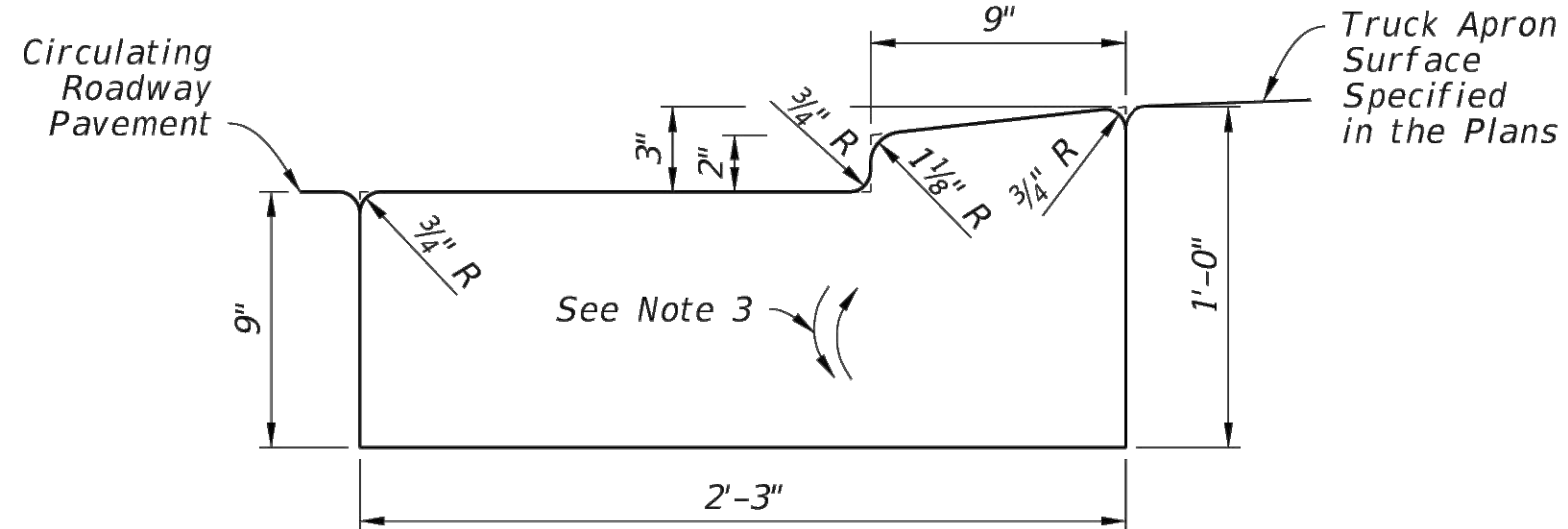
- For Type A, Type B, and Type D Curb: Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 3.
- For Type E, Type F, Drop Curb, and Valley Gutter: When used on high side of roadways, match the cross slope of the gutter to the cross slope of the adjacent pavement. The thickness of the lip is 6", unless otherwise shown on Plans.
- For Type RA, rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.
- For details depicting usage of Type A Curb adjacent to flexible pavement see Sheet 3.



TYPE E

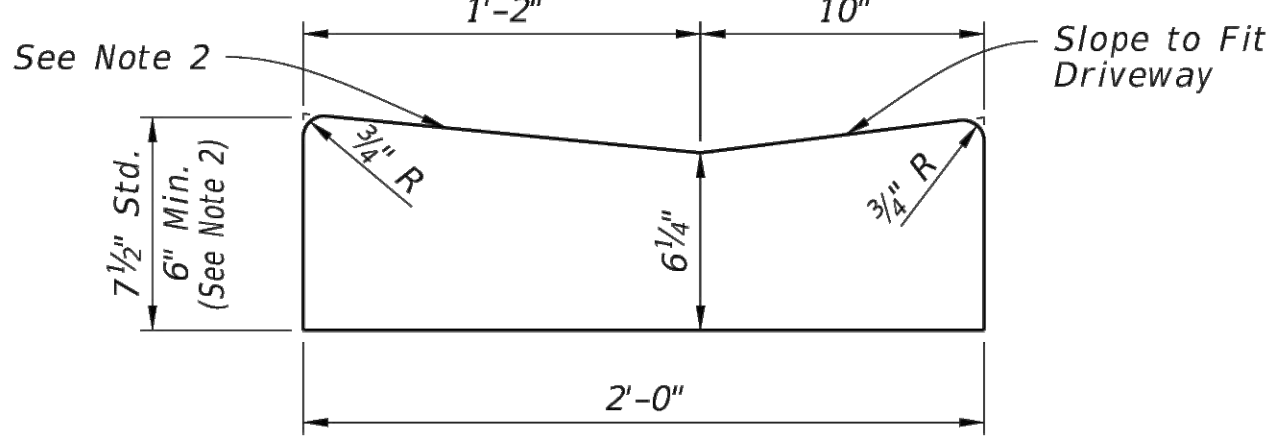


TYPE F

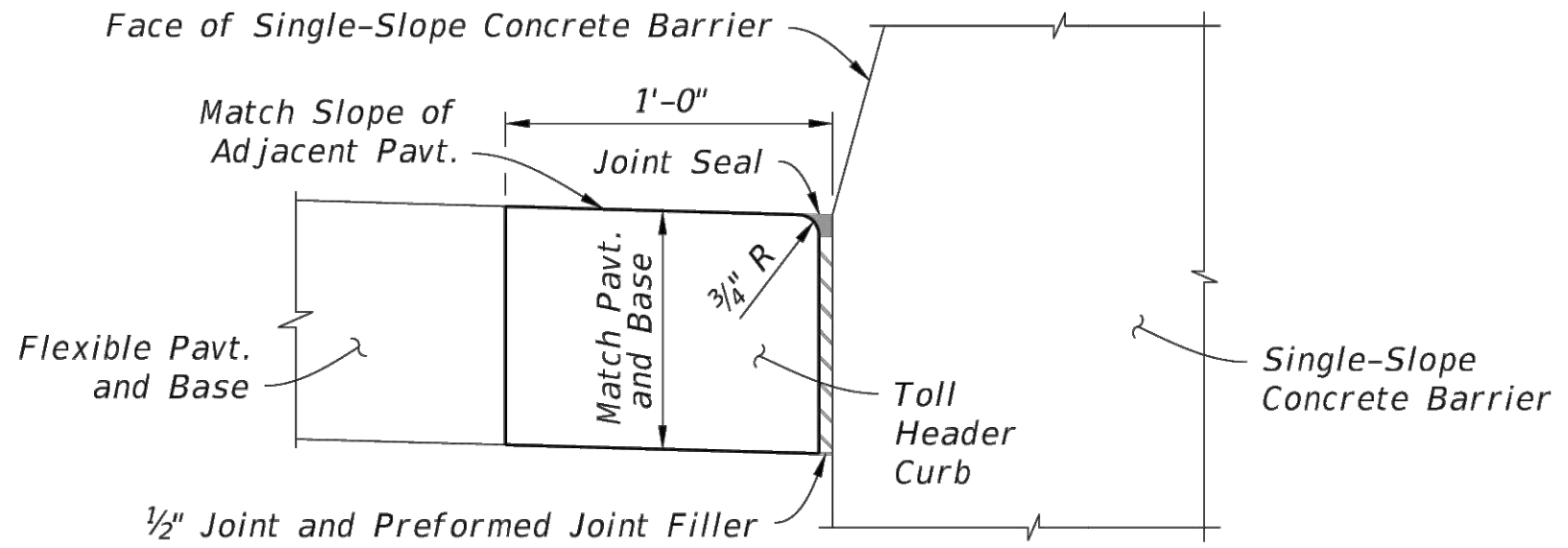


NOTE: Traffic Bearing Sections for use in Roundabout Central Island Construction.

TYPE RA

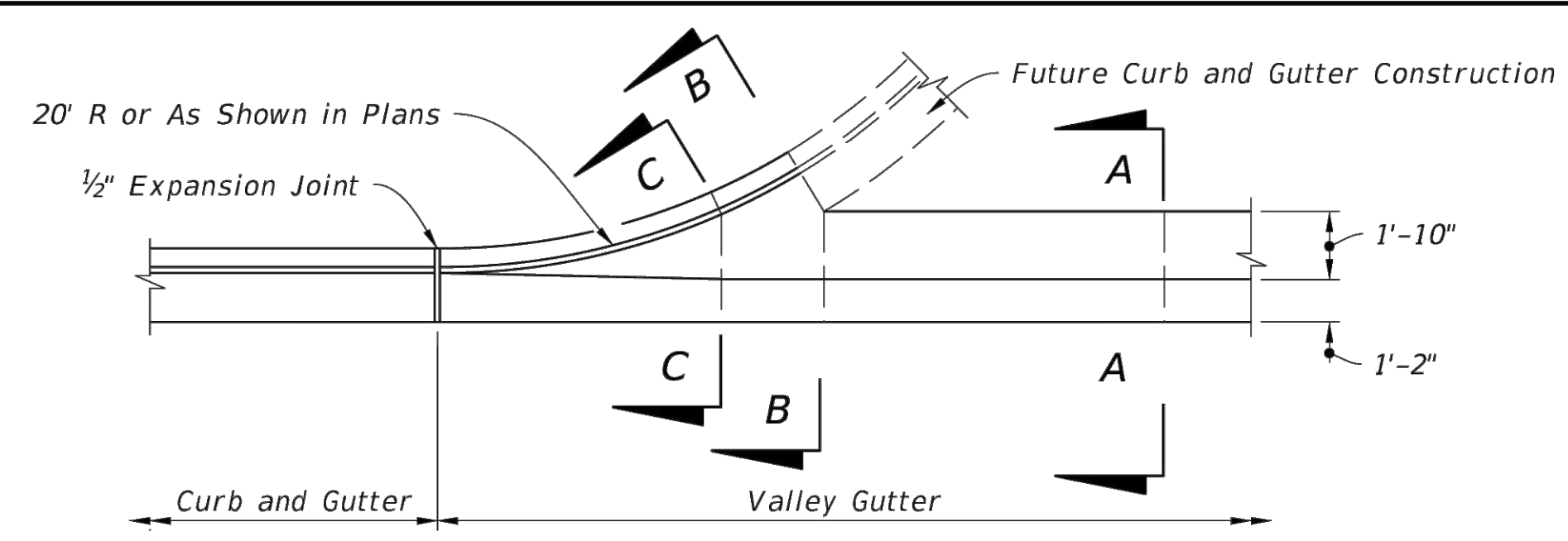


DROP CURB

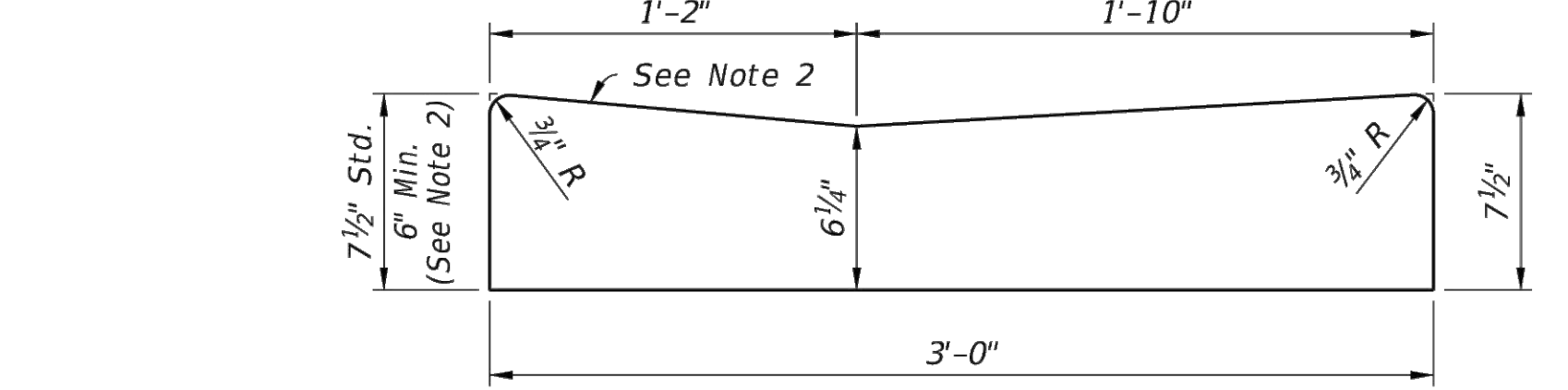


NOTE: See the toll site details for conduit requirements.

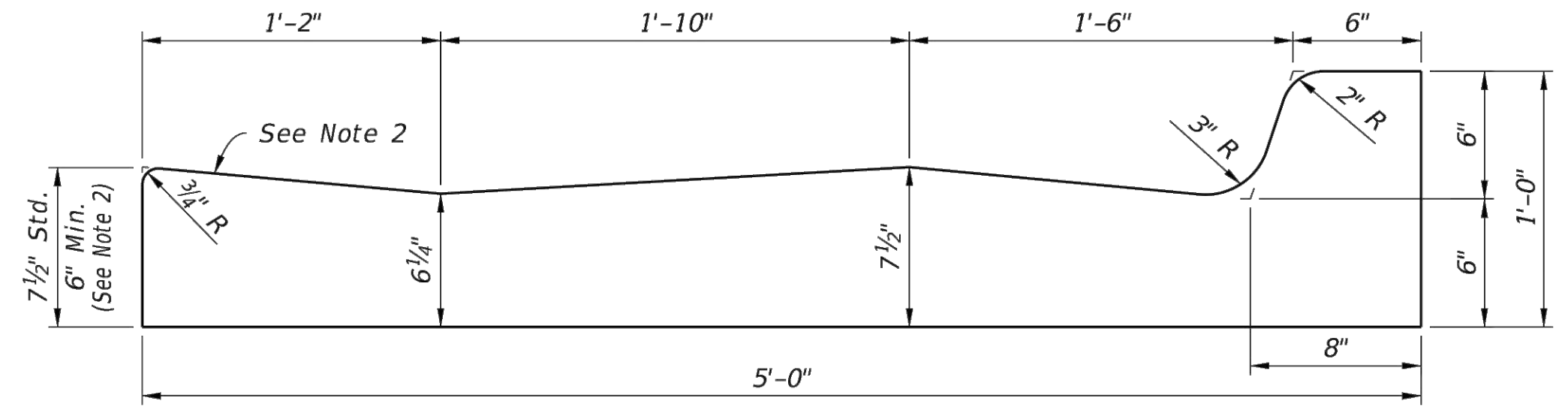
TOLL HEADER CURB



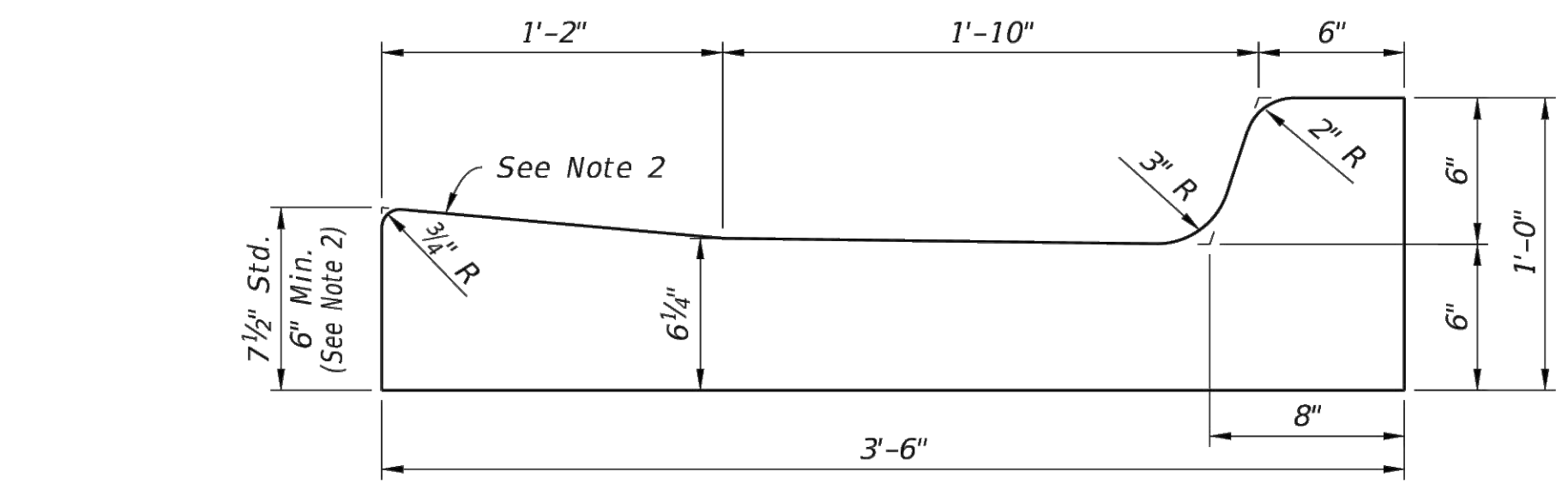
PLAN VIEW



SECTION A-A

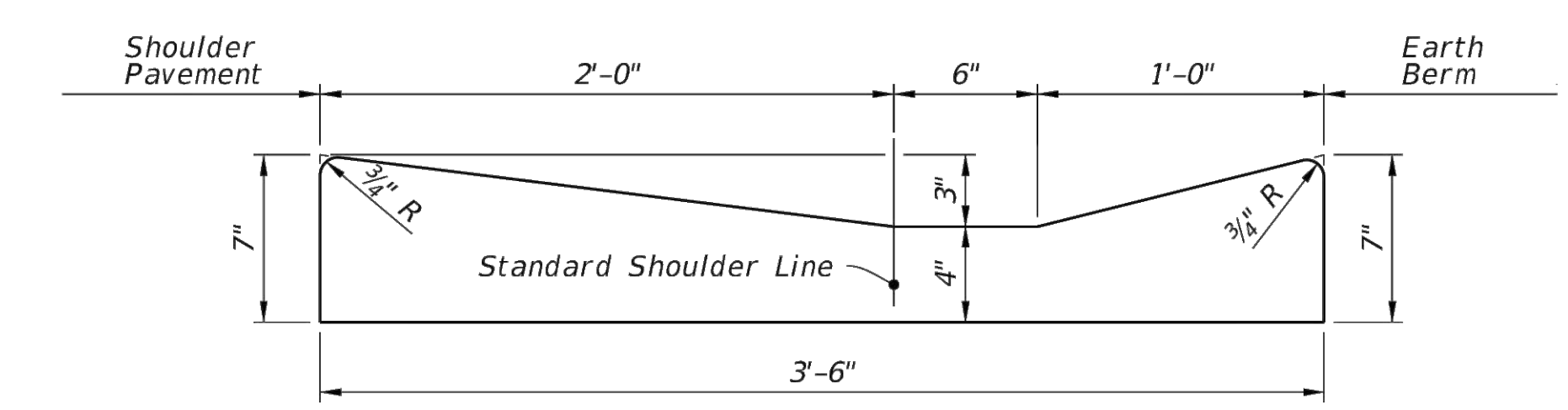


SECTION B-B



SECTION C-C

VALLEY GUTTER



SHOULDER GUTTER

CONCRETE CURB AND GUTTER

CURB AND GUTTER

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FL Reg. Engineer #83309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

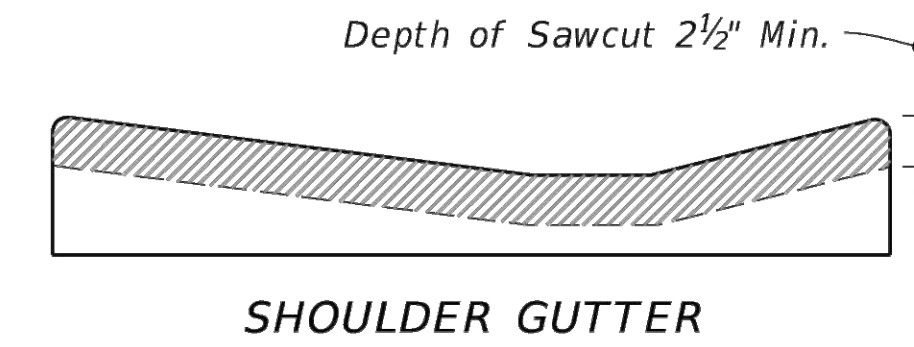
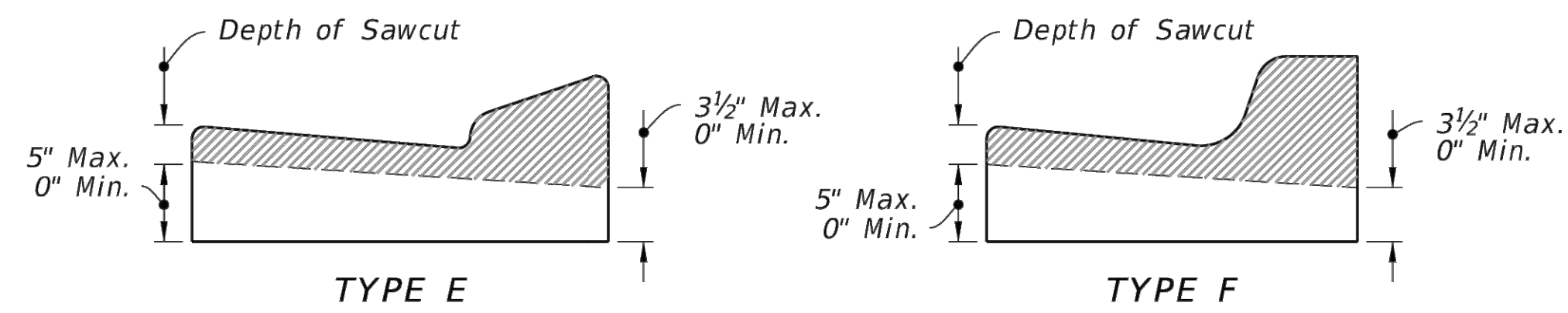
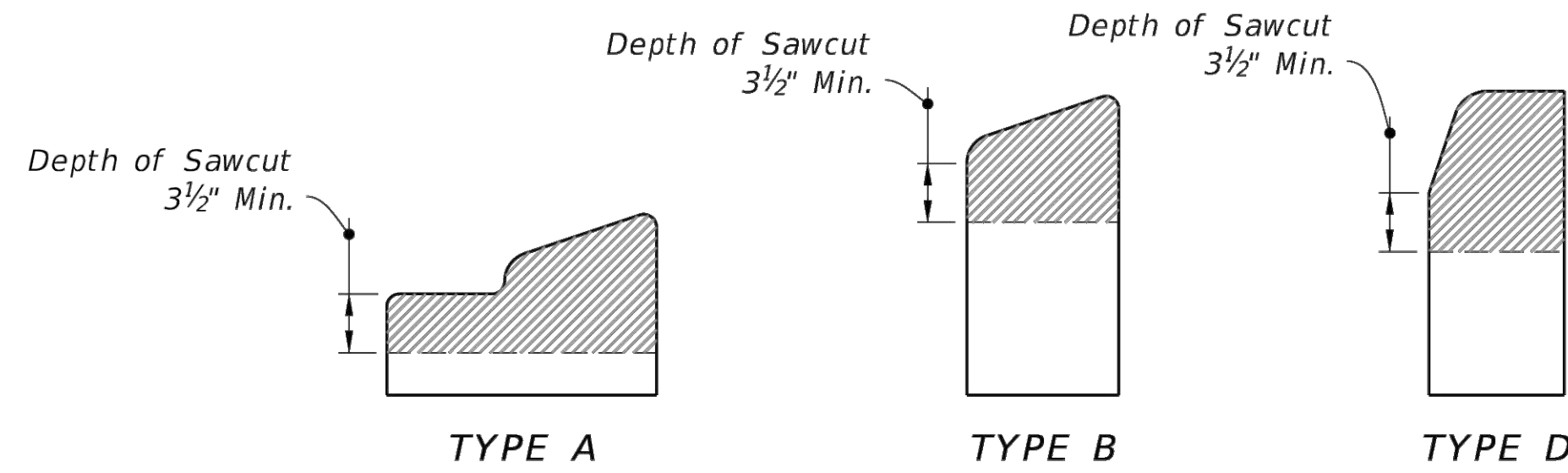
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123503.01	JTL	RWD	RWD	JWL	FEBRUARY 2023
NO.	REVISION/ACTION TAKEN	APPR.	DATE	NOT RELEASED FOR CONSTRUCTION BY	DATE

**FDOT
STANDARD DETAILS**

C-906

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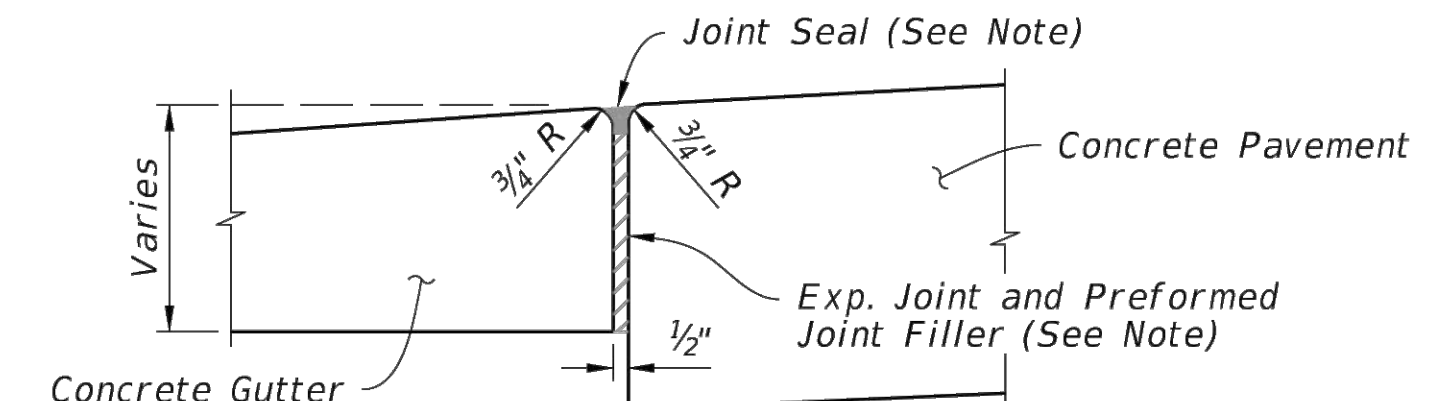
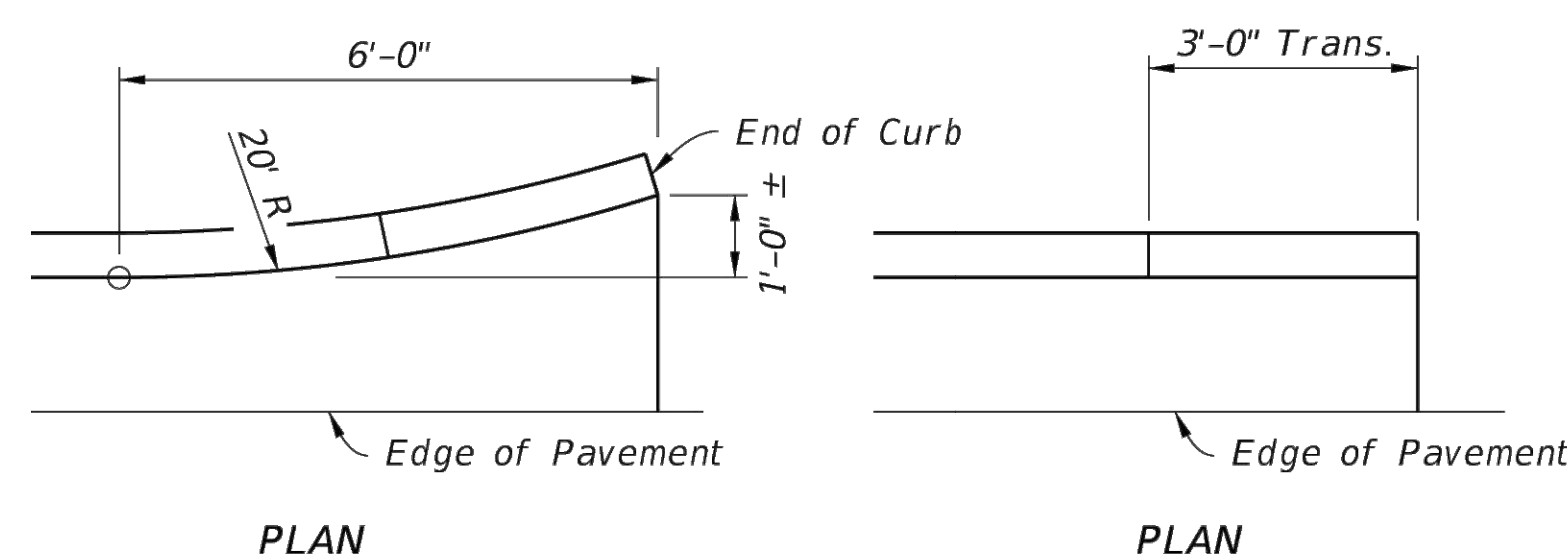
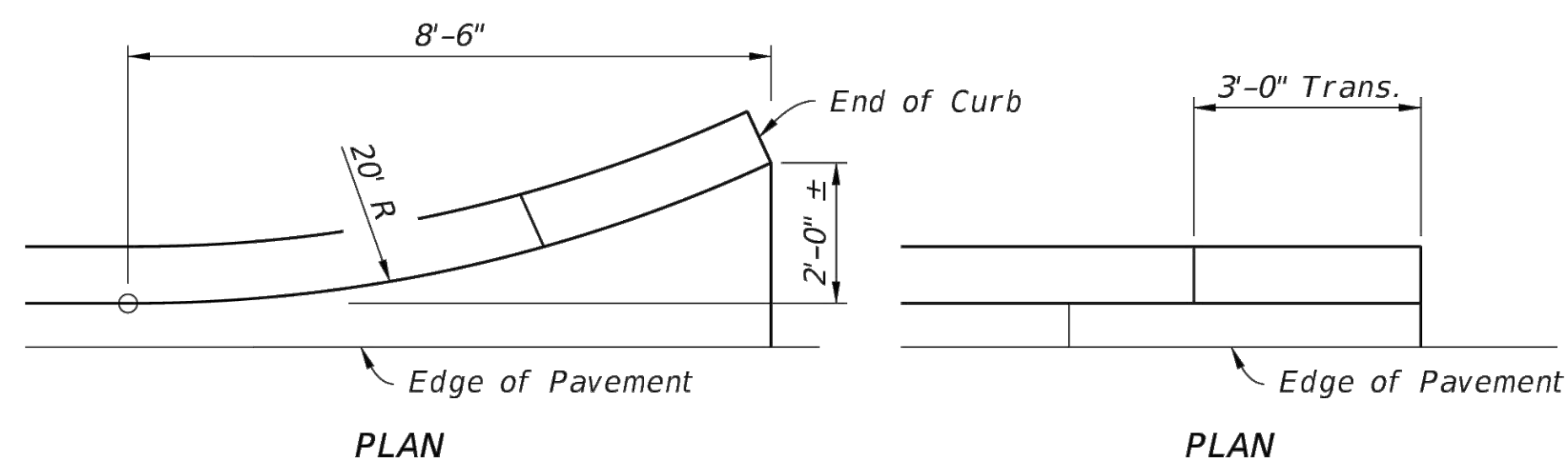
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NOTE: Sawcuts should be avoided within valley gutter and within curb and gutter endings.

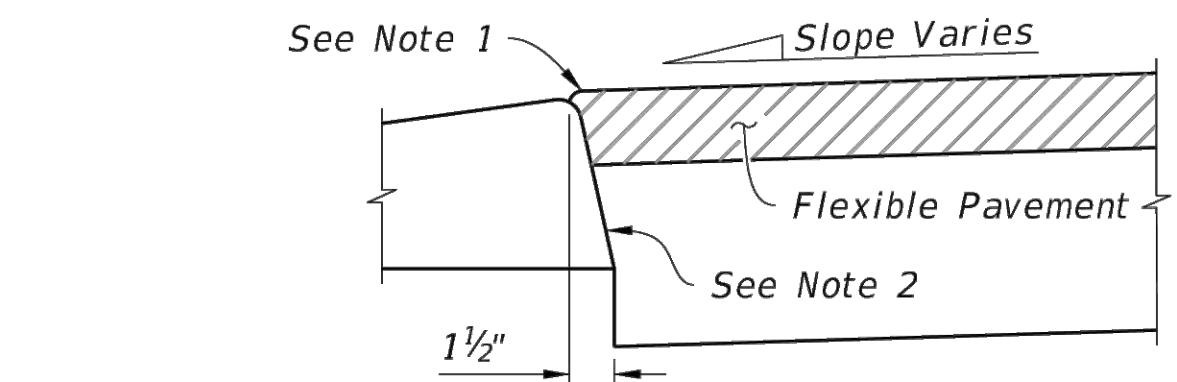
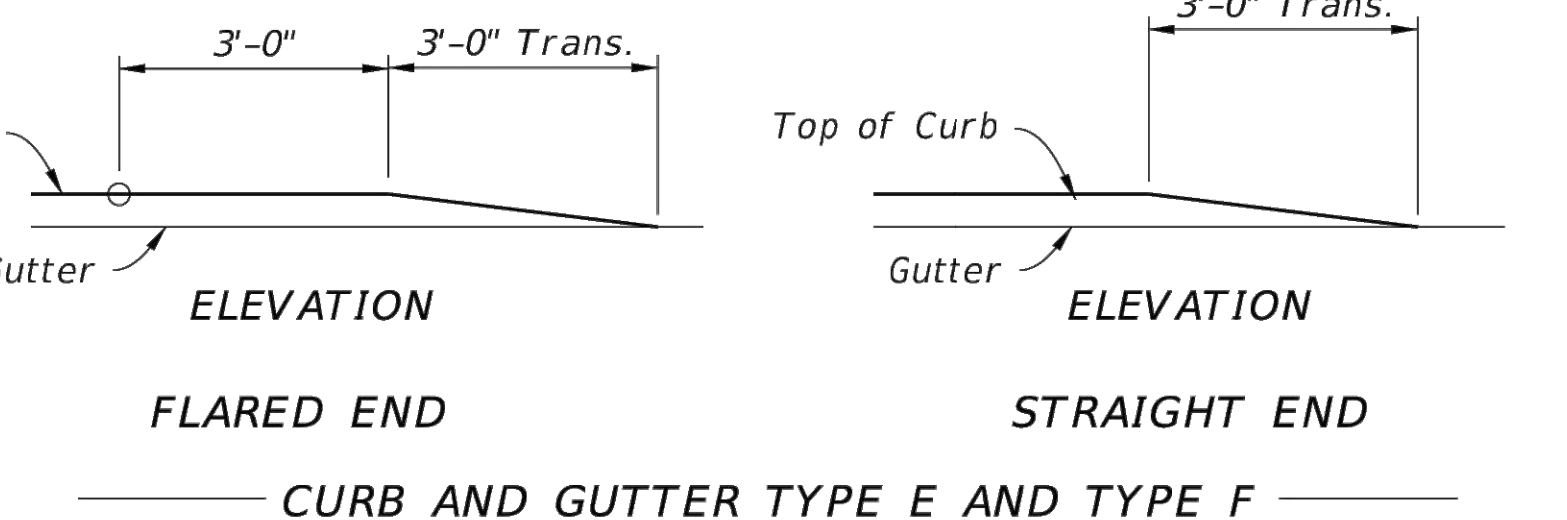
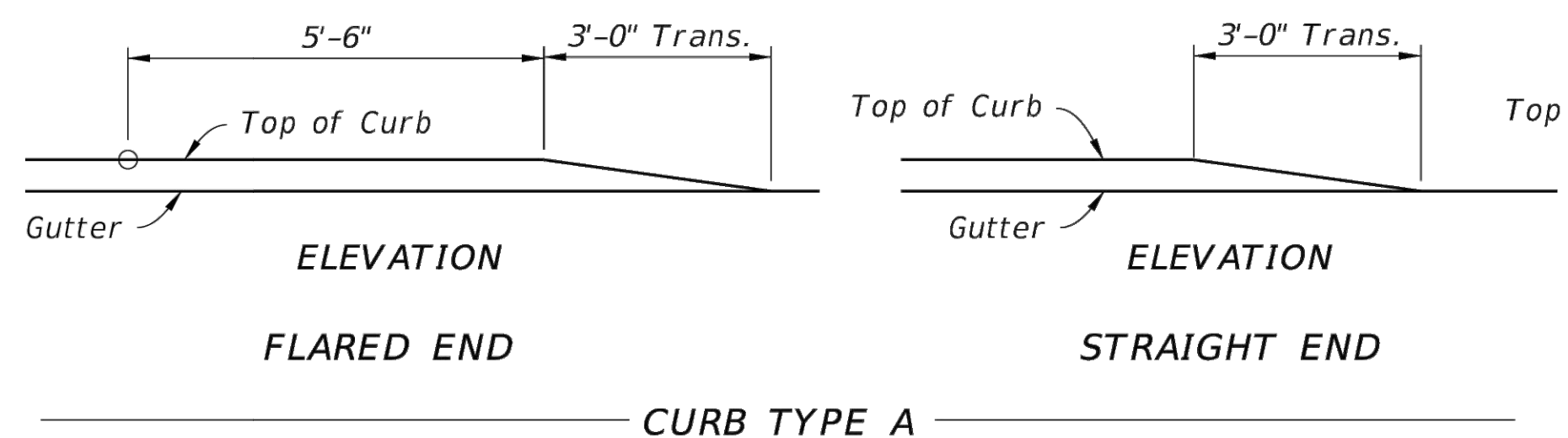
CONTRACTION JOINTS IN CURB

CONTRACTION JOINTS IN CURB & GUTTER



NOTE: Joint Seal application applies to both high and low sides of pavement, low side shown.

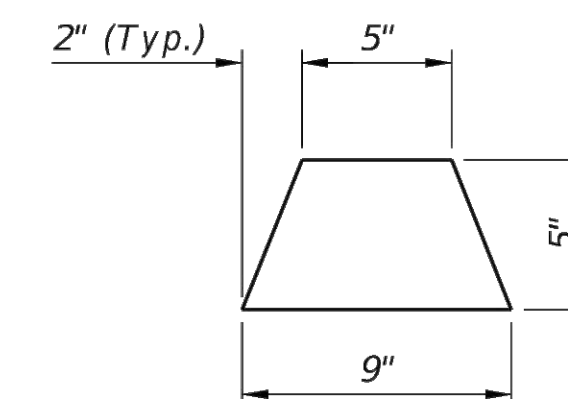
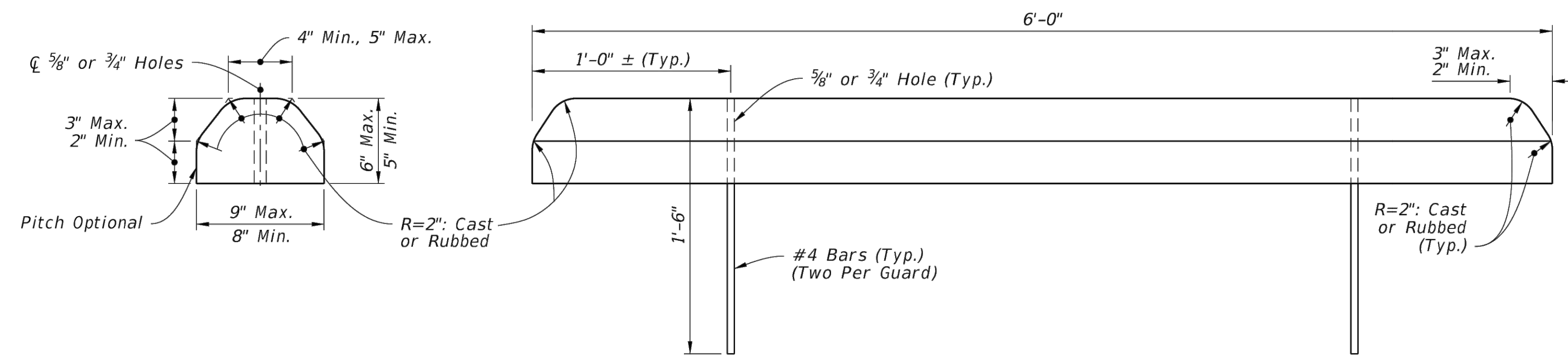
EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT



NOTES:

1. Surface on Low Side of Pavement to be 1/4" Above Lip of Gutter. Surface on High Side to be Flush With Lip of Curb or Curb & Gutter.
2. Applies to both high and low sides of pavement, low side shown. Applies to shoulder gutter only where adjoining traffic lanes.

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT



NOTE: Ends of Type B and D Curb transition from full to zero heights in 3 ft.

CURB AND CURB & GUTTER ENDINGS

CONCRETE BUMPER GUARD

ASPHALTIC CONCRETE CURB

CURB AND GUTTER JOINTS AND ENDINGS, CONCRETE BUMPER GUARD, AND ASPHALTIC CONCRETE CURB

LAST REVISION	DESCRIPTION:
11/01/21	



FY 2023-24
STANDARD PLANS

CURB AND GUTTER

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FL Reg. Engineer #83309

CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

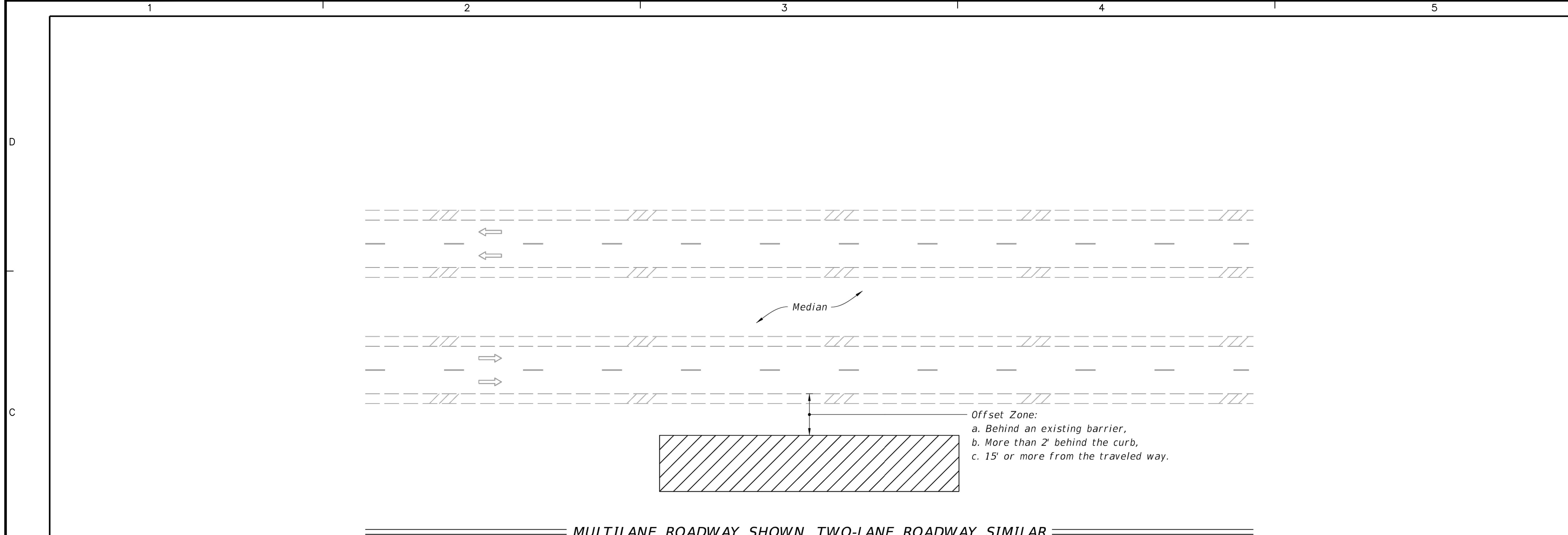
PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RWD	JWJ		FEBRUARY 2023

FDOT
STANDARD DETAILS

C-907

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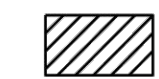

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NOTES:

1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work beyond the shoulder.
2. Use Index 102-602 when the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the Offset Zone in any one hour period.
3. Use Index 102-660 when Work Area encroaches a Sidewalk.

SYMBOLS:

-  Work Area
-  Lane Identification and Direction of Traffic

LAST REVISION	DESCRIPTION:
11/01/20	



FY 2023-24
STANDARD PLANS

TWO-LANE AND MULTILANE ROADWAY,
WORK BEYOND THE SHOULDER

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STANDARD DETAILS

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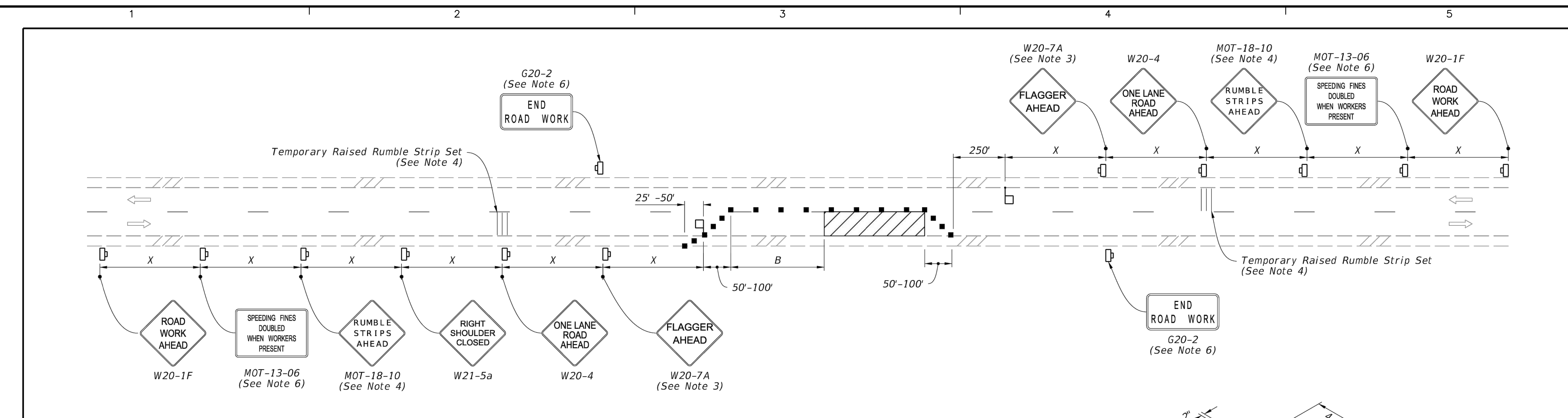
BASKERVILLE-DONOVAN, INC.
ENGINEERING THE SOUTH SINCE 1927
448 W. MAIN ST., PENSACOLA, FL 32502 (850)438-9861
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TYLER T. LEE
FL Reg. Engineer #93309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01				
DESIGNED BY: TTL				
DRAWN BY: RGG				
CHKD BY: RWD				
PROJ. MGR.: JWJ				
DATE: FEBRUARY 2023				
				NOT RELEASED FOR CONSTRUCTION BY
				DATE

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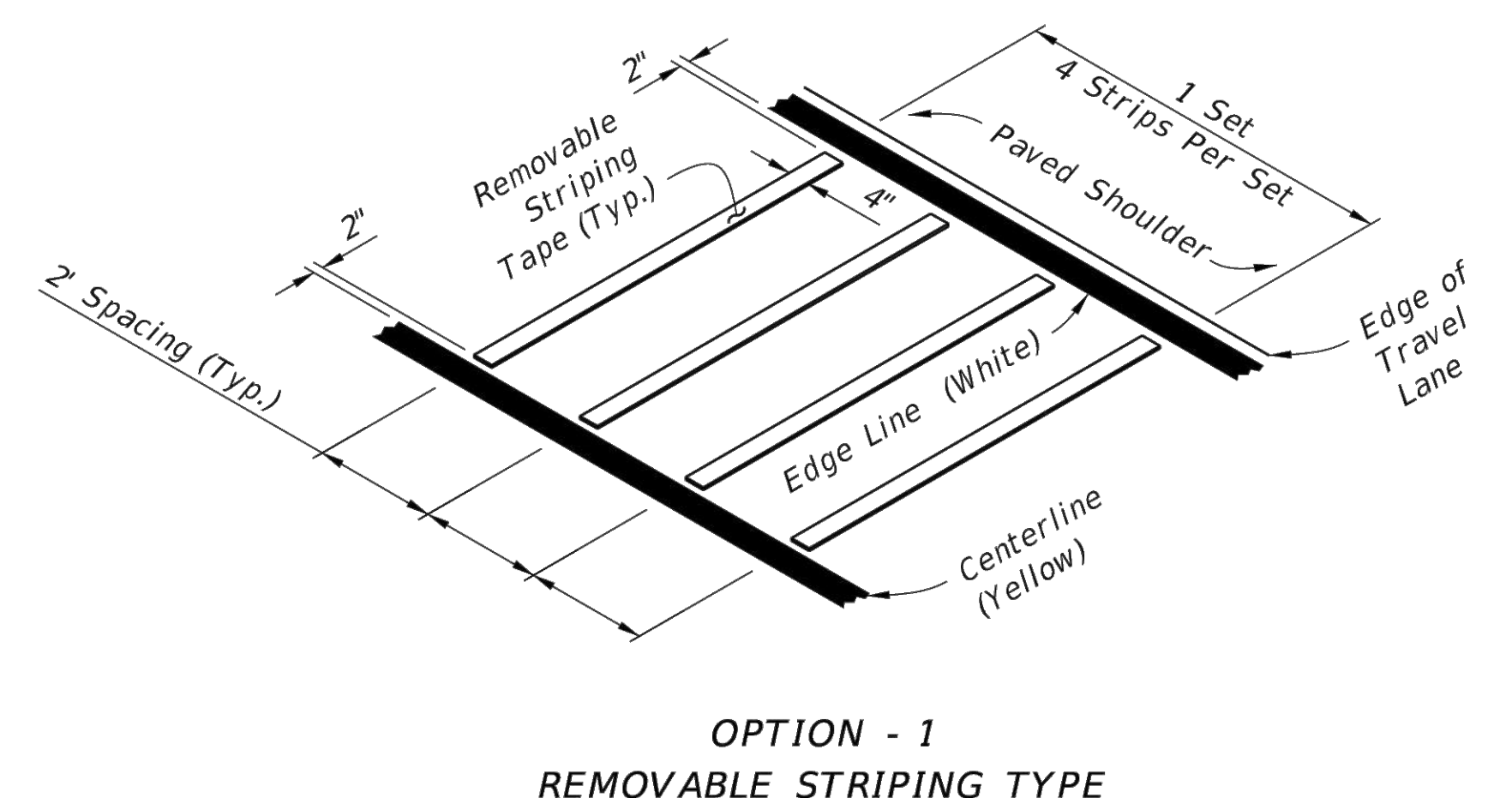
NOTES:

- This Index applies to Two-Lane, Two-Way Roadways with work within the traveled way.
- L = Taper Length
B = Buffer Length
X = Work Zone Sign Spacing
See Index 102-600 for "L", "B", "X" and channelizing device spacing values.
- Optionally, use "Flagger Ahead" sign with symbol (W20-7) instead of "Flagger Ahead" sign with text (W20-7A).
- Use temporary raised rumble strips when the existing posted speed is 55 mph or greater and the work duration is greater than 60 minutes. If temporary raised rumble strips are not used, omit "Rumble Strips Ahead" signs (MOT-18-10) and associated work zone sign spacing.
- Additional one-way control may be provided by the following means:
 - Flag-carrying vehicle
 - Official vehicle
 - Pilot vehicles
 - Traffic signals
- The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2), along with associated work zone sign spacing, may be omitted when the work operation will be in place for 24 hours or less.
- Automated Flagger Assistance Devices (AFADs) may be used in accordance with Specification Sections 102, 990 and the APL vendor drawings.
- Railroad Crossings:
 - If an active railroad crossing is located closer to the Work Area than the queue length plus 300 feet, extend the Buffer Space as shown on Sheet 2.
 - If the queuing of vehicles across an active railroad crossing cannot be avoided, provide a uniformed traffic control officer or flagger at the highway-rail grade crossing to prevent vehicles from stopping within the highway-rail grade crossing, even if automatic train warning devices are in place.

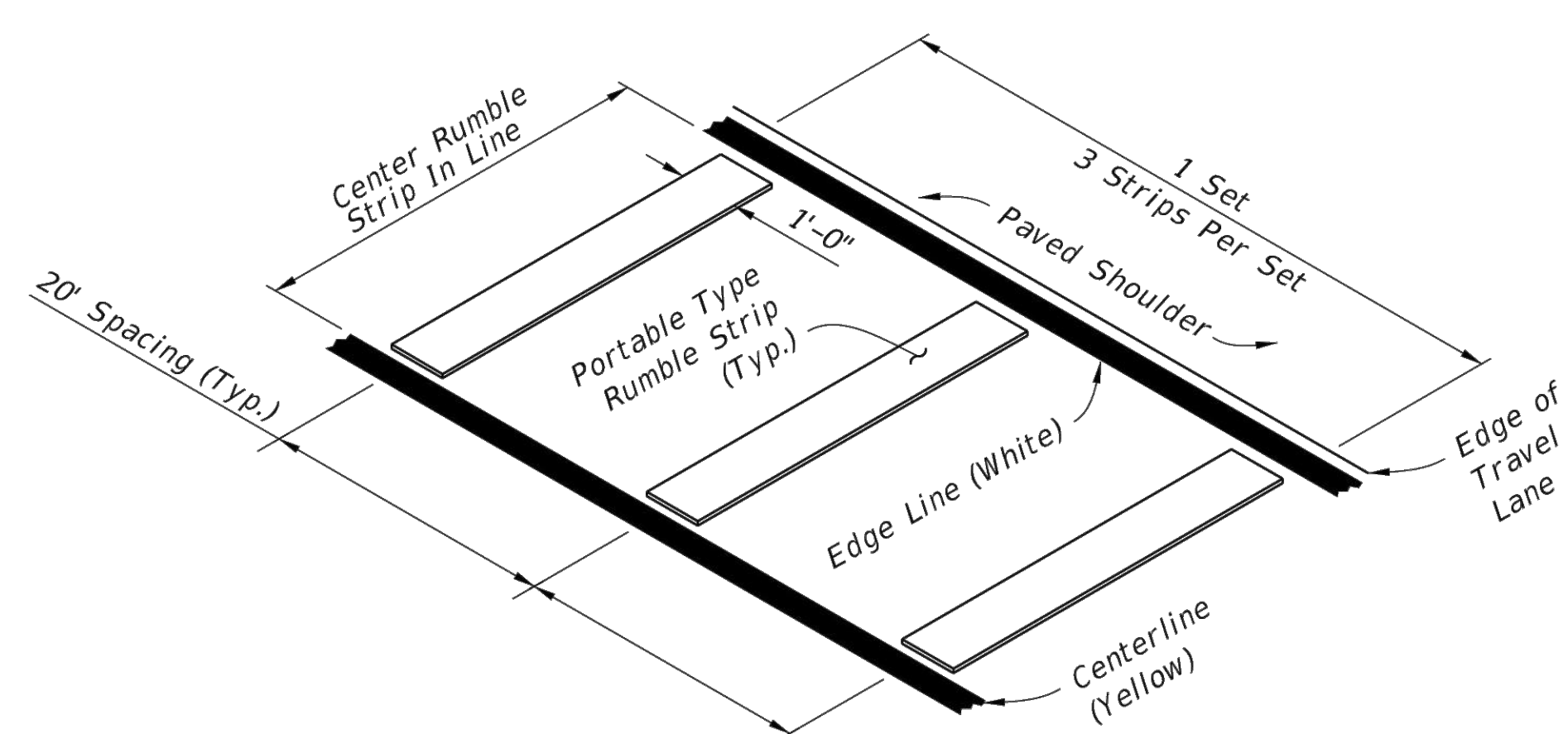
When flaggers are the sole means of one-way control, the flaggers must be in sight of each other or in direct communication at all times.

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Flagger
- Lane Identification and Direction of Traffic



**OPTION - 1
REMOVABLE STRIPING TYPE**



**OPTION - 2
PORTABLE TYPE**

RUMBLE STRIP SETS

LAST REVISION 11/01/21	REVISION	DESCRIPTION:		FY 2023-24 STANDARD PLANS	TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY	INDEX 102-603	SHEET 1 of 2
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FL Reg. Engineer #033009

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY	DRAWN BY	CHKD BY	PROJ. MGR.	DATE
123503.01	TTL	RWD	RWD	JWL	FEBRUARY 2023

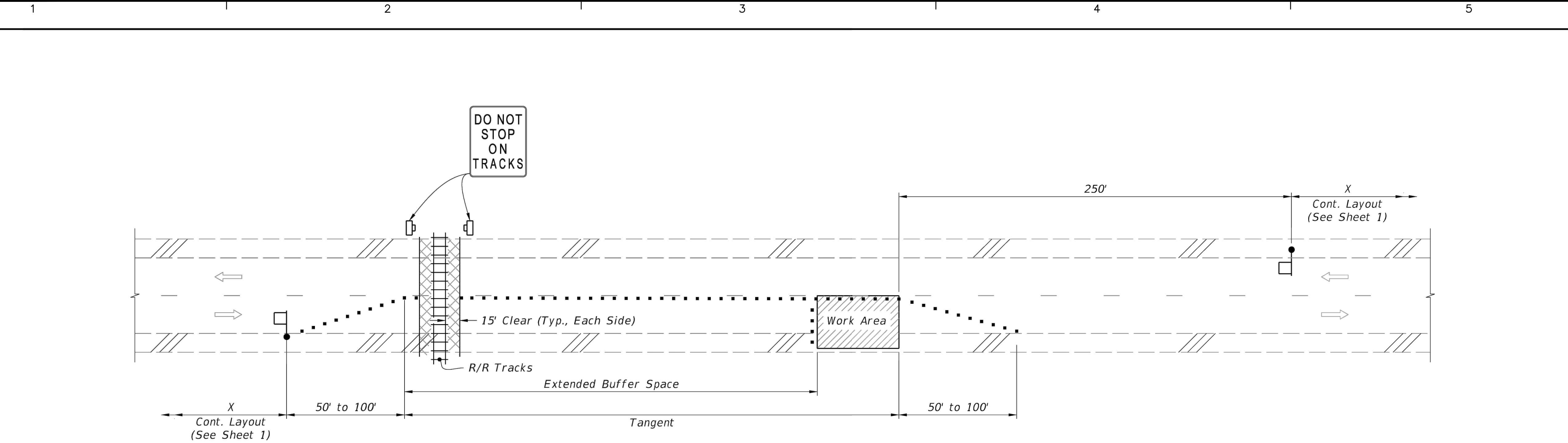
**FDOT
STANDARD DETAILS**

NOT RELEASED FOR CONSTRUCTION BY _____ DATE _____

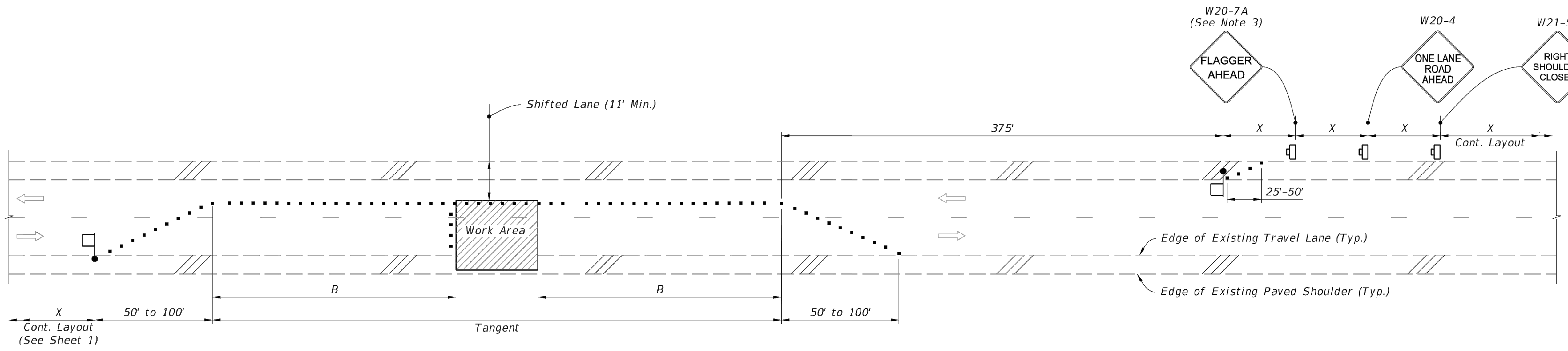
C-909

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TEMPORARY RAILROAD CROSSING BUFFER SPACE EXTENSION



TEMPORARY LANE SHIFT TO SHOULDER WHEN WORK AREA ENCREACHES ON THE CENTERLINE
(For Work Operations In place 24 Hours or Less)

- SYMBOLS:**
- Work Area
 - Channelizing Device (See Index 102-600)
 - Work Zone Sign
 - Flagger
 - Lane Identification and Direction of Traffic

SPECIAL CONDITIONS

LAST REVISION 11/01/21	DESCRIPTION:		FY 2023-24 STANDARD PLANS	TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY		INDEX	SHEET
						102-603	2 of 2

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TYLER T. LEE
FL Reg. Engineer #83309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

NO.	DATE	APPR.	REVISION/ACTION TAKEN
PROJECT NO: 123503.01	DESIGNED BY: TTL		
DRAWN BY: RGG	CHKD BY: RWD		
PROJ. MGR: JWL	DATE: FEBRUARY 2023		
			NOT RELEASED FOR CONSTRUCTION BY
			DATE

**FDOT
STANDARD DETAILS**

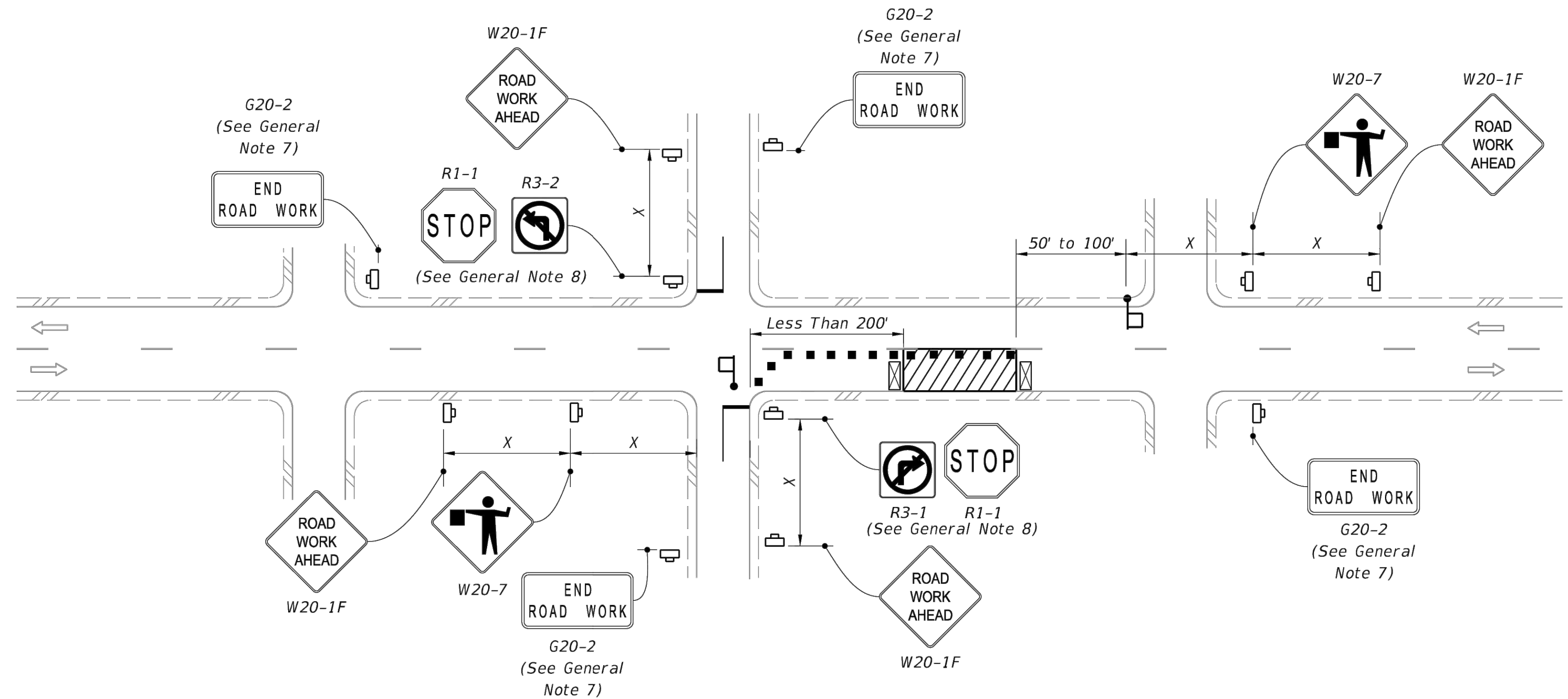
C-910

GENERAL NOTES:

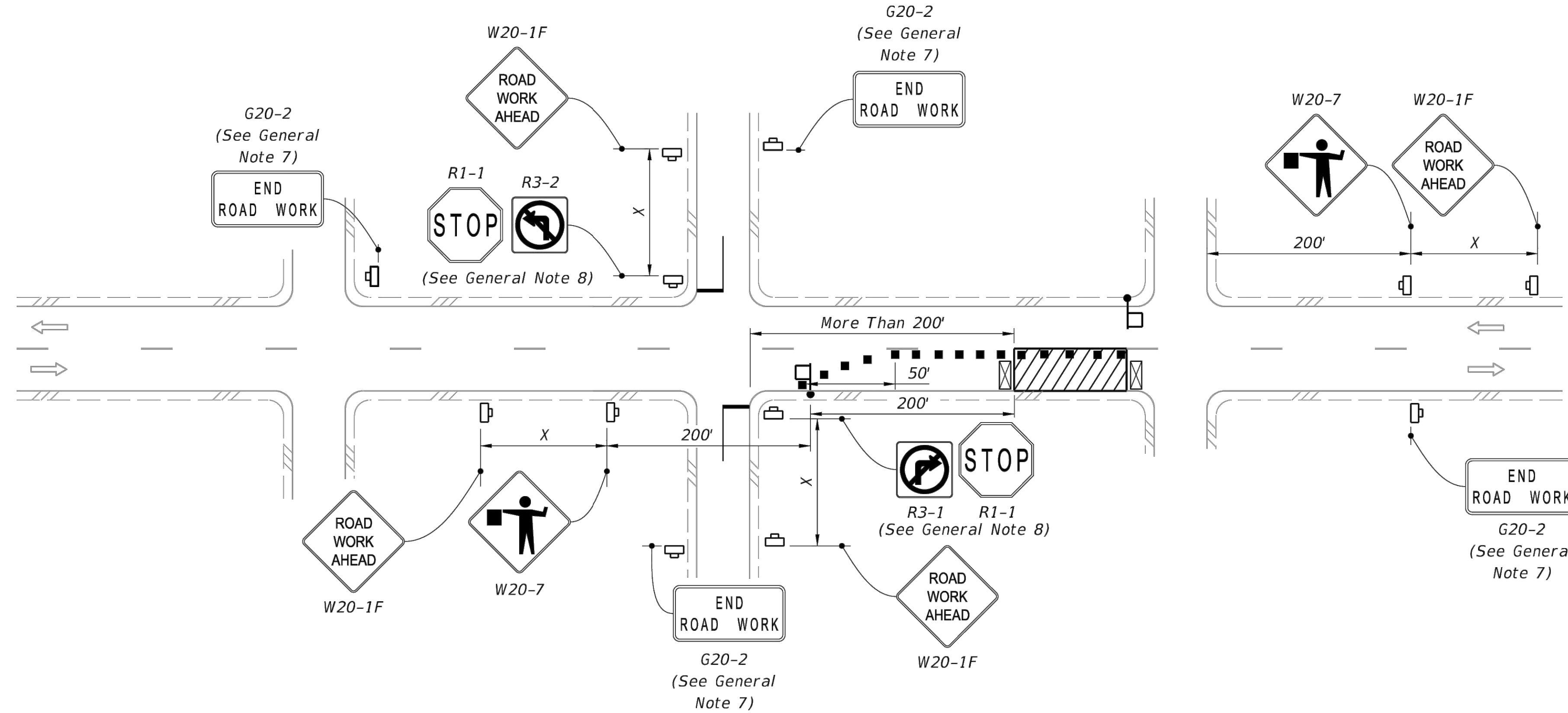
1. This Index applies to two-lane, two-way roadways with work within or near the intersection.
2. X = Work Zone Sign Spacing
See Index 102-600 for "X" and channelizing device spacing values.
3. Optionally, use "Flagger Ahead" sign with text (W20-7A) instead of "Flagger Ahead" sign with symbol (W20-7).
4. If vehicles in a parking zone block the line of sight to TCZ signs, locate and post mount signs in accordance with Index 700-101.
5. If the work area extends across a crosswalk, close the crosswalk in accordance with Index 102-660.
6. For unsignalized intersections, use Temporary Raised Rumble Strips in accordance with Index 102-603. Placement of Rumble Strips and additional signs should begin at FLAGGER sign location.
7. The "End Road Work" signs (G20-2) along with the associated work zone sign distances may be omitted when the work zone will be in place for 24 hours or less.
8. As an option to the "STOP" sign (R1-1) and Restricted Left/Right Turning Movement sign (R3-1 or R3-2), the "SIDE ROAD INTERSECTING THE WORK ZONE" flagging operation from Index 102-600 may be used.

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Type III Barricade
- Stop Bar
- Flagger
- Lane Identification and Direction of Traffic



LANE CLOSURE FOR WORK LESS THAN 200' FROM INTERSECTION



LANE CLOSURE FOR WORK MORE THAN 200' FROM INTERSECTION

LAST REVISION 11/01/22	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	TWO-LANE, TWO-WAY, INTERSECTION WORK	INDEX 102-604	SHEET 1 of 2
1	2			3	4

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CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION








PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023

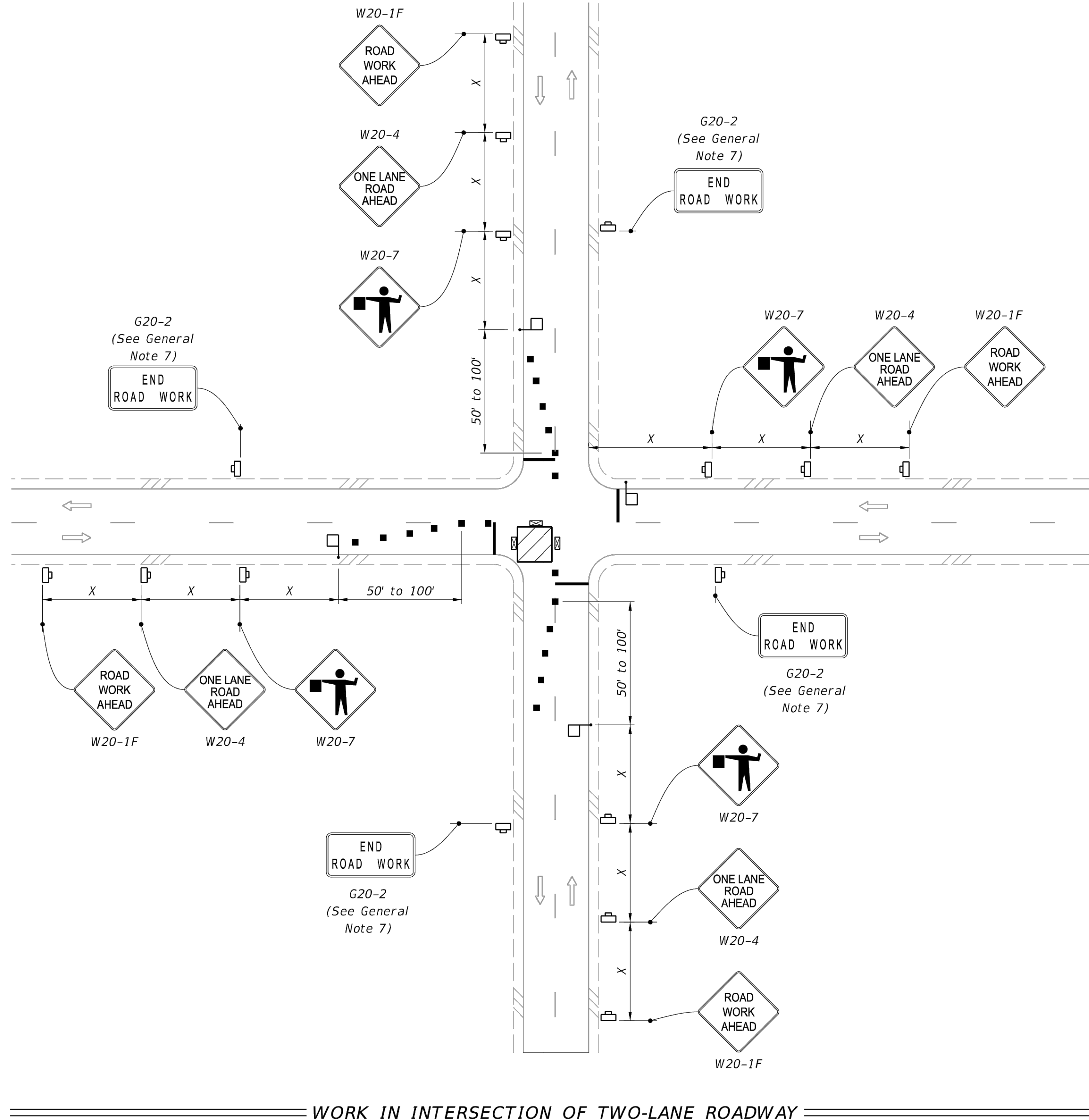
FDOT
STANDARD DETAILS
C-911

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SYMBOLS:

-  Work Area
-  Channelizing Device (See Index 102-600)
-  Work Zone Sign
-  Type III Barricade
-  Stop Bar
-  Flagger
-  Lane Identification and Direction of Traffic




LAST REVISION	DESCRIPTION:
11/01/22	


**FY 2023-24
STANDARD PLANS**

TWO-LANE, TWO-WAY, INTERSECTION WORK

INDEX	SHEET
102-604	2 of 2


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 FL Reg. Engineer #93309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	RG	RWD	JWL	FEBRUARY 2023				
									NOT RELEASED FOR CONSTRUCTION BY _____ DATE _____

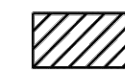

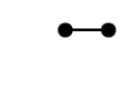

**FDOT
STANDARD DETAILS**

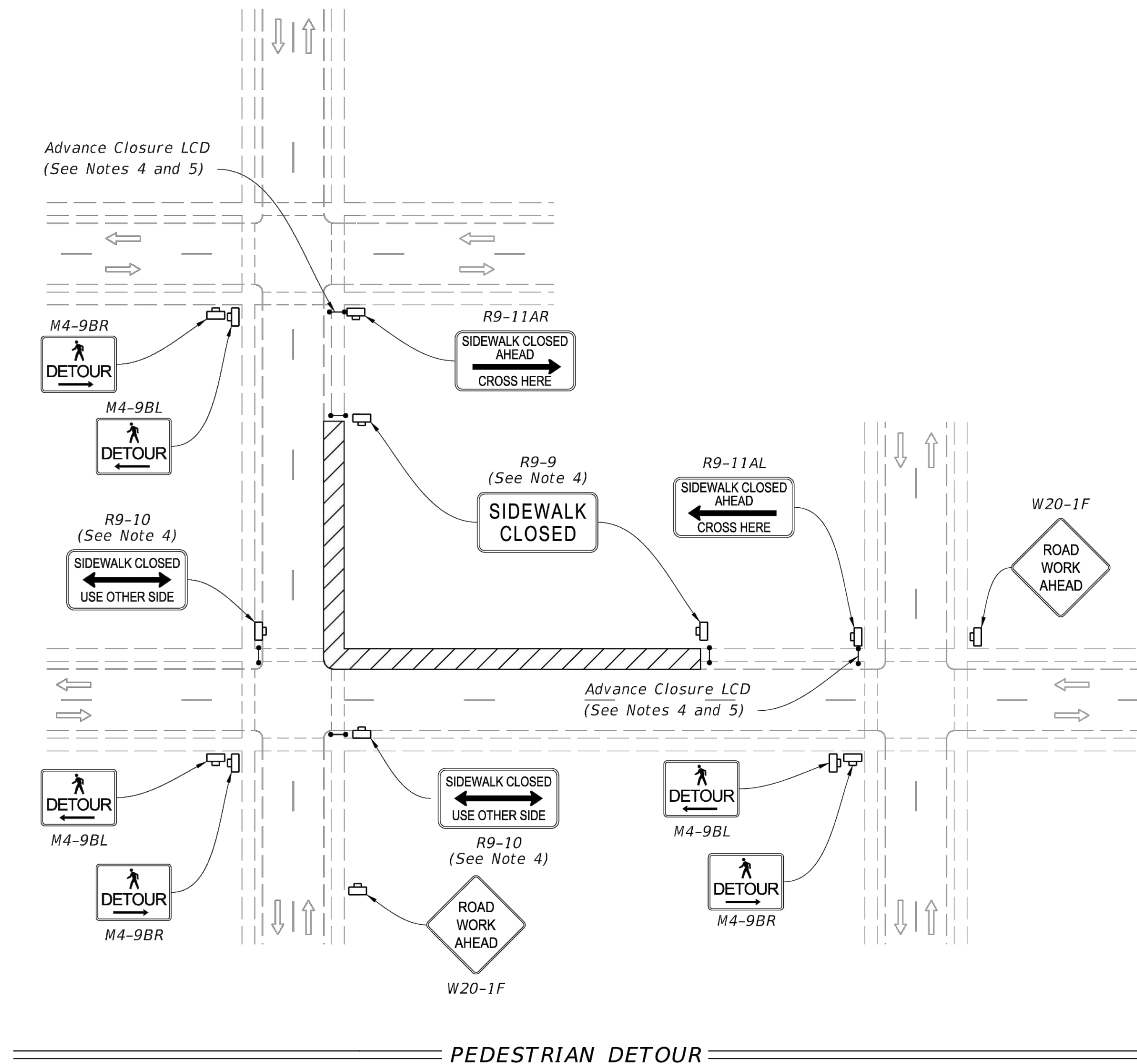
C-912

NOTES:

1. Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
2. Place pedestrian LCDs across the full width of the closed sidewalk.
3. For post mounted signs located near or adjacent to a sidewalk, maintain a minimum 7' clearance from the bottom of the sign panel to the surface of the sidewalk.
4. "Sidewalk Closed" signs (R9-XX) may be mounted on pedestrian LCDs in accordance with the manufacturer's instructions.
5. Omit the Advance Closure LCD if it blocks access to other pedestrian facilities (e.g., transit stops, residences, or business entrances).

SYMBOLS:

-  Work Area
-  Work Zone Sign
-  Pedestrian Longitudinal Channelizing Device (LCD)
-  Lane Identification and Direction of Traffic



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LAST REVISION	DESCRIPTION:
11/01/20	


REVISION	DESCRIPTION:


FY 2023-24
STANDARD PLANS

SIDEWALK CLOSURE

INDEX
102-660

SHEET
1 of 2


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 FL Reg. Engineer #83309

**CEDAR KEY
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REHABILITATION**

PROJECT NO.	DESIGNED BY	DRAWN BY	CHKD BY	PROJ. MGR.	DATE
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN

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**FDOT
STANDARD DETAILS**

C-913


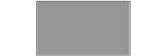

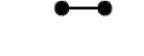




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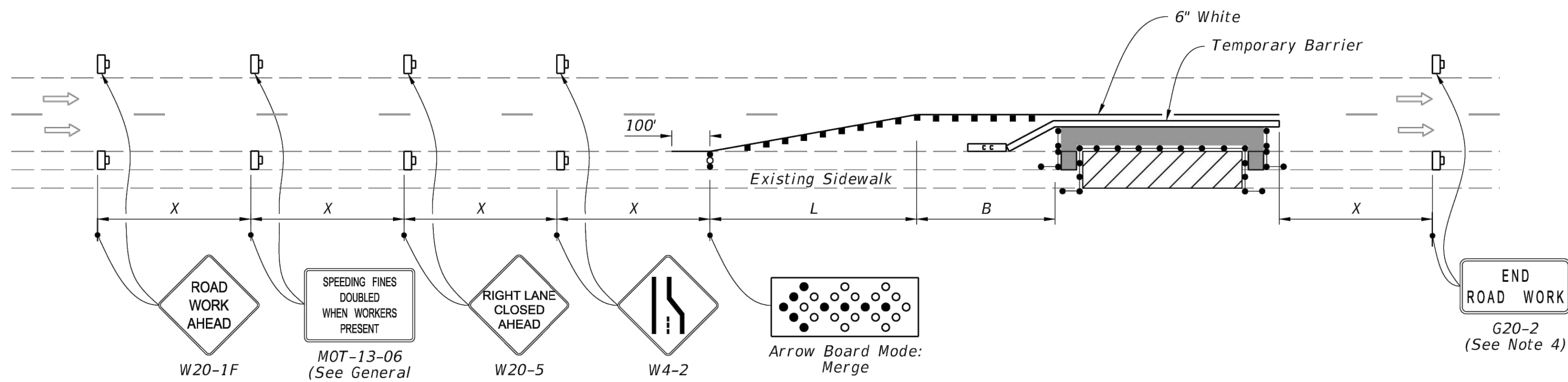
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NOTES:

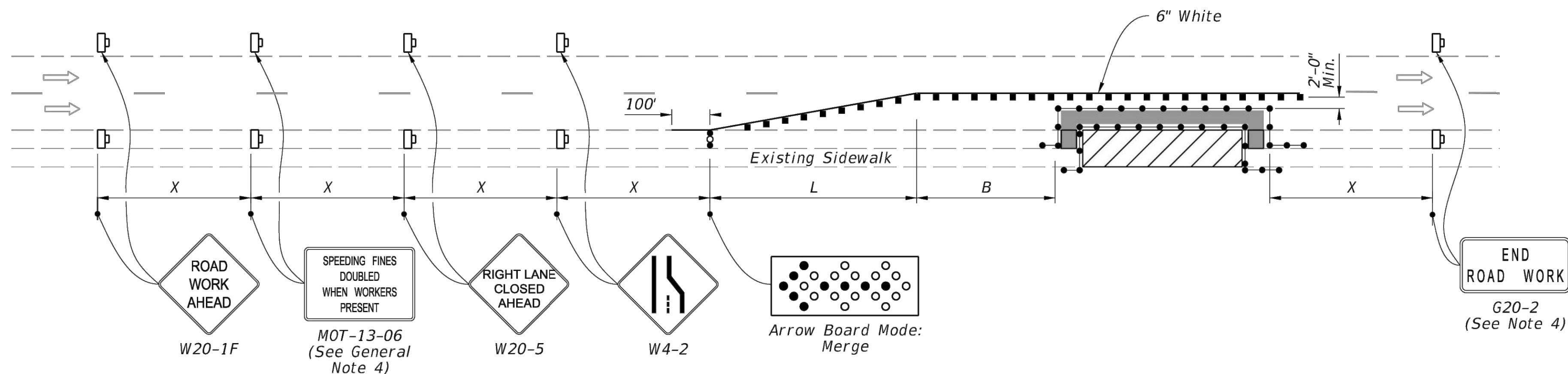
1. L = Taper Length
B = Buffer Length
X = Work Zone Sign Distance
See Index 102-600 for "L", "B", "X", channelizing device spacing values.
2. Provide a 5' wide temporary pedestrian way with a maximum cross-slope of 0.02, except where space restrictions warrant a minimum width of 4'. Provide a 5' x 5' passing space for temporary pedestrian ways less than 5' in width at intervals not to exceed 200'.
3. When temporary pedestrian ways require curb ramps, meet the requirements of Index 522-002. Detectable warnings are not required for curb ramps diverting pedestrian traffic into a closed lane.
4. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2), along with associated work zone sign distances, may be omitted when the work operation will be in place for 24 hours or less.
5. Pedestrian Diversion Option 2 may only be used when called for in the Plans or as approved by an Engineer.

SYMBOLS:

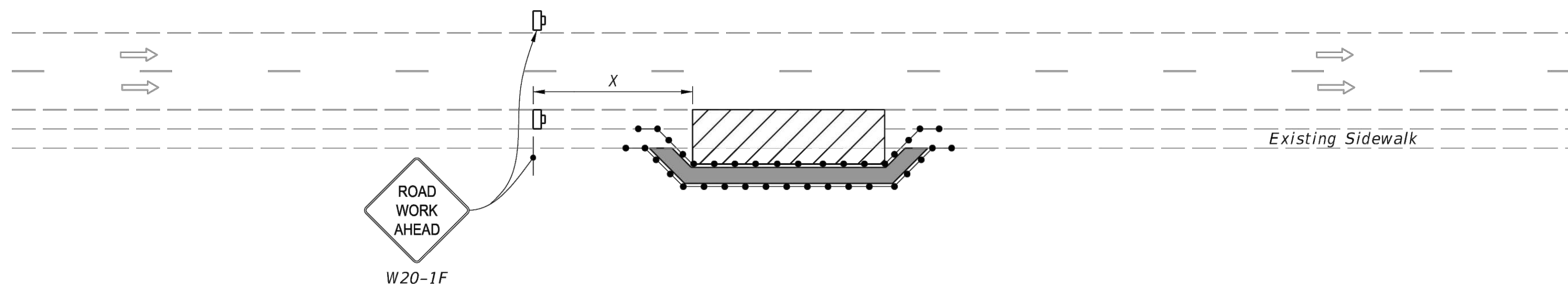
-  Work Area
-  Temporary Pedestrian Way
-  Channelizing Device (See Index 102-600)
-  Pedestrian Longitudinal Channelizing Device (LCD)
-  Work Zone Sign
-  Arrow Board
-  Crash Cushion
-  Lane Identification and Direction of Traffic




PEDESTRIAN DIVERSION - OPTION 1
(Temporary Barrier Shown, Low Profile Barrier Similar)



PEDESTRIAN DIVERSION - OPTION 2
(Work Zone Speed 35 mph or Less)



PEDESTRIAN SPECIAL DETOUR

LAST REVISION 11/01/21	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	SIDEWALK CLOSURE		INDEX 102-660	SHEET 2 of 2

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**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY	DRAWN BY	CHKD BY	PROJ. MGR.	DATE
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023

**FDOT
STANDARD DETAILS
C-914**

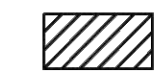



NO.	DATE	APPR.	REVISION/ACTION TAKEN

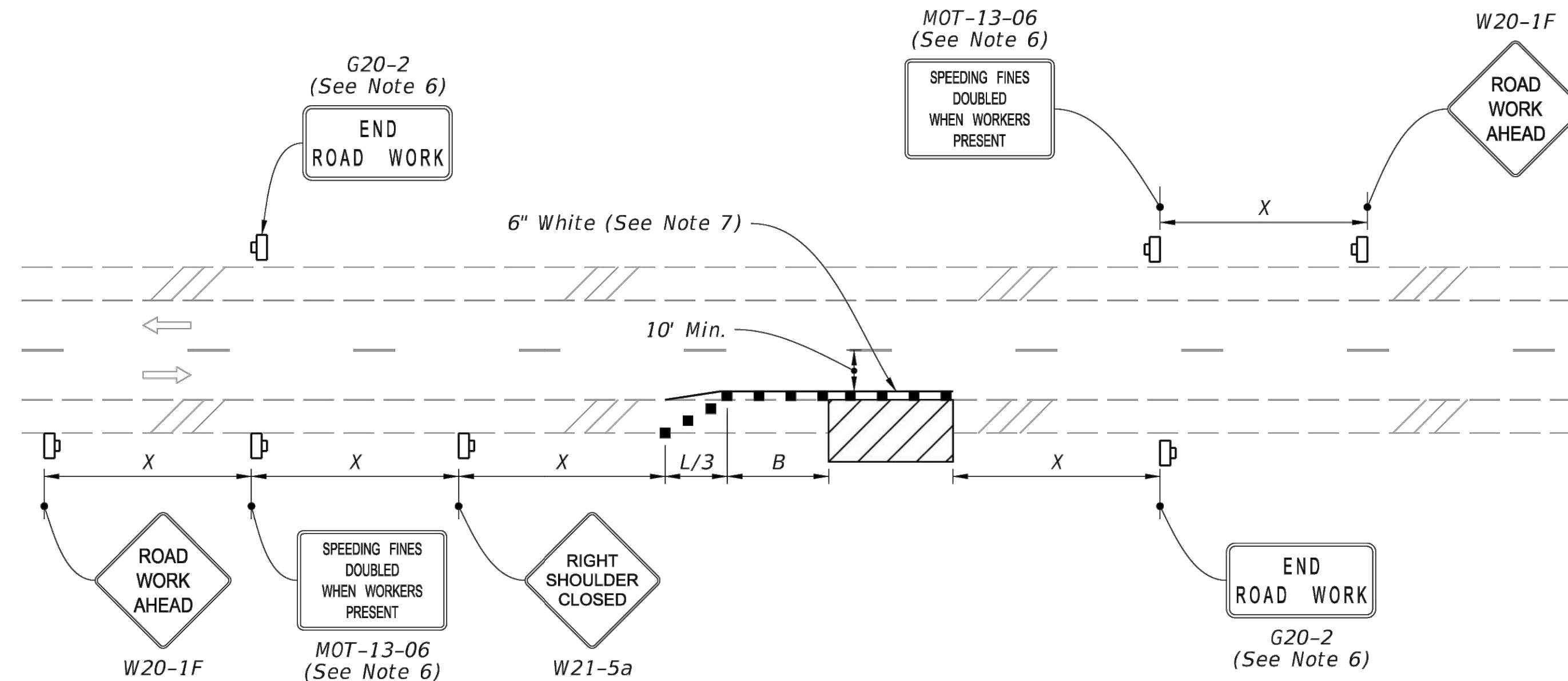
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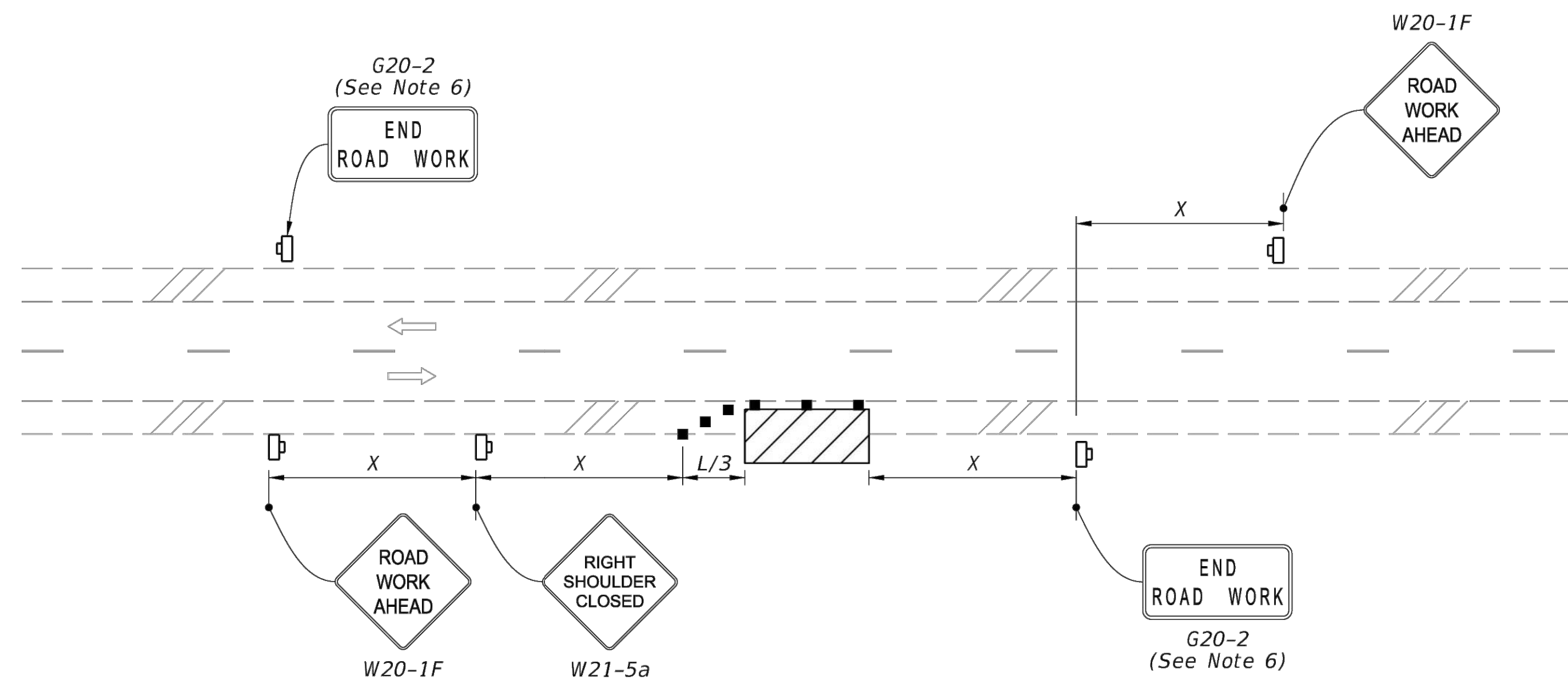
1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.
2. L = Taper Length
 X = Work Zone Sign Spacing
 B = Buffer Length
See Index 102-600 for " L ", " X ", " B ", and channelizing device spacing values.
3. Where work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes or less.
4. When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), use a flagger or lane closure to accommodate work vehicle ingress and egress.
5. For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.
6. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" Signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.
7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.
8. Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.
9. When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

SYMBOLS:

-  Work Area
-  Channelizing Device (See Index 102-600)
-  Work Zone Sign
-  Lane Identification and Direction of Traffic




TWO-LANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS



TWO-LANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

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LAST REVISION 11/01/21	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX 102-602	SHEET 1 of 2
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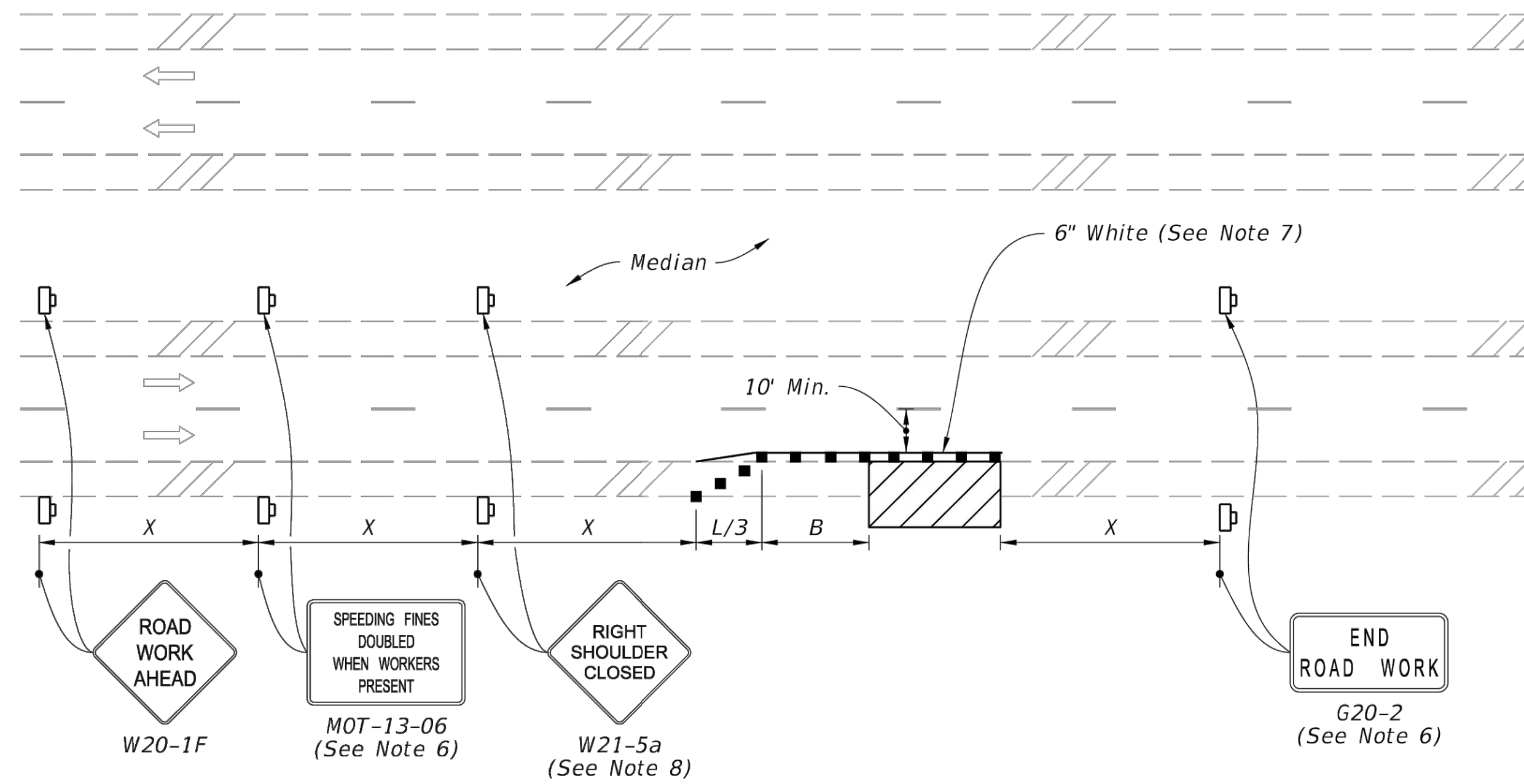
CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION

PROJECT NO:	123503.01
DESIGNED BY:	TTL
DRAWN BY:	RGD
CHKD BY:	RWD
PROJ. MGR.:	JWL
DATE:	FEBRUARY 2023
NO.	
DATE	
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REVISION/ACTION TAKEN	
NOT RELEASED FOR CONSTRUCTION BY	DATE

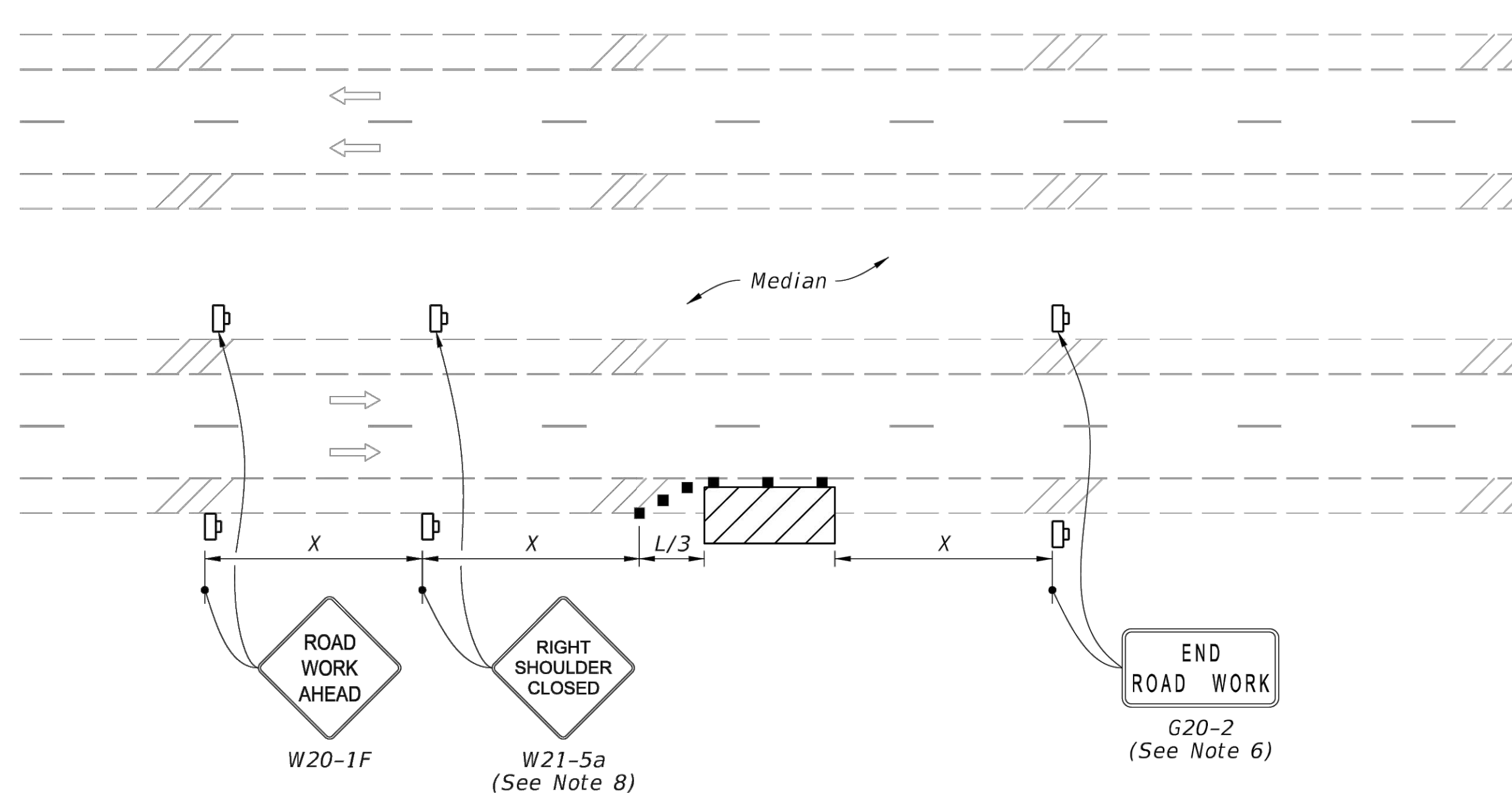
FDOT
 STANDARD DETAILS
C-915

SYMBOLS:

-  Work Area
-  Channelizing Device (See Index 102-600)
-  Work Zone Sign
-  Lane Identification and Direction of Traffic



MULTILANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS



MULTILANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

LAST REVISION	DESCRIPTION:
11/01/20	



FY 2023-24
 STANDARD PLANS

TWO-LANE AND MULTILANE, WORK ON SHOULDER

INDEX 102-602
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FDOT
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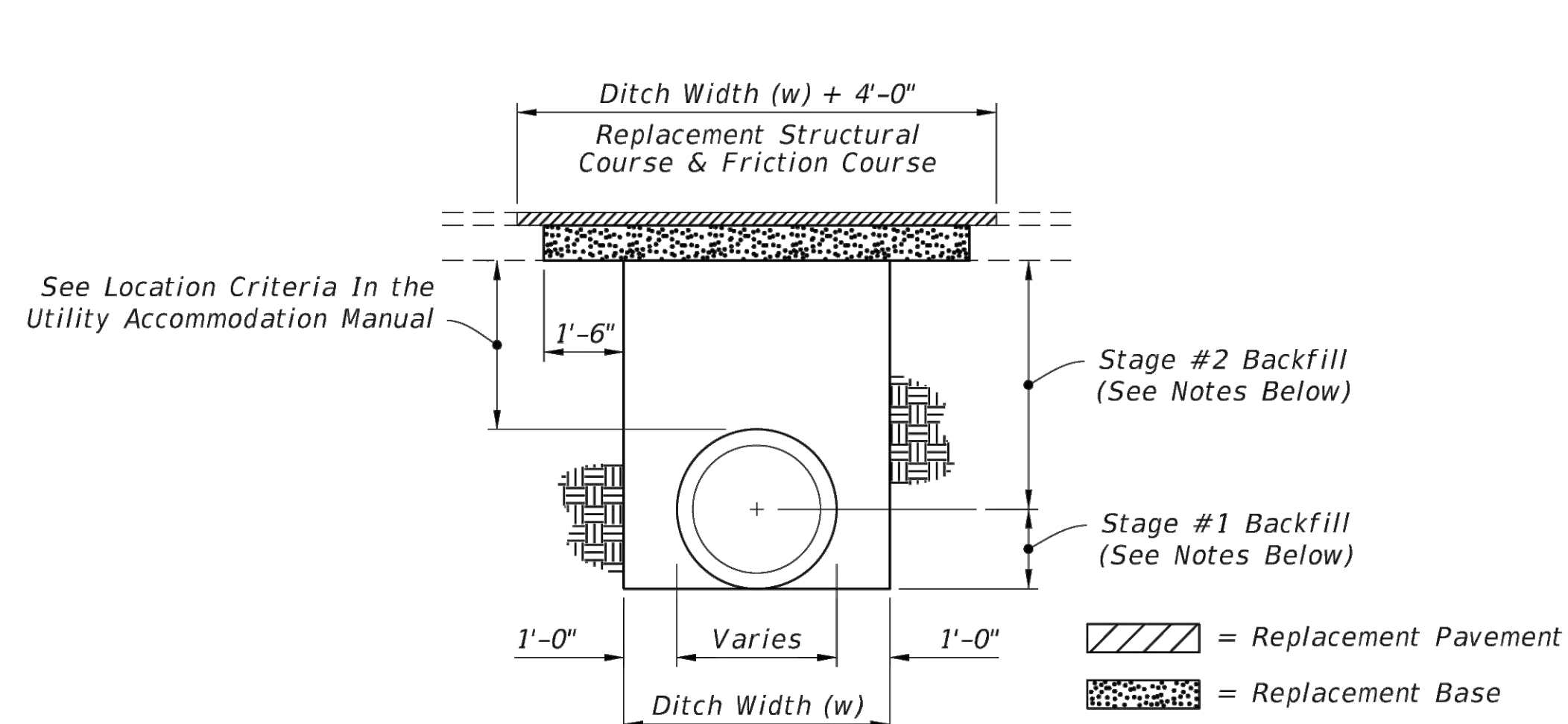
C-916

PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHKD BY:	PROJ. MGR.:	DATE:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	RGD	RWD	JWL	FEBRUARY 2023				

CEDAR KEY
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 REHABILITATION

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 FL Reg. Engineer #93309

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NOTES:
PAVEMENT REMOVAL AND REPLACEMENT

1. Pavement shall be mechanically sawed.
2. The replacement asphalt shall match the existing structural and friction courses for type and thickness in accordance with current FDOT asphalt mix specifications.
3. The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy.

BACKFILL OPTION

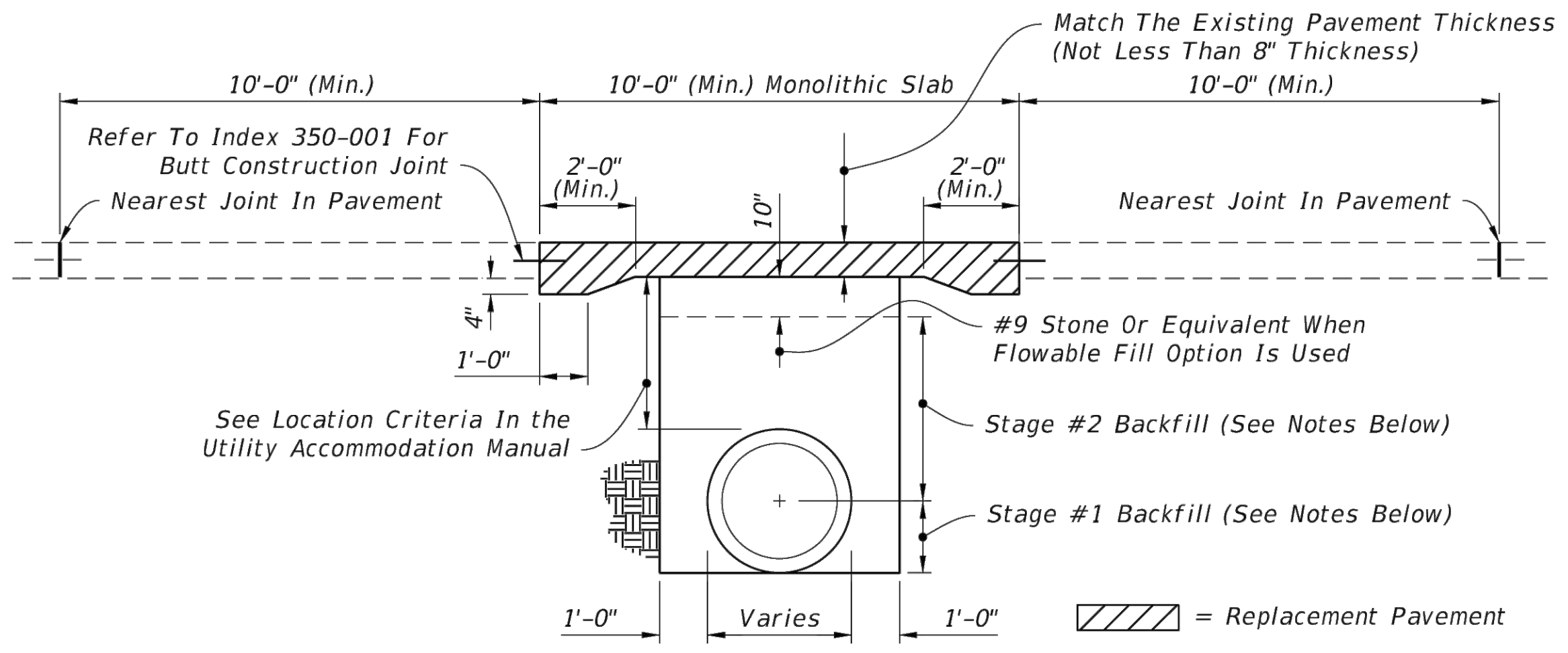
1. COMPACTED AND STABILIZED FILL

- A. Place backfill material in accordance with Specification 125.
- B. In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.
- C. In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

2. FLOWABLE FILL

- A. If compaction can not be achieved through normal mechanical methods then flowable fill may be used.
- B. Flowable fill is to be placed in accordance with Specification 121, as approved by the Engineer.
- C. Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
- D. In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
- E. In Stage #2, place flowable fill to the bottom of the existing base course.

FLEXIBLE PAVEMENT CUT



NOTES:
PAVEMENT REMOVAL AND REPLACEMENT

1. High early strength cement concrete (3000 psi) meeting the requirements of Specification 346 shall be used for rigid pavement replacement.
2. Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours. (See Index 350-001)

BACKFILL OPTION

1. GRANULAR BACKFILL

- A. Any edgedrain system that is removed shall be replaced with the same type materials. Any edgedrain system that is damaged shall be repaired with methods approved by the Engineer.
- B. Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index 350-001.
- C. In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.
- D. In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

2. FLOWABLE FILL

- A. If mechanical compaction can not be achieved through normal mechanical methods then flowable fill may be used.
- B. Flowable fill is to be placed in accordance with Specification 121, as approved by the Engineer.
- C. Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
- D. In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
- E. In Stage #2, place flowable fill to the bottom of the stone layer.

RIGID PAVEMENT CUT

GENERAL NOTES

1. The details provided in this Index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 120-001) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to prevent pavement settlement.
3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
4. Method of construction must be approved by the Engineer.
5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapsulate the special granular material.

6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.
7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential.
9. Excavatable flowable fill is to be used when the flowable fill option is selected.

TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

LAST REVISION 11/01/17	DESCRIPTION:	<p>FY 2023-24 STANDARD PLANS</p>	INDEX 125-001	SHEET 1 of 2
			<p>UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT</p>	

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ENGINEERING BUSINESS: EB-00000340
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TYLER T. LEE
FL Reg. Engineer #83309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO:	123503.01	DESIGNED BY:	JTL	DRAWN BY:	RGD	CHK'D BY:	RWD	PROJ. MGR.:	JWL	DATE:	FEBRUARY 2023
NO.		DATE		APPR.		REVISION/ACTION TAKEN		NOT RELEASED FOR CONSTRUCTION BY		DATE	

**FDOT
STANDARD DETAILS**

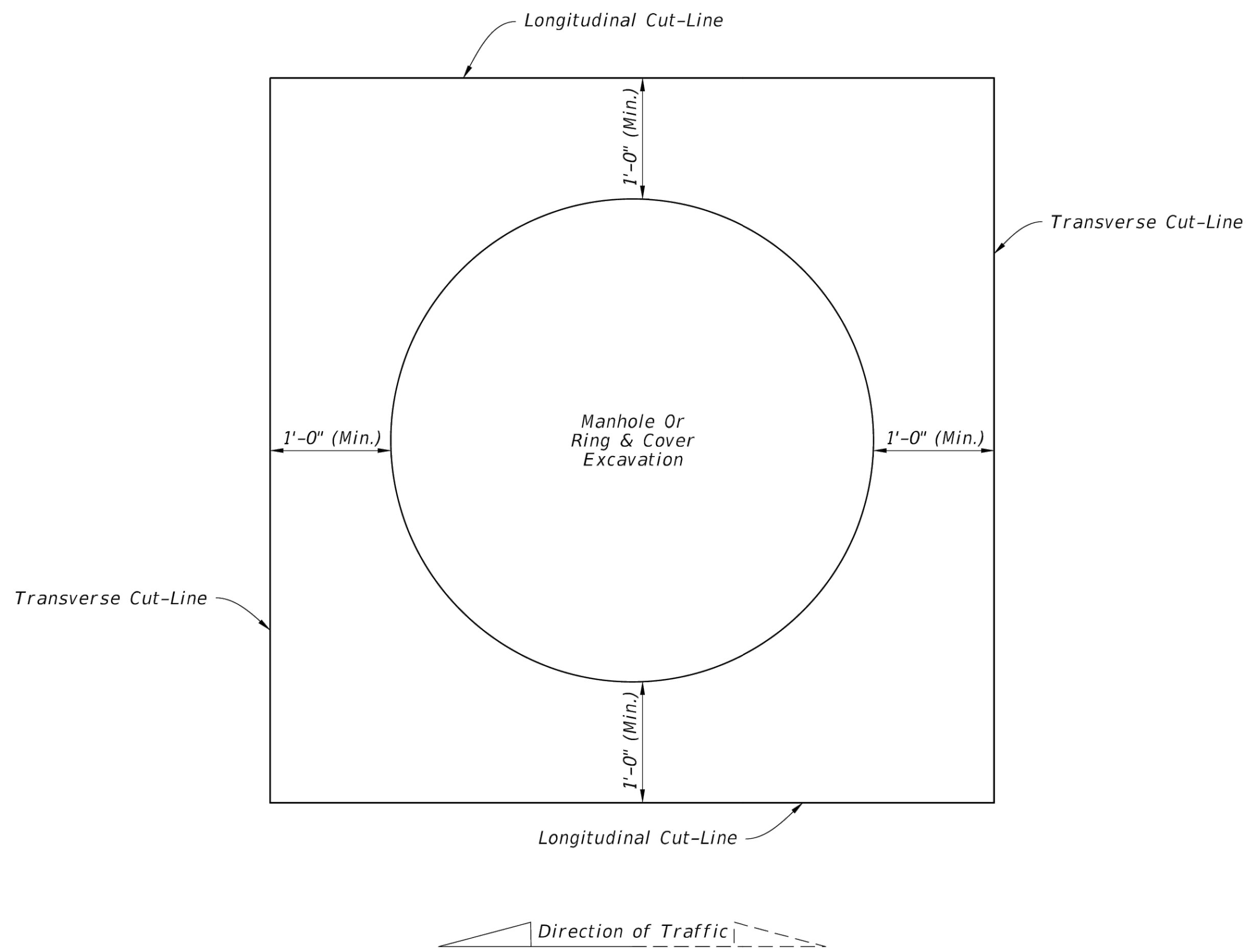
C-917

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PARTIAL CUTS FOR RING AND COVER ADJUSTMENTS

NOTES

1. Cut-Lines must be straight and cleanly sawed.
2. See Sheet 1 for replacement pavement.
3. Adjust manholes prior to placing friction course when pavement resurfacing is occurring in the area adjacent to the manhole.
4. Align Longitudinal Cut-Lines with pavement joint or center of traffic lane to avoid wheel path.
5. For rigid pavement, align Transverse Cut-Lines with nearest existing joint.

NONTRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT

LAST REVISION 11/01/17	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	UTILITY ADJUSTMENTS THRU EXISTING PAVEMENT	INDEX 125-001	SHEET 2 of 2
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ENGINEERING BUSINESS: EB-0000340
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TYLER T. LEE
FL Reg. Engineer #93309

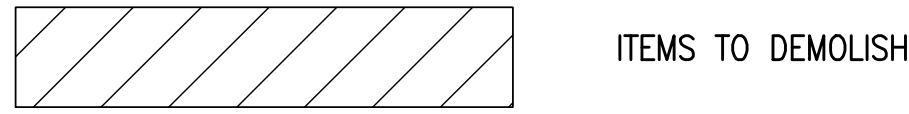
**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

PROJECT NO.	DESIGNED BY	DRAWN BY	CHKD BY	PROJ. MGR.	DATE	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	TTL	RG	RWD	JWL	FEBRUARY 2023				
									NOT RELEASED FOR CONSTRUCTION BY
									DATE

**FDOT
STANDARD DETAILS**

C-918

LEGEND

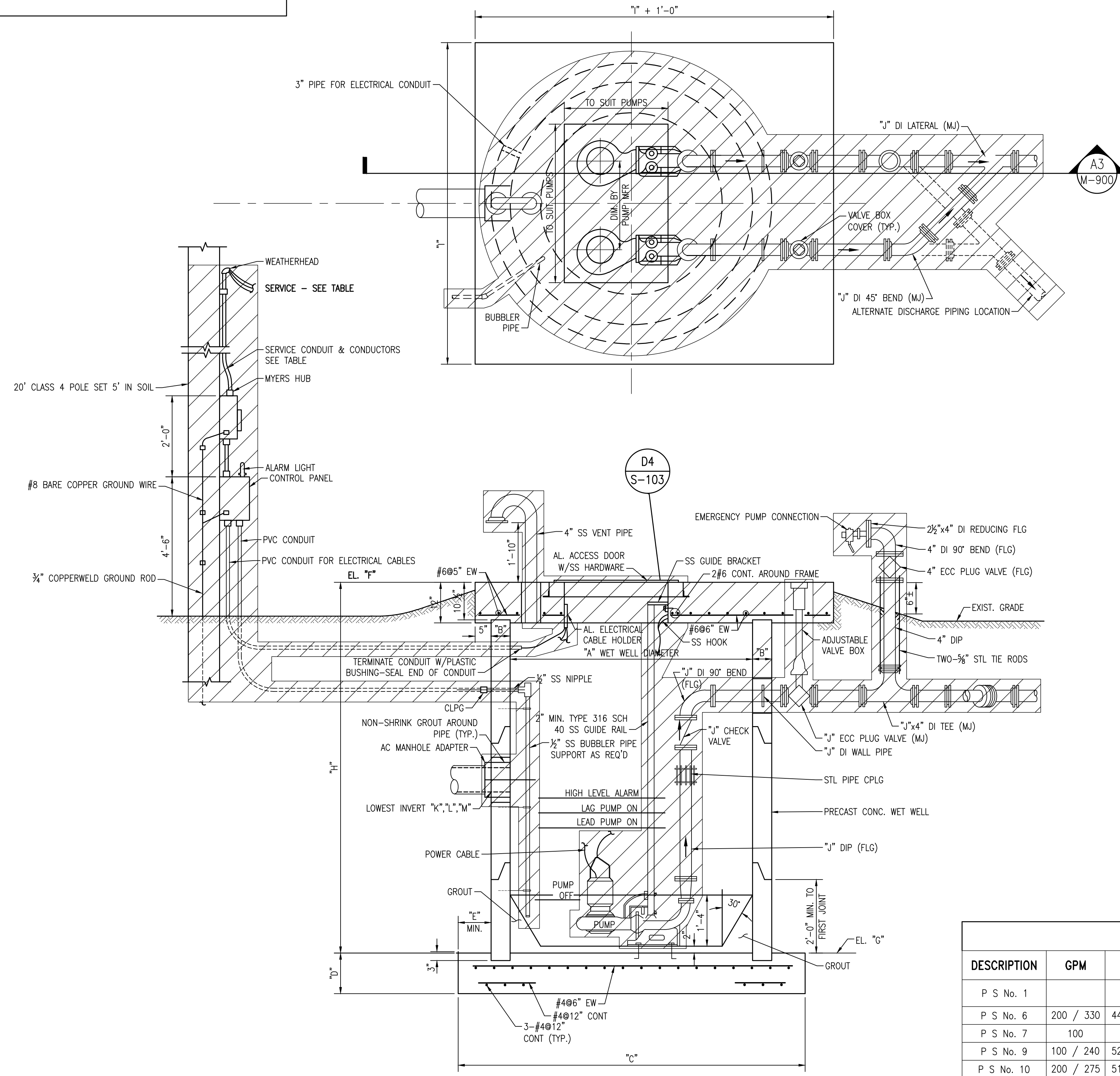


SHEET NOTES:

- PRIOR TO DEMOLITION OF THE EXISTING LIFT STATIONS, THE CONTRACTOR SHALL CONTACT THE OWNER AND ALLOW THE OWNER TO TAG ALL ITEMS DEEMED SALVAGEABLE.

DEMOLITION NOTES:

- CONTRACTOR SHALL REMOVE ALL PUMPS, PIPING, FITTINGS, GUIDE RAILS, BASE ELBOWS, AND ALL OTHER LIFT STATION APPURTENANCES FROM INSIDE THE LIFT STATION WET WELL.
- CONTRACTOR SHALL REMOVE ALL PIPING, FITTINGS, VALVES, PRESSURE GAUGES, AND ALL OTHER LIFT STATION APPURTENANCES FROM INSIDE THE WET WELL OR BELOW THE EXISTING CONCRETE PAD



A3 LIFT STATION PLAN & SECTION
SCALE: 1" = 1'
0 0.5' 1' 2'

SERVICE POLE SCHEDULE

PUMP STATION	SERVICE VOLTAGE	SERVICE CONDUIT	SERVICE CONDUCTORS	MAX MOTOR HP	REMARKS
P S No. 6	120 / 240 V 3ø - 4W	1"	4# 8 THW	5 (3ø)	
P S No. 9	120 / 240 V 3ø - 4W	1"	4# 8 THW	5 (3ø)	
P S No. 10	120 / 240 V 1ø - 3W	1 1/2"	3# 4 & 1# 8 THW	9.4 (3ø)	

SERVICE BY CENTRAL FLORIDA ELECTRIC COOPERATIVE - CHIEFLAND FLORIDA

PUMP STATION DEMOLITION SCHEDULE

DESCRIPTION	GPM	TDH	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	REMARKS
P S No. 1			6'-0"	7"	8'-0"	1'-0"	6"	± 3.71	± -11.09	± 14'-10"	7'-0"	6"	± -6.11	± -6.31	± -7.53	
P S No. 6	200 / 330	44 / 37	6'-0"	7"	8'-0"	1'-0"	5"	± 6.61	± -6.25	± 12'-10"	8'-0"	6"	± -1.55	-	-	
P S No. 7	100	45	6'-0"	7"	8'-0"	1'-0"	6"	± 5.44	± -4.38	± 9'-10"	6'-6"	6"	± -0.30	± -0.34	-	
P S No. 9	100 / 240	52 / 42	5'-0"	6"	7'-0"	10"	6"	± 7.59	± -6.55	± 14'-2"	6'-10"	4"	± -2.59	-	-	
P S No. 10	200 / 275	51 / 40	6'-0"	7"	8'-0"	1'-0"	5"	± 7.09	± -8.66	± 15'-9"	8'-0"	6"	± 0.92	-	-	

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FL Reg. Engineer #93309

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

NO.	DATE	APPR.	REVISION/ACTION TAKEN

PROJECT NO: 125503.01
DESIGNED BY: TTL
DRAWN BY: RCG
CHK'D BY: RWD
PROJ. MGR: JMW
DATE: FEBRUARY 2023

**STANDARD DETAIL
FOR LIFT STATION
DEMOLITION**

M-900

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- CONSTRUCTION KEY NOTES:**
- ① CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PIPING, FITTINGS & VALVES ABOVE THE HDPE/316 S.S. TRANSITION FITTING.
 - ② CONTRACTOR TO ROTATE 90° BEND AS REQUIRED TO CONNECT TO THE EXISTING FORCE MAIN

PUMPING STATION IMPROVEMENT SCHEDULE

DESCRIPTION	GPM	TDH	"A" (HP)	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	"O"	"P"	REMARKS
P S No. 6	200/330	44/37	15.00	9.11	± 6.61	± -6.25	± 12'-10"	4"	6"	-5.18	-3.81	-2.81	-2.31	-1.81	± -1.55	-	-	6'-0"	UTILIZE 4"x6" ECCENTRIC INCREASER
P S No. 9	100/240	52/42	15.00	10.09	± 7.59	± -6.55	± 14'-2"	4"	4"	-5.48	-4.11	-3.11	-2.61	-2.11	± -2.59	-	-	5'-0"	
P S No. 10	200/275	51/40	15.00	9.59	± 7.09	± -8.66	± 15'-9"	4"	6"	-7.59	-6.22	-5.22	-4.72	-4.22	± 0.92	-	-	6'-0"	UTILIZE 4"x6" ECCENTRIC INCREASER

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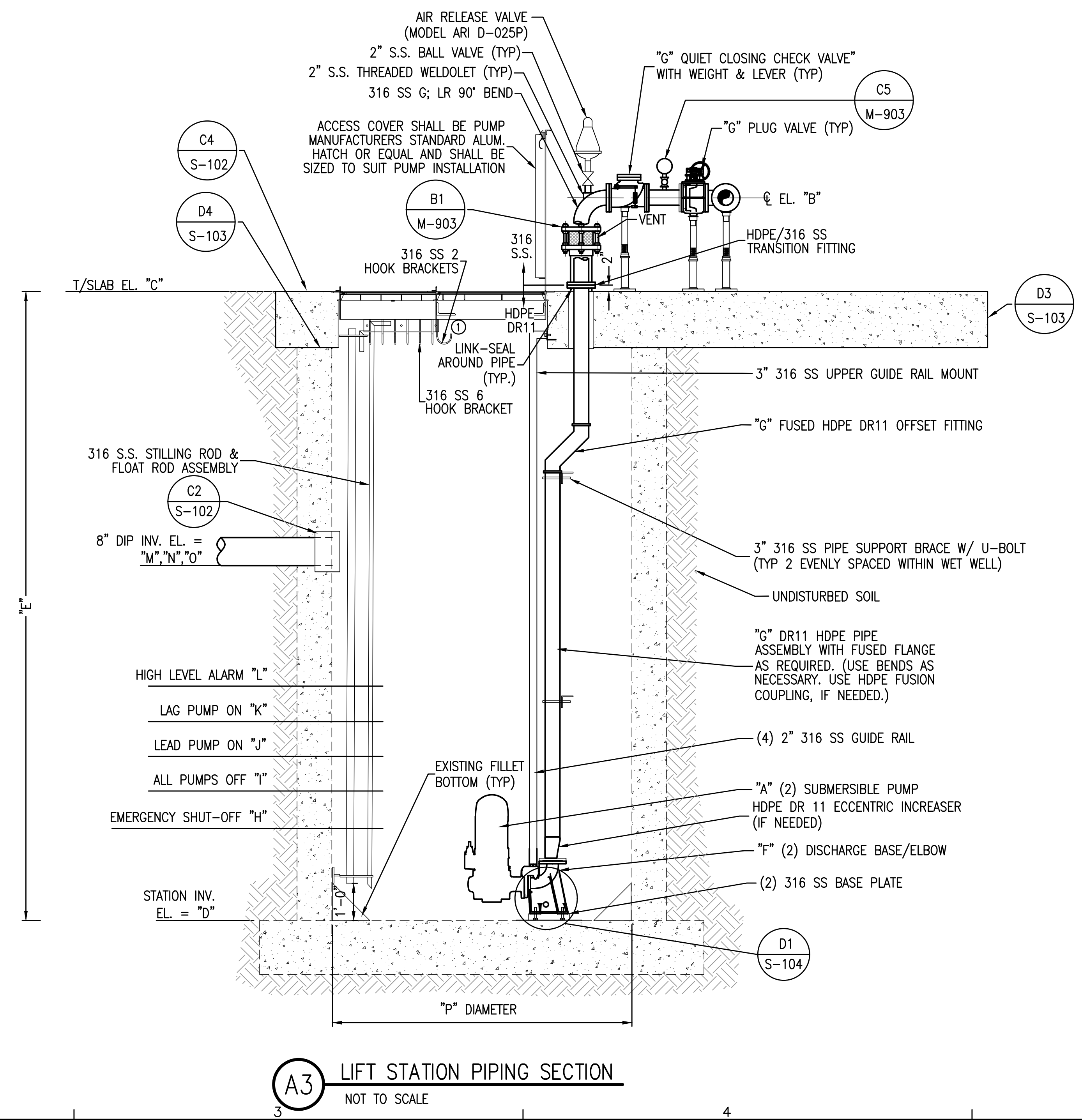
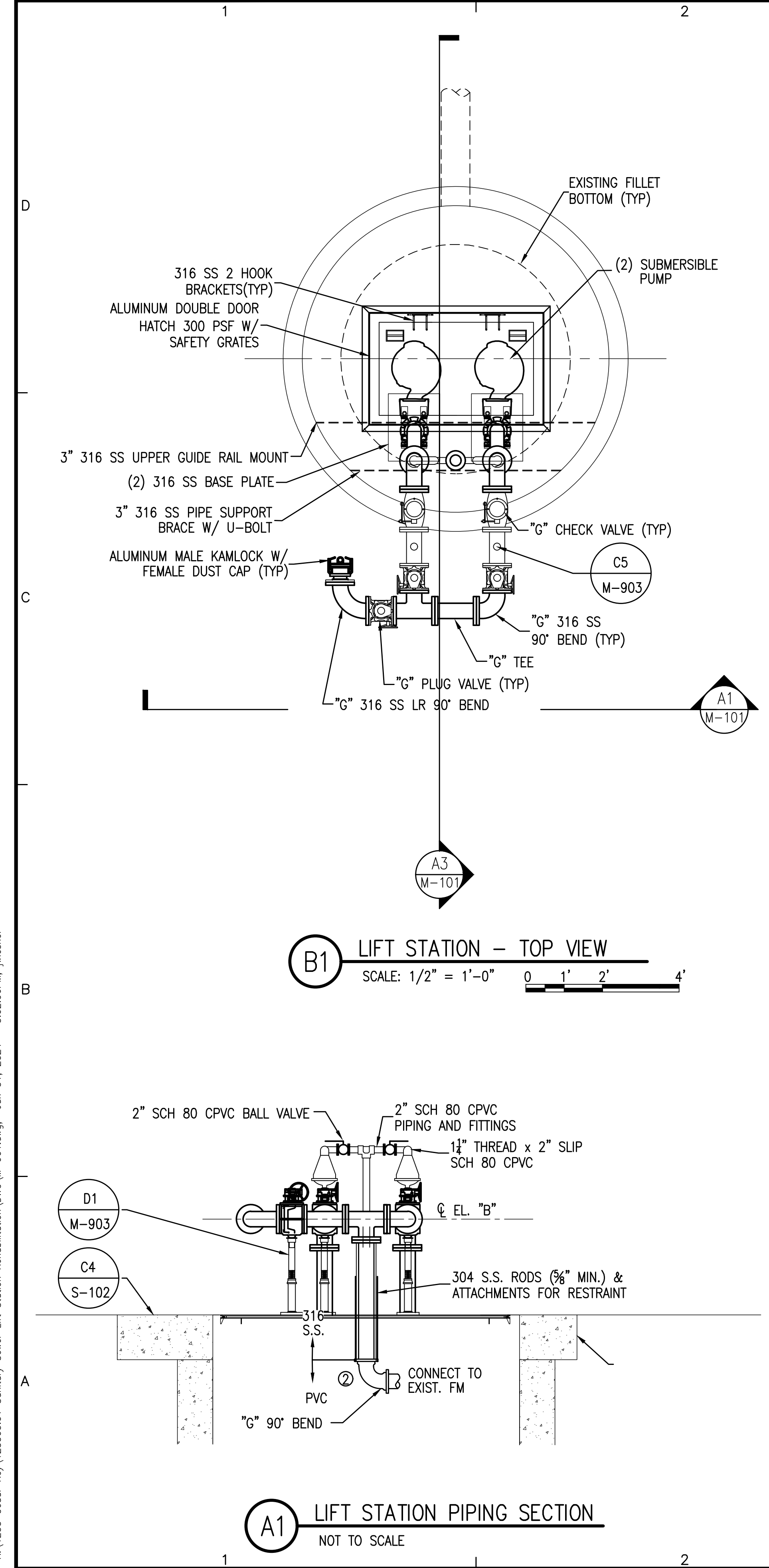
TYLER T. LEE
 FL Reg. Engineer #83309

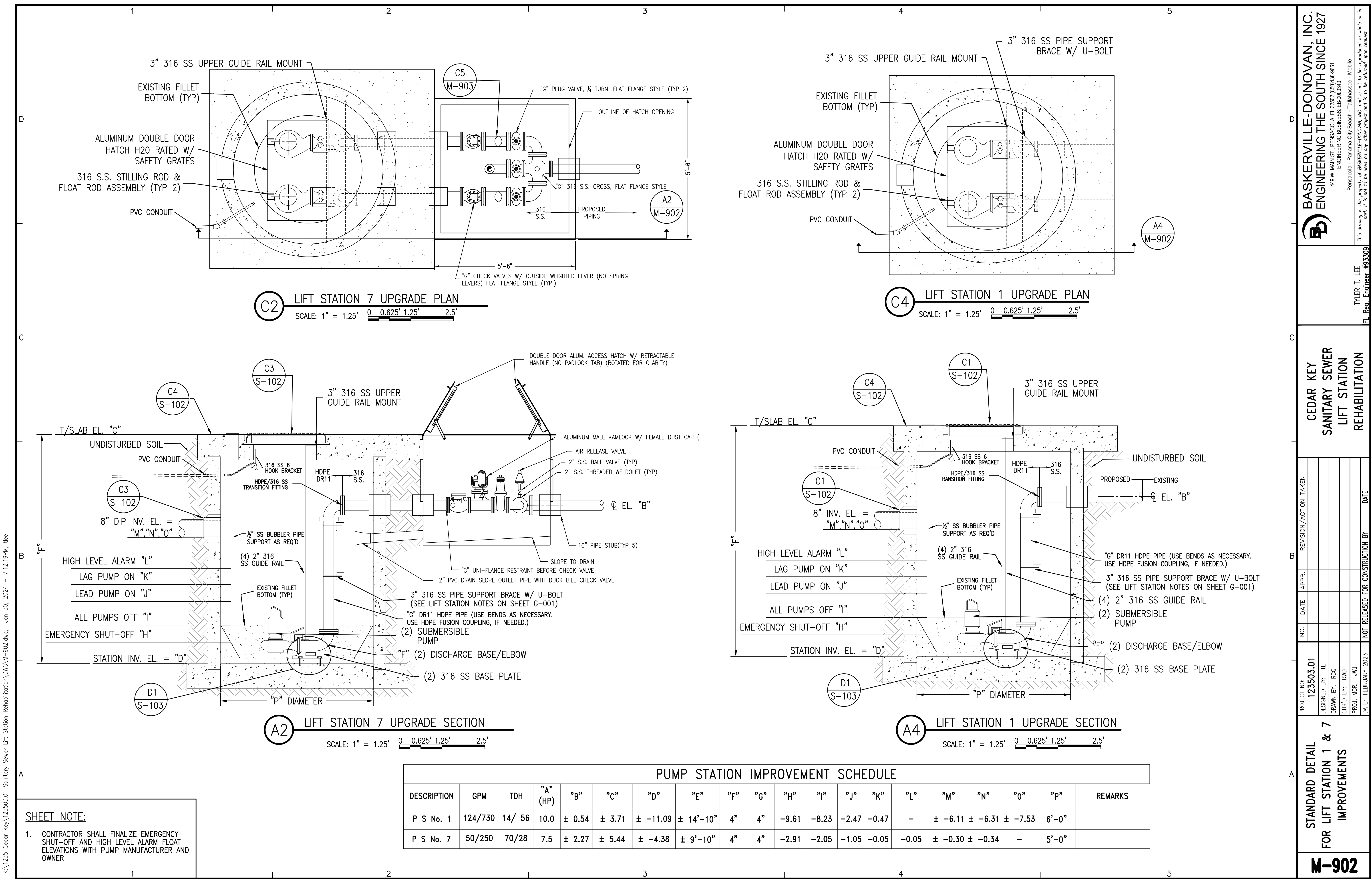
CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

NO.	DATE	APPR.	REVISION/ACTION TAKEN
PROJECT NO:	123503.01	DESIGNED BY:	TTL
DRAWN BY:	RCG	CHK'D BY:	RWD
PROJ. MGR.:	JWL	DATE:	FEBRUARY 2023
NOT RELEASED FOR CONSTRUCTION BY _____ DATE _____			

STANDARD DETAILS
FOR LIFT STATION 6,
9, & 10 IMPROVEMENTS
M-901

- SHEET NOTE:**
- 1. CONTRACTOR SHALL FINALIZE EMERGENCY SHUT-OFF AND HIGH LEVEL ALARM FLOAT ELEVATIONS WITH PUMP MANUFACTURER AND OWNER





C2 LIFT STATION 7 UPGRADE PLAN
 SCALE: 1" = 1.25' 0 0.625' 1.25' 2.5'

C4 LIFT STATION 1 UPGRADE PLAN
 SCALE: 1" = 1.25' 0 0.625' 1.25' 2.5'

A2 LIFT STATION 7 UPGRADE SECTION
 SCALE: 1" = 1.25' 0 0.625' 1.25' 2.5'

A4 LIFT STATION 1 UPGRADE SECTION
 SCALE: 1" = 1.25' 0 0.625' 1.25' 2.5'

SHEET NOTE:
 1. CONTRACTOR SHALL FINALIZE EMERGENCY SHUT-OFF AND HIGH LEVEL ALARM FLOAT ELEVATIONS WITH PUMP MANUFACTURER AND OWNER

PUMP STATION IMPROVEMENT SCHEDULE																			
DESCRIPTION	GPM	TDH	"A" (HP)	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	"O"	"P"	REMARKS
P S No. 1	124/730	14/ 56	10.0	± 0.54	± 3.71	± -11.09	± 14'-10"	4"	4"	-9.61	-8.23	-2.47	-0.47	-	± -6.11	± -6.31	± -7.53	6'-0"	
P S No. 7	50/250	70/28	7.5	± 2.27	± 5.44	± -4.38	± 9'-10"	4"	4"	-2.91	-2.05	-1.05	-0.05	-0.05	± -0.30	± -0.34	-	5'-0"	

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FL. Reg. Engineer #93309
 TYLER T. LEE

CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION

NO.	DATE	APPR.	REVISION/ACTION TAKEN

PROJECT NO: 123503.01
 DESIGNED BY: TTL
 DRAWN BY: RGD
 CHK'D BY: RWD
 PROJ. MGR.: JWL
 DATE: FEBRUARY 2023

STANDARD DETAIL FOR LIFT STATION 1 & 7 IMPROVEMENTS

M-902

STRUCTURE NOTES

- CONSTRUCTION IS TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING BUILDING CODE AND ALL OTHER APPLICABLE FEDERAL, STATE, LOCAL CODES, STANDARDS, REGULATIONS AND LAW, THE GOVERNING CODE FOR THIS PROJECT IS THE FLORIDA BUILDING CODE 8th EDITION (2023) INCLUDING ALL CURRENT AMENDMENTS.
- THE GOVERNING STANDARDS AND SPECIFICATIONS SHALL BE THE FLORIDA DEPARTMENT OF TRANSPORTATION, FY 2024-25 STANDARD PLANS AND REVISED INDEX DRAWINGS AS APPENDED HEREIN, AND THE FY 2024-25 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS AMENDED BY CONTRACT DOCUMENTS.
- THE STRUCTURE IS DESIGNED TO BE STRUCTURALLY SOUND WHEN COMPLETED, PRIOR TO COMPLETION, THE CONTRACTOR IS RESPONSIBLE FOR STABILITY AND TEMPORARY BRACING OR SUPPORT.
- DESIGN LOADS:**
DEAD LOADS:
 CONCRETE UNIT WEIGHT- 150 PCF

SOIL LOADS:
 SOIL UNIT WEIGHT- 115 PCF
 LATERAL SOIL LOAD- 150 PSF
 (PSF PER FOOT OF DEPTH)

 MINIMUM FACTOR OF SAFETY- 1.5
 MINIMUM SOIL ALLOWABLE BEARING CAPACITY- 2,000 PSF

LIVE LOADS:
 AASHTO HS20-44 WHEEL LOAD - 16 KIP
 IMPACT FACTOR - 33%

WIND LOADS:
 GOVERNING CODE - ASCE 7-22
 ULTIMATE DESIGN WIND SPEED - 150 MPH
 NOMINAL WIND DESIGN SPEED - 116.2 MPH
 RISK CATEGORY - IV
 EXPOSURE - B
 WIND DIRECTIONAL FACTOR - 0.85
 TOPOGRAPHY FACTOR - 1.0
 VELOCITY PRESSURE - 41.6 PSF
- VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO START OF CONSTRUCTION, NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES, NO CHANGES OF INFORMATION SHOWN ON THE DRAWINGS SHALL BE MADE WITHOUT THE SPECIFIC WRITTEN APPROVAL OF THE ENGINEER. DESIGN INFORMATION SHOWN ON THE DRAWINGS PROVIDES OVERALL DIMENSIONAL PARAMETERS AND DESCRIBES ELEMENTS TO BE CONSTRUCTED, THE CONTRACTOR SHALL ADJUST DIMENSIONS AND DETAILS AS REQUIRED TO FIT EXISTING CONDITIONS. THE ENGINEER SHALL BE NOTIFIED OF ANY PROPOSED MODIFICATIONS.
- DETAILS LABELED "TYP." APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY REFERENCED, WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. QUESTIONS REGARDING THE APPLICABILITY OF TYPICAL DETAILS SHALL BE RESOLVED BY THE ENGINEER.
- OPENINGS SHOWN ON STRUCTURAL DRAWINGS ARE ONLY PICTORIAL, SEE THE CIVIL AND M.E.P. DRAWINGS FOR THE SIZE AND LOCATIONS OF OPENINGS IN THE STRUCTURE.
- CONTRACTORS WHO DISCOVER DISCREPANCIES, OMISSIONS OR VARIATIONS IN THE CONTRACT DOCUMENTS SHALL IMMEDIATELY NOTIFY THE ENGINEER. THE ENGINEER WILL RESOLVE THE CONDITION AND ISSUE A WRITTEN CLARIFICATION.
- THE CONTRACTOR SHALL COORDINATE ALL CONTRACT DOCUMENTS WITH FIELD CONDITIONS, DIMENSIONS AND PROJECT SHOP DRAWINGS PRIOR TO CONSTRUCTION. DO NOT SCALE DRAWINGS MARKED WITH (+/-). USE ONLY PRINTED DIMENSIONS. ELECTRONIC DRAWINGS SHOULD NOT BE ASSUMED TO BE DRAWN TO SCALE. REPORT ANY DISCREPANCIES IN WRITING TO THE ENGINEER PRIOR TO PROCEEDING WITH WORK. DO NOT CHANGE SIZE OR LOCATION OF STRUCTURAL MEMBERS WITHOUT WRITTEN INSTRUCTION FROM THE STRUCTURAL ENGINEER OF RECORD.
- THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTY, HIS OWN WORK, AND THE PUBLIC FROM HARM. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND JOB SITE SAFETY INCLUDING ALL OSHA REQUIREMENTS.
- THE CONTRACTOR SHALL SUBMIT FOR APPROVAL, 3 SETS OF PLANS, CALCULATIONS, AND SPECIFICATIONS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA, FOR ANY PROPOSED CHANGES TO THE CONTRACT DOCUMENTS.

SITE PREPARATION

- CLEAR AND GRUB ALL EXISTING VEGETATION, DEMOLISH AND REMOVE EXISTING PAVEMENT FROM THE WORK AREA. ANY EXISTING UNDERGROUND UTILITY LINES SHOULD BE IDENTIFIED AND PROTECTED OR REMOVED COMPLETELY FROM THE EXISTING PROJECT AREA. COMPLETE STRIPPING OF THE TOPSOIL SHOULD BE PERFORMED IN AREAS OF PROPOSED GRADE BEARING IMPROVEMENTS.
- GRADE SITE AND PERFORM SURFICIAL COMPACTION ON ALL SOILS WITHIN 2 FEET OF PLANNED STRUCTURES TO DEVELOP A MINIMUM DRY DENSITY OF 96% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) TO A DEPTH OF 1"0" BELOW THE COMPACTED SURFACE. ALL FILL SHALL BE A CLEAN SAND WITH NO MORE THAN 15% PASSING THE NO. 200 SIEVE, COMPACTED IN LAYERS NOT EXCEEDING 4" TO 6" THICK LOOSE MEASURE.
- DO NOT PERMIT WATER TO STAND OR POND ON OR NEAR FOUNDATION AREA DURING OR AFTER CONSTRUCTION. SITE GRADING SHALL BE SUCH TO PROVIDE POSITIVE DRAINAGE OF SURFACE WATER RUNOFF AROUND AND AWAY FROM FOUNDATION AREA.

EXCAVATION, BACKFILL AND DEWATERING

- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LOGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, AND UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL BUILDING DEPARTMENT AND OSHA REGULATIONS. DO NOT EXCAVATE WITHIN ONE FOOT OF THE AFOOT OF REPOSE OF ANY SOIL BEARING FOUNDATION UNLESS THE FOUNDATION IS PROPERLY PROTECTED AGAINST SETTLEMENT.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL ACCUMULATED WATER IN A MANNER THAT DOES NOT INCONVENIENCE OR DAMAGE THE WORK IN A MANOR CONSISTENT WITH ANY PERMIT REQUIREMENTS.

REINFORCED CONCRETE

- CONSTRUCT REINFORCED CONCRETE IN ACCORDANCE WITH ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
- CAST IN PLACE CONCRETE SHALL HAVE THE FOLLOWING MINIMUM 28-DAY COMPRESSIVE STRENGTHS:
 WET WELL TOP SLABS 5,500 PSI
 ELECTRICAL PANEL SUPPORT SHAFT 4,000 PSI
- USE NORMAL WEIGHT CONCRETE FOR ALL STRUCTURAL MEMBERS, UNLESS OTHERWISE NOTED.
- REINFORCING STEEL SHALL BE GRADE 60 CARBON STEEL PER ASTM A615.
- PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318, SECTION 26.5.6. PROVIDE KEY WAYS AND ADEQUATE DOWELS. SUBMIT DRAWINGS SHOWING LOCATION OF CONSTRUCTION JOINTS AND DIRECTION OF POUR FOR REVIEW.
- PLACING OF CONCRETE - VIBRATE CONCRETE TO PREVENT HONEYCOMBS AND VOIDS. DO NOT USE ADMIXTURES CONTAINING CHLORIDE SALTS IN THE CONCRETE MIX.

SOIL TESTING

- EACH LIFT OF COMPACTED FILL SHOULD BE TESTED, EVALUATED, AND REWORKED, AS NECESSARY, UNTIL APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO PLACEMENT OF ADDITIONAL LIFTS.
- EACH LIFT SHOULD BE TESTED FOR DENSITY AND WATER CONTENT AT A FREQUENCY OF AT LEAST ONE TEST AT EACH LIFT STATION.

EPOXY ANCHORS

- THE CONTRACTOR SHALL TAKE PRECAUTION NOT TO CAUSE DAMAGE TO THE EXISTING CONCRETE DURING INSTALLATION OF ADHESIVE ANCHORS AND THROUGHOUT THE DURATION OF CONSTRUCTION.
- THREADED ROD ANCHORS SHALL CONFORM TO ASTM F1554 GRADE 55. WASHERS SHALL BE IN ACCORDANCE WITH ASTM F436, TYPE 3. NUTS SHALL BE HEAVY HEX NUTS IN ACCORDANCE WITH ASTM A563 GRADE C3. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153. TREAT COATED HARDWARE WITH CHROMATE AFTER COATING IN A WATER SOLUTION CONTAINING 0.2% SODIUM DICHROMATE 3 OZ./10 GAL.
- ANCHORS SHALL BE POST-INSTALLED WITH SIMPSON SET-XP EPOXY OR APPROVED EQUAL.
- ANCHOR HOLES ARE TO BE PRE-DRILLED TO A MAXIMUM DIAMETER OF 1½ TIMES THE NOMINAL ANCHOR DIAMETER AND A MINIMUM OF THE NOMINAL ANCHOR DIAMETER PLUS ¼". THE CONTRACTOR SHALL TAKE EXTREME CAUTION DURING PLACEMENT OF ANCHORS.
- PRIOR TO INSTALLATION OF ADHESIVE, ENSURE THAT THE CONCRETE SURFACE IS CLEAN AND FREE OF DEBRIS FROM DRILLING OF ANCHOR HOLES. THE BASE CONCRETE TEMPERATURE SHALL BE BETWEEN 50°-80° F DURING APPLICATION OF EPOXY ADHESIVE. ENSURE THE CONCRETE IS DRY DURING INSTALLATION OF ADHESIVE AND THROUGHOUT THE CURE PERIOD.
- ALLOW FOR A MINIMUM CURE TIME OF 72 HOURS PRIOR TO INITIATING ANY OTHER CONSTRUCTION ACTIVITIES THAT MAY DISTURB THE ANCHORED STEEL.

ACCESS HATCH

- LIFT STATIONS 6, 7, 9, & 10:
 - ACCESS HATCHES SHALL BE MODEL F1H ALUMINUM ACCESS COVER BY HALLIDAY PRODUCTS, INC. OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND RECOMMENDATIONS.
 - ACCESS DOOR PANEL AND HATCH SHALL BE H-20 LOAD RATED, AND PRESSURE RATED WATERTIGHT CAPABLE OF WITHSTANDING A 25 FOOT STATIONARY WATER COLUMN.
 - HINGES, CAM LOCKS, HOLD-OPEN ARM, AND ALL FASTENING HARDWARE SHALL BE T-316 STAINLESS STEEL.
 - ACCESS HATCH SHALL INCLUDE ORANGE SAFETY RETRO GRATES, BOLTS, AND LIFT ASSIST.
- LIFT STATION 1:
 - ACCESS HATCHES SHALL BE MODEL 00821624C01 ACCESS COVER BY EJ GROUP, INC. OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND RECOMMENDATIONS.
 - ACCESS DOOR PANEL AND HATCH SHALL BE H-20 LOAD RATED FOR IN-STREET USE AND BE FITTED WITH EPDM GASKETS.
 - ACCESS HATCH FRAME AND LID TO BE DUCTILE IRON MEETING THE SPECIFICATIONS OF ASTM A536 GRADE 70-50-05.
 - ACCESS HATCH SHALL INCLUDE ORANGE SAFETY RETRO GRATES, BOLTS, AND LIFT ASSIST.

PIPE SEALS

- PIPE WALL AND SLAB PENETRATION SEALS TO BE OF THE MODULAR LINK TYPE. SEALS SHALL CONSIST OF A SERIES OF INTERLOCKING, MOLDED SYNTHETIC RUBBER LINKS, WITH HEAVY-DUTY PLASTIC PRESSURE PLATES, AND STAINLESS STEEL NUTS AND BOLTS.
- SEALS TO BE DESIGNED TO PROVIDE A HYDROSTATIC SEAL BETWEEN THE PIPE AND WALL/SLAB PENETRATION. SEALS SHALL BE SIZED AND SELECTED PER MANUFACTURER RECOMMENDATIONS.
- MECHANICAL PIPE SEALS SHALL BE FABRICATED OF AN EPDM ELASTOMER FOR GENERAL SERVICE AND A NITRILE/ BUNA-N FOR HYDROCARBON/PETROLEUM BASED APPLICATIONS. MECHANICAL PIPE SEALS SHALL BE MODEL "METRASEAL" AS MANUFACTURED BY THE METRAFLEX COMPANY, CHICAGO, IL, OR APPROVED EQUAL.
- PRIOR TO INSTALLATION OF MODULAR TYPE WALL/SLAB PENETRATION SEAL, ENSURE THAT THE CORED CONCRETE IS CLEAN, AND LAITANCE FREE.
- SEAL INTERIOR FACE OF REINFORCED CONCRETE WALL PENETRATIONS AFTER SEALING OF PIPE PENETRATION USING BASF MASTERFLOW 4316 NON-SHRINK GROUT OR APPROVED EQUAL. PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONCRETE SHALL BE CLEAN, SATURATED SURFACE-DRY (SSD), SOUND, AND ROUGHENED TO CONCRETE SURFACE PROFILE (CSP) OF 5 TO 9 IN ACCORDANCE WITH ICRI 310.2 TO PERMIT PROPER BOND. INSTALL NON-SHRINK GROUT IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

CONCRETE CORE DRILLING

- THE CONTRACTOR SHALL COMPLY WITH ANSI B-7.1 AND B-7.5 STANDARDS AND SHALL ADHERE TO ALL APPLICABLE SAFETY GUIDELINES IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL ORDINANCES.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE LOCATION OF THE AREA TO BE CORED REVIEWED, APPROVED, AND ALL CUT LINES CLEARLY MARKED PRIOR TO THE START OF ANY CUTTING OPERATIONS.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THE CONCRETE WALL TO BE CORED IS REINFORCED AND THAT CORING OPERATIONS WILL LIKELY ENCOUNTER STEEL REINFORCING.
- EQUIPMENT USED IN THE DRILLING OPERATIONS MUST MEET ALL OSHA STANDARDS AND SPECIFICATIONS AS TO PLUGS, NOISE, WIRING, AND FUME POLLUTION.
- SPECIFICATIONS FOR MINIMUM AND MAXIMUM CLEARANCE REQUIREMENTS BETWEEN THE PIPE AND CORE HOLE SHALL BE OBTAINED BY THE CONTRACTOR IN ACCORDANCE WITH THE MODULAR SEAL MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND SHOULD BE DETERMINED PRIOR TO STARTING WORK.
- THE CORE DRILLING EQUIPMENT SHALL BE OPERATED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
- APPLY SIMPSON FX-70-9 EPOXY COATING OR APPROVED EQUAL TO THE CORED EDGE OF THE REINFORCED CONCRETE WALL IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. APPLICATION OF COATING SHALL OCCUR PRIOR TO INSTALLATION OF PIPE AND SEALS. PRIOR TO APPLICATION, CONCRETE SURFACE SHALL BE CLEAN AND LAITANCE AND DEBRIS FREE.

ALUMINUM PANEL SUPPORT POST

- ELECTRICAL PANEL SUPPORT POSTS SHALL BE GRADE 6061-T6 ALUMINUM MEETING THE REQUIREMENTS OF ASTM B429.
- ELECTRICAL PANEL ENCLOSURE MOUNTING HEIGHT SHALL NOT EXCEED 6 FEET FROM THE FINISH GRADE TO THE BOTTOM OF THE PANEL ENCLOSURE.
- CONTRACTOR SHALL COORDINATE ELECTRICAL PANEL FOUNDATION LOCATION WITH THE OWNER PRIOR TO CONSTRUCTION.

WATERSTOP

- CONSTRUCTION JOINTS SHALL BE SEALED USING A 3/4" X3/4" X3/4" TRIANGULAR CONTINUOUS BEAD OF SIKASWELL S-2 WATERSTOP OR APPROVED EQUAL.
- WATERSTOP SHALL BE 1-PART POLYURETHANE HYDROPHILIC WATER-SWELLING CONTACT SEALANT.
- COAT CONTACT SURFACE USING SIKA ARMATEC-110 EpoCem OR APPROVED EQUAL PRIOR TO APPLICATION OF WATERSTOP.
- ENSURE SUBSTRATE IS CLEAN, DRY OR MATT DAMP AND LAITANCE FREE PRIOR TO APPLICATION. ALLOW FOR A MINIMUM CURE TIME OF 24 HOURS PRIOR TO PLACING CONCRETE. PROTECT WATERSTOP AGAINST CONTACT WITH WATER UNTIL PLACEMENT OF CONCRETE. INSTALL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

LIFT STATION LINING SYSTEM

- EXISTING LIFT STATION INTERIORS SHALL BE FULLY COATED USING SPECTRASHELD TWO COMPONENT MODIFIED POLYUREA AND CLOSED CELL POLYURETHANE FOAM SPRAY APPLICATION BY CCI SPECTRUM, INC. OR APPROVED EQUAL.
- THE LINING SYSTEM SHALL BE A MULTI-LAYER STRESS SKIN PANEL LINER SYSTEM CONSISTING OF THREE LAYERS:
 - MOISTURE BARRIER BASE COAT - MODIFIED POLYMER (SILICONE MODIFIED POLYUREA)
 - SURFACER - POLYURETHANE/POLYMERIC BLEND FOAM
 - FINAL CORROSION BARRIER - MODIFIED POLYMER (SILICONE MODIFIED POLYUREA)

THE MODIFIED POLYMER (SILICONE MODIFIED POLYUREA) SHALL BE SPRAYABLE, SOLVENT FREE, TWO-COMPONENT POLYMERIC, MOISTURE/CHEMICAL BARRIER SPECIFICALLY DEVELOPED FOR THE CORROSIVE WASTEWATER ENVIRONMENT. THE POLYURETHANE RIGID STRUCTURE FOAM, SHALL BE LOW VISCOSITY TWO-COMPONENT, CONTAINING FLAME RETARDANTS, TOTAL THICKNESS OF MULTI-LAYER LINER SYSTEM SHALL BE A MINIMUM OF 500 MILS.
- THE MATERIALS TO BE UTILIZED IN THE LINING OF WASTEWATER STRUCTURES SHALL BE DESIGNED AND MANUFACTURED TO WITHSTAND THE SEVERE EFFECTS A WASTEWATER ENVIRONMENT. THE MANUFACTURER OF THE CORROSION PROTECTION PRODUCTS SHALL HAVE AT LEAST 10 YEARS OF EXPERIENCE IN THE PRODUCTION OF THE LINING PRODUCTS UTILIZED, AND THE PRODUCTS SHALL HAVE SATISFACTORY INSTALLATION RECORD.
- PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS INCLUDING MATERIAL TECHNICAL DATA SHEETS, SAFETY DATA SHEETS, MANUFACTURER'S CERTIFICATION OF APPLICATOR, AND WORK PROCEDURES TO THE OWNER FOR APPROVAL.
- SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND MAY INCLUDE HIGH PRESSURE WATER CLEANING, HYDRO BLASTING, ABRASIVE BLASTING, GRINDING, OR DETERGENT WATER CLEANING. THE SURFACE PREPARATION METHOD SHALL PRODUCE A CLEANED, ABRADED AND SOUND SURFACE WITH NO EVIDENCE OF LAITANCE, LOOSE CONCRETE, LOOSE MORTAR, CONTAMINANTS, OR DEBRIS, AND SHALL DISPLAY A SURFACE PROFILE SUITABLE FOR APPLICATION OF THE LINER SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- INSTALL LINING SYSTEM AFTER COMPLETION OF STRUCTURAL UPGRADES INCLUDING TOP SLAB REPLACEMENT, SEALING OF DISCHARGE, EXHAUST, CONDUIT, AND EXISTING PIPING, AND PRIOR TO PUMP AND PIPE CONNECTION INSTALLATION.



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 Pensacola - Panama City Beach - Tallahassee - Mobile

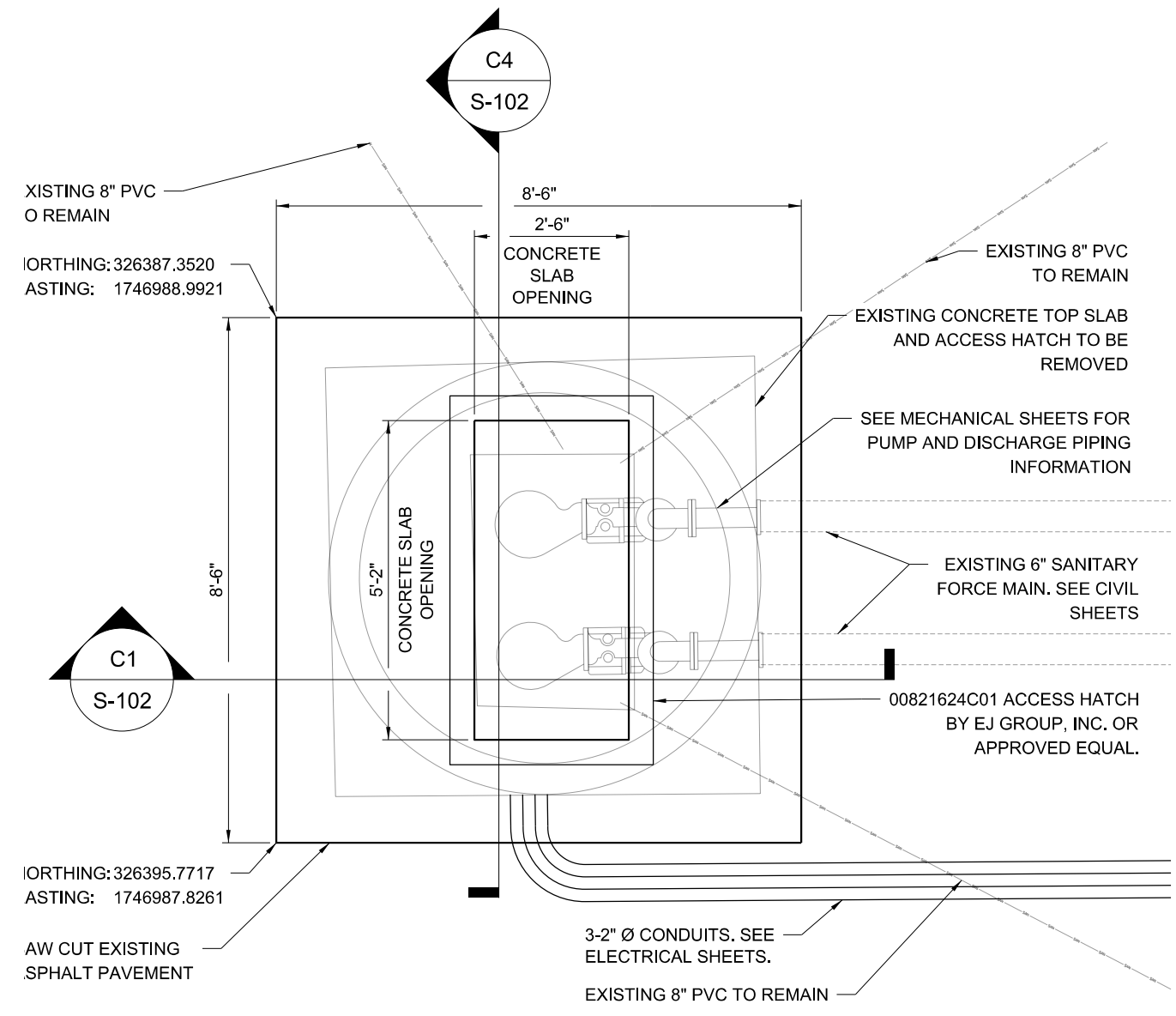
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 LICENSE NUMBER: 686537
 EBBSTONE CAPITAL CIRCLE, NE, SUITE J
 5370 CAPITAL CIRCLE, NE, SUITE J
 TALLAHASSEE, FL 32308

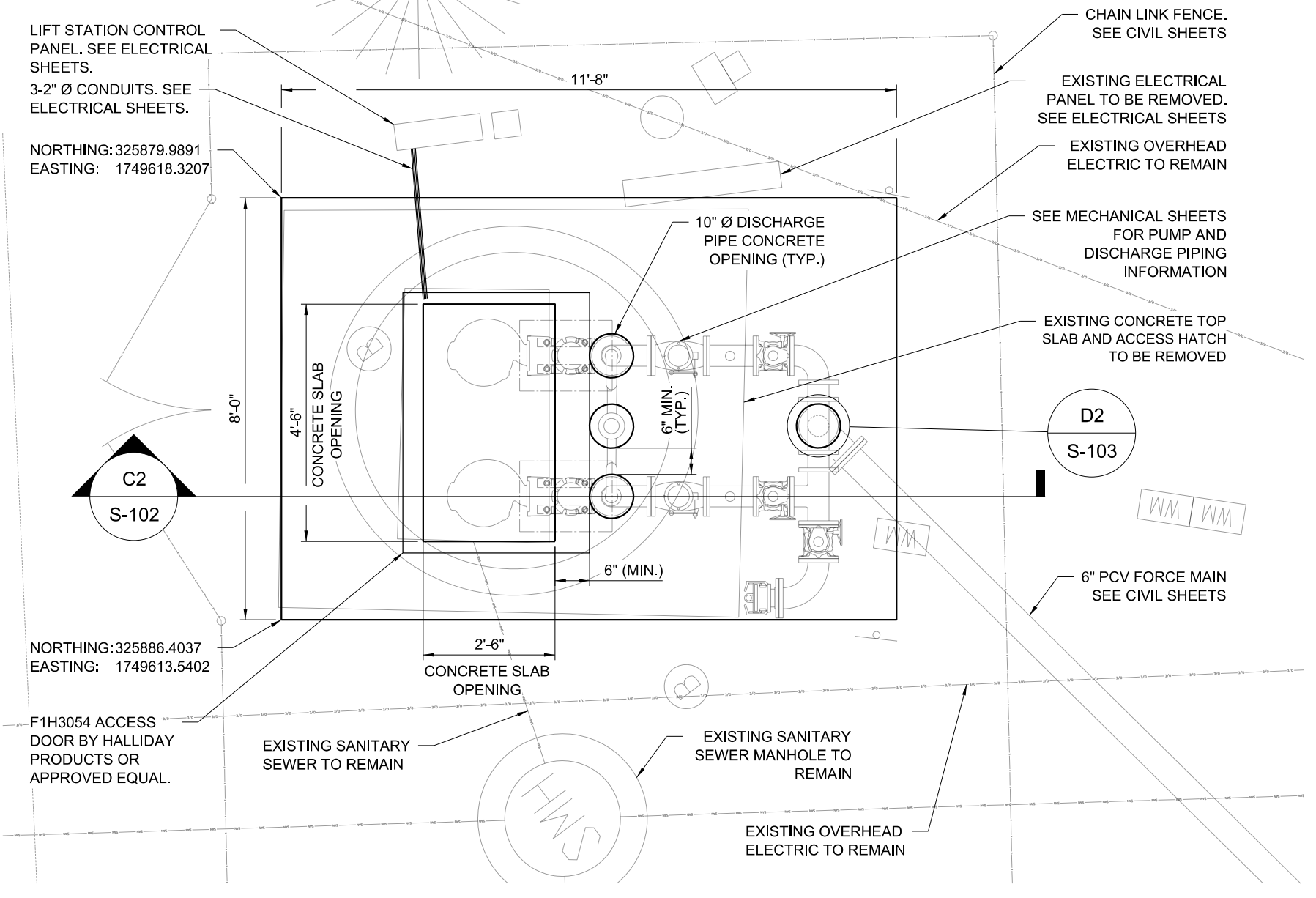
**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

PROJECT NO:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR:	DATE:	NO.	DATE	APPR.	REVISION / ACTION	TAKEN
123503.01	NAC	NAC	JFS	JMU	FEBRUARY 2023					

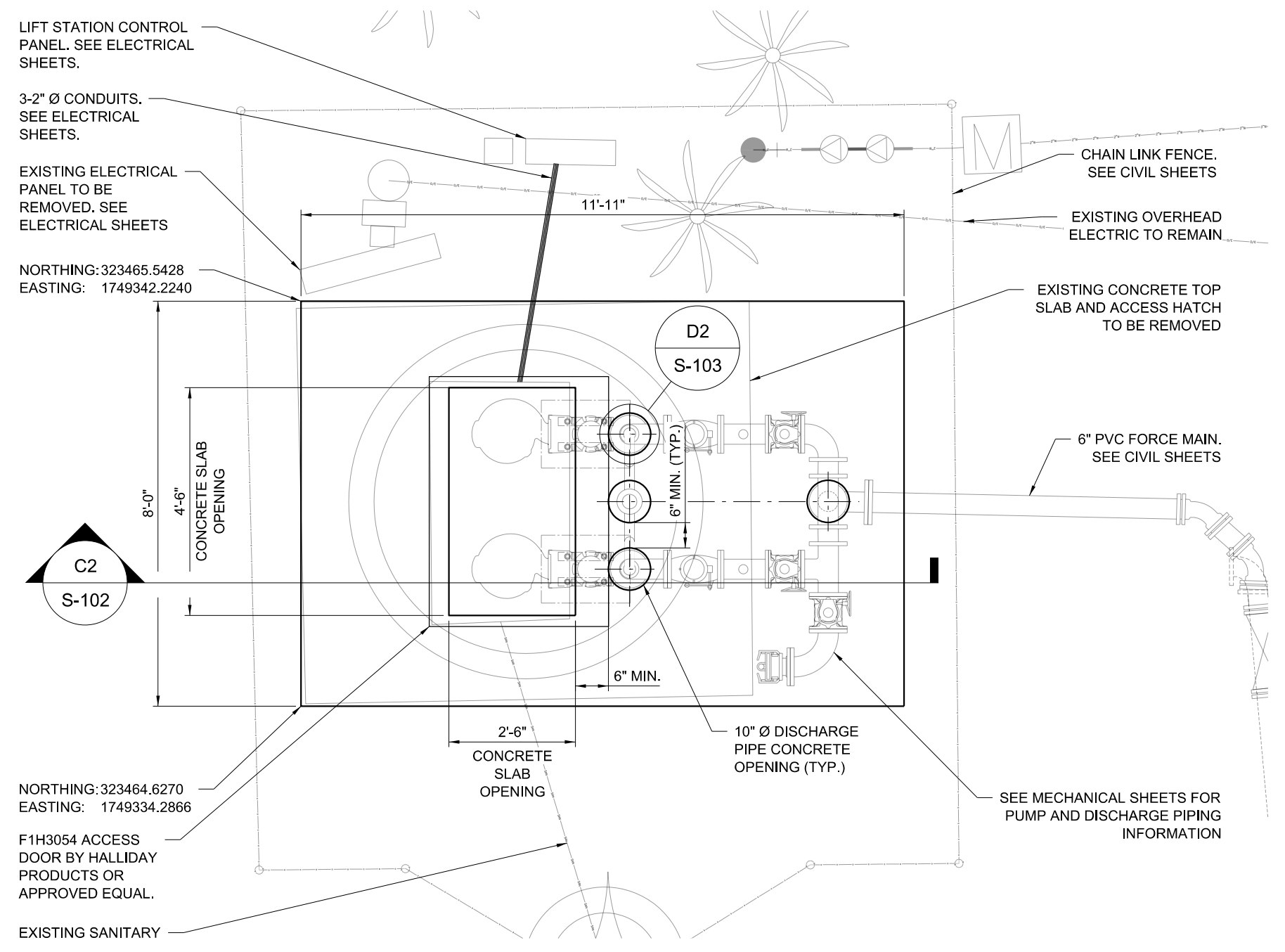
STRUCTURE NOTES



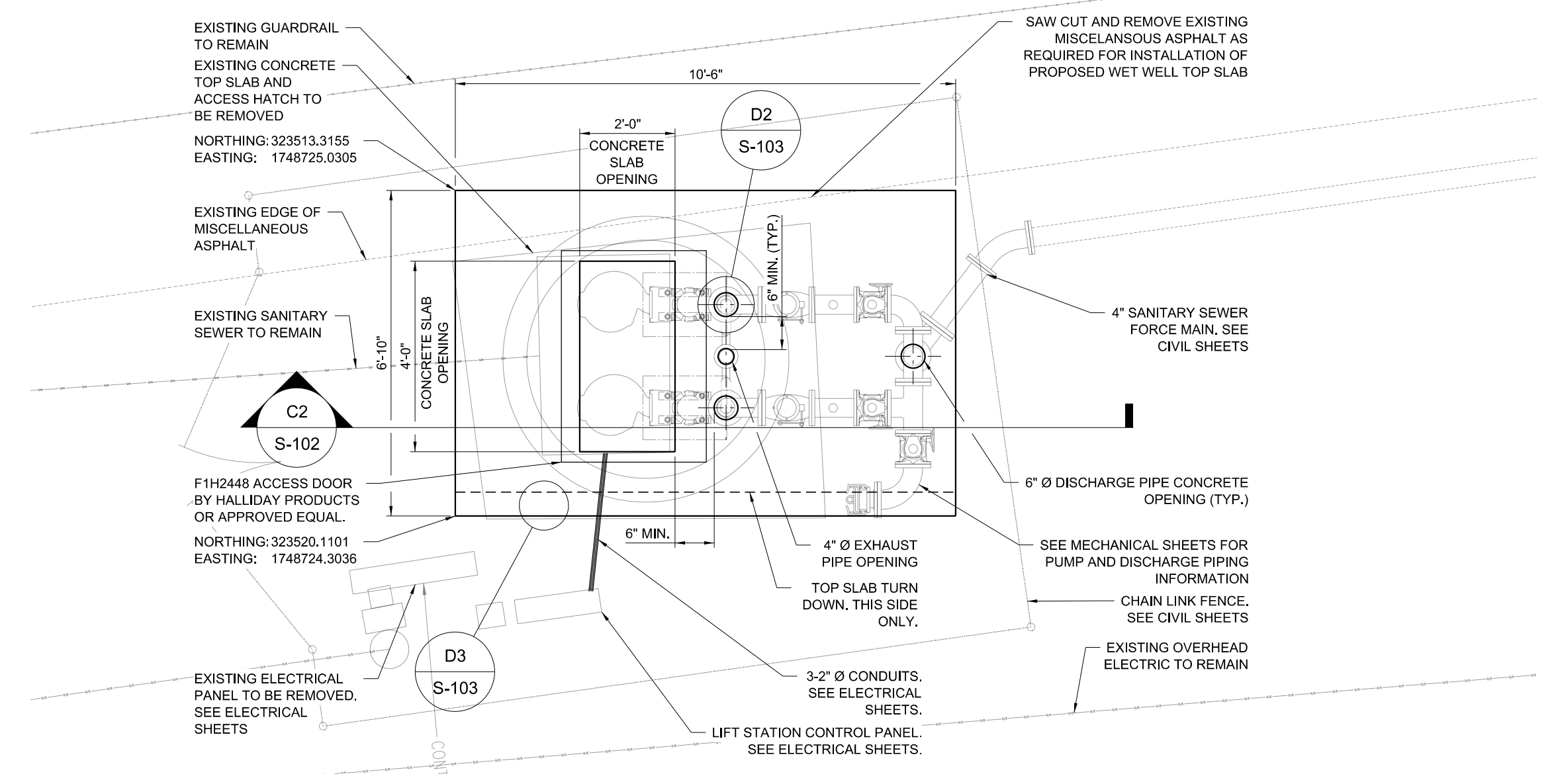
A1 LIFT STATION 1 PLAN
SCALE: 3/8" = 1'



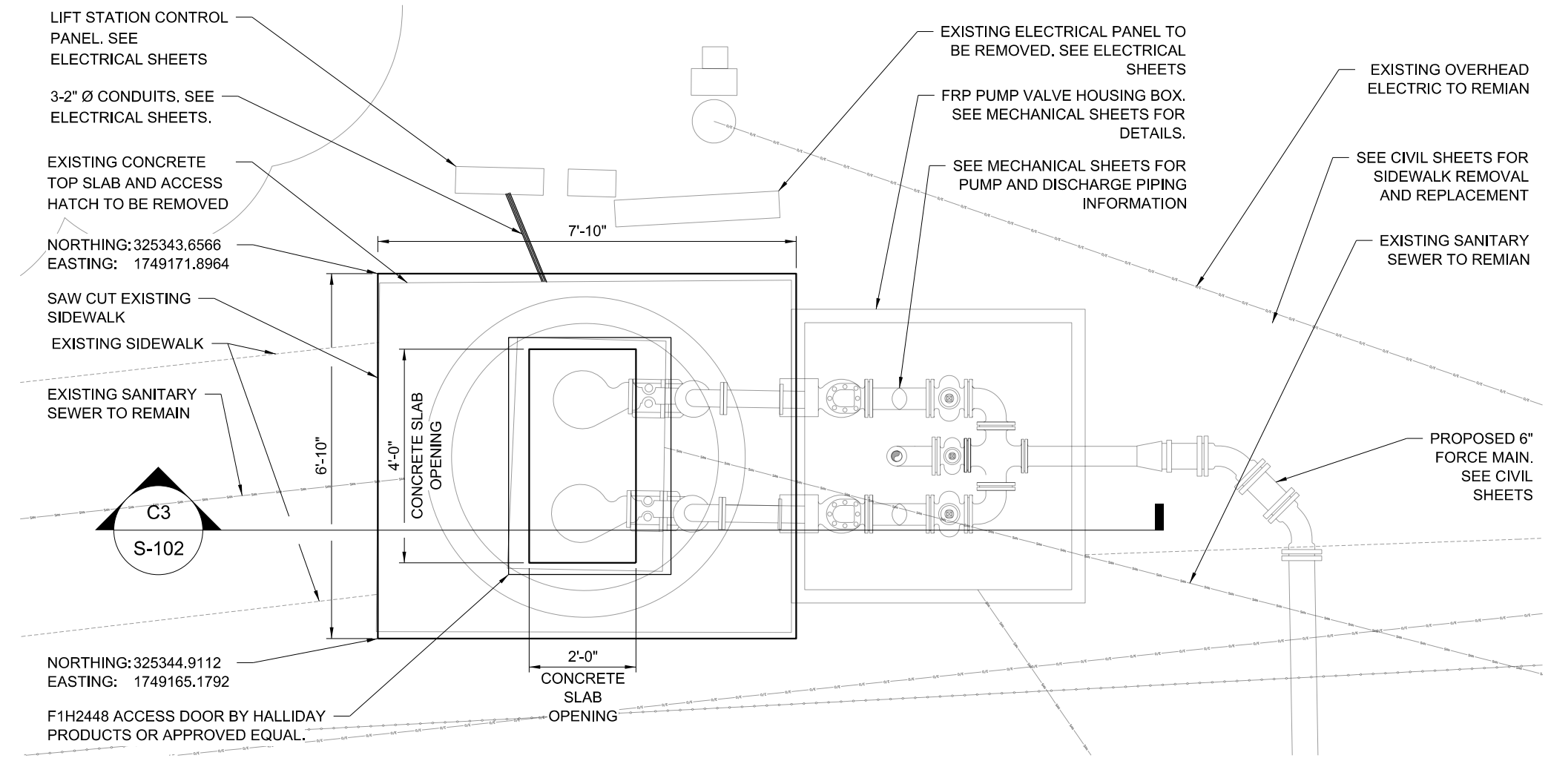
A2 LIFT STATION 6 PLAN
SCALE: 3/8" = 1'



A3 LIFT STATION 10 PLAN
SCALE: 3/8" = 1'

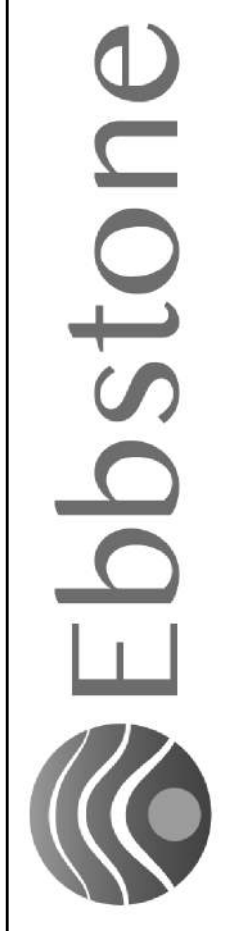


A4 LIFT STATION 9 PLAN
SCALE: 3/8" = 1'



A5 LIFT STATION 7 PLAN
SCALE: 3/8" = 1'

NOTE:
CONTRACTOR SHALL CONFIRM LOCATION AND ORIENTATION OF ACCESS HATCHES BASED ON THE PROPOSED PUMP AND PIPE LAYOUT. CONTRACTOR SHALL CONFIRM THE ADEQUACY OF THE SPECIFIED MINIMUM HATCH SIZE WITH THE PUMP SUPPLIER'S SPECIFICATIONS AND RECOMMENDATIONS.



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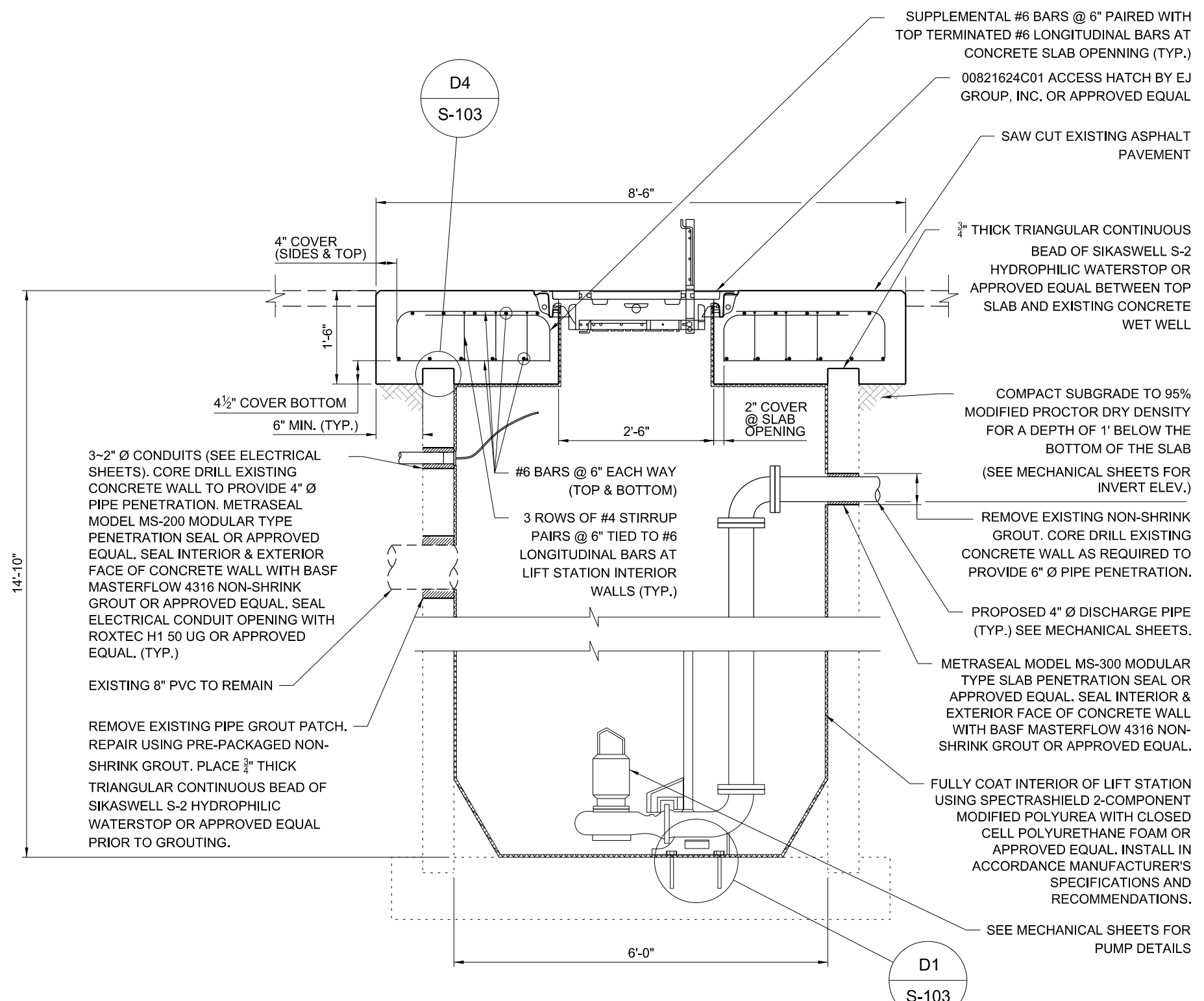
ENGINEER OF RECORD
NICHOLAS A. CONLIN, P.E.
LICENSE NUMBER: 86637
EBBSTONE CAPITAL CIRCLE, N.E. SUITE J
TALLAHASSEE, FL 32308

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

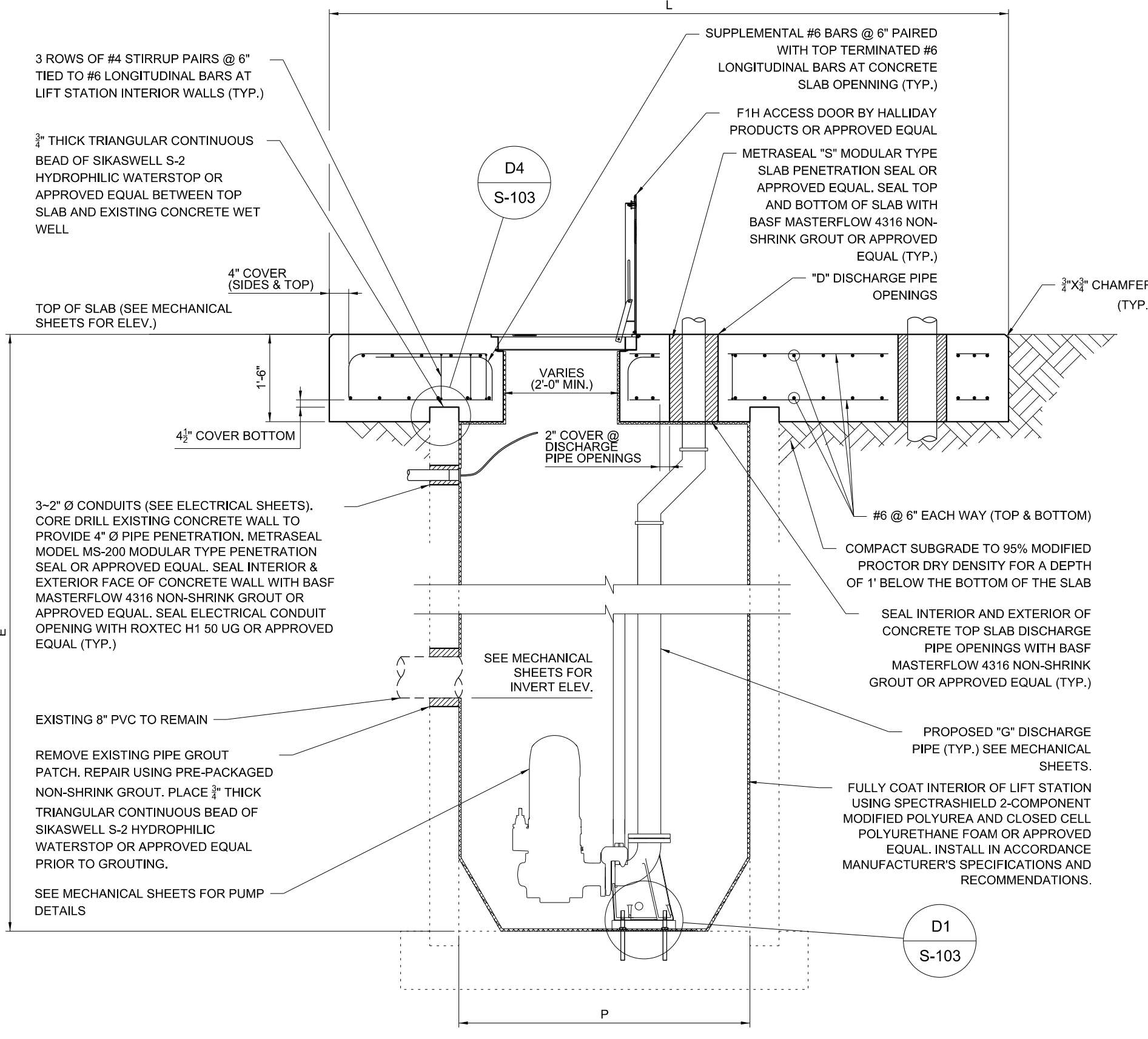
PROJECT NO:	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR:	DATE:
123503.01	NAC	NAC	JFS	JWJ	FEBRUARY 2023

LIFT STATION PLAN

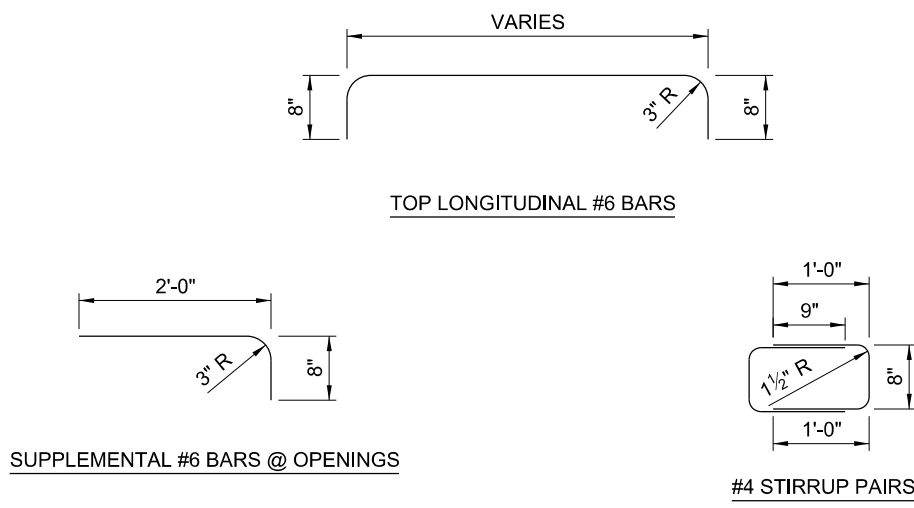
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C1 LIFT STATION 1 SECTION
SCALE: 1/2" = 1'

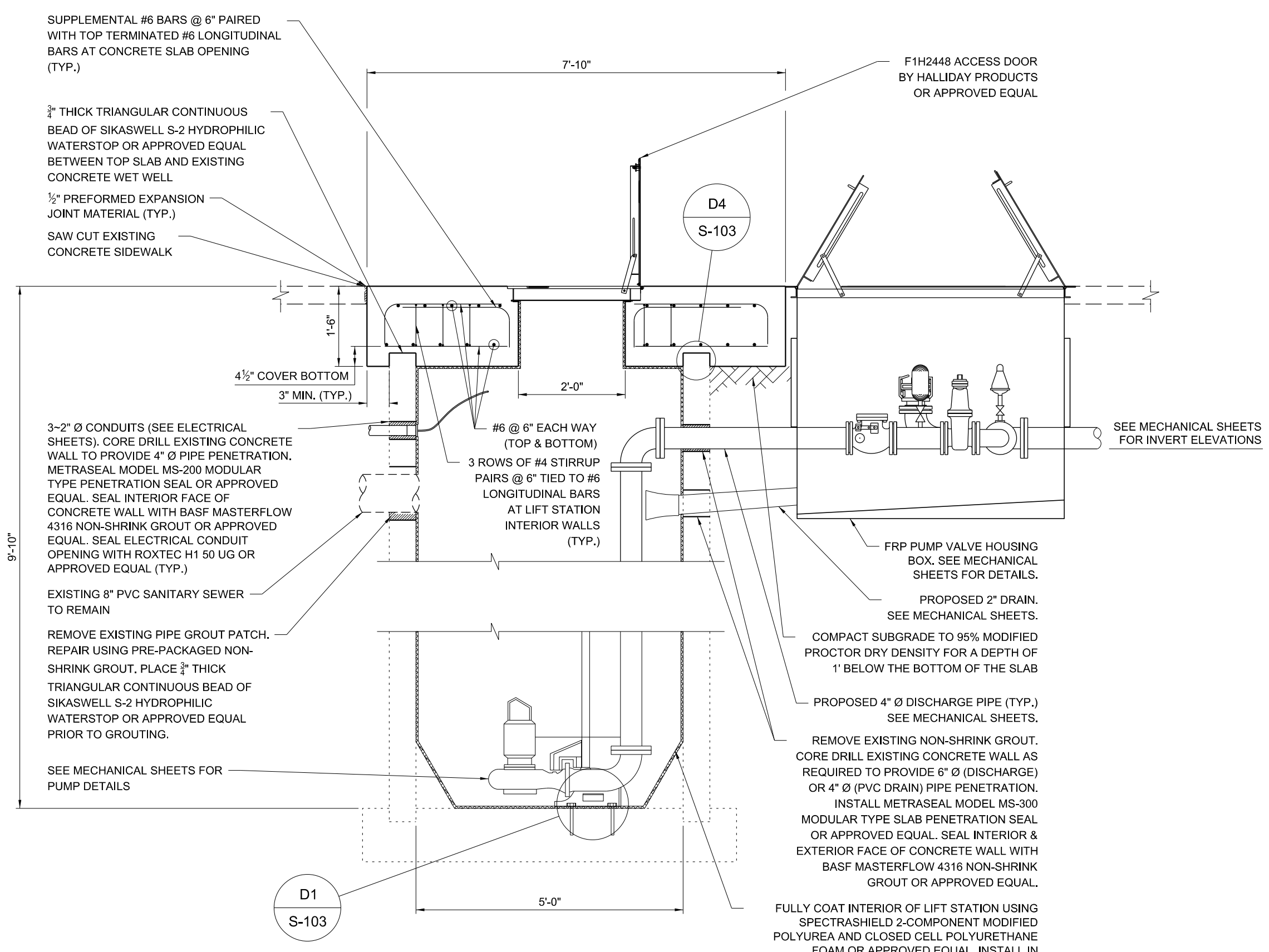


C2 LIFT STATIONS 6, 9, & 10 SECTIONS
SCALE: 1/2" = 1'

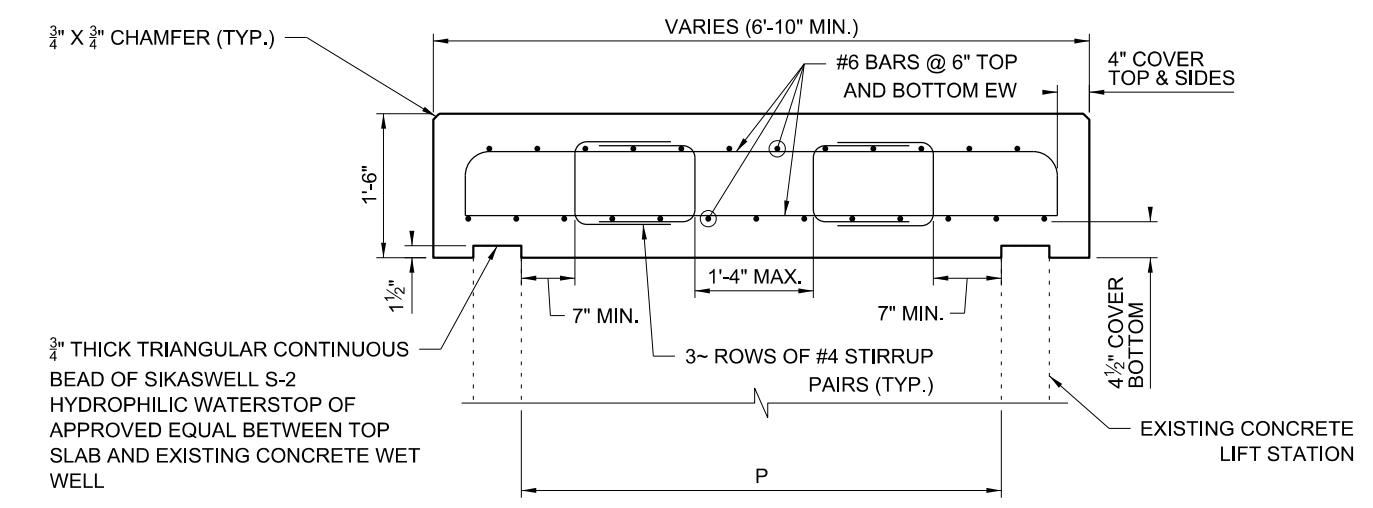


D1 BAR BENDING DETAILS
SCALE: 1/2" = 1'

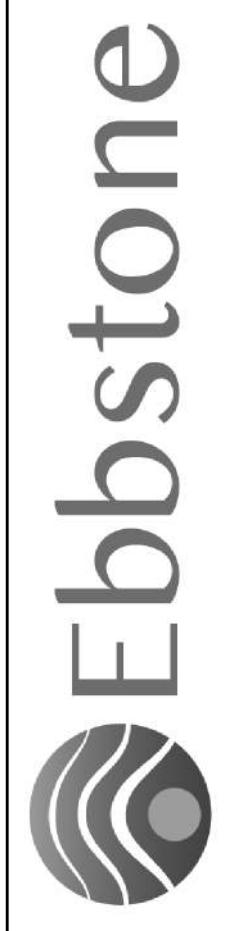
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LIFT STATION	E	P	L	G	D	S
LS 6	12'-10"	6'-0"	11'-8"	6"	10"	MS-475
LS 9	14'-2"	5'-0"	10'-6"	4"	6"	MS-300
LS 10	15'-9"	6'-0"	11'-11"	6"	10"	MS-475



C3 LIFT STATION 7 SECTION
SCALE: 1/2" = 1'



C4 SLAB SECTION
SCALE: 1/2" = 1'



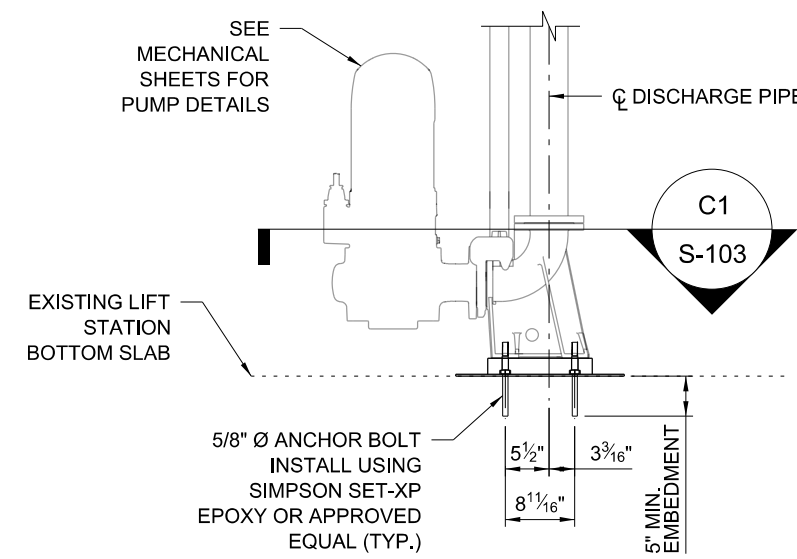
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ENGINEERING BUSINESS: EB-0000340

ENGINEER OF RECORD
NICOLAUS A. CONLIN, P.E.
LICENSE NUMBER: 86637
EFFECTIVE DATE: 01/01/2010
5370 CAPITAL CIRCLE, NE, SUITE J
TALLAHASSEE, FL 32308

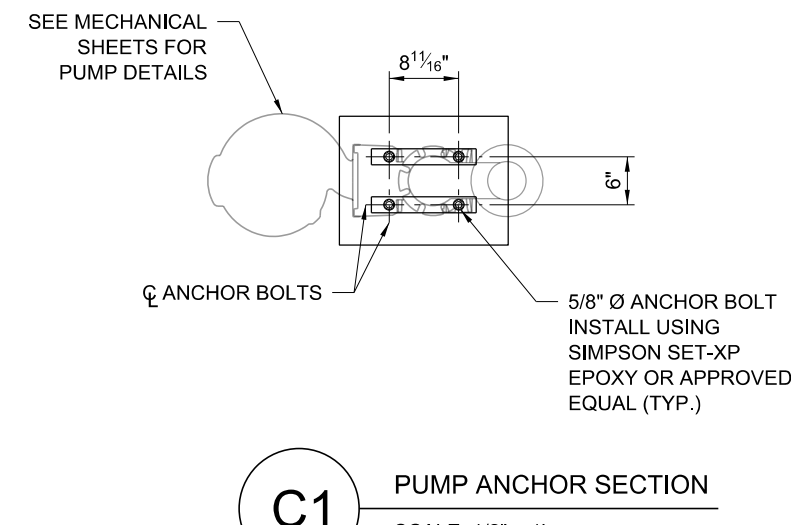
**CEDAR KEY
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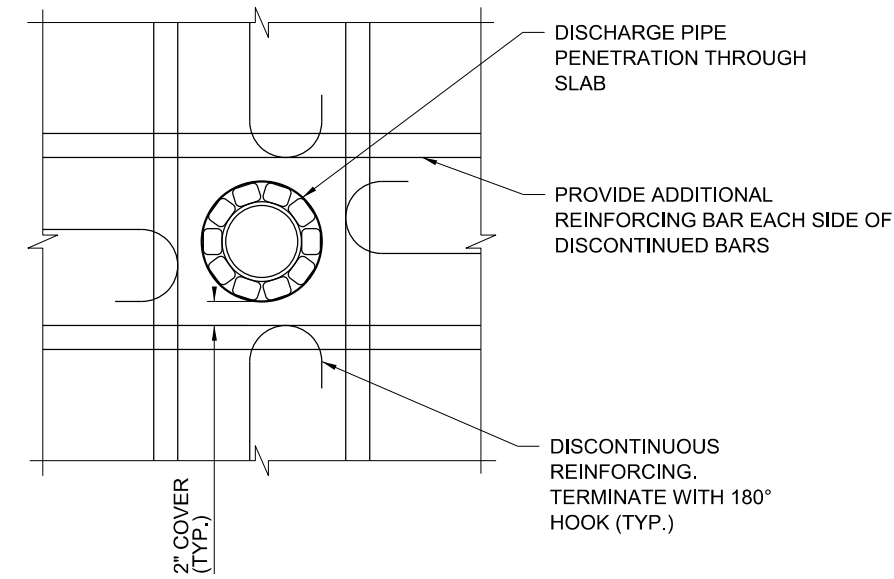
PROJECT NO: 123503.01
DESIGNED BY: NAC
DRAWN BY: NAC
CHK'D BY: JFS
PROJ. MGR: JMW
DATE: FEBRUARY 2023



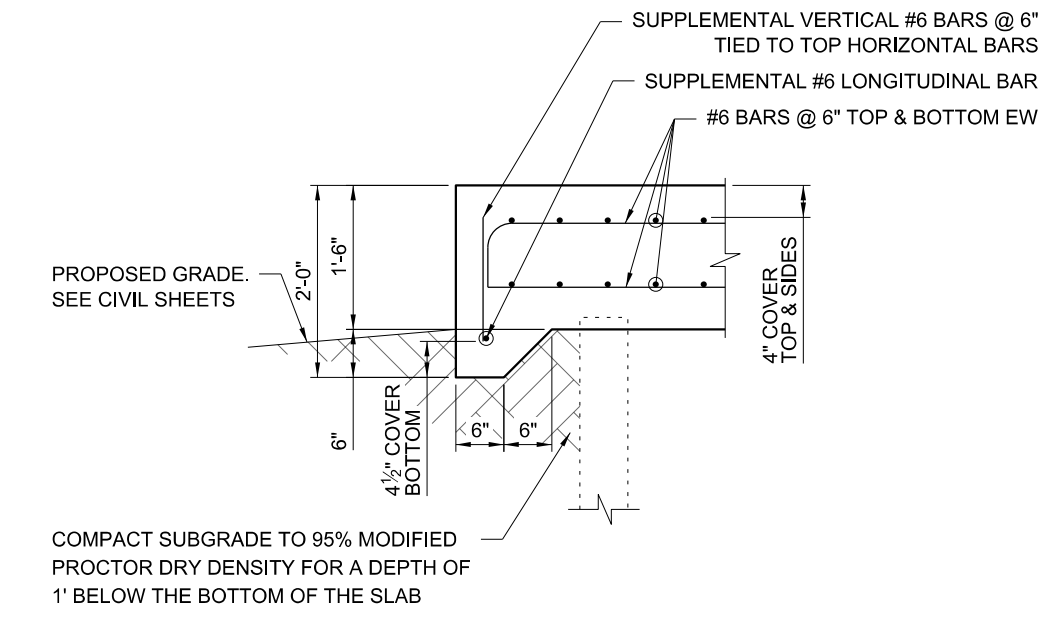
D1 PUMP ANCHOR DETAIL
SCALE: 1/2" = 1'



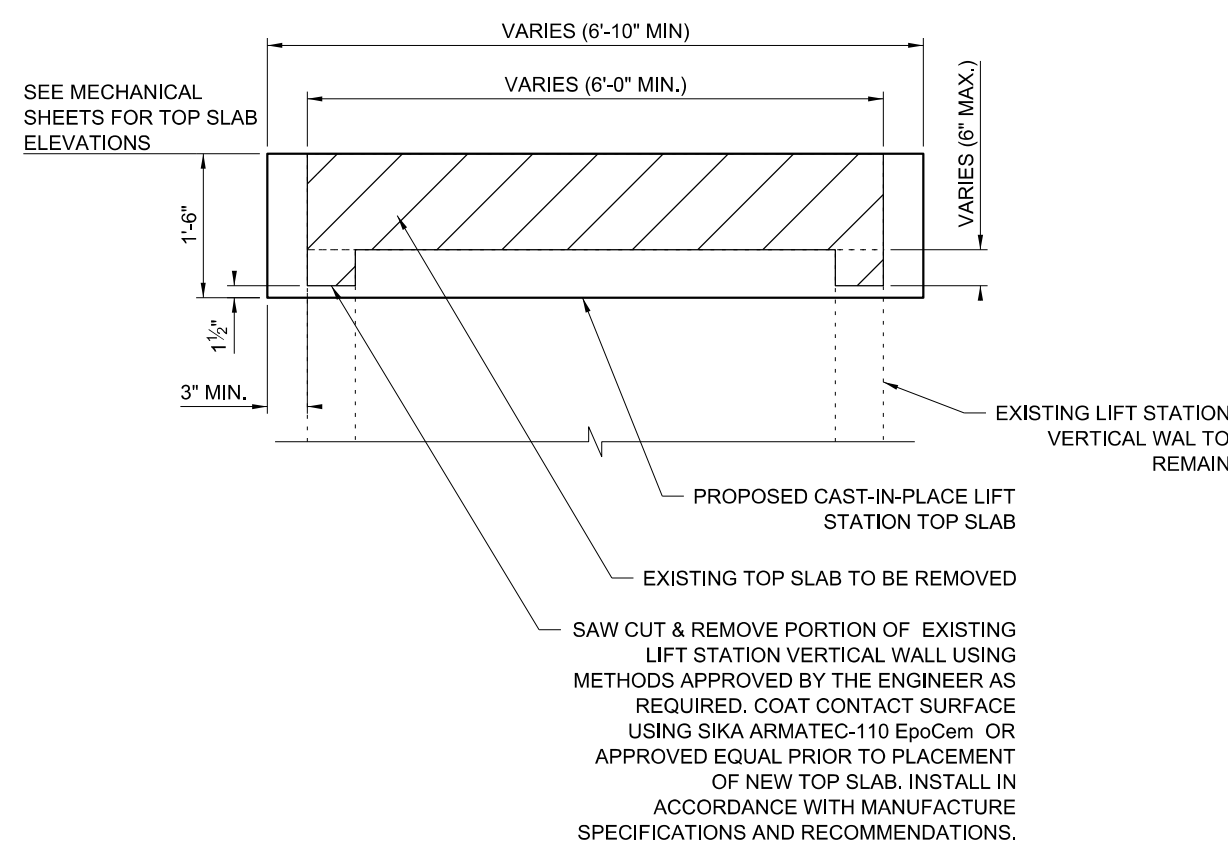
C1 PUMP ANCHOR SECTION
SCALE: 1/2" = 1'



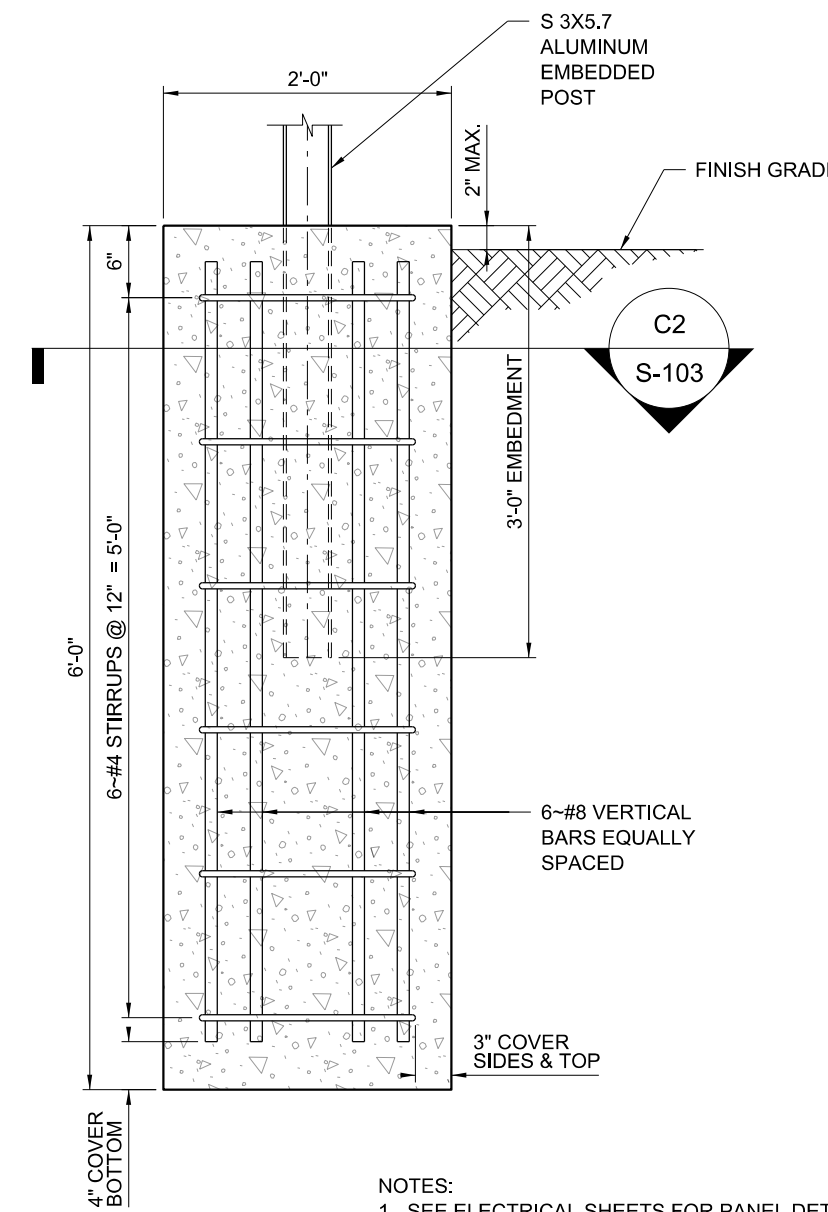
D2 SLAB PIPE PENETRATION DETAIL
SCALE: 3/4" = 1'



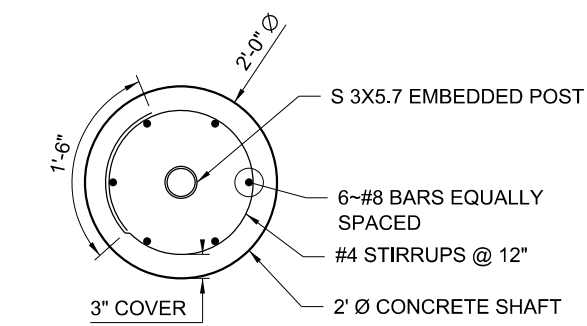
D3 LIFT STATION 9 SLAB TURN DOWN DETAIL
SCALE: 1/2" = 1'



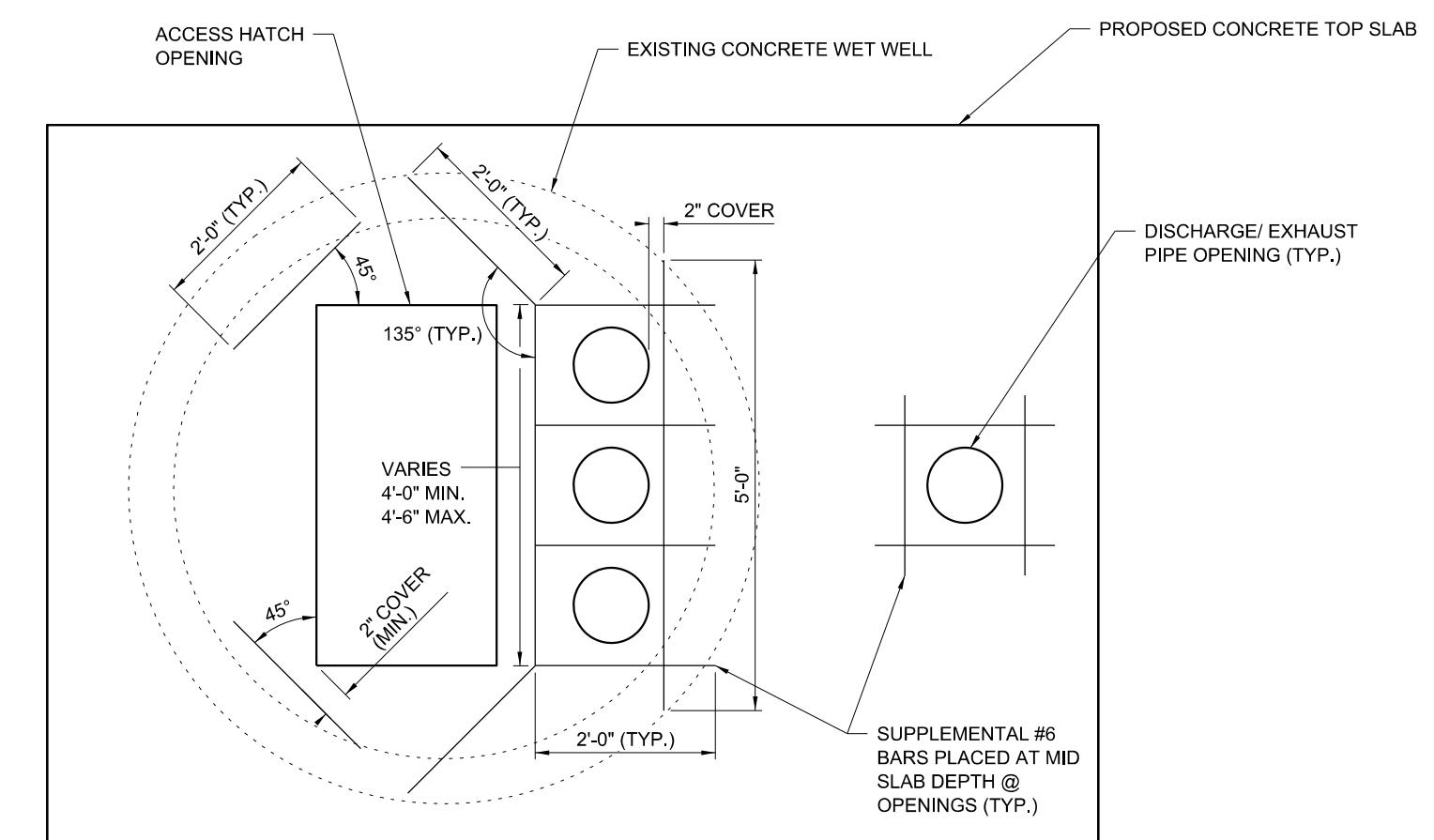
D4 TOP SLAB DEMOLITION DETAILS
SCALE: 1/2" = 1'



D5 PANEL FOUNDATION DETAIL
SCALE: 1/2" = 1'



C2 PANEL FOUNDATION SECTION
SCALE: 1/2" = 1'



D6 SUPPLEMENTAL OPENING REINFORCING DETAILS
SCALE: 1/2" = 1'



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ENGINEER OF RECORD
NICHOLAS A. CONLIN, P.E.
LICENSE NUMBER: 86637
EBBSTONE CAPITAL CIRCLE, NE, SUITE J
TALLAHASSEE, FL 32308

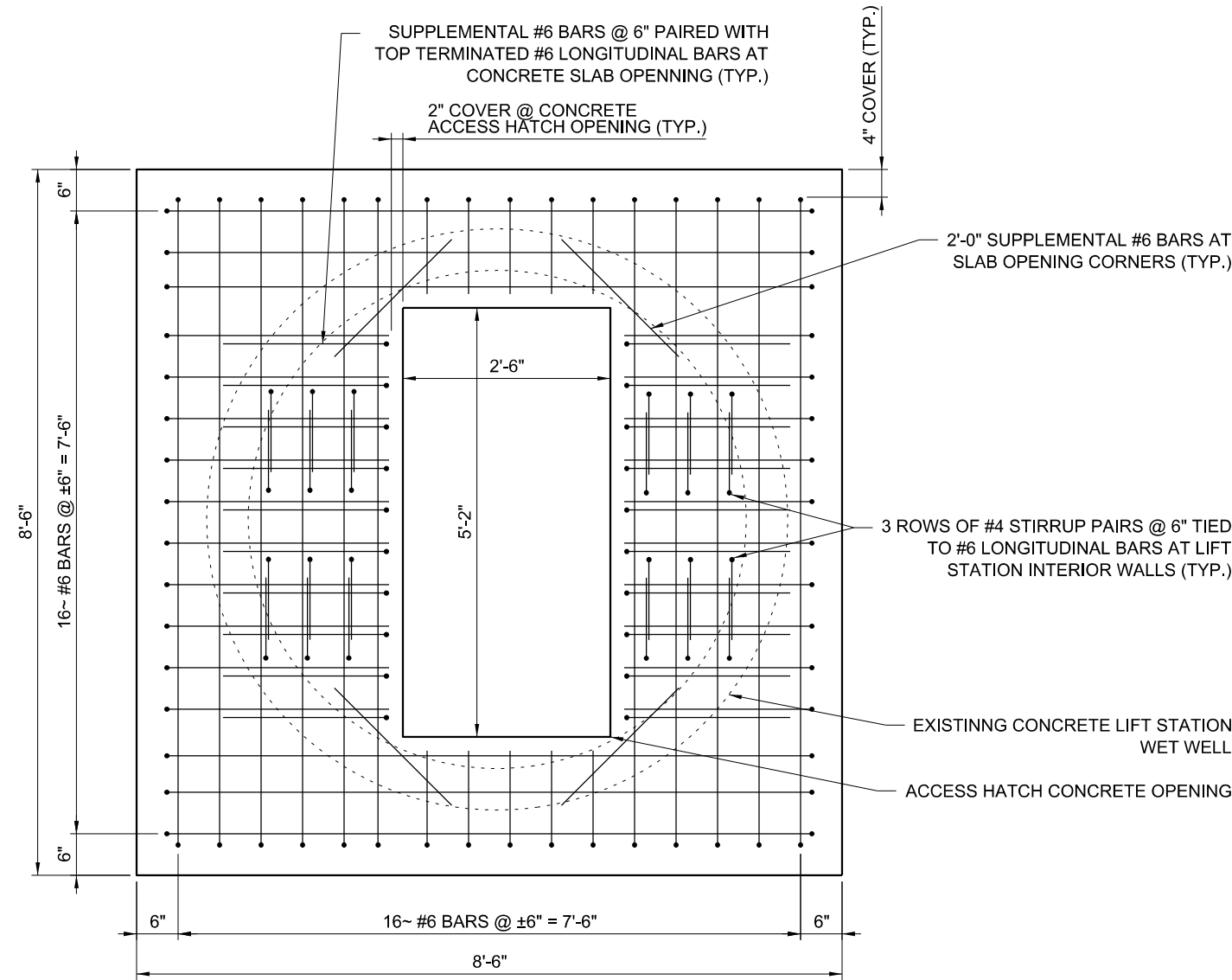
**CEDAR KEY
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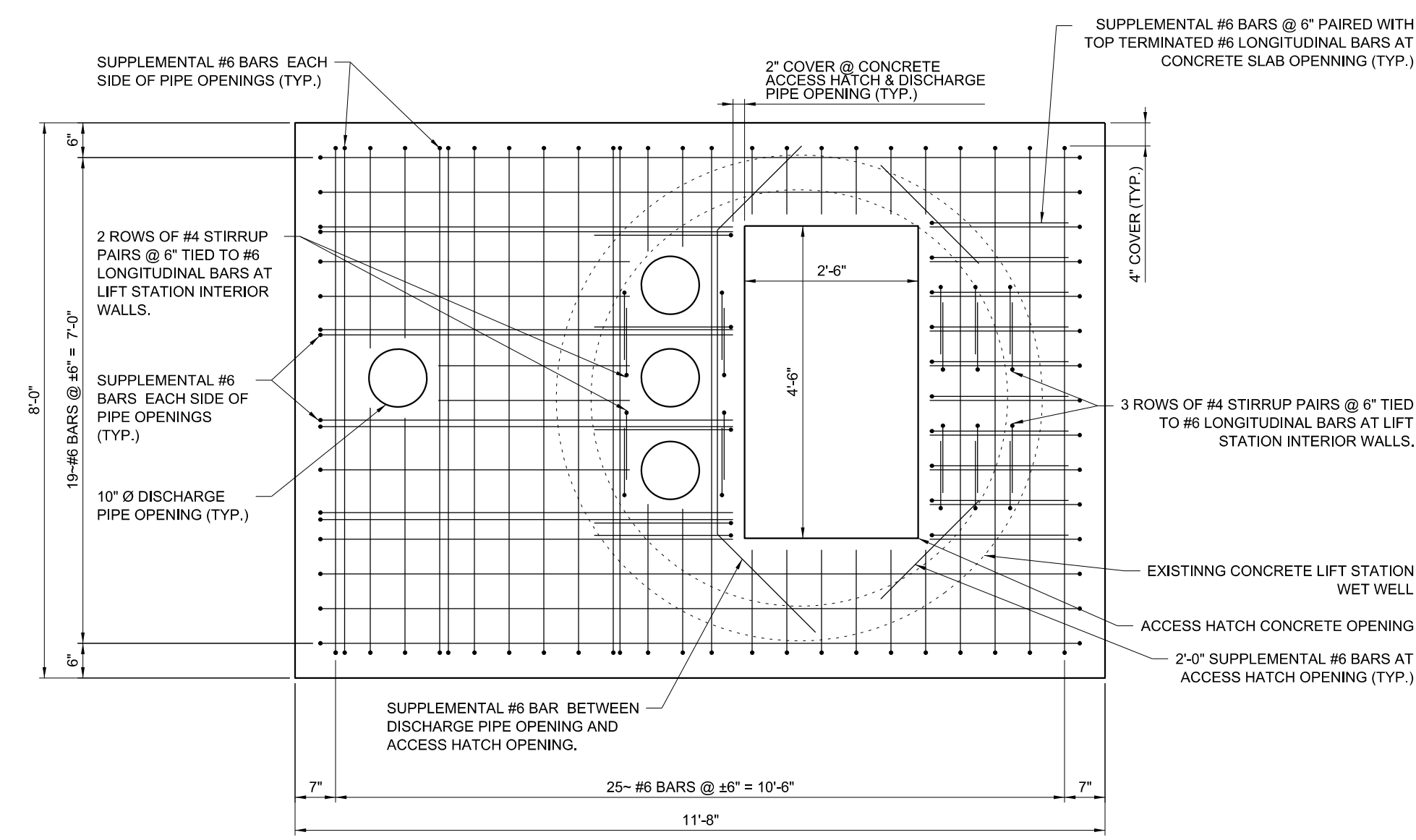
PROJECT NO: 123503.01
DESIGNED BY: NAC
DRAWN BY: NAC
CHK'D BY: JFS
PROJ. MGR: JMU
DATE: FEBRUARY 2023

**STRUCTURE
DETAILS**

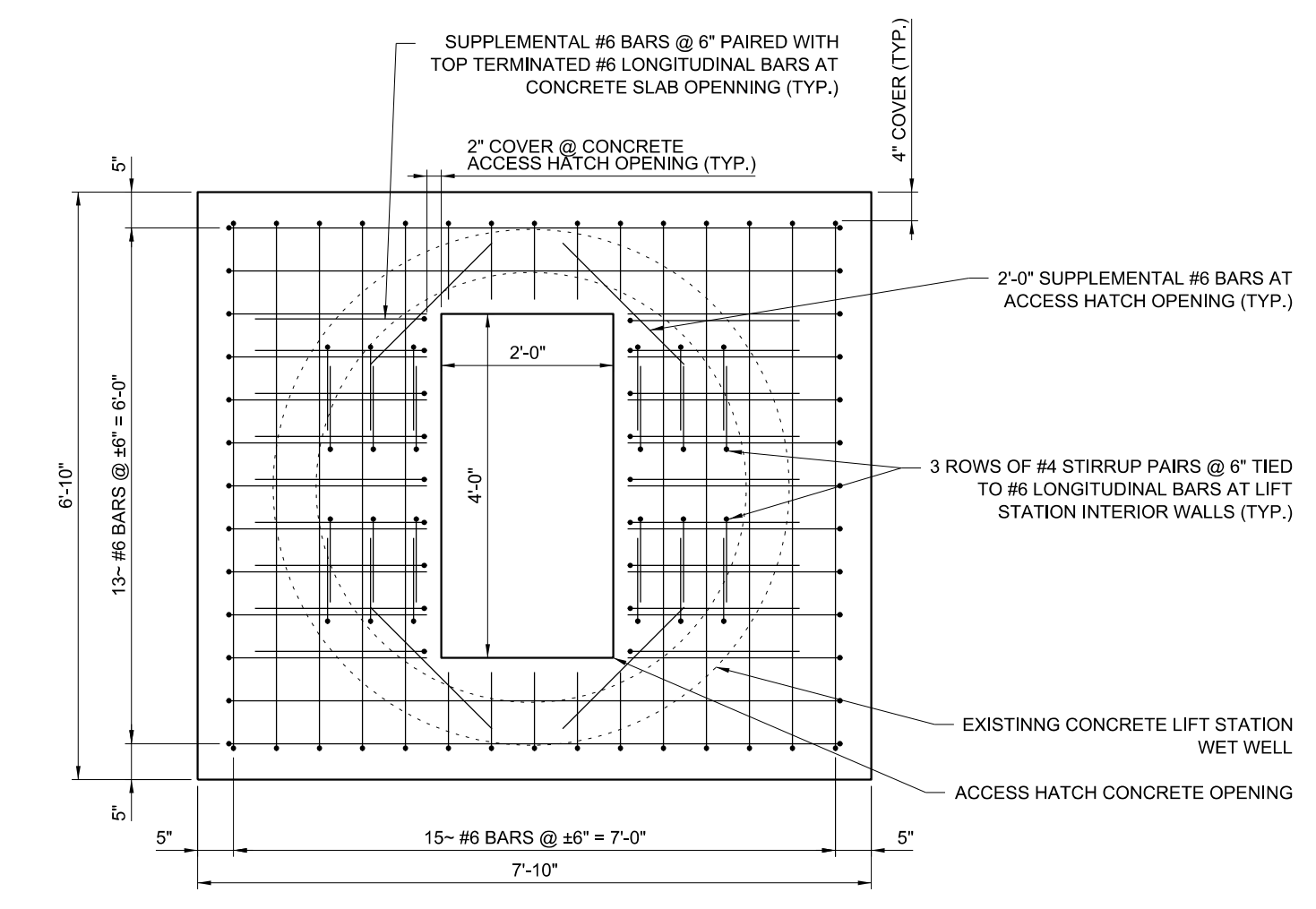
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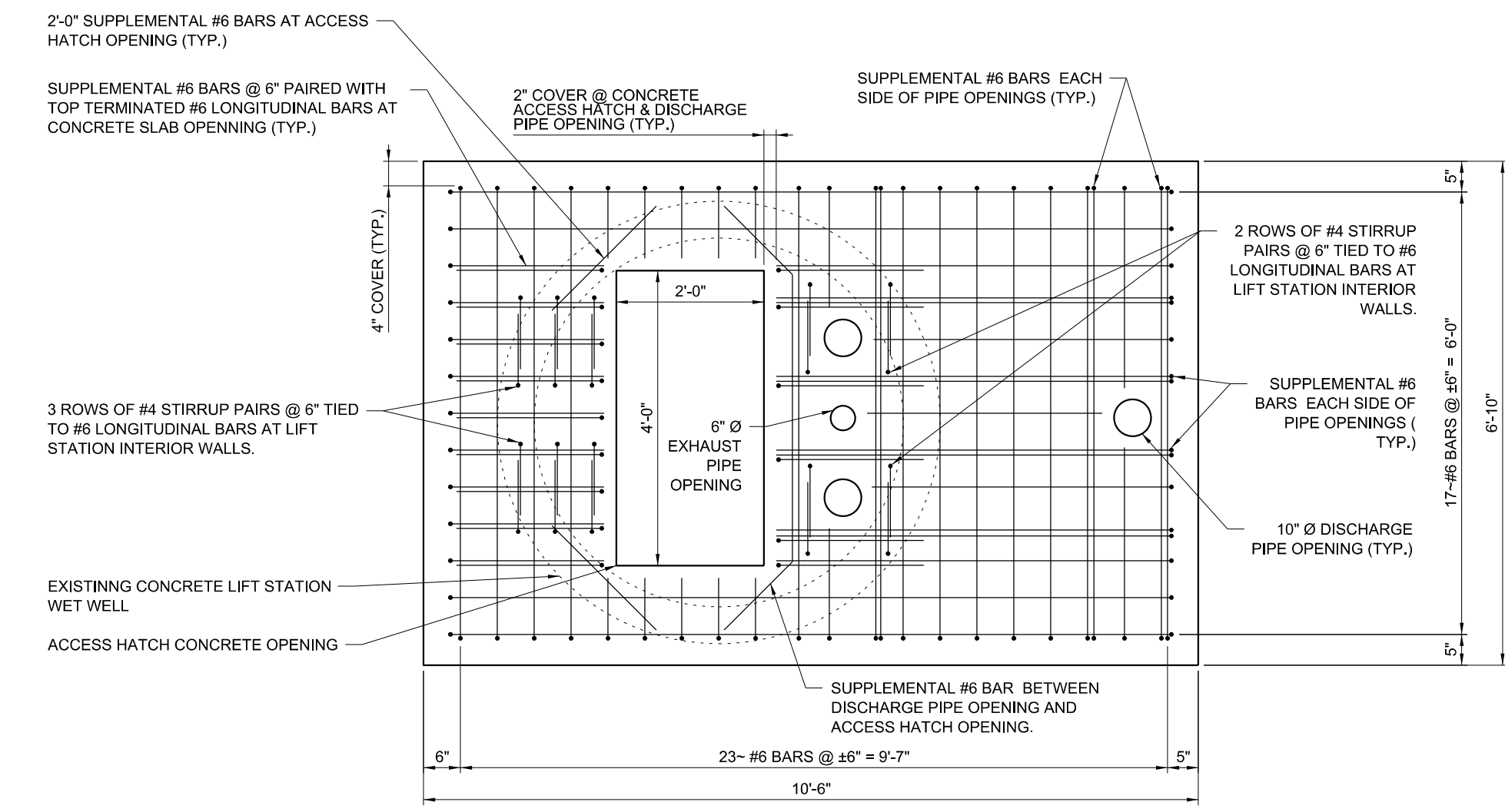
D1 LIFT STATION 1 SLAB REINFORCING DETAIL
SCALE: 1/2" = 1'



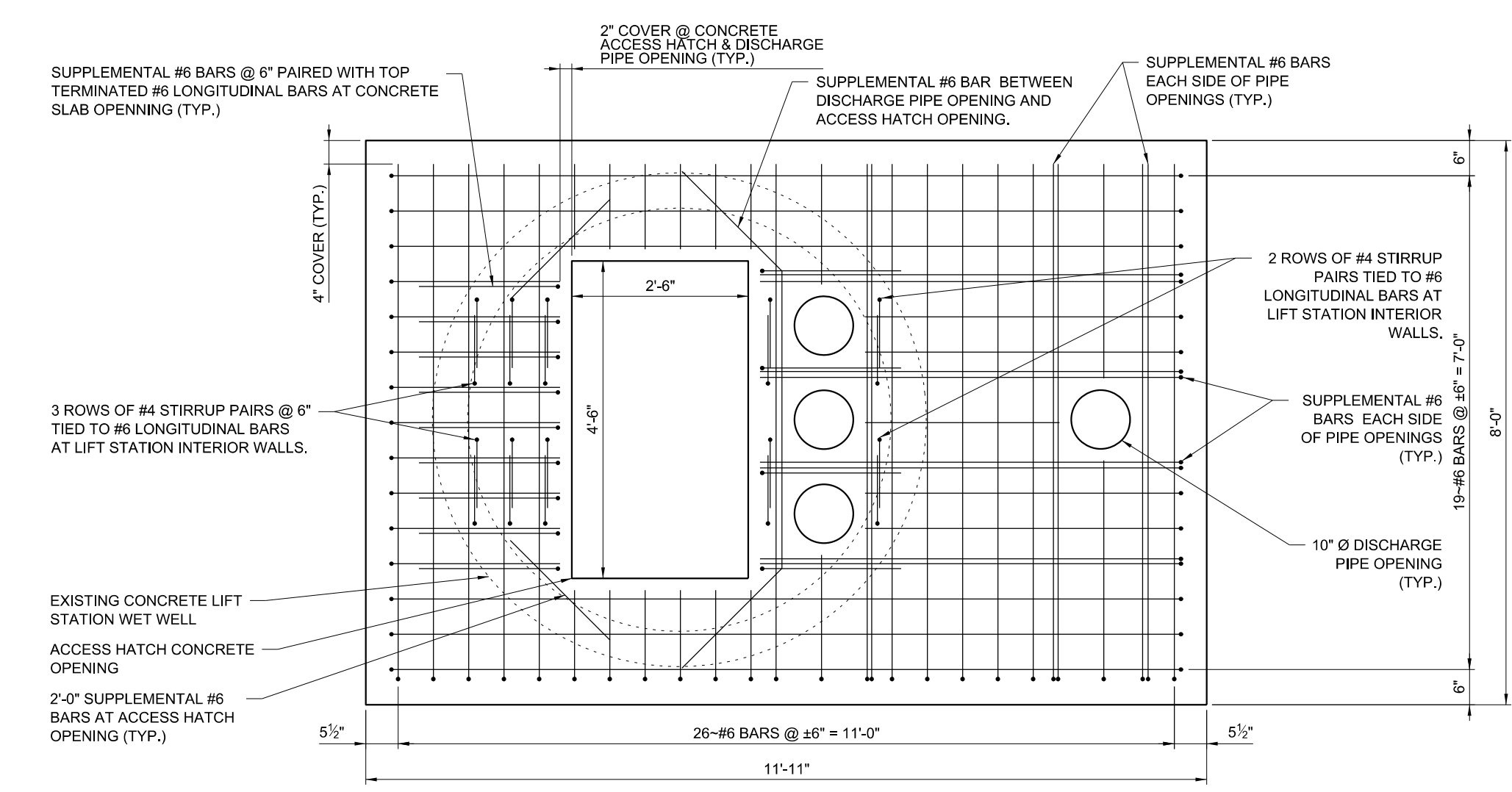
D2 LIFT STATION 6 SLAB REINFORCING DETAIL
SCALE: 1/2" = 1'



D3 LIFT STATION 7 SLAB REINFORCING DETAIL
SCALE: 1/2" = 1'

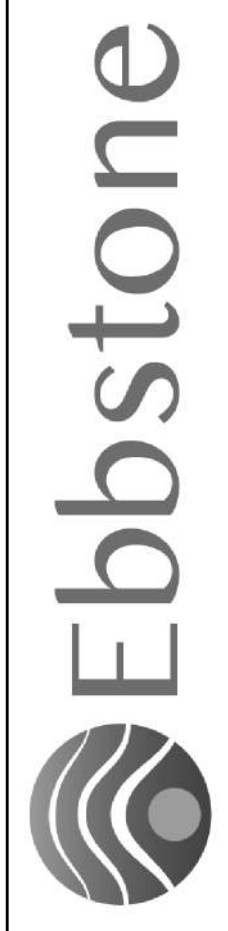


D4 LIFT STATION 9 SLAB REINFORCING DETAIL
SCALE: 1/2" = 1'



D5 LIFT STATION 10 SLAB REINFORCING DETAIL
SCALE: 1/2" = 1'

- NOTES:
- TOP LAYER OF SLAB REINFORCING SHOWN, BOTTOM OF SLAB REINFORCING LAYER SIMILAR.
 - CONTRACTOR SHALL COORDINATE SIZE, LOCATION, AND ORIENTATION OF CONCRETE SLAB AND LIFT STATION PENETRATIONS WITH THE HATCH AND WATER STOP MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS AS WELL AS THE CIVIL AND MECHANICAL SHEETS FOR PROPOSED PIPE AND PUMP PLACEMENT AND ORIENTATION.
 - CONTRACTOR SHALL CONFIRM THE ADEQUACY OF THE SPECIFIED MINIMUM HATCH SIZE WITH THE PUMP SUPPLIER'S SPECIFICATIONS AND RECOMMENDATIONS. CONTRACTOR SHALL CONFIRM ACCESS HATCH CONCRETE SLAB OPENING DIMENSIONS PRIOR TO CONSTRUCTION.



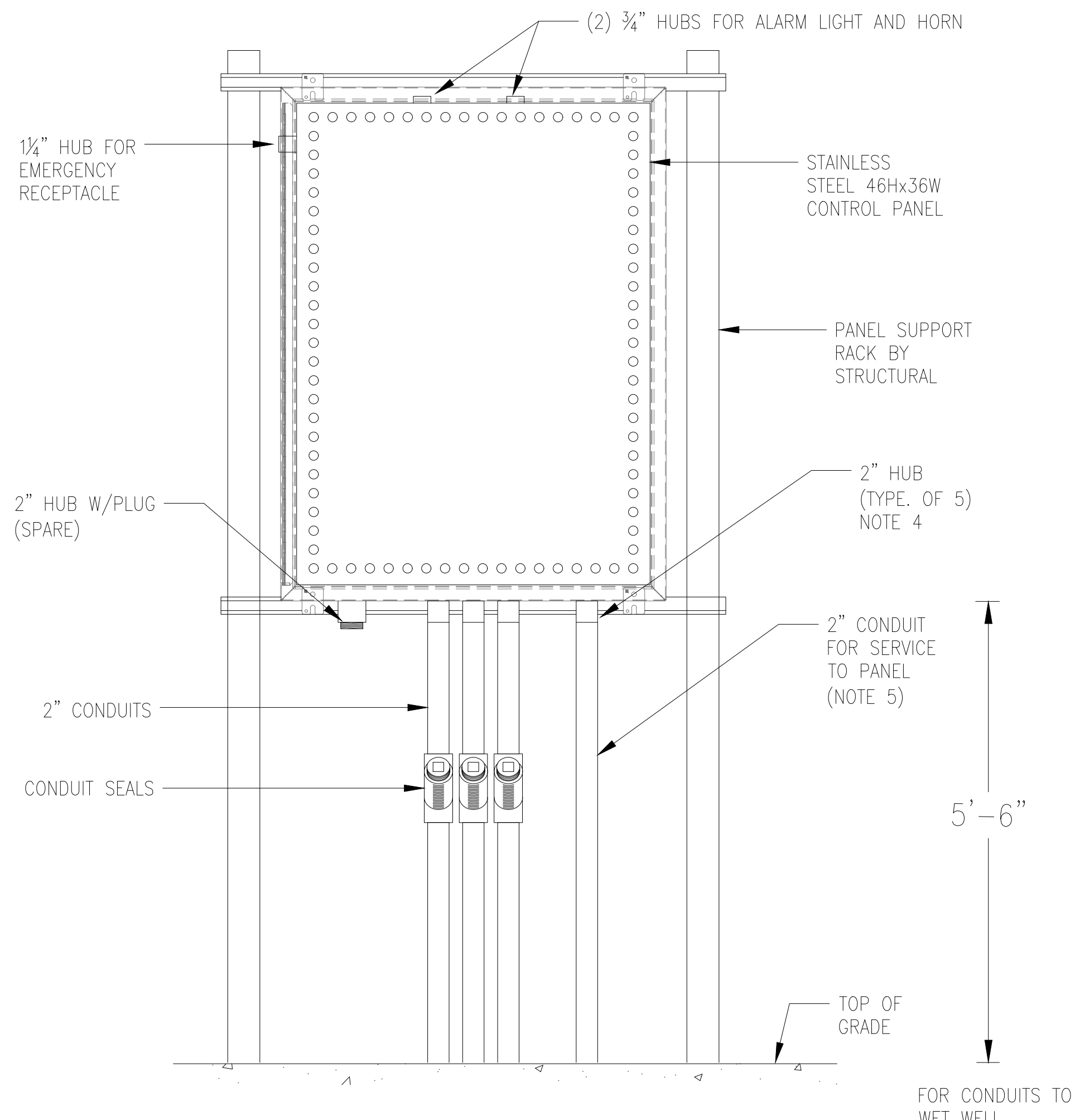
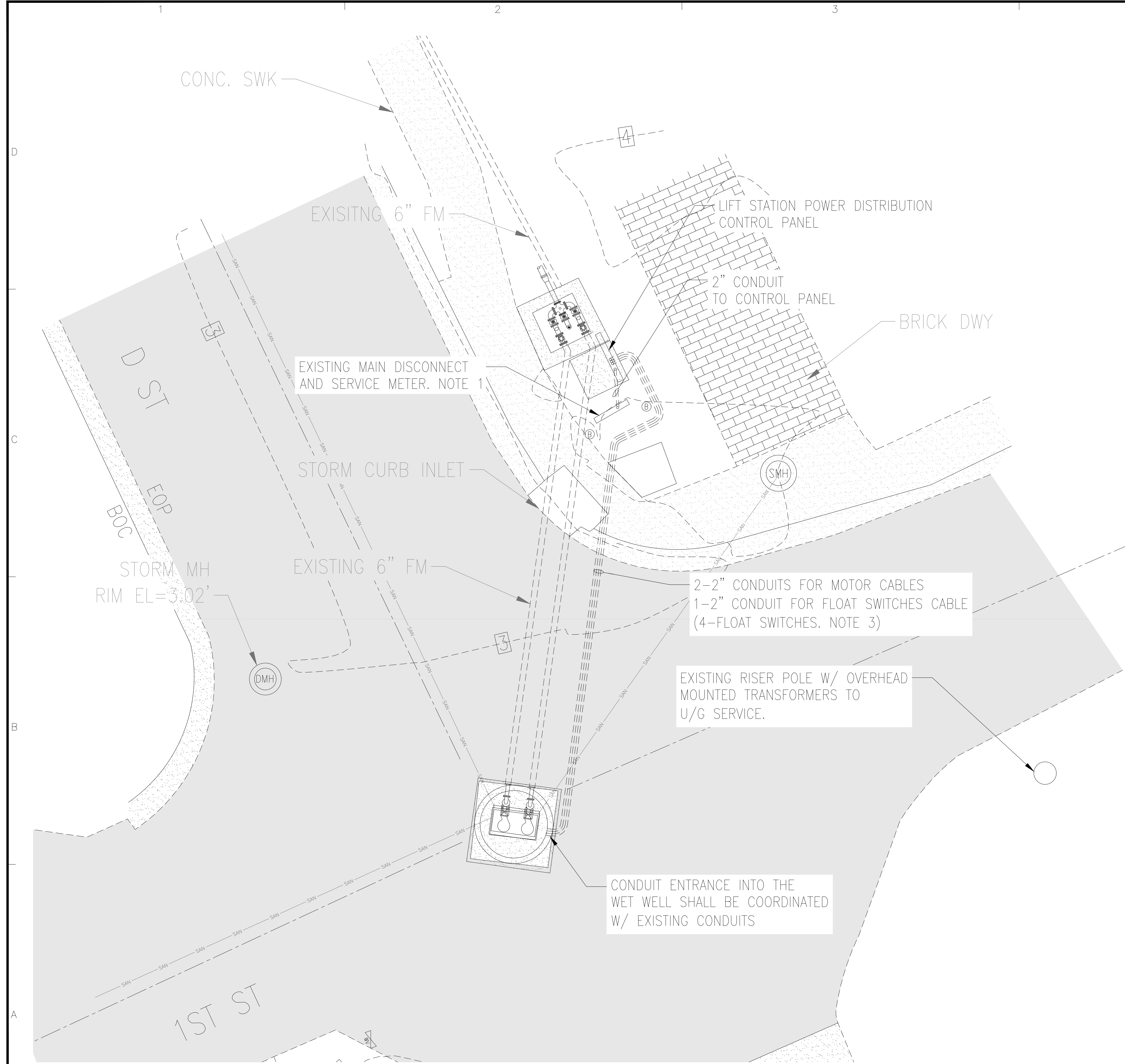
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ENGINEER OF RECORD
NICHOLOS A. CONLIN, P.E.
LICENSE NUMBER: 86637
EBBSTONE CAPITAL CIRCLE, NE, SUITE J
3370 CAPITAL CIRCLE, NE, SUITE J
TALLAHASSEE, FL 32308

**CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION**

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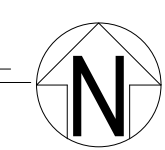
**STRUCTURE
DETAILS**



LIFT STATION CONTROL PANEL
NOT TO SCALE

- NOTES:
- 1 COORDINATE REWORKING OF SERVICE CONDUITS AND METER ENCLOSURE WITH THE SERVING UTILITY (CENTRAL FLORIDA ELECTRICAL CO-OP; CHIEFLAND, FL)
 - 2 THE CONTROL PANEL SHALL BE INSTALLED ON THE SUPPORT STRUCTURE (SUPPLIED BY OTHERS) AT 5'-6" ABOVE GRADE TO THE BOTTOM OF THE PANEL. THE SUPPLY AND INSTALLATION OF STRUT/HARDWARE TO MOUNT THE PANEL TO THE SUPPORT IS PART OF THE ELECTRICAL WORK.
 - 3 THE FLOAT SWITCHES SHALL BE ANCHOR SCIENTIFIC MINI-FLOATS (SUSPENDED-TYPE-S) OR EQUAL. PROVIDE CABLES OF ADEQUATE LENGTH.
 - 4 CONDUIT FITTINGS/HUBS ARE PART OF THE PANEL/ENCLOSURE. THEY ARE INTENDED TO BE ATTACHED AS PART OF THE MANUFACTURING PROCESS.
 - 5 THE CONDUIT FOR THE SERVICE SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT ON BOTH ENDS.

LIFT STATION 1: ELECTRICAL DETAIL
SCALE: 1" = 5'



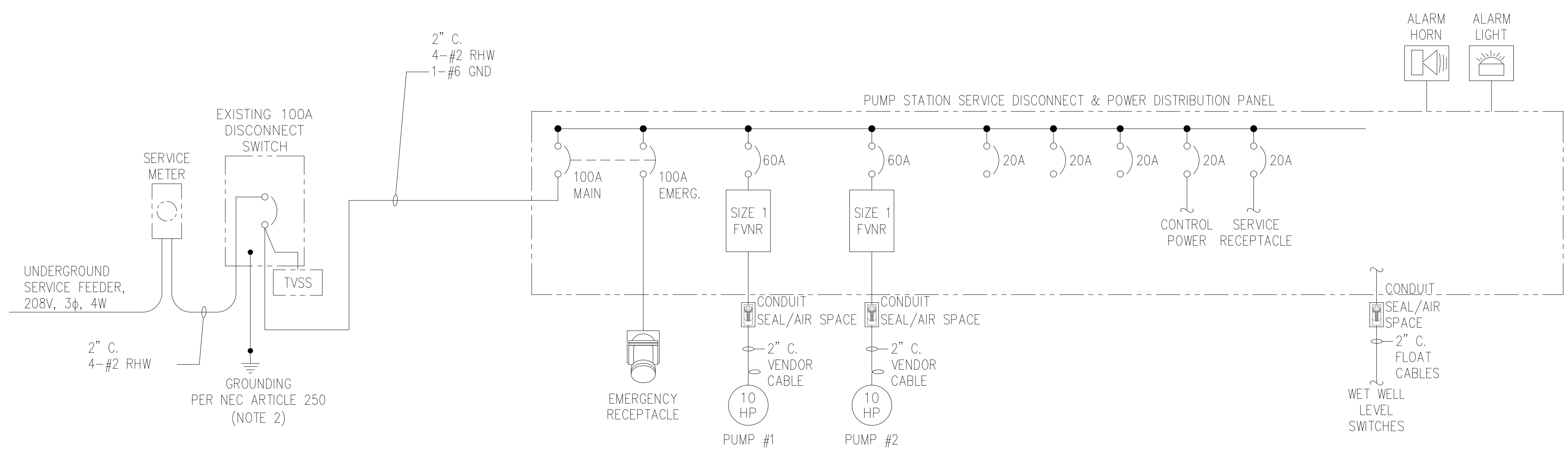
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SANITARY SEWER
LIFT STATION
REHABILITATION

NO.	DATE	APPR.	REVISION/ACTION TAKEN
1	1-31-24	-	100% SUBMITTAL

LS 1
ELECTRICAL SITE
PLAN

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LIFT STATION 1 RISER DIAGRAM

- NOTE:
- PUMP STATION WET WELL IS A CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION THAT REQUIRES THE USE OF CONDUIT SEALS, OR AIR SPACE PROVISION, BETWEEN THE WET WELL AND POSSIBLE SOURCES OF IGNITION. CONDUIT SEALS, OR AIR SPACE, SHALL BE PLACED WITHIN (18)EIGHTEEN INCHES OF THE PUMP STATION CONTROL PANEL ENCLOSURE.
 - GROUNDING SHALL BE TESTED TO VERIFY THAT RESISTANCE TO EARTH/GROUND IN LESS THAN 26 OHMS. ADDITIONAL GROUND RODS SHALL BE INSTALLED (AS REQUIRED) TO ESTABLISH A GROUNDING RESISTANCE OF LESS THAN 26 OHMS. THE GROUNDING TEST SHALL BE COORDINATED WITH AND WITNESSED BY THE OWNER'S REPRESENTATIVE. REFER TO THE OWNER'S STANDARD SPECIFICATIONS.

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	NEMA 6P ENCLOSURE W/6P HINGED DOOR AND GASKETS 304SS 48x36x12D NOMINAL	NEMACO	N6P-483612-304	1
2	BACK PANEL EPOXY COATED STEEL	NEMACO	N69-IP4836	1
3	HINGED SWING-OUT PANEL - 304SS W/3 POINT TURN LATCH HANDLE	NEMACO	-	1
4	POWER DISTRIBUTION BLOCK 3-POLE 400-#6 1 IN, 2-#14 6 OUT	SQUARE-D	9080LBA363106	1
5	POWER DISTRIBUTION BLOCK 1-POLE 400-#6 1 IN, 2-#14 6 OUT	SQUARE-D	9080LBA163106	1
6	EQUIPMENT GROUND BAR	SQUARE-D	PK9GTA	1
7	PHASE MONITOR RELAY SOCKET	ATC DIVERSIFIED	SLA-230-ALA RB-08	1
8	ALTERNATING RELAY - DUPLEX	ATC DIVERSIFIED	ARA-24-ADA	1
9	BREAKER-60A, THREE-POLE	SQUARE-D	HDL36060	2
9A	EMERGENCY BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9B	MAIN BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9C	H/J FRAME MECHANICAL INTERLOCK FOR TOGGLE HANDLE	SQUARE-D	S29354	2
10	BREAKER-20A, SINGLE POLE	SQUARE-D	BDL16020	5
11	FULL VOLTAGE NON-REVERSING SIZE 1 STARTER	SQUARE-D	85365D01V02H305	2
12	SURGE PROTECTIVE DEVICE	SURGE SUPPRESSION, INC	LS5D-3Y1-D1XS	1
13	35mm DIN RAIL	SQUARE-D	9080MH320	AS REQ'D
14	FEED THROUGH TERMINAL	SQUARE-D	9080GM6	AS REQ'D
15	END BARRIER	SQUARE-D	9080GM6B	AS REQ'D
16	END CLAMP	SQUARE-D	9080MHA10	AS REQ'D
17	INTRINSICALLY SAFE RELAY	R-K ELECTRONICS	ISR-24V-10K	2
18	GEMS ZENER BARRIER	TEQUIPMENT	54801	2
19	PUMP MONITORING/CONTROL RELAY w BASE	PUMP VENDOR		2
20	RELAY, OCTAL PLUG-IN, 3PDT 120VAC w/RELAY SOCKET	EATON	D3RF3A D3PA7	2
21	(NOT USED)	-	-	-
22	RELAY, OCTAL PLUG-IN, 3PDT 24VDC w/RELAY SOCKET	SQUARE-D	D3RF3T1 D3PA7	7
23	MINIATURE PLUG-IN RELAY - 24VDC	SQUARE-D	RXM4AB2B0PVM	1
24	PILOT LIGHT - w/GREEN LENSE	ALLEN-BRADLEY	800T-0TH2G	2
25	3 POSITION SELECTOR SWITCH w/"H-0-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2B 800T-X511	2
26	HOUR COUNTER PANEL METER	GRASSLIN	UWZ48E-12050U	3
27	PILOT LIGHT - w/RED LENSE	ALLEN-BRADLEY	800T-QTH2R	7
28	EXTERNAL RESET MECHANISM	SQUARE-D	9066RA1	1
29	DUPLEX SERVICE RECEPTACLE 20A, 125VAC, G.F.I. w/COVER	LEVITON	GFWT2-T	1
30	WIREWAY DUCT 2"x4" w/COVER	HOFFMAN	A200400WH A200CWH	AS REQ'D
31	LED ALARM BEACON - 12-24VDC, NEMA 4X	EDWARDS SIGNALING	94PLEDMR24AD	1
32	ALARM HORN - WEATHERPROOF, 24VDC, NEMA 4X	EDWARDS SIGNALING	877-G1	1
33	PUSH BUTTON - MOMENTARY CONTACT, BLACK, 1 NO	ALLEN-BRADLEY	800T-B2D1	1
34	BREAKER-10A, THREE-POLE	SQUARE-D	Q0U310	1
35	EMERGENCY RECEPTACLE - 100A, 3φ 4 WIRE, NEMA 6P/IP67 W/BACK BOX	LEVITON	4100R9W BX100-V	1
36	VIBRATING HORN 120VAL NEMA 4X	EDWARDS	876-N5	1
37	FLASHING ALARM LIGHT - RED LED MICROLERT NEMA 6P CAPABLE	TOMAR ELECTRONICS	290LF-120-240	1

BOM NOTES:
 1 VIBRATING HORN HAS A NEMA 4X ENCLOSURE. THEREFORE CONDUIT INTO THE NEMA 6P PANEL SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT.

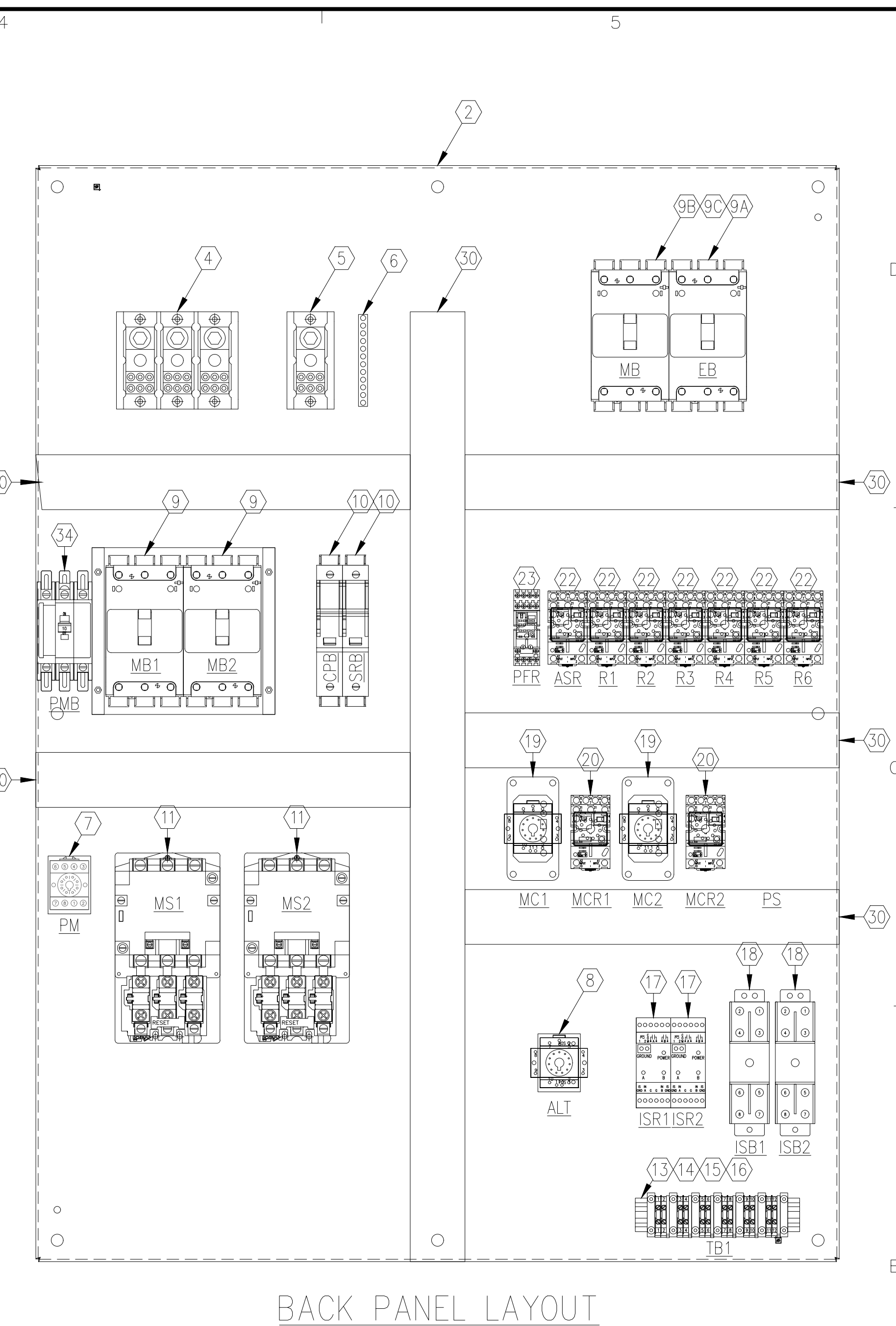
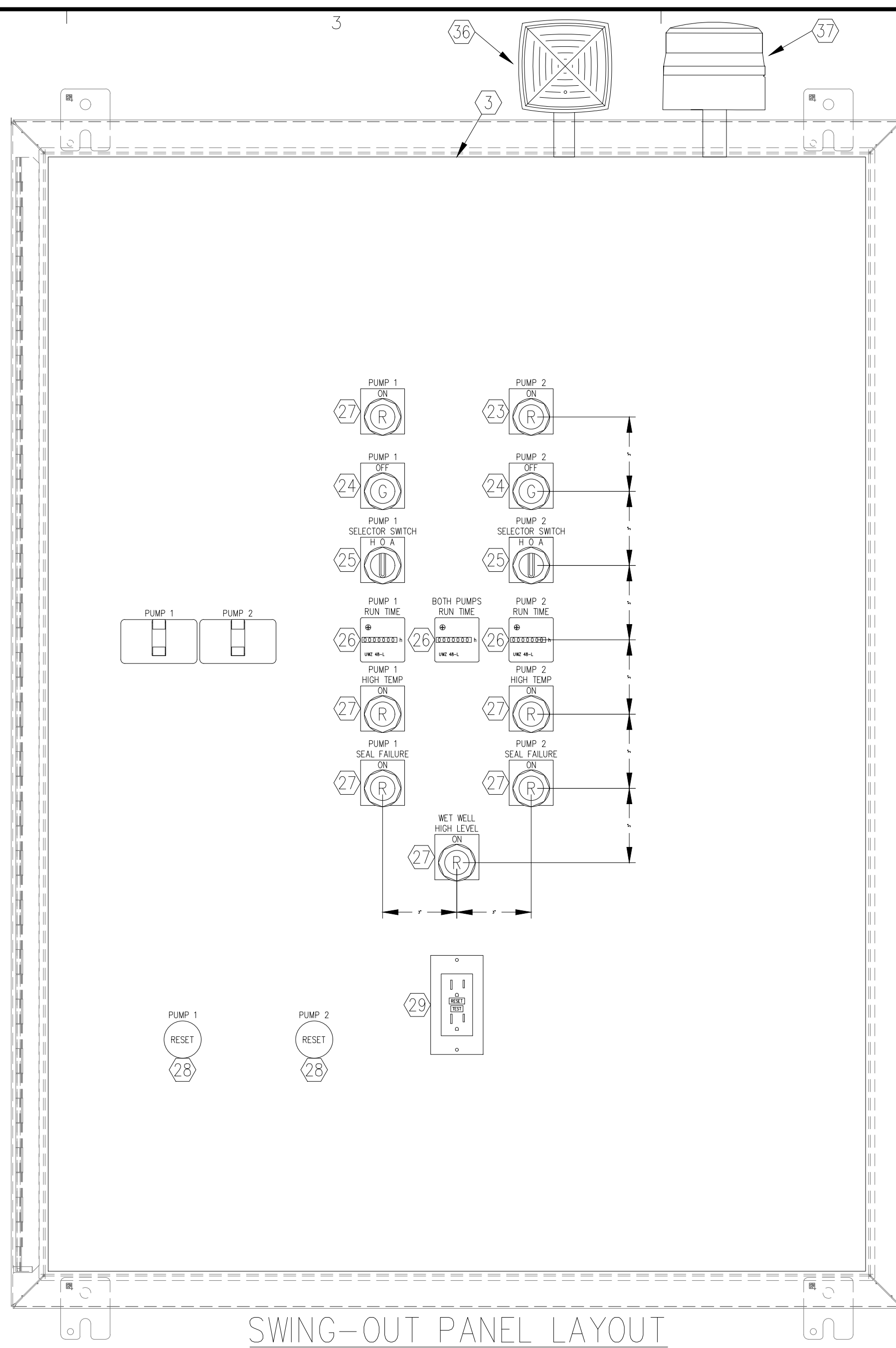
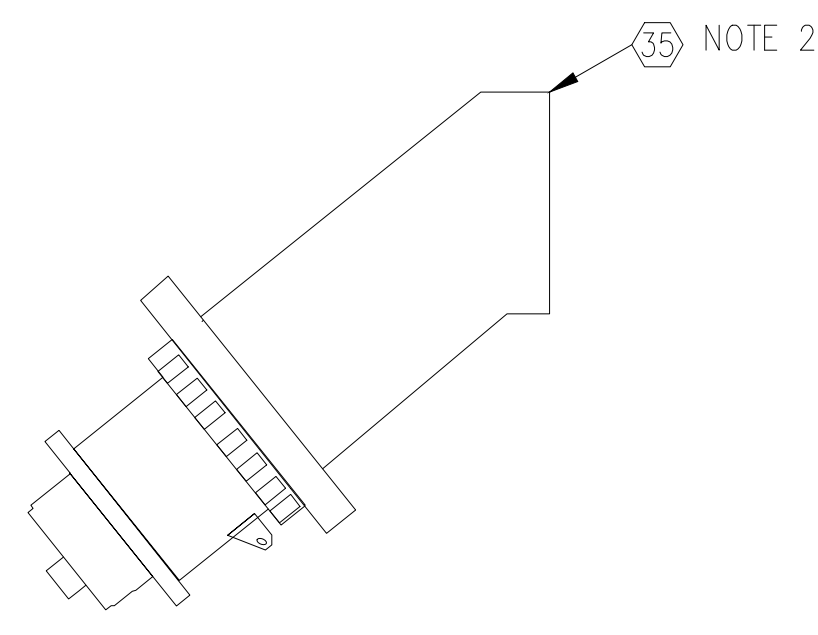
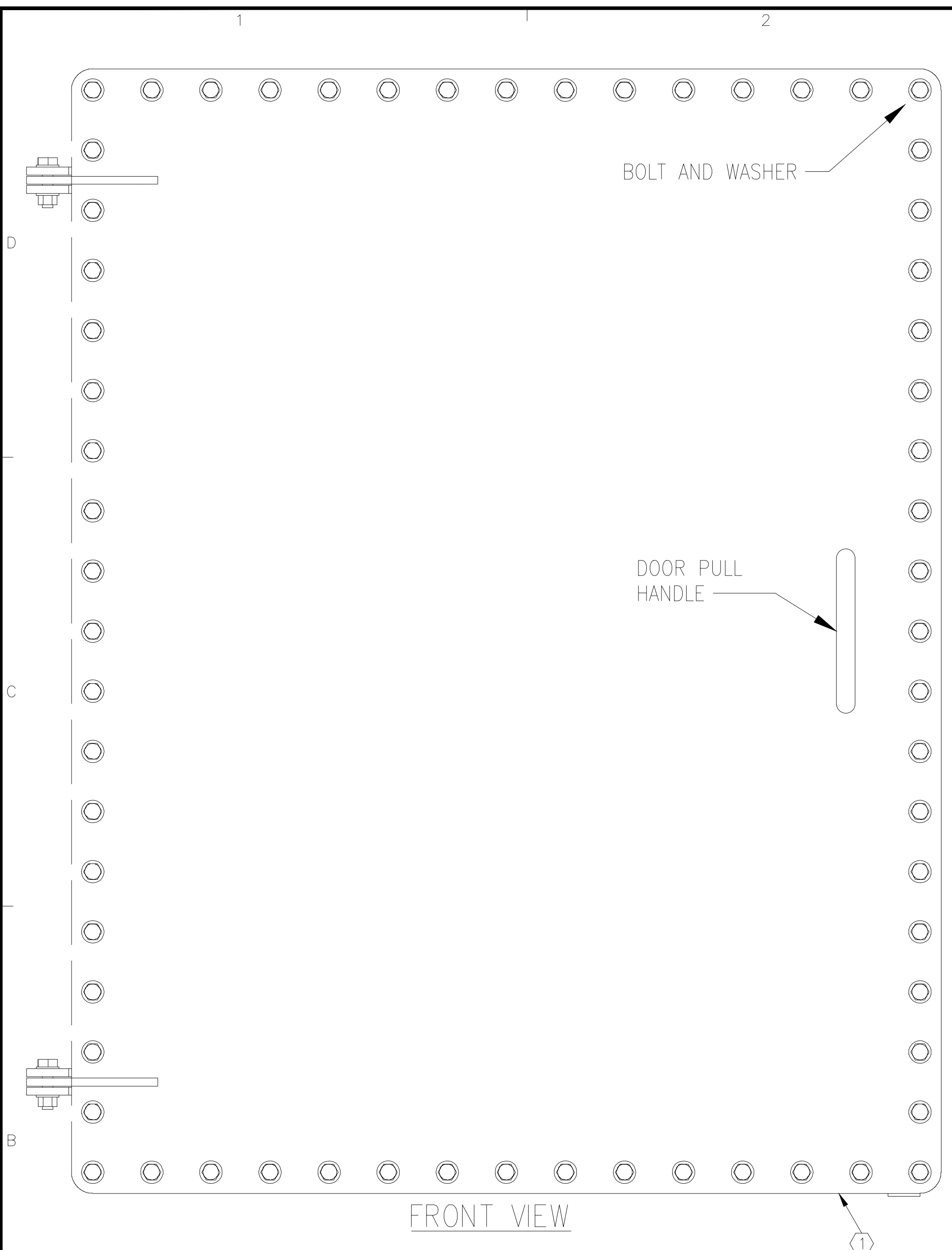
BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST. PENSACOLA, FL 32502 (850)438-9661
 PENSACOLA - Panama City Beach - Tallahassee - Mobile
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CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION

PROJECT NO:	123503.01	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR:	JWJ	DATE:	FEBRUARY 2023	REVISION/ACTION TAKEN		DATE
									NO.	100% SUBMITTAL	
APPR.	-	1-31-24									
NOT RELEASED FOR CONSTRUCTION BY											

LS 1
 ELECTRICAL
 RISER/1-LINE DIAGRAM

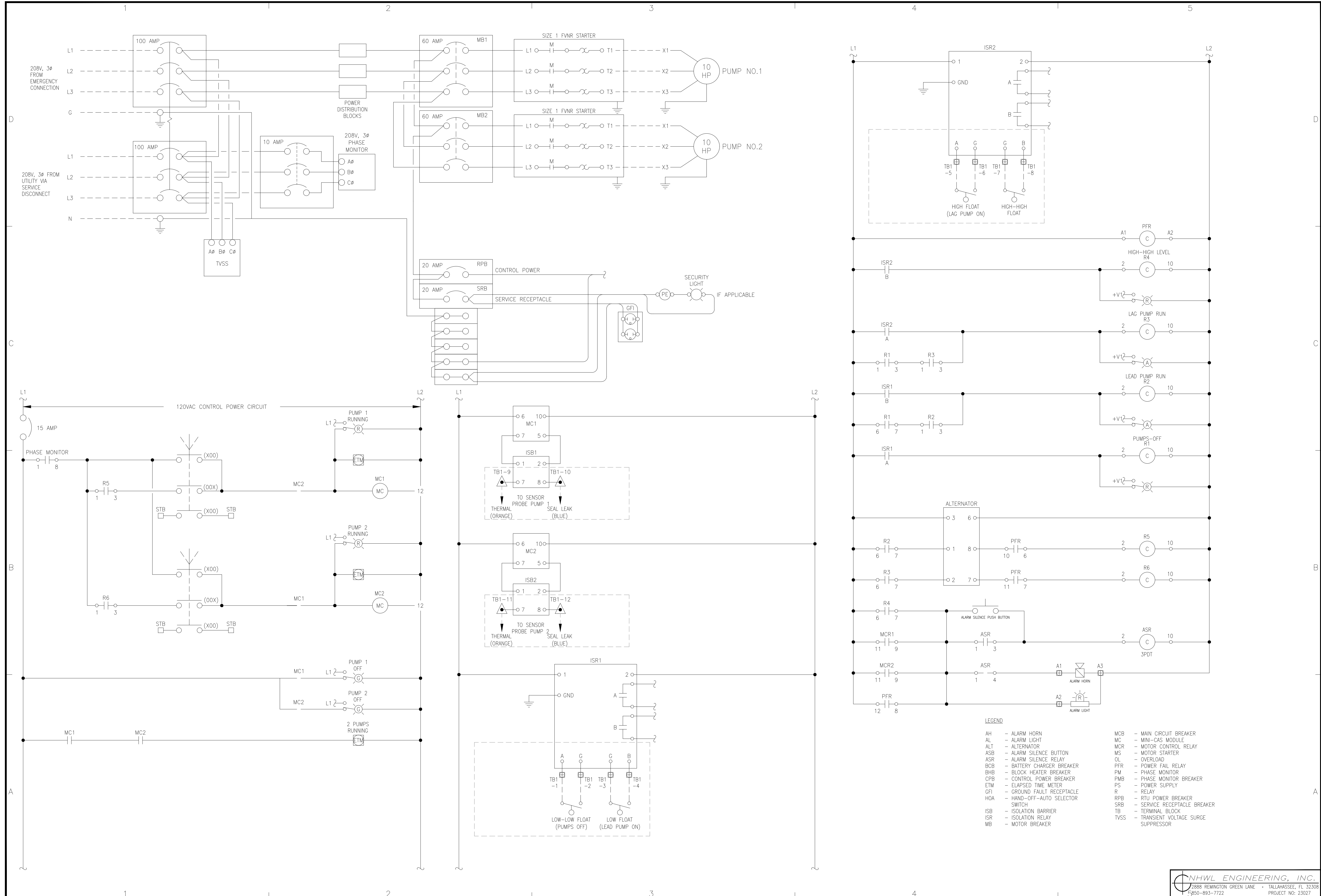
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- NOTES:
- 1 THE EQUIPMENT AND MATERIALS REFERENCED ON THESE DRAWINGS ARE MEANT TO ESTABLISH A MINIMUM STANDARD FOR CAPABILITY AND QUALITY ASSURANCE. SUBSTITUTIONS OF ANY EQUIPMENT AND/OR MATERIALS ARE TO BE EQUAL OR BETTER THAN THE AFOREMENTIONED EQUIPMENT AND MATERIALS AND ARE SUBJECT TO APPROVAL BY THE OWNER/ENGINEER.
 - 2 THE EMERGENCY RECEPTACLE IS TO BE MOUNTED ON THE LEFT SIDE OF THE ENCLOSURE 4" FROM THE TOP. UTILIZE THE 1 1/4" HUB OF THE ENCLOSURE TO CONNECT THE BACK BOX AND RECEPTACLE.

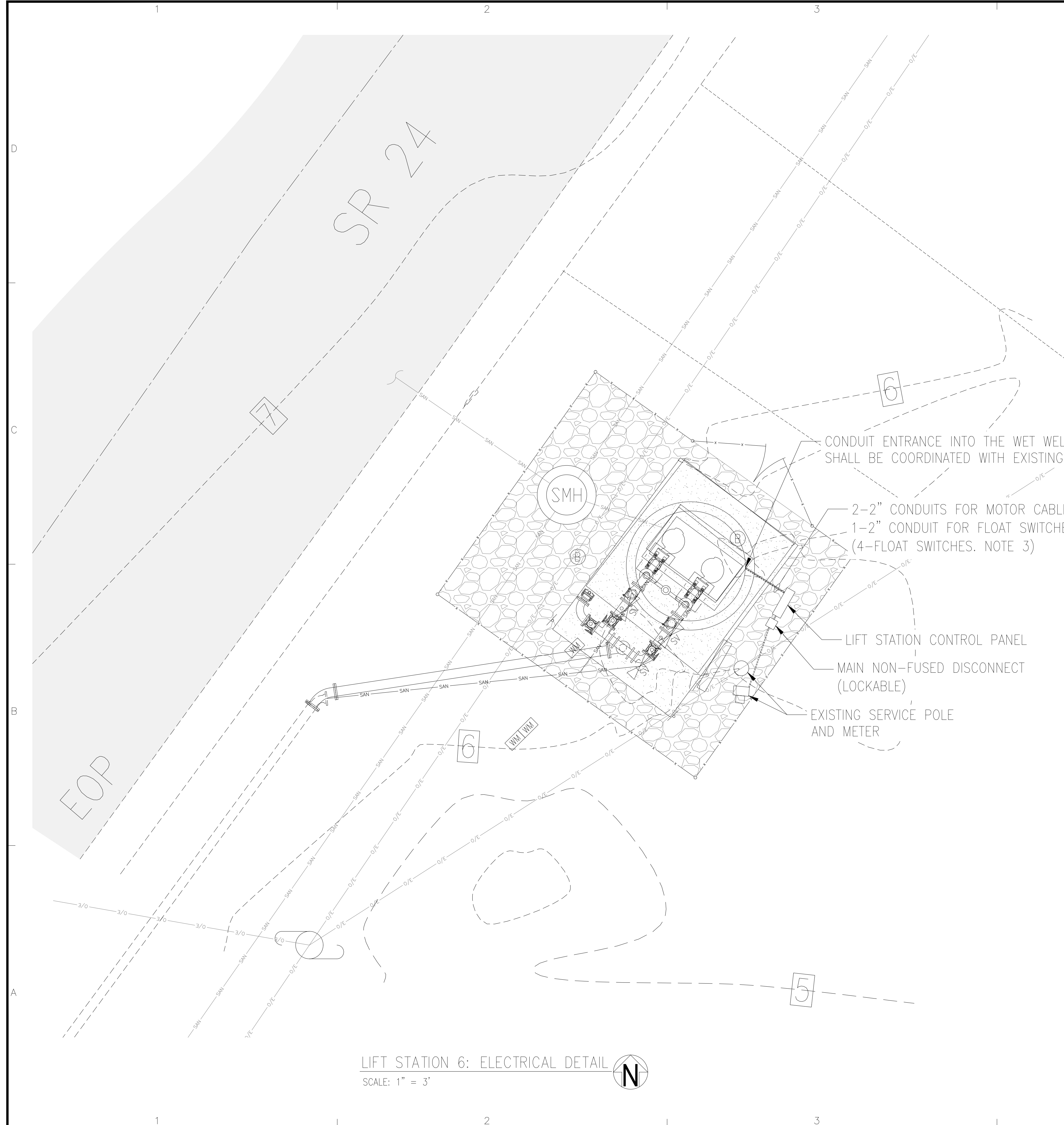
BASKERVILLE-DONOVAN, INC. ENGINEERING THE SOUTH SINCE 1927 <small>448 W. MAIN ST. PENSACOLA, FL 32502 (850) 438-6661 ENGINEERING BUSINESS EB-0000340 Pensacola - Panama City Beach - Tallahassee - Mobile</small>	
CD	
CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION	
PROJECT NO: 123503.01	REVISION/ACTION TAKEN NO. DATE APPR. 100% SUBMITTAL
DESIGNED BY: DRAWN BY: CHK'D BY: PROJ. MGR: JMW DATE: FEBRUARY 2023	NOT RELEASED FOR CONSTRUCTION BY DATE
LS 1 ELECTRICAL CONTROL PANEL LAYOUT	
E-103	

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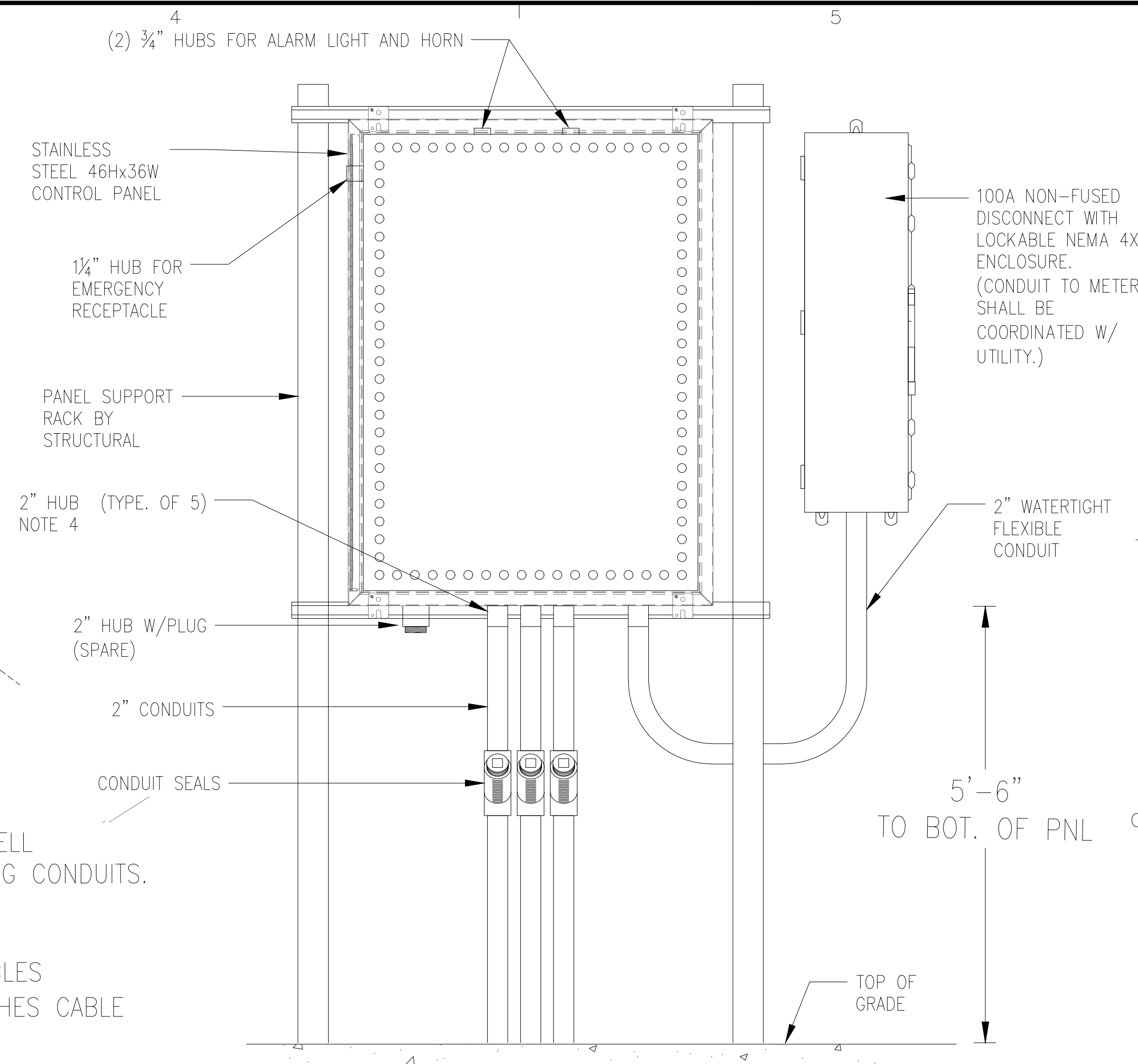


PROJECT NO:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	-	1-31-24	-	100% SUBMITTAL

DESIGNED BY:	PROJ. MGR:	DATE:	NOT RELEASED FOR CONSTRUCTION BY	DATE
DRANN BY:	JWJ	FEBRUARY 2023		



LIFT STATION 6: ELECTRICAL DETAIL
SCALE: 1" = 3'



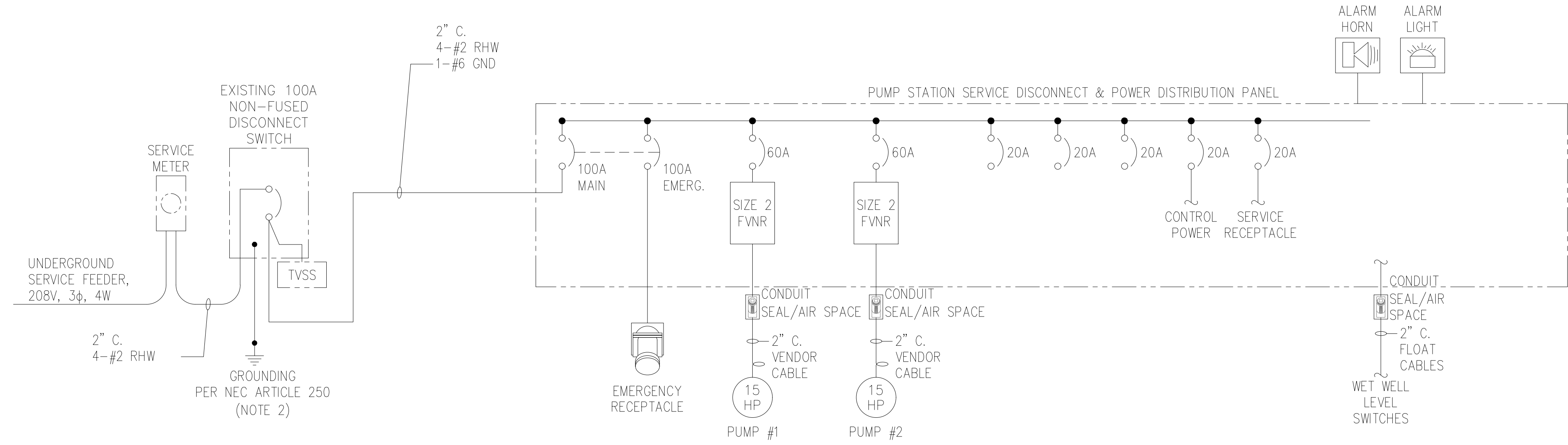
LIFT STATION CONTROL PANEL
NOT TO SCALE

- NOTES:
- 1 COORDINATE REWORKING OF SERVICE CONDUITS AND METER ENCLOSURE WITH THE SERVING UTILITY (CENTRAL FLORIDA ELECTRICAL CO-OP; CHIEFLAND, FL)
 - 2 THE CONTROL PANEL SHALL BE INSTALLED ON THE SUPPORT STRUCTURE (SUPPLIED BY OTHERS) AT 5'-6" ABOVE GRADE TO THE BOTTOM OF THE PANEL. THE SUPPLY AND INSTALLATION OF STRUT/HARDWARE TO MOUNT THE PANEL TO THE SUPPORT IS PART OF THE ELECTRICAL WORK.
 - 3 THE FLOAT SWITCHES SHALL BE ANCHOR SCIENTIFIC MINI-FLOATS (SUSPENDED-TYPE-S) OR EQUAL. PROVIDE CABLES OF ADEQUATE LENGTH.
 - 4 MAIN DISCONNECT MAY BE MOUNTED ON THE BACK OF THE SUPPORT FRAME. MOUNT DISCONNECT AS HIGH AS POSSIBLE ON THE SUPPORT FRAME. THE CONDUIT FOR THE SERVICE SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT ON BOTH ENDS.
 - 5 CONDUIT FITTINGS/HUBS ARE PART OF THE PANEL/ENCLOSURE. THEY ARE INTENDED TO BE ATTACHED AS PART OF THE MANUFACTURING PROCESS.

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CEAR KEY SANITARY SEWER LIFT STATION REHABILITATION	
PROJECT NO: 123503.01 DESIGNED BY: DRAWN BY: PROJ. MGR: JMW DATE: FEBRUARY 2023	REVISION/ACTION TAKEN NO. DATE APPR. 100% SUBMITTAL 1-31-24 NOT RELEASED FOR CONSTRUCTION BY DATE
LS 6 ELECTRICAL SITE PLAN	E-105

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LIFT STATION 6 RISER DIAGRAM

- NOTE:
- PUMP STATION WET WELL IS A CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION THAT REQUIRES THE USE OF CONDUIT SEALS, OR AIR SPACE PROVISION BETWEEN THE WET WELL AND POSSIBLE SOURCES OF IGNITION. CONDUIT SEALS, OR AIR SPACE, SHALL BE PLACED WITHIN (18)EIGHTEEN INCHES OF THE PUMP STATION CONTROL PANEL ENCLOSURE.
 - GROUNDING SHALL BE TESTED TO VERIFY THAT RESISTANCE TO EARTH/GROUND IN LESS THAN 26 OHMS. ADDITIONAL GROUND RODS SHALL BE INSTALLED (AS REQUIRED) TO ESTABLISH A GROUNDING RESISTANCE OF LESS THAN 26 OHMS. THE GROUNDING TEST SHALL BE COORDINATED WITH AND WITNESSED BY THE OWNER'S REPRESENTATIVE. REFER TO THE OWNER'S STANDARD SPECIFICATIONS.

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	NEMA 6P ENCLOSURE W/6P HINGED DOOR AND GASKETS 304SS 48Hx36Wx12D NOMINAL	NEMACO	N6P-483612-304	1
2	BACK PANEL EPOXY COATED STEEL	NEMACO	N69-IP4836	1
3	HINGED SWING-OUT PANEL - 304SS W/3 POINT TURN LATCH HANDLE	NEMACO	-	1
4	POWER DISTRIBUTION BLOCK 3-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA363106	1
5	POWER DISTRIBUTION BLOCK 1-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA163106	1
6	EQUIPMENT GROUND BAR	SQUARE-D	PK9GT4	1
7	PHASE MONITOR RELAY SOCKET	ATC DIVERSIFIED	SLA-230-ALA RB-08	1
8	ALTERNATING RELAY - DUPLEX	ATC DIVERSIFIED	ARA-24-ADA	1
9	BREAKER-60A, THREE-POLE	SQUARE-D	HDL36060	2
9A	EMERGENCY BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9B	MAIN BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9C	H/J FRAME MECHANICAL INTERLOCK FOR TOGGLE HANDLE	SQUARE-D	S29354	2
10	BREAKER-20A, SINGLE-POLE	SQUARE-D	BDL16020	5
11	FULL VOLTAGE NON-REVERSING SIZE 2 STARTER	SQUARE-D	85365D01V02H305	2
12	SURGE PROTECTIVE DEVICE	SURGE SUPPRESSION, INC	LS2D-3Y1-D1XS	1
13	35mm DIN RAIL	SQUARE-D	9080MH320	AS REQ'D
14	FEED THROUGH TERMINAL	SQUARE-D	9080GM6	AS REQ'D
15	END BARRIER	SQUARE-D	9080GM6B	AS REQ'D
16	END CLAMP	SQUARE-D	9080MH410	AS REQ'D
17	INTRINSICALLY SAFE RELAY	R-K ELECTRONICS	ISR-24V-10K	2
18	GEMS ZENER BARRIER	TEQUIPMENT	54801	2
19	PUMP MONITORING/CONTROL RELAY w/ BASE	PUMP VENDOR		2
20	RELAY, OCTAL PLUG-IN, 3PDT 120VAC w/RELAY SOCKET	EATON	D3RF3A D3PA7	2
21	(NOT USED)	-	-	-
22	RELAY, OCTAL PLUG-IN, 3PDT 24VDC w/RELAY SOCKET	SQUARE-D	D3RF3T1 D3PA7	7
23	MINIATURE PLUG-IN RELAY - 24VDC	SQUARE-D	RXM4AB2BDPVM	1
24	PILOT LIGHT - w/GREEN LENSE	ALLEN-BRADLEY	800T-QTH2G	2
25	3 POSITION SELECTOR SWITCH w/"H-0-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2B 800T-X511	2
26	HOUR COUNTER PANEL METER	GRASSLIN	UMZ48E-12050U	3
27	PILOT LIGHT - w/RED LENSE	ALLEN-BRADLEY	800T-QTH2R	7
28	EXTERNAL RESET MECHANISM	SQUARE-D	9066RA1	1
29	DUPLEX SERVICE RECEPTACLE 20A, 125VAC, G.F.I. w/COVER	LEVITON	GFWT2-T	1
30	WIREWAY DUCT 2"x4" w/COVER	HOFFMAN	A200400WH A200CWH	AS REQ'D
31	LED ALARM BEACON - 12-24VDC, NEMA 4X	EDWARDS SIGNALING	94PLEDMR24AD	1
32	ALARM HORN - WEATHERPROOF, 24VDC, NEMA 4X	EDWARDS SIGNALING	877-G1	1
33	PUSH BUTTON - MOMENTARY CONTACT, BLACK, 1 NO	ALLEN-BRADLEY	800T-B2D1	1
34	BREAKER-10A, THREE-POLE	SQUARE-D	QOU310	1
35	EMERGENCY RECEPTACLE - 100A, 3φ 4 WIRE, NEMA 6P/IP67 W/BACK BOX	LEVITON	4100R9W BX100-V	1
36	VIBRATING HORN 120VAL NEMA 4X	EDWARDS	876-N5	1
37	FLASHING ALARM LIGHT - RED LED MICROLERT NEMA 6P CAPABLE	TOMAR ELECTRONICS	290LF-120-240	1

BOM NOTES:
 1 VIBRATING HORN HAS A NEMA 4X ENCLOSURE. THEREFORE CONDUIT INTO THE NEMA 6P PANEL SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT.

BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST. PENSACOLA, FL 32502 (850)438-9681
 ENGINEERING BUSINESS EB-000040
 Pensacola - Panama City Beach - Tallahassee - Mobile
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CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION

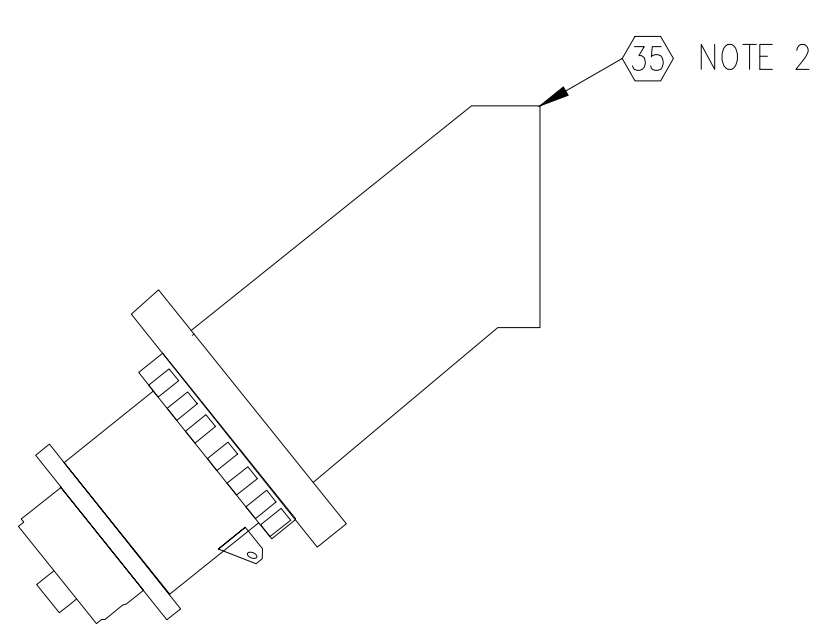
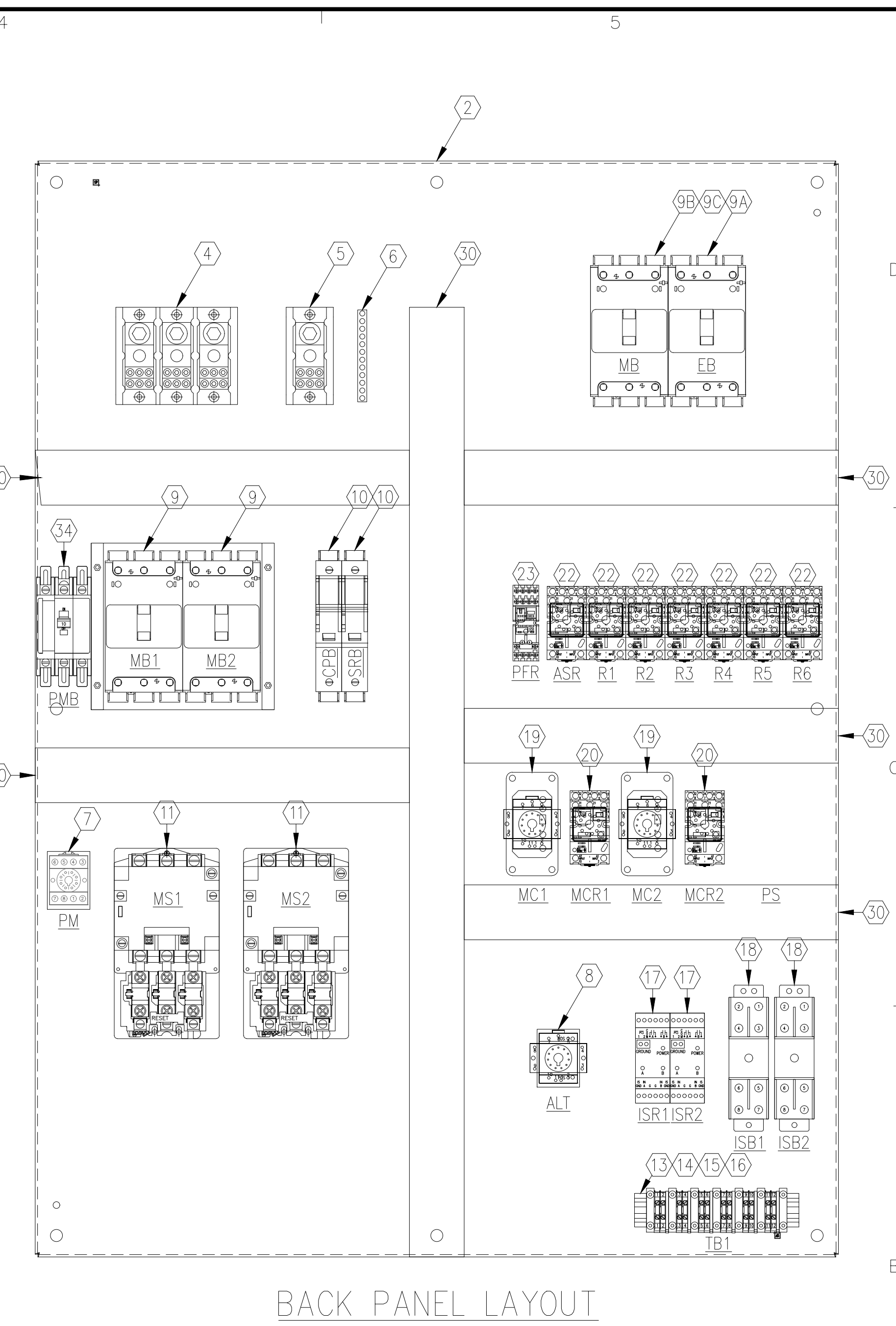
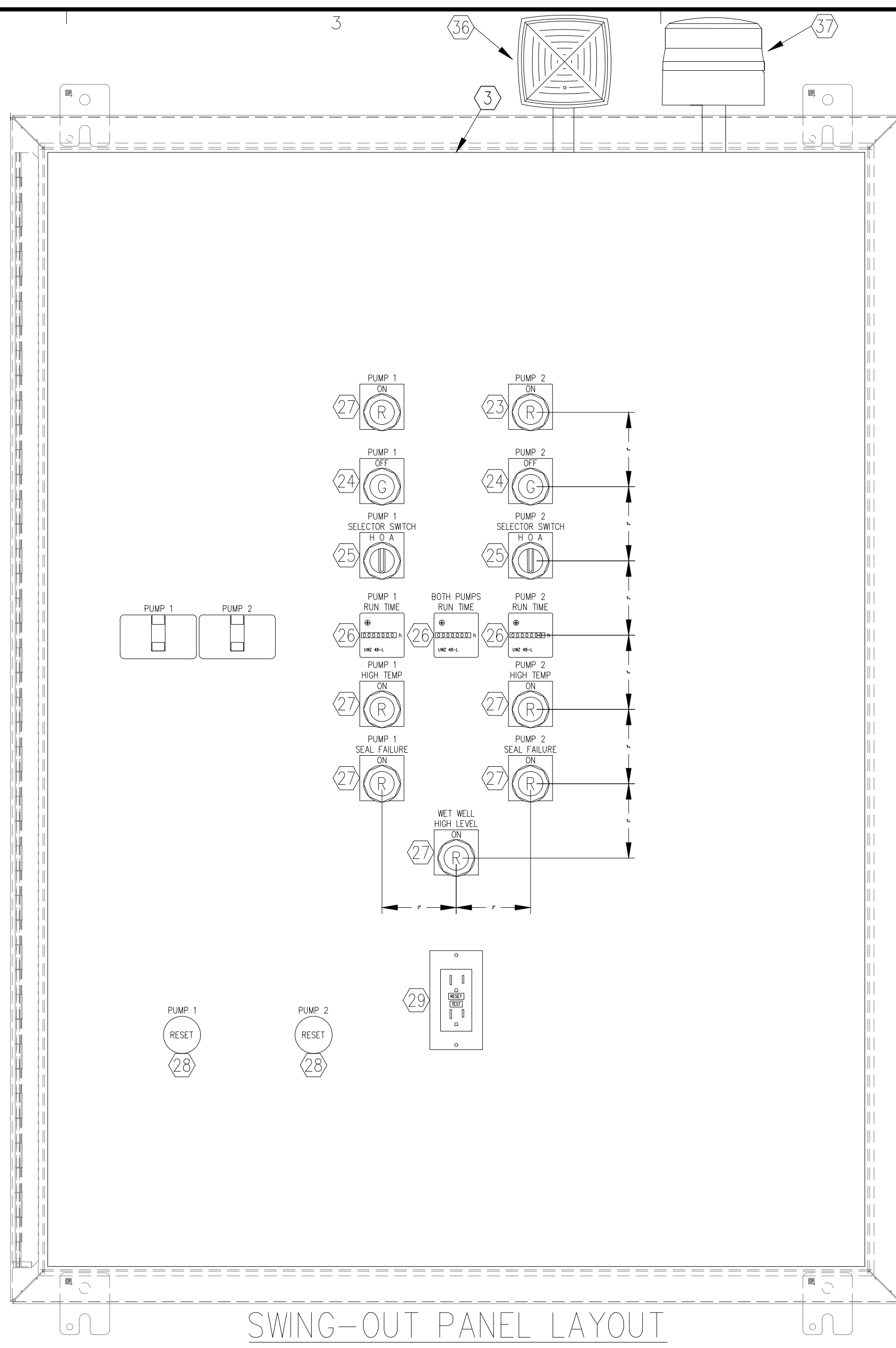
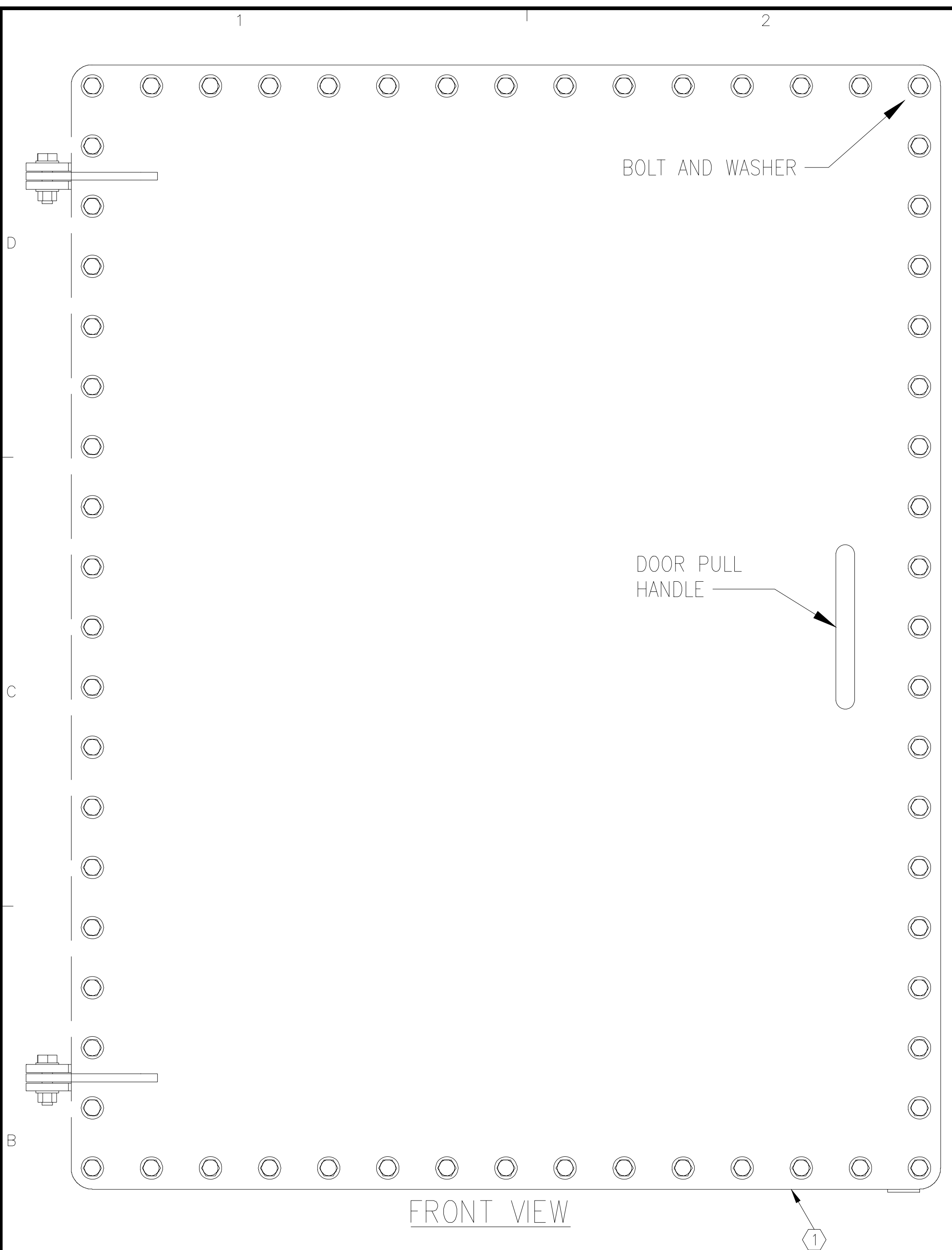
PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR:	DATE:
123503.01				JWJ	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN
1	1-31-24		100% SUBMITTAL

NOT RELEASED FOR CONSTRUCTION BY	DATE

LS 6
 ELECTRICAL
 RISER/1-LINE DIAGRAM

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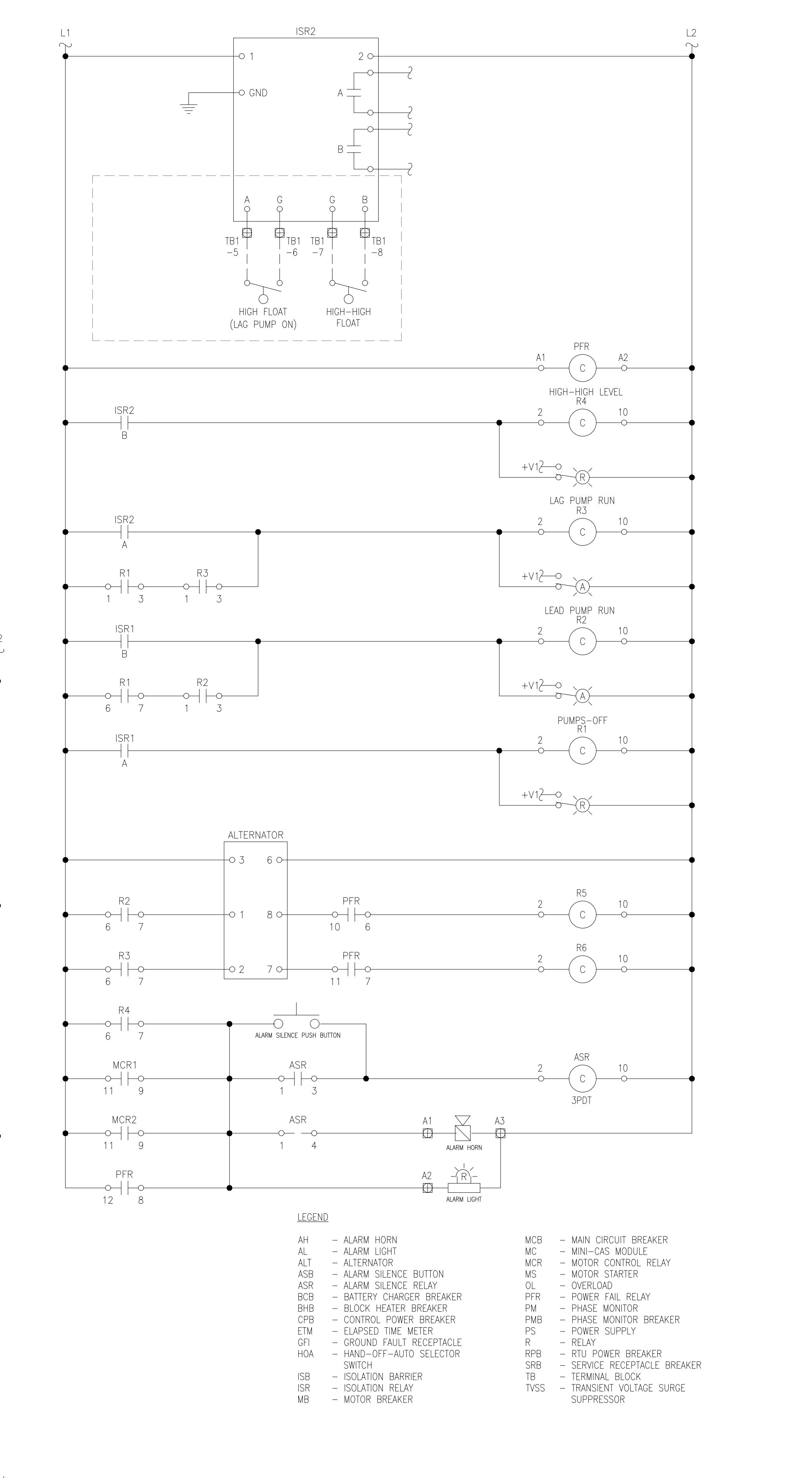
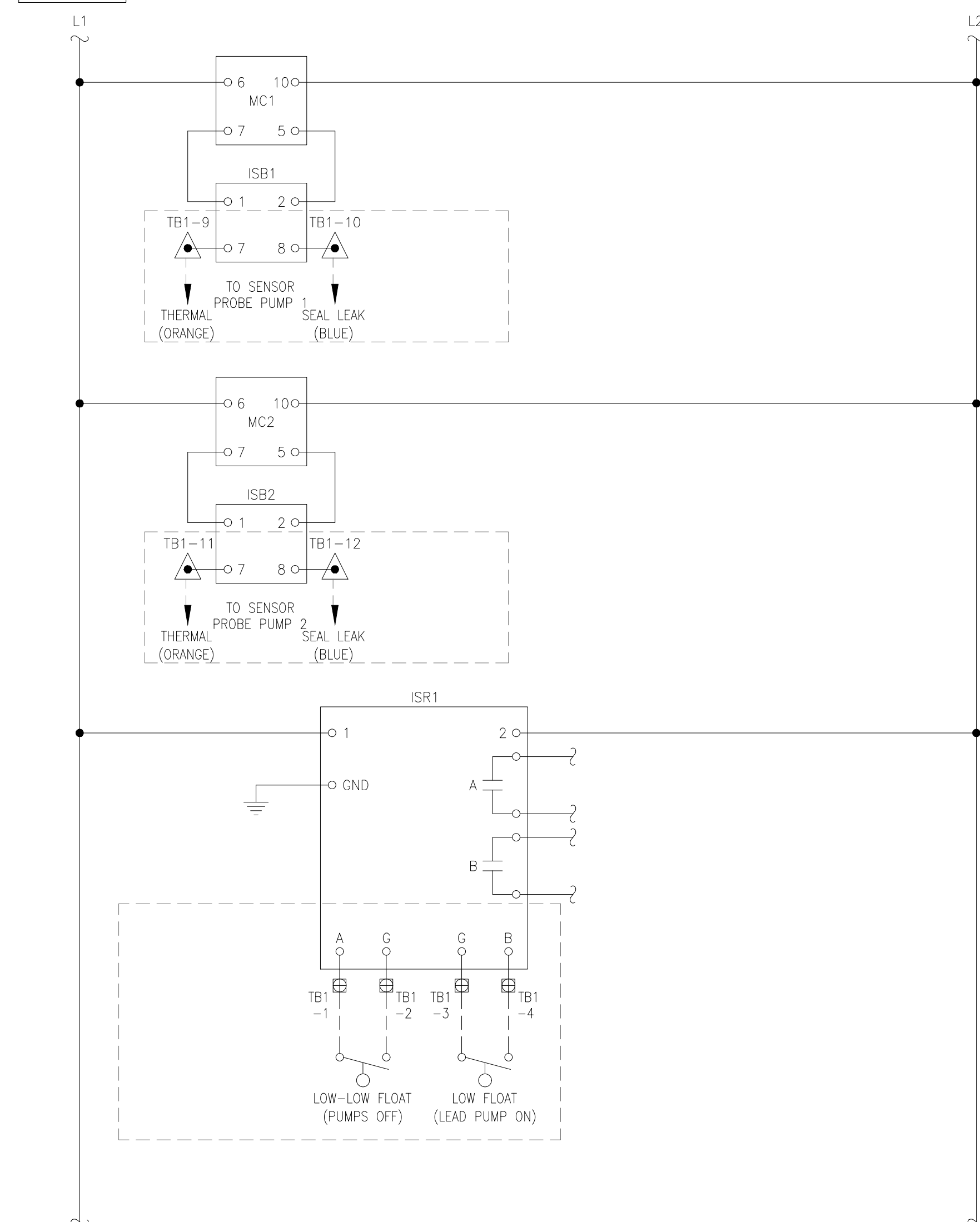
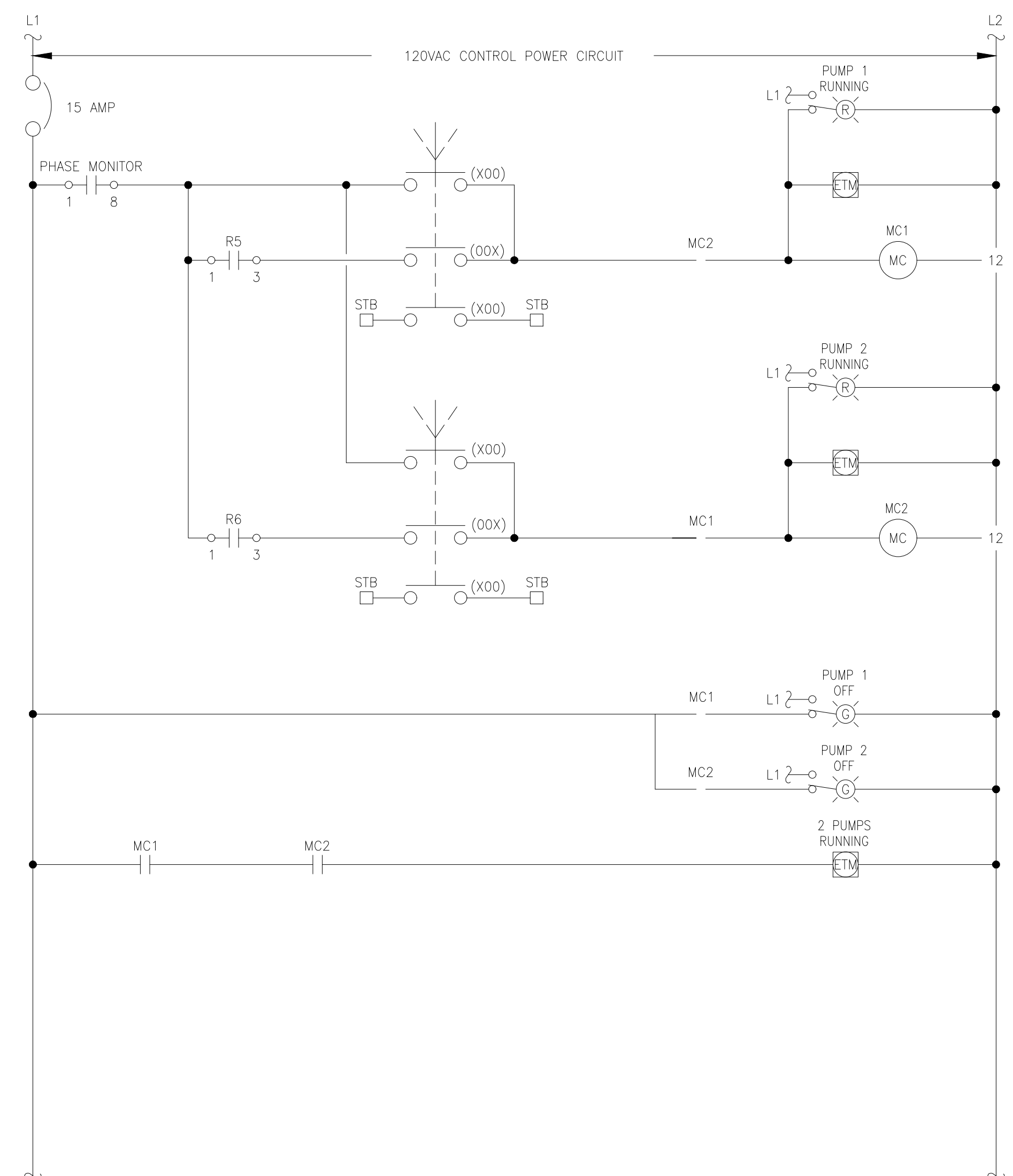
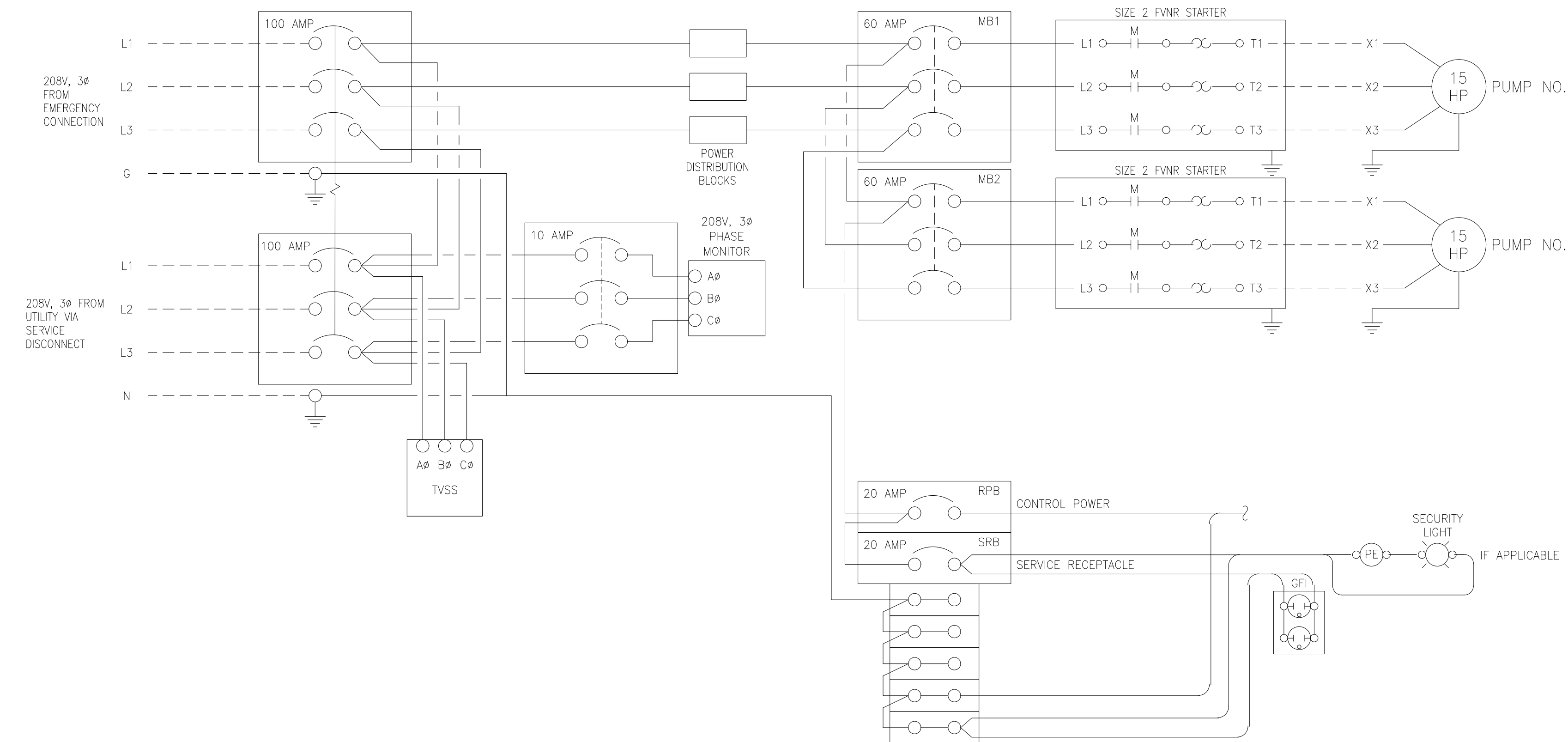


NOTES:

- 1 THE EQUIPMENT AND MATERIALS REFERENCED ON THESE DRAWINGS ARE MEANT TO ESTABLISH A MINIMUM STANDARD FOR CAPABILITY AND QUALITY ASSURANCE. SUBSTITUTIONS OF ANY EQUIPMENT AND/OR MATERIALS ARE TO BE EQUAL OR BETTER THAN THE AFOREMENTIONED EQUIPMENT AND MATERIALS AND ARE SUBJECT TO APPROVAL BY THE OWNER/ENGINEER.
- 2 THE EMERGENCY RECEPTACLE IS TO BE MOUNTED ON THE LEFT SIDE OF THE ENCLOSURE 4" FROM THE TOP. UTILIZE THE 1/4" HUB OF THE ENCLOSURE TO CONNECT THE BACK BOX AND RECEPTACLE.

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CD	
CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION	
PROJECT NO: 123503.01 DESIGNED BY: DRAWN BY: CHK'D BY: PROJ. MGR: JMW DATE: FEBRUARY 2023	REVISION/ACTION TAKEN 100% SUBMITTAL NO. DATE APPR. 1-31-24 NOT RELEASED FOR CONSTRUCTION BY DATE
LS 6 ELECTRICAL CONTROL PANEL LAYOUT	
E-107	

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ENGINEERING THE SOUTH SINCE 1927
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ENGINEERING BUSINESS EB-0000340
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LS 6
ELECTRICAL WIRING
DIAGRAM

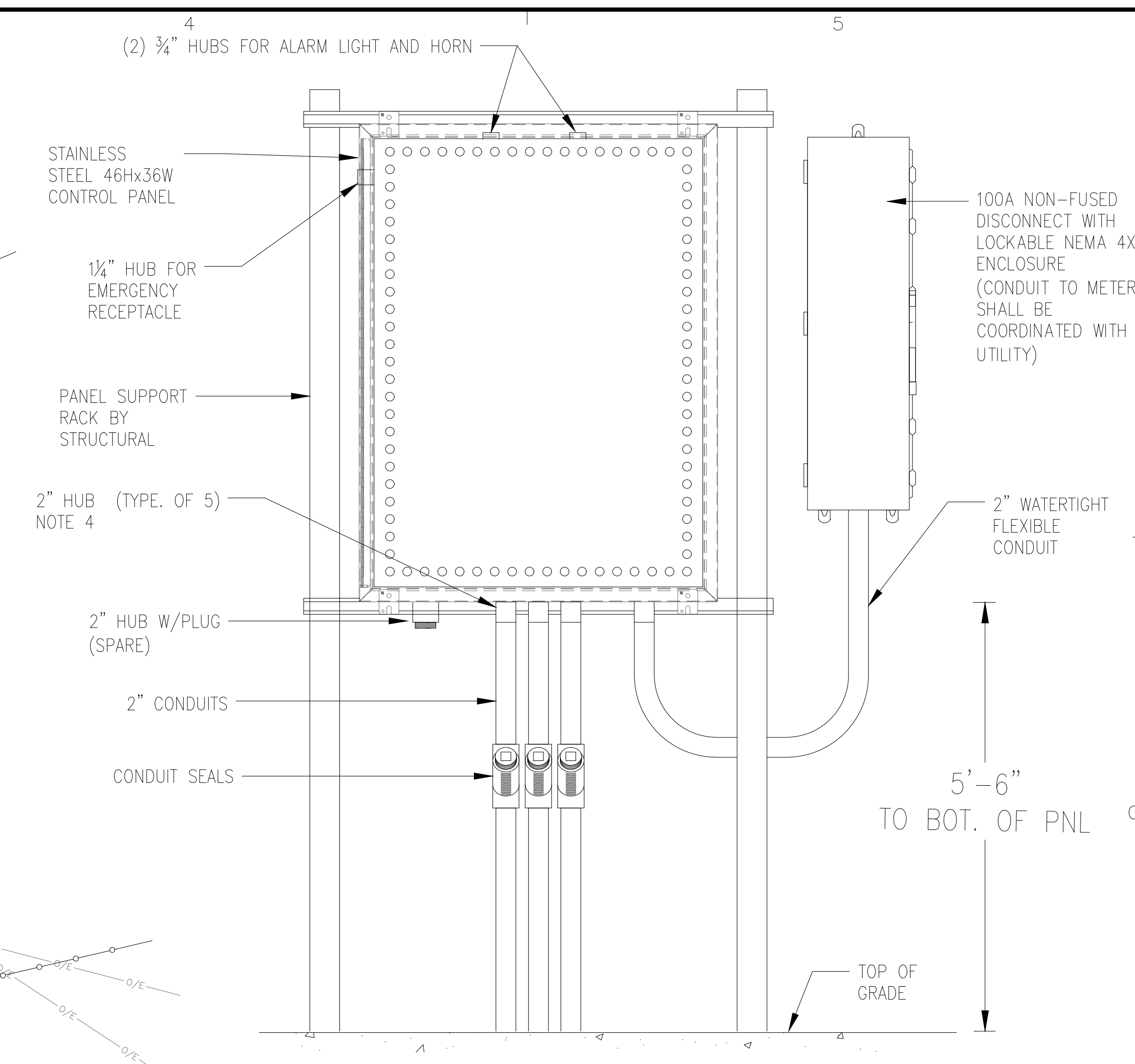
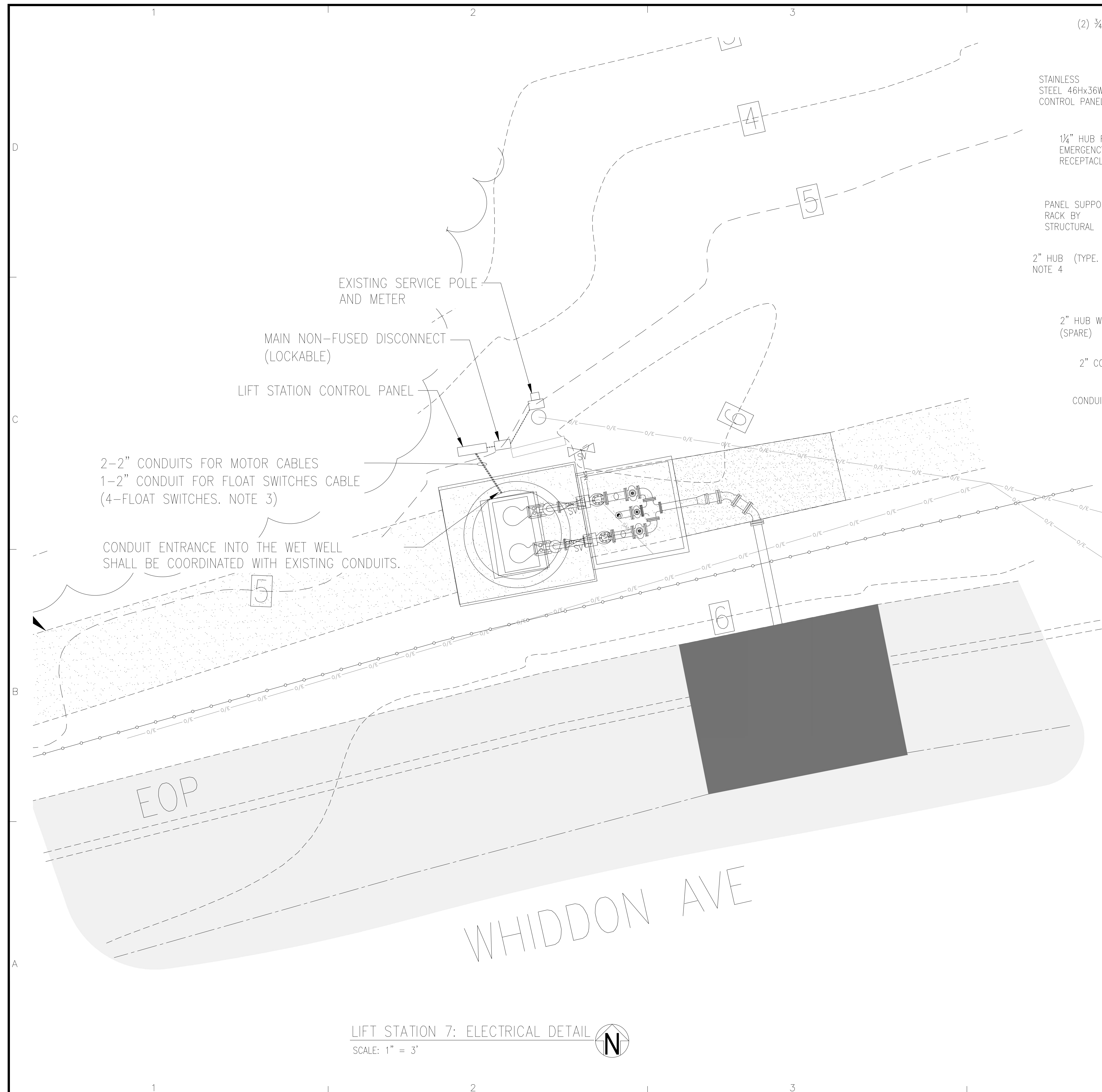
CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

PROJECT NO:	DESIGNED BY:	PROJ. MGR:	DATE:
123503.01		JWJ	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN
1	1-31-24		100% SUBMITTAL

NOT RELEASED FOR CONSTRUCTION BY	DATE

E-108

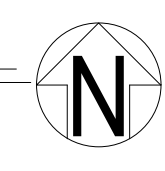


LIFT STATION CONTROL PANEL
NOT TO SCALE

NOTES:

- [1] COORDINATE REWORKING OF SERVICE CONDUITS AND METER ENCLOSURE WITH THE SERVING UTILITY (CENTRAL FLORIDA ELECTRICAL CO-OP; CHIEFLAND,FL)
- [2] THE CONTROL PANEL SHALL BE INSTALLED ON THE SUPPORT STRUCTURE (SUPPLIED BY OTHERS) AT 5'-6" ABOVE GRADE TO THE BOTTOM OF THE PANEL. THE SUPPLY AND INSTALLATION OF STRUT/HARDWARE TO MOUNT THE PANEL TO THE SUPPORT IS PART OF THE ELECTRICAL WORK.
- [3] THE FLOAT SWITCHES SHALL BE ANCHOR SCIENTIFIC MINI-FLOATS (SUSPENDED-TYPE-S) OR EQUAL. PROVIDE CABLES OF ADEQUATE LENGTH.
- [4] MAIN DISCONNECT MAY BE MOUNTED ON THE BACK OF THE SUPPORT FRAME. MOUNT DISCONNECT AS HIGH AS POSSIBLE ON THE SUPPORT FRAME. THE CONDUIT FOR THE SERVICE SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT ON BOTH ENDS.
- [5] CONDUIT FITTINGS/HUBS ARE PART OF THE PANEL/ENCLOSURE. THEY ARE INTENDED TO BE ATTACHED AS PART OF THE MANUFACTURING PROCESS.

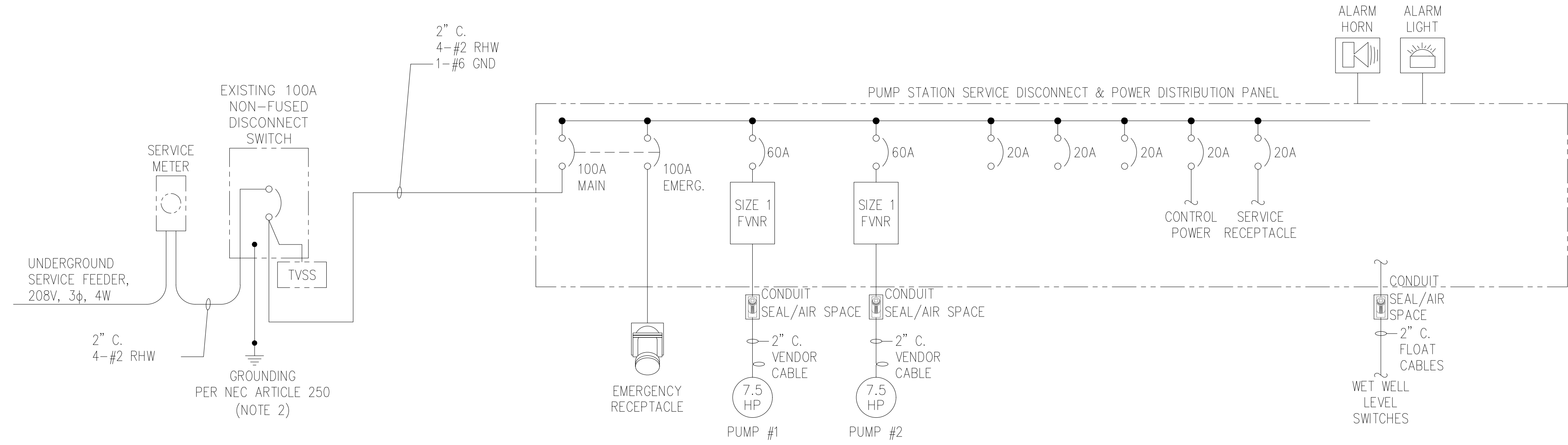
LIFT STATION 7: ELECTRICAL DETAIL
SCALE: 1" = 3'



PROJECT NO.	DESIGNED BY:	PROJ. MGR:	DATE:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01		JWJ	1-31-24	-	-	-	100% SUBMITTAL
	DRAWN BY:						
	CHK'D BY:						

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LIFT STATION 6 RISER DIAGRAM

- NOTE:
- PUMP STATION WET WELL IS A CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION THAT REQUIRES THE USE OF CONDUIT SEALS, OR AIR SPACE PROVISION, BETWEEN THE WET WELL AND POSSIBLE SOURCES OF IGNITION. CONDUIT SEALS, OR AIR SPACE, SHALL BE PLACED WITHIN (18)EIGHTEEN INCHES OF THE PUMP STATION CONTROL PANEL ENCLOSURE.
 - GROUNDING SHALL BE TESTED TO VERIFY THAT RESISTANCE TO EARTH/GROUND IN LESS THAN 26 OHMS. ADDITIONAL GROUND RODS SHALL BE INSTALLED (AS REQUIRED) TO ESTABLISH A GROUNDING RESISTANCE OF LESS THAN 26 OHMS. THE GROUNDING TEST SHALL BE COORDINATED WITH AND WITNESSED BY THE OWNER'S REPRESENTATIVE. REFER TO THE OWNER'S STANDARD SPECIFICATIONS.

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	NEMA 6P ENCLOSURE W/6P HINGED DOOR AND GASKETS 304SS 48Hx36Wx12D NOMINAL	NEMACO	N6P-483612-304	1
2	BACK PANEL EPOXY COATED STEEL	NEMACO	N69-IP4836	1
3	HINGED SWING-OUT PANEL - 304SS W/3 POINT TURN LATCH HANDLE	NEMACO	-	1
4	POWER DISTRIBUTION BLOCK 3-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA363106	1
5	POWER DISTRIBUTION BLOCK 1-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA163106	1
6	EQUIPMENT GROUND BAR	SQUARE-D	PK9GT4	1
7	PHASE MONITOR RELAY SOCKET	ATC DIVERSIFIED	SLA-230-ALA RB-08	1
8	ALTERNATING RELAY - DUPLEX	ATC DIVERSIFIED	ARA-24-ADA	1
9	BREAKER-60A, THREE POLE	SQUARE-D	HDL36060	2
9A	EMERGENCY BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9B	MAIN BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9C	H/J FRAME MECHANICAL INTERLOCK FOR TOGGLE HANDLE	SQUARE-D	S29354	2
10	BREAKER-20A, SINGLE POLE	SQUARE-D	BDL16020	5
11	FULL VOLTAGE NON-REVERSING SIZE 1 STARTER	SQUARE-D	85365D01V02H305	2
12	SURGE PROTECTIVE DEVICE	SURGE SUPPRESSION, INC	LSED-3Y1-D1XS	1
13	35mm DIN RAIL	SQUARE-D	9080MH320	AS REQ'D
14	FEED THROUGH TERMINAL	SQUARE-D	9080GM6	AS REQ'D
15	END BARRIER	SQUARE-D	9080GM6B	AS REQ'D
16	END CLAMP	SQUARE-D	9080MH410	AS REQ'D
17	INTRINSICALLY SAFE RELAY	R-K ELECTRONICS	ISR-24V-10K	2
18	GEMS ZENER BARRIER	TEQUIPMENT	54801	2
19	PUMP MONITORING/CONTROL RELAY w BASE	PUMP VENDOR		2
20	RELAY, OCTAL PLUG-IN, 3PDT 120VAC w/RELAY SOCKET	EATON	D3RF3A D3PA7	2
21	(NOT USED)	-	-	-
22	RELAY, OCTAL PLUG-IN, 3PDT 24VDC w/RELAY SOCKET	SQUARE-D	D3RF3T1 D3PA7	7
23	MINIATURE PLUG-IN RELAY - 24VDC	SQUARE-D	RXM4AB2BDPVM	1
24	PILOT LIGHT - w/GREEN LENSE	ALLEN-BRADLEY	800T-QTH2G	2
25	3 POSITION SELECTOR SWITCH w/"H-0-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2B 800T-X511	2
26	HOUR COUNTER PANEL METER	GRASSLIN	UMZ48E-12050U	3
27	PILOT LIGHT - w/RED LENSE	ALLEN-BRADLEY	800T-QTH2R	7
28	EXTERNAL RESET MECHANISM	SQUARE-D	9066RA1	1
29	DUPLEX SERVICE RECEPTACLE 20A, 125VAC, G.F.I. w/COVER	LEVITON	GFWT2-T	1
30	WIREWAY DUCT 2"x4" w/COVER	HOFFMAN	A200400WH A200CWH	AS REQ'D
31	LED ALARM BEACON - 12-24VDC, NEMA 4X	EDWARDS SIGNALING	94PLEDMR24AD	1
32	ALARM HORN - WEATHERPROOF, 24VDC, NEMA 4X	EDWARDS SIGNALING	877-G1	1
33	PUSH BUTTON - MOMENTARY CONTACT, BLACK, 1 NO	ALLEN-BRADLEY	800T-B2D1	1
34	BREAKER-10A, THREE POLE	SQUARE-D	QOU310	1
35	EMERGENCY RECEPTACLE - 100A, 3φ 4 WIRE, NEMA 6P/IP67 W/BACK BOX	LEVITON	4100R9W BX100-V	1
36	VIBRATING HORN 120VAL NEMA 4X	EDWARDS	876-N5	1
37	FLASHING ALARM LIGHT - RED LED MICROLERT NEMA 6P CAPABLE	TOMAR ELECTRONICS	290LF-120-240	1

BOM NOTES:
 1 VIBRATING HORN HAS A NEMA 4X ENCLOSURE. THEREFORE CONDUIT INTO THE NEMA 6P PANEL SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT.

BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST. PENSACOLA, FL 32502 (850)438-9681
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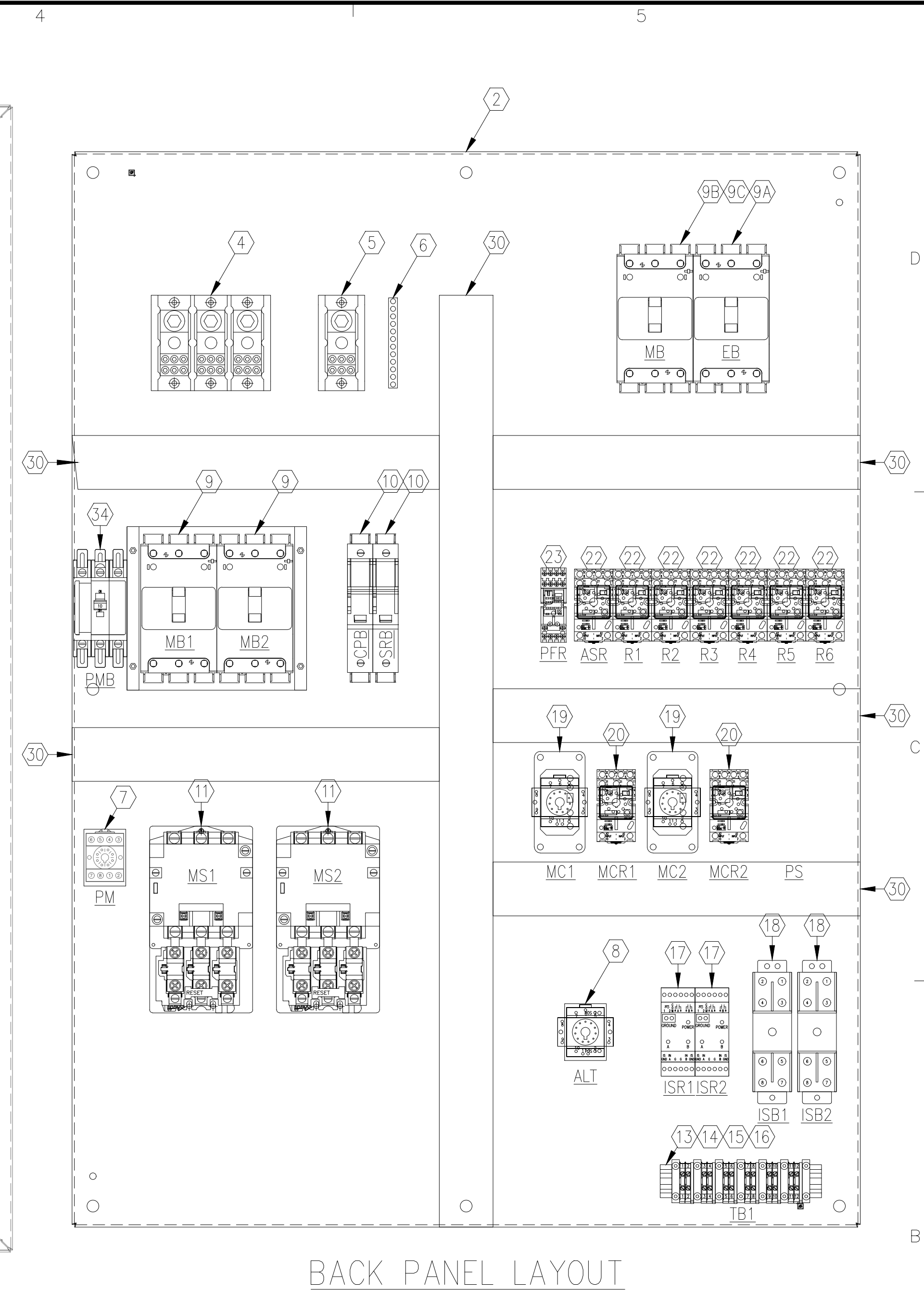
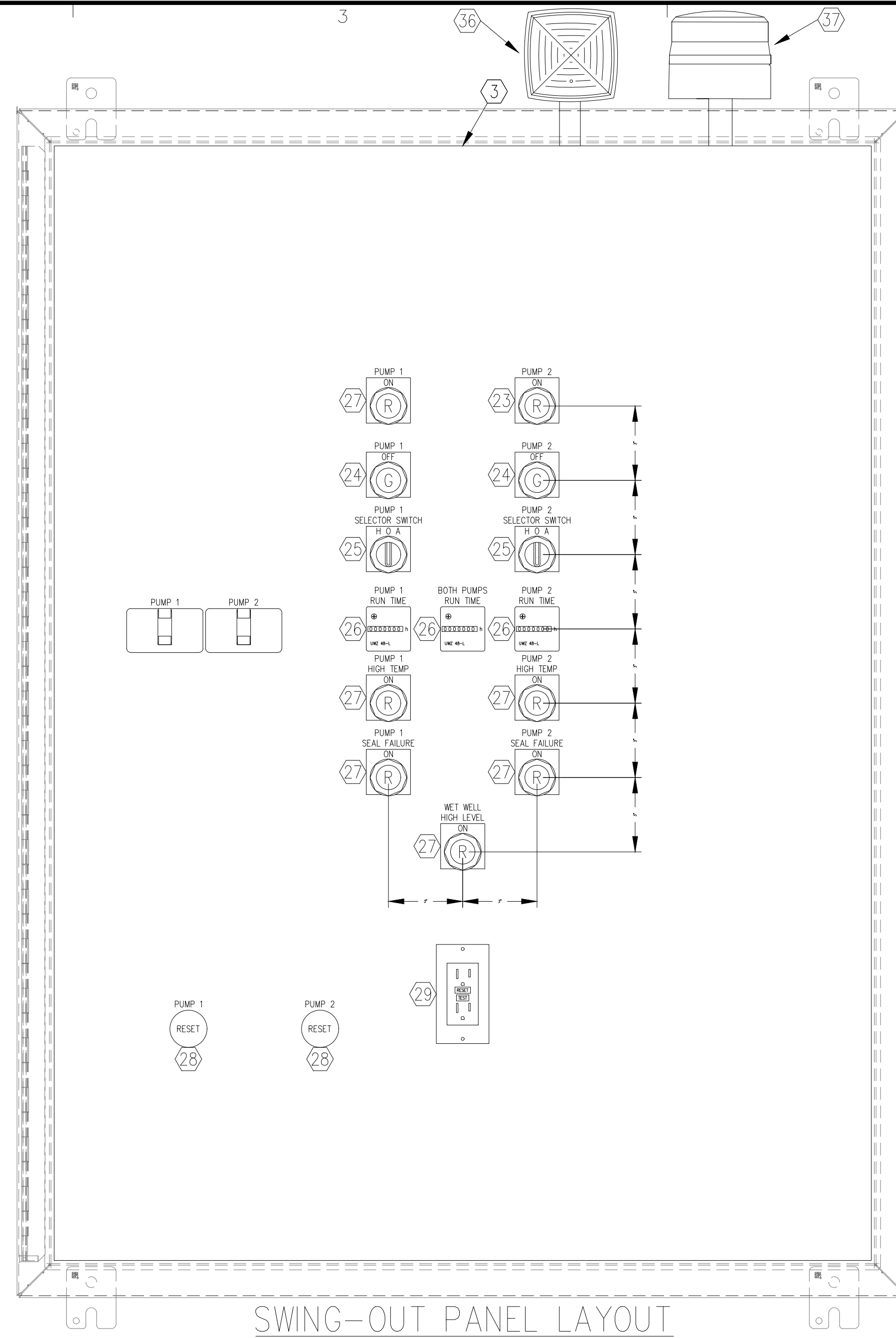
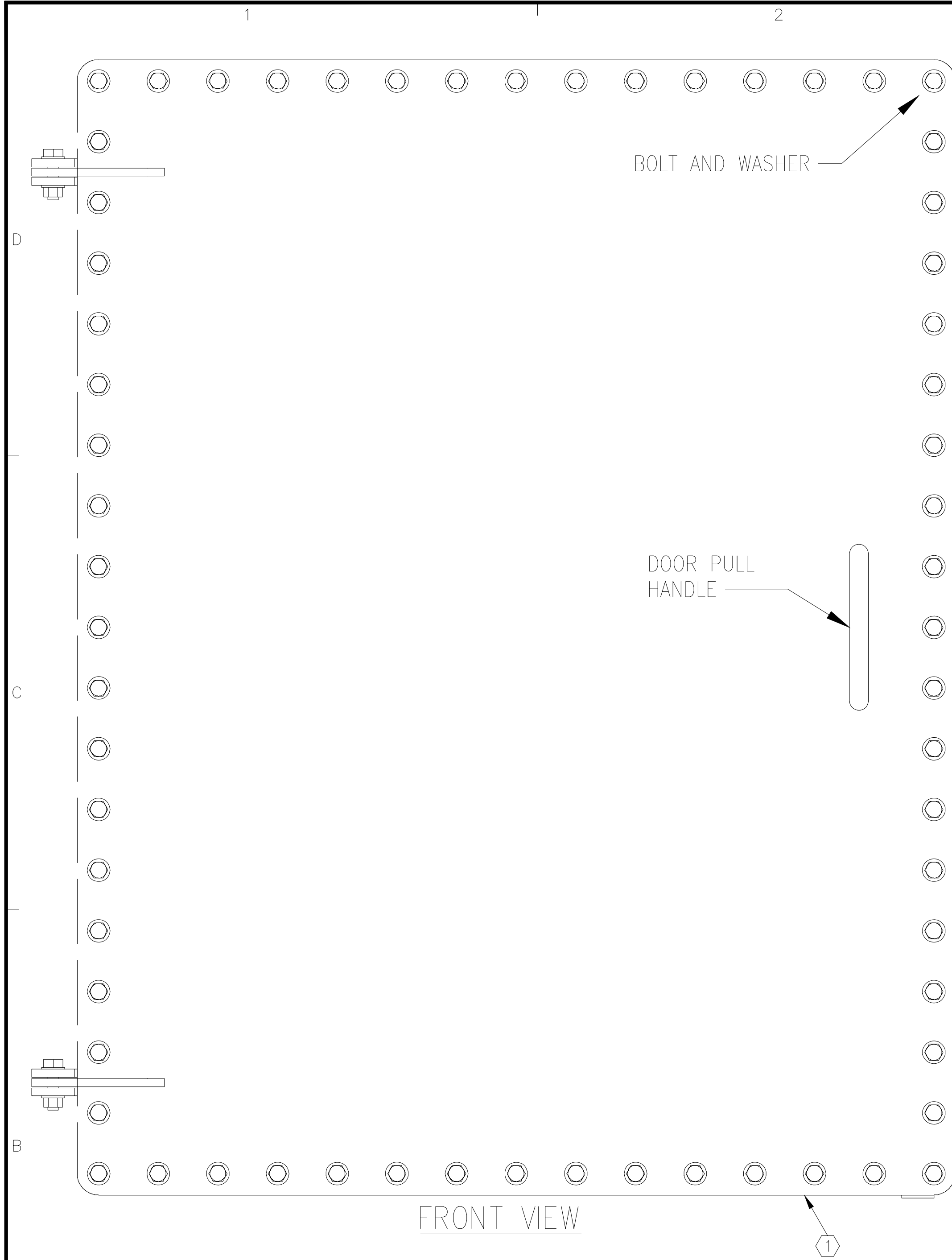
**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

PROJECT NO:	123503.01	NO.	1	REVISION/ACTION TAKEN	
DESIGNED BY:		DATE	1-31-24	100% SUBMITTAL	
DRAWN BY:		APPR.			
CHK'D BY:					
PROJ. MGR:	JMU				
DATE:	FEBRUARY 2023				
				NOT RELEASED FOR CONSTRUCTION BY	DATE

**LS 7
 ELECTRICAL
 RISER/1-LINE DIAGRAM**

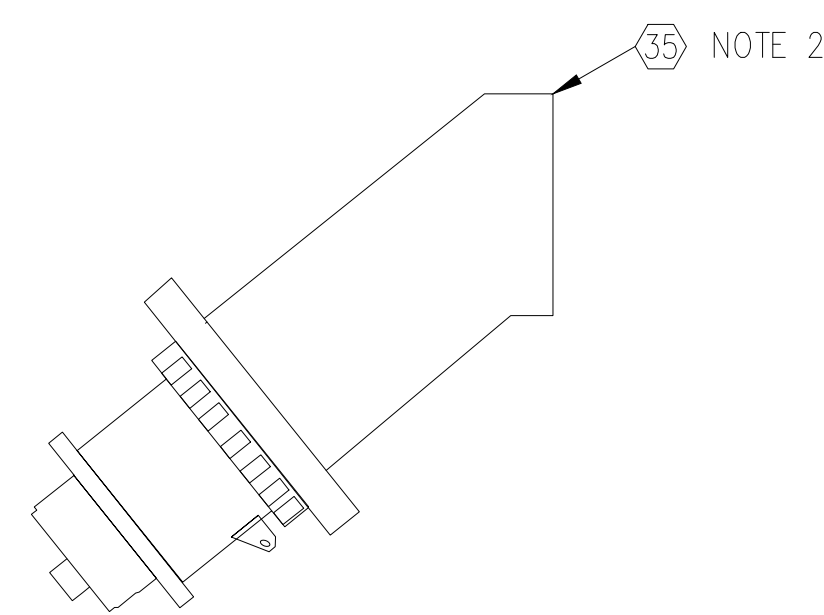
E-110

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NOTES:

- 1 THE EQUIPMENT AND MATERIALS REFERENCED ON THESE DRAWINGS ARE MEANT TO ESTABLISH A MINIMUM STANDARD FOR CAPABILITY AND QUALITY ASSURANCE. SUBSTITUTIONS OF ANY EQUIPMENT AND/OR MATERIALS ARE TO BE EQUAL OR BETTER THAN THE AFOREMENTIONED EQUIPMENT AND MATERIALS AND ARE SUBJECT TO APPROVAL BY THE OWNER/ENGINEER.
- 2 THE EMERGENCY RECEPTACLE IS TO BE MOUNTED ON THE LEFT SIDE OF THE ENCLOSURE 4" FROM THE TOP. UTILIZE THE 1/4" HUB OF THE ENCLOSURE TO CONNECT THE BACK BOX AND RECEPTACLE.



BASKERVILLE-DONOVAN, INC.
ENGINEERING THE SOUTH SINCE 1927
448 W. MAIN ST., PENSACOLA, FL 32502 (850)438-9661
ENGINEERING BUSINESS: EB-000340
Pensacola - Panama City Beach - Tallahassee - Mobile
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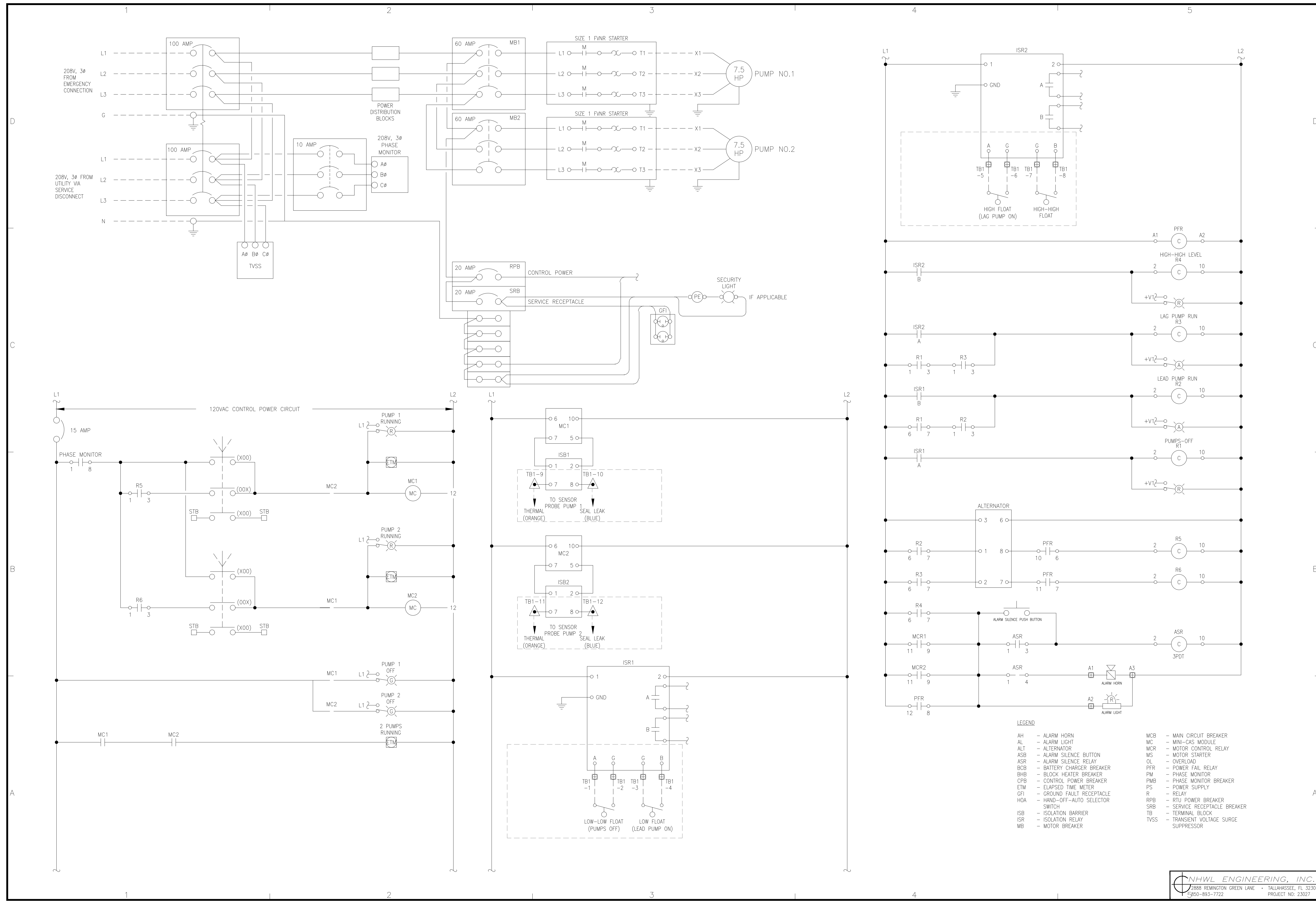
CEDAR KEY
SANITARY SEWER
LIFT STATION
REHABILITATION

PROJECT NO:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01	-	1-31-24	-	100% SUBMITTAL

LS 7
ELECTRICAL CONTROL
PANEL LAYOUT

E-111

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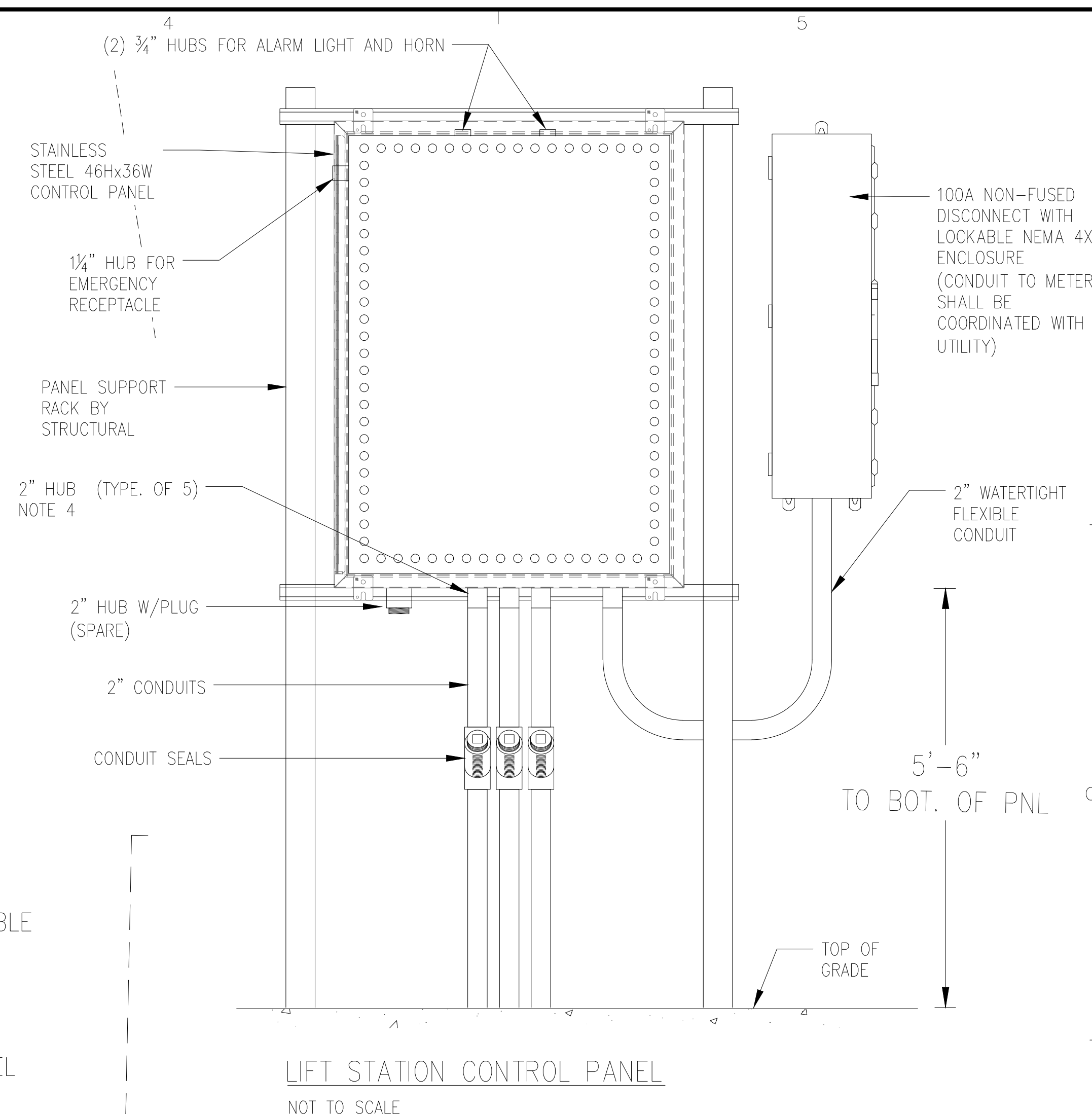
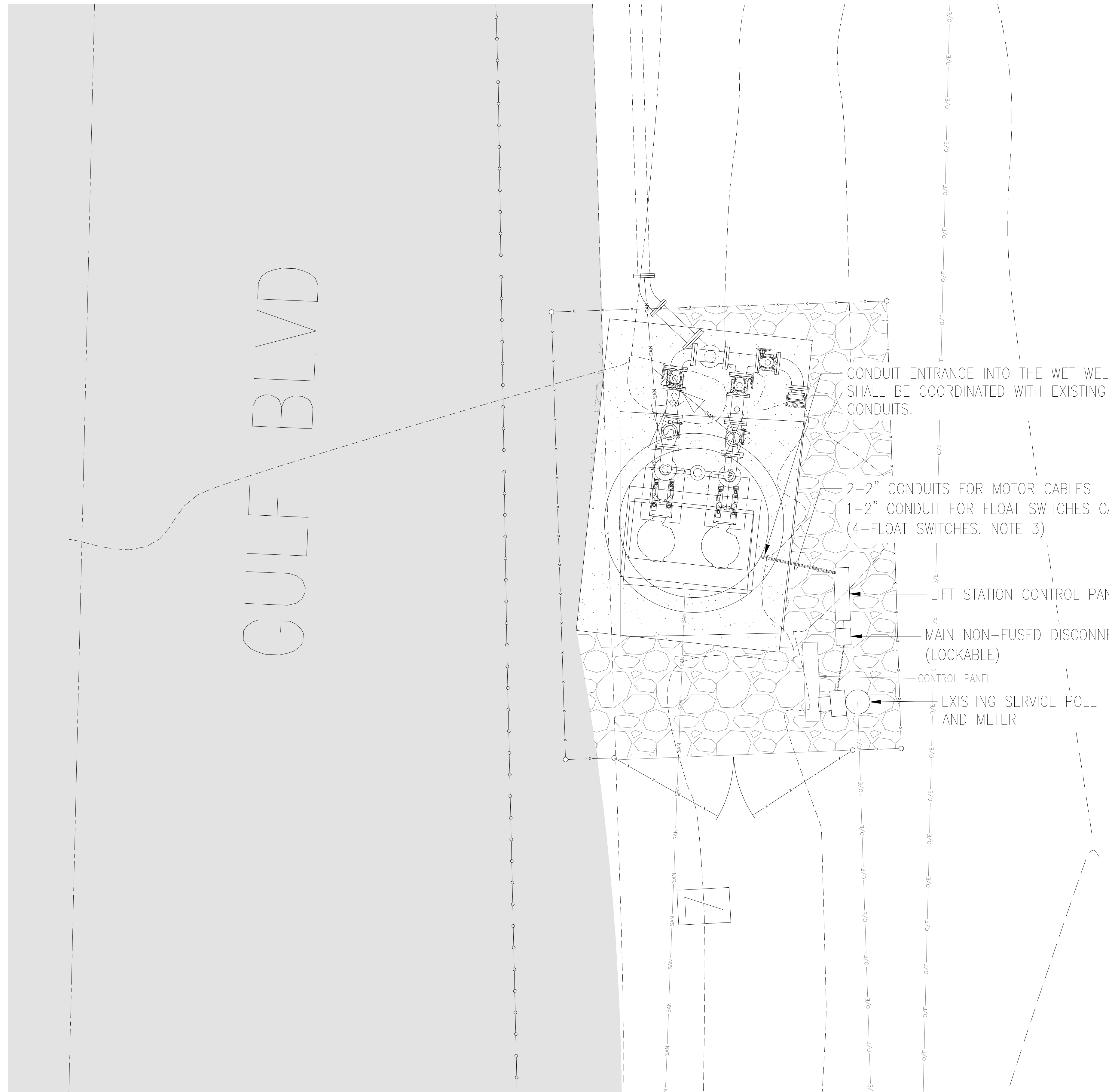


- LEGEND**
- AH - ALARM HORN
 - AL - ALARM LIGHT
 - ALT - ALTERNATOR
 - ASB - ALARM SILENCE BUTTON
 - ASR - ALARM SILENCE RELAY
 - BCB - BATTERY CHARGER BREAKER
 - BHB - BLOCK HEATER BREAKER
 - CPB - CONTROL POWER BREAKER
 - ETM - ELAPSED TIME METER
 - GFI - GROUND FAULT RECEPTACLE SWITCH
 - HOA - HAND-OFF-AUTO SELECTOR
 - ISB - ISOLATION BARRIER SWITCH
 - ISR - ISOLATION RELAY
 - MB - MOTOR BREAKER
 - MCB - MAIN CIRCUIT BREAKER
 - MC - MINI-CAS MODULE
 - MCR - MOTOR CONTROL RELAY
 - MS - MOTOR STARTER
 - OL - OVERLOAD
 - PFR - POWER FAIL RELAY
 - PM - PHASE MONITOR
 - PMB - PHASE MONITOR BREAKER
 - PS - POWER SUPPLY
 - R - RELAY
 - RPB - RTU POWER BREAKER
 - SRB - SERVICE RECEPTACLE BREAKER
 - TB - TERMINAL BLOCK
 - TVSS - TRANSIENT VOLTAGE SURGE SUPPRESSOR

**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

PROJECT NO.	DESIGNED BY:	NO.	DATE	APPR.	REVISION/ACTION TAKEN
123503.01		1	1-31-24	-	100% SUBMITTAL
	DRAWN BY:				
	CHK'D BY:				
	PROJ. MGR:				
	DATE:				

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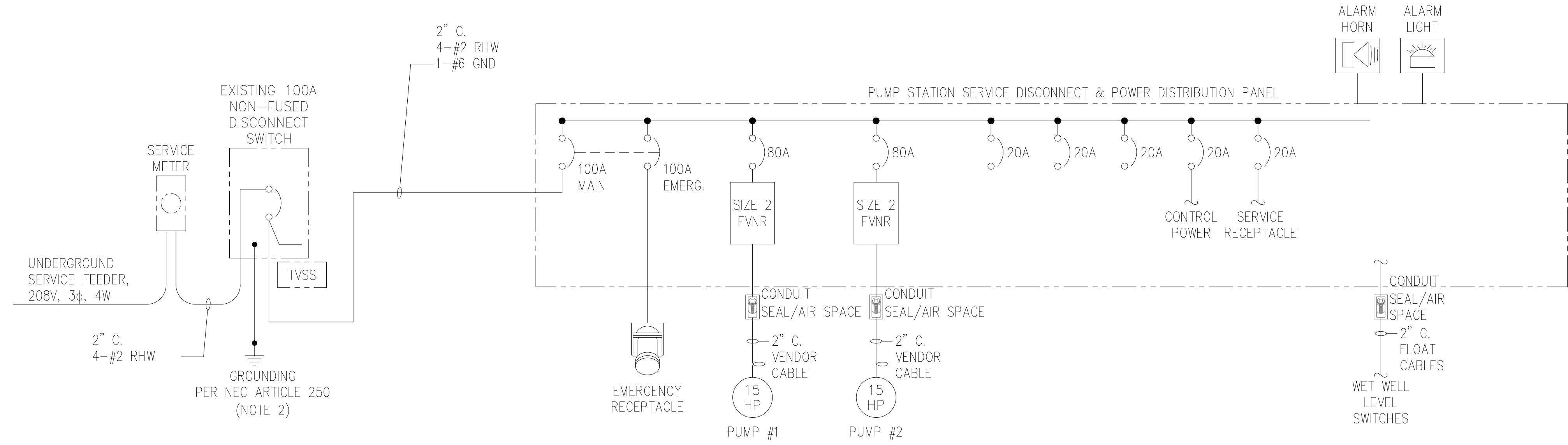


- NOTES:
- 1] COORDINATE REWORKING OF SERVICE CONDUITS AND METER ENCLOSURE WITH THE SERVING UTILITY (CENTRAL FLORIDA ELECTRICAL CO-OP; CHIEFLAND,FL)
 - 2] THE CONTROL PANEL SHALL BE INSTALLED ON THE SUPPORT STRUCTURE (SUPPLIED BY OTHERS) AT 5'-6" ABOVE GRADE TO THE BOTTOM OF THE PANEL. THE SUPPLY AND INSTALLATION OF STRUT/HARDWARE TO MOUNT THE PANEL TO THE SUPPORT IS PART OF THE ELECTRICAL WORK.
 - 3] THE FLOAT SWITCHES SHALL BE ANCHOR SCIENTIFIC MINI-FLOATS (SUSPENDED-TYPE-S) OR EQUAL. PROVIDE CABLES OF ADEQUATE LENGTH.
 - 4] MAIN DISCONNECT MAY BE MOUNTED ON THE BACK OF THE SUPPORT FRAME. MOUNT DISCONNECT AS HIGH AS POSSIBLE ON THE SUPPORT FRAME. THE CONDUIT FOR THE SERVICE SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT ON BOTH ENDS.
 - 5] CONDUIT FITTINGS/HUBS ARE PART OF THE PANEL/ENCLOSURE. THEY ARE INTENDED TO BE ATTACHED AS PART OF THE MANUFACTURING PROCESS.

LIFT STATION 9: ELECTRICAL DETAIL
SCALE: 1" = 2'

<p>BASKERVILLE-DONOVAN, INC. ENGINEERING THE SOUTH SINCE 1927 448 W. MAIN ST. PENSACOLA, FL 32502 (850)438-6661 ENGINEERING BUSINESS EB-0000340 Pensacola - Panama City Beach - Tallahassee - Mobile <small>This drawing is the property of BASKERVILLE-DONOVAN, INC. and is not to be reproduced in whole or in part. It is not to be used on any other project and is to be returned upon request.</small></p>	<p>CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION</p>										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">NO.</th> <th style="width: 10%;">DATE</th> <th style="width: 10%;">APPR.</th> <th style="width: 10%;">REVISION/ACTION TAKEN</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1-31-24</td> <td style="text-align: center;">-</td> <td style="text-align: center;">100% SUBMITTAL</td> </tr> </tbody> </table>	NO.	DATE	APPR.	REVISION/ACTION TAKEN	1	1-31-24	-	100% SUBMITTAL		
NO.	DATE	APPR.	REVISION/ACTION TAKEN								
1	1-31-24	-	100% SUBMITTAL								
<p>LS 9 ELECTRICAL SITE PLAN</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">PROJECT NO: 123503.01</td> <td style="width: 20%;">DESIGNED BY:</td> <td style="width: 20%;">DRAWN BY:</td> <td style="width: 20%;">CHK'D BY:</td> <td style="width: 20%;">PROJ. MGR: JMW</td> </tr> <tr> <td colspan="5" style="text-align: right;">DATE: FEBRUARY 2023</td> </tr> </table>	PROJECT NO: 123503.01	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR: JMW	DATE: FEBRUARY 2023				
PROJECT NO: 123503.01	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR: JMW							
DATE: FEBRUARY 2023											
<p>NHWL ENGINEERING, INC. 2888 REMINGTON GREEN LANE • TALLAHASSEE, FL 32308 905-893-7722 PROJECT NO: 23027</p>	<p>E-113</p>										

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LIFT STATION 6 RISER DIAGRAM

- NOTE:
- PUMP STATION WET WELL IS A CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION THAT REQUIRES THE USE OF CONDUIT SEALS, OR AIR SPACE PROVISION, BETWEEN THE WET WELL AND POSSIBLE SOURCES OF IGNITION. CONDUIT SEALS, OR AIR SPACE, SHALL BE PLACED WITHIN (18)EIGHTEEN INCHES OF THE PUMP STATION CONTROL PANEL ENCLOSURE.
 - GROUNDING SHALL BE TESTED TO VERIFY THAT RESISTANCE TO EARTH/GROUND IN LESS THAN 26 OHMS. ADDITIONAL GROUND RODS SHALL BE INSTALLED (AS REQUIRED) TO ESTABLISH A GROUNDING RESISTANCE OF LESS THAN 26 OHMS. THE GROUNDING TEST SHALL BE COORDINATED WITH AND WITNESSED BY THE OWNER'S REPRESENTATIVE. REFER TO THE OWNER'S STANDARD SPECIFICATIONS.

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	NEMA 6P ENCLOSURE W/6P HINGED DOOR AND GASKETS 304SS 48Hx36Wx12D NOMINAL	NEMACO	N6P-483612-304	1
2	BACK PANEL EPOXY COATED STEEL	NEMACO	N69-IP4836	1
3	HINGED SWING-OUT PANEL - 304SS W/3 POINT TURN LATCH HANDLE	NEMACO	-	1
4	POWER DISTRIBUTION BLOCK 3-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA363106	1
5	POWER DISTRIBUTION BLOCK 1-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA163106	1
6	EQUIPMENT GROUND BAR	SQUARE-D	PK9GTA	1
7	PHASE MONITOR RELAY SOCKET	ATC DIVERSIFIED	SLA-230-ALA RB-08	1
8	ALTERNATING RELAY - DUPLEX	ATC DIVERSIFIED	ARA-24-ADA	1
9	BREAKER-60A, THREE POLE	SQUARE-D	HDL36060	2
9A	EMERGENCY BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9B	MAIN BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9C	H/J FRAME MECHANICAL INTERLOCK FOR TOGGLE HANDLE	SQUARE-D	S29354	2
10	BREAKER-20A, SINGLE POLE	SQUARE-D	BDL16020	5
11	FULL VOLTAGE NON-REVERSING SIZE 2 STARTER	SQUARE-D	85365D01V02H305	2
12	SURGE PROTECTIVE DEVICE	SURGE SUPPRESSION, INC	LS2D-3Y1-D1XS	1
13	35mm DIN RAIL	SQUARE-D	9080MH320	AS REQ'D
14	FEED THROUGH TERMINAL	SQUARE-D	9080GM6	AS REQ'D
15	END BARRIER	SQUARE-D	9080GM6B	AS REQ'D
16	END CLAMP	SQUARE-D	9080MH410	AS REQ'D
17	INTRINSICALLY SAFE RELAY	R-K ELECTRONICS	ISR-24V-10K	2
18	GEMS ZENER BARRIER	TEQUIPMENT	54801	2
19	PUMP MONITORING/CONTROL RELAY w BASE	PUMP VENDOR		2
20	RELAY, OCTAL PLUG-IN, 3PDT 120VAC w/RELAY SOCKET	EATON	D3RF3A D3PA7	2
21	(NOT USED)	-	-	-
22	RELAY, OCTAL PLUG-IN, 3PDT 24VDC w/RELAY SOCKET	SQUARE-D	D3RF3T1 D3PA7	7
23	MINIATURE PLUG-IN RELAY - 24VDC	SQUARE-D	RXM4AB2BDPVM	1
24	PILOT LIGHT - w/GREEN LENSE	ALLEN-BRADLEY	800T-QTH2G	2
25	3 POSITION SELECTOR SWITCH w/"H-O-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2B 800T-X511	2
26	HOUR COUNTER PANEL METER	GRASSLIN	UMZ48E-12050U	3
27	PILOT LIGHT - w/RED LENSE	ALLEN-BRADLEY	800T-QTH2R	7
28	EXTERNAL RESET MECHANISM	SQUARE-D	9066RA1	1
29	DUPLEX SERVICE RECEPTACLE 20A, 125VAC, G.F.I. w/COVER	LEVITON	GFWT2-T	1
30	WIREWAY DUCT 2"x4" w/COVER	HOFFMAN	A200400WH A200CWH	AS REQ'D
31	LED ALARM BEACON - 12-24VDC, NEMA 4X	EDWARDS SIGNALING	94PLEDMR24AD	1
32	ALARM HORN - WEATHERPROOF, 24VDC, NEMA 4X	EDWARDS SIGNALING	877-G1	1
33	PUSH BUTTON - MOMENTARY CONTACT, BLACK, 1 NO	ALLEN-BRADLEY	800T-B2D1	1
34	BREAKER-10A, THREE POLE	SQUARE-D	QOU310	1
35	EMERGENCY RECEPTACLE - 100A, 3φ 4 WIRE, NEMA 6P/IP67 W/BACK BOX	LEVITON	4100R9W BX100-V	1
36	VIBRATING HORN 120VAL NEMA 4X	EDWARDS	876-N5	1
37	FLASHING ALARM LIGHT - RED LED MICROLERT NEMA 6P CAPABLE	TOMAR ELECTRONICS	290LF-120-240	1

BOM NOTES:
 1 VIBRATING HORN HAS A NEMA 4X ENCLOSURE. THEREFORE CONDUIT INTO THE NEMA 6P PANEL SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT.

BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST. PENSACOLA, FL 32502 (850) 438-9681
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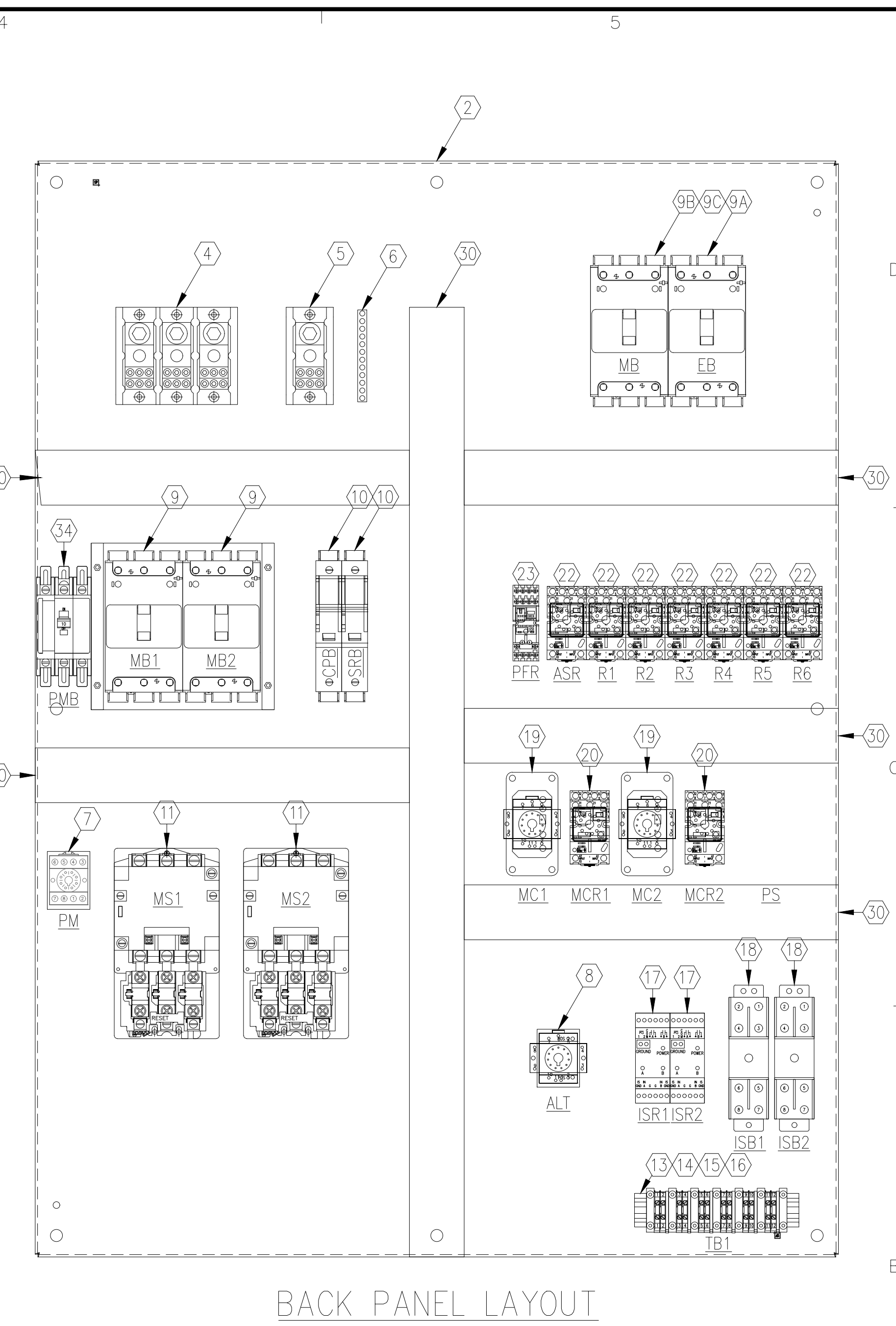
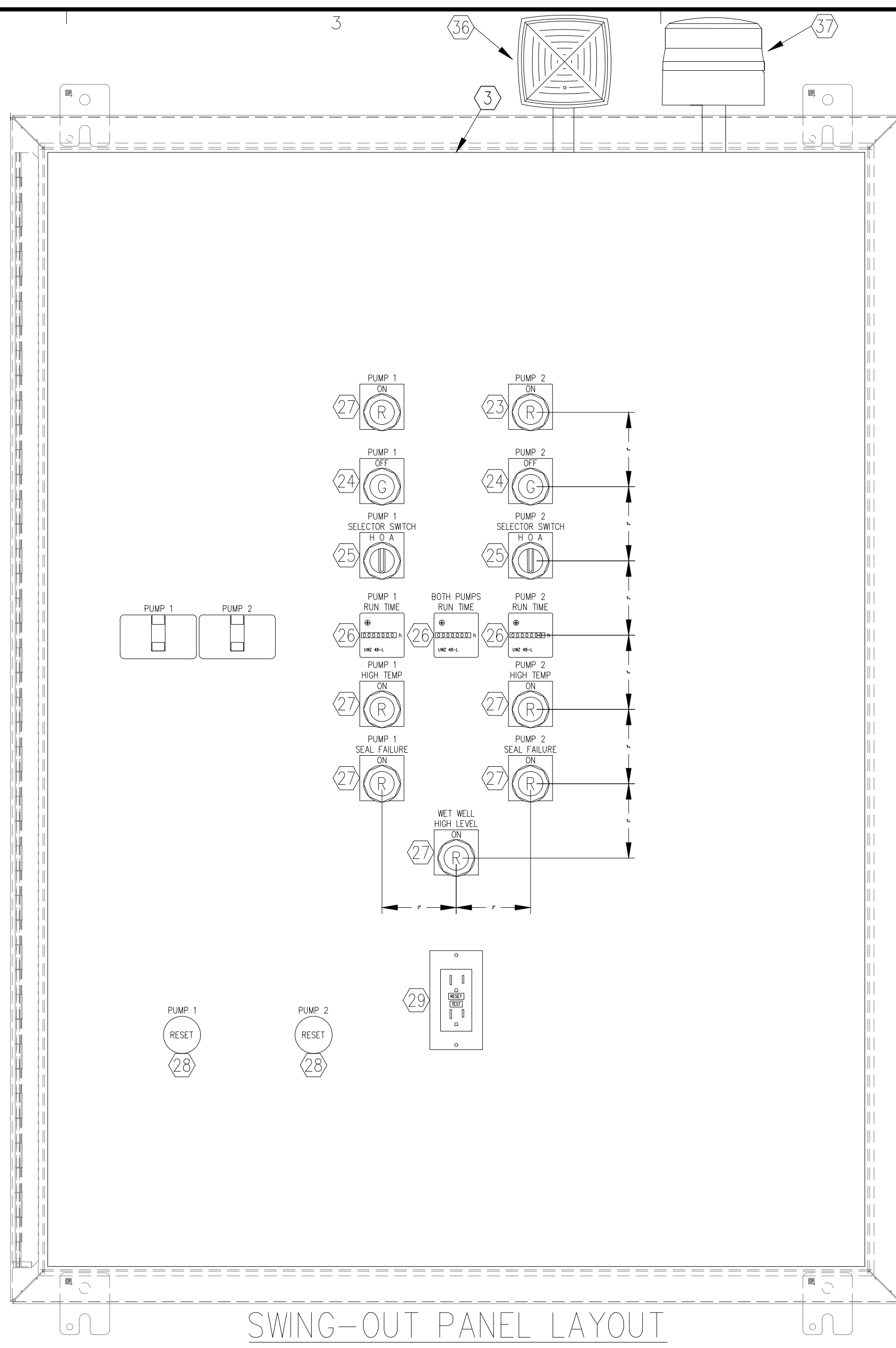
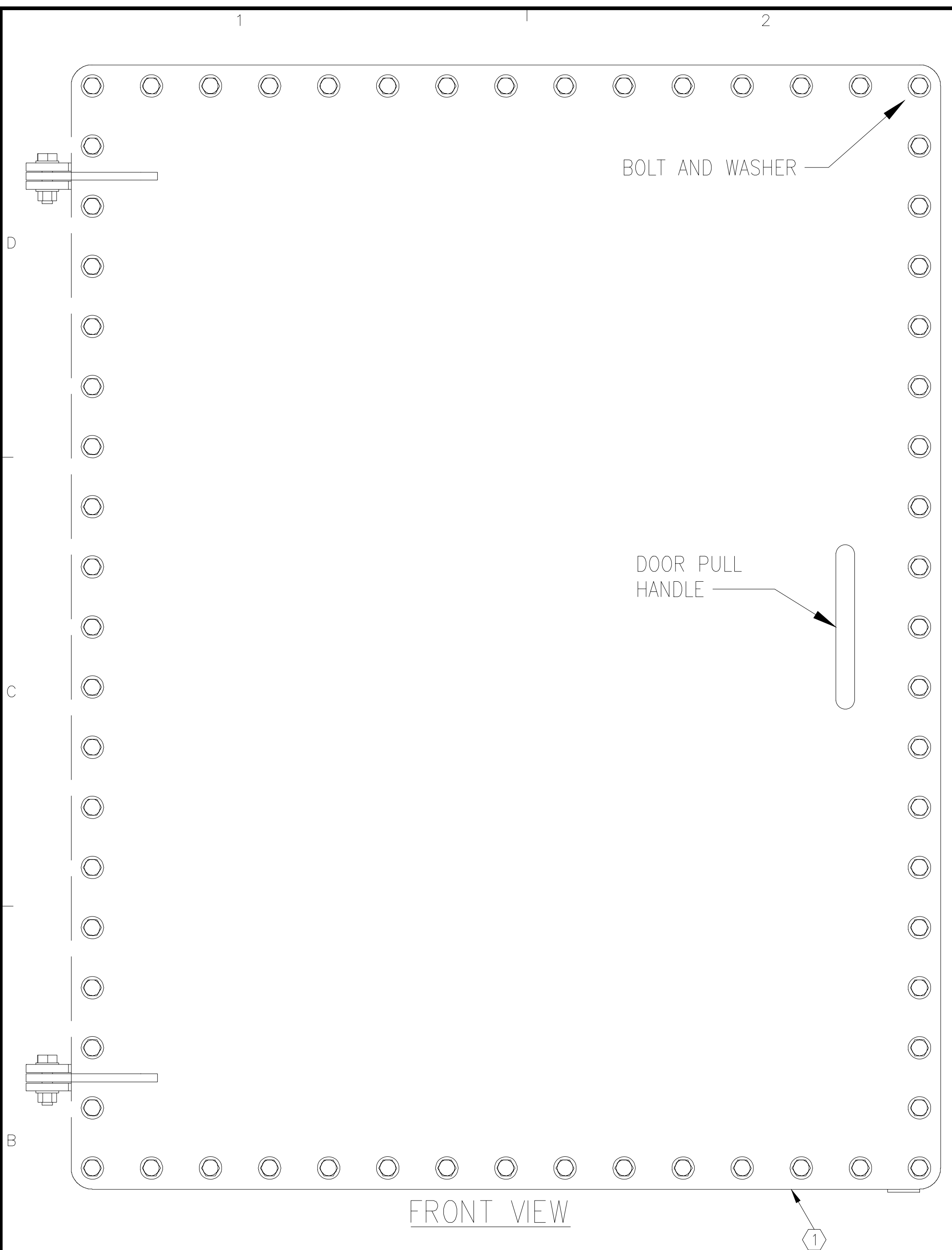
**CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION**

PROJECT NO:	123503.01	DESIGNED BY:		NO.	1	DATE	1-31-24	APPR.		REVISION/ACTION TAKEN	100% SUBMITTAL
DRAWN BY:		CHK'D BY:									
PROJ. MGR:	JWJ										
DATE:	FEBRUARY 2023										NOT RELEASED FOR CONSTRUCTION BY
											DATE

**LS 9
 ELECTRICAL
 RISER/1-LINE DIAGRAM**

E-114

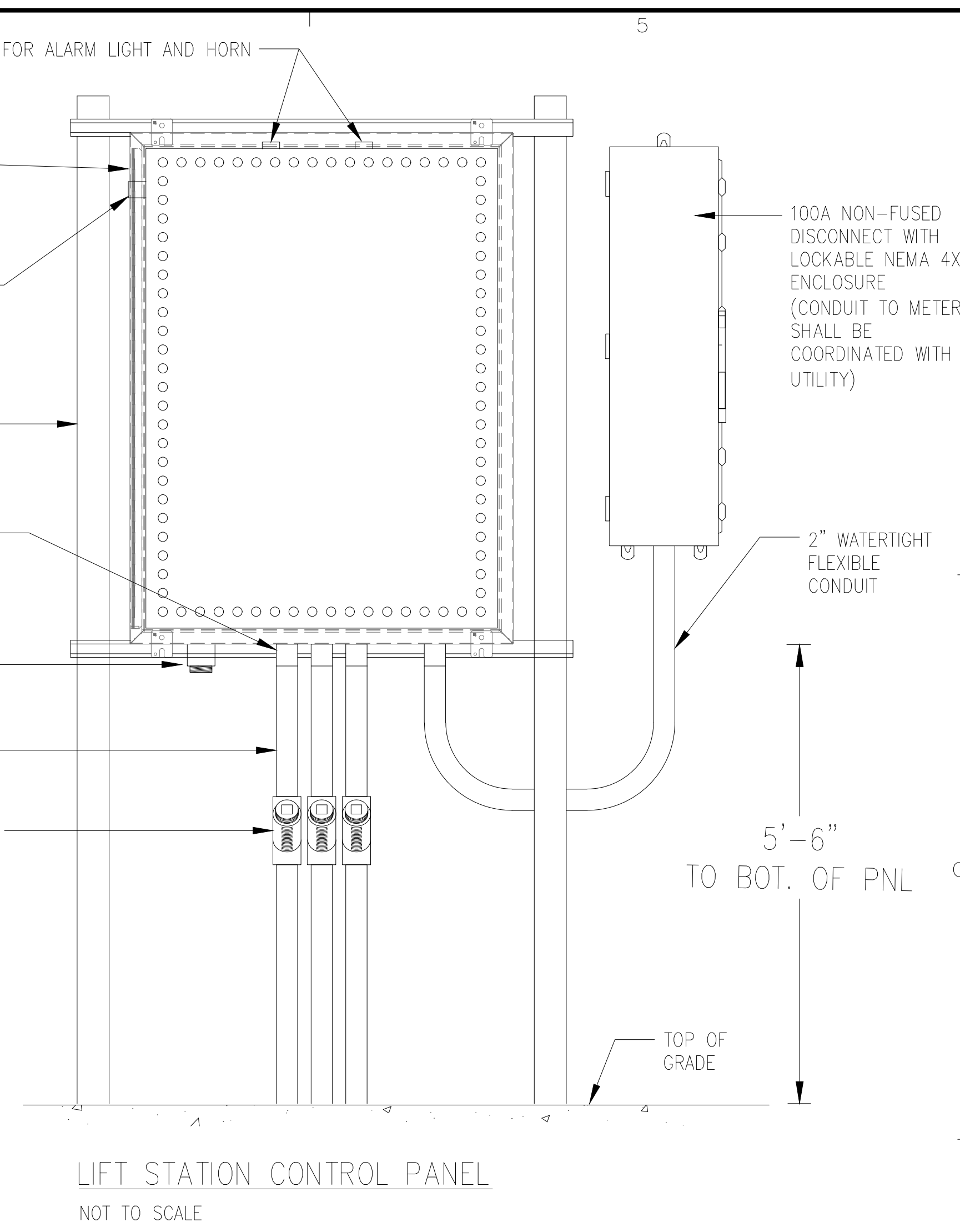
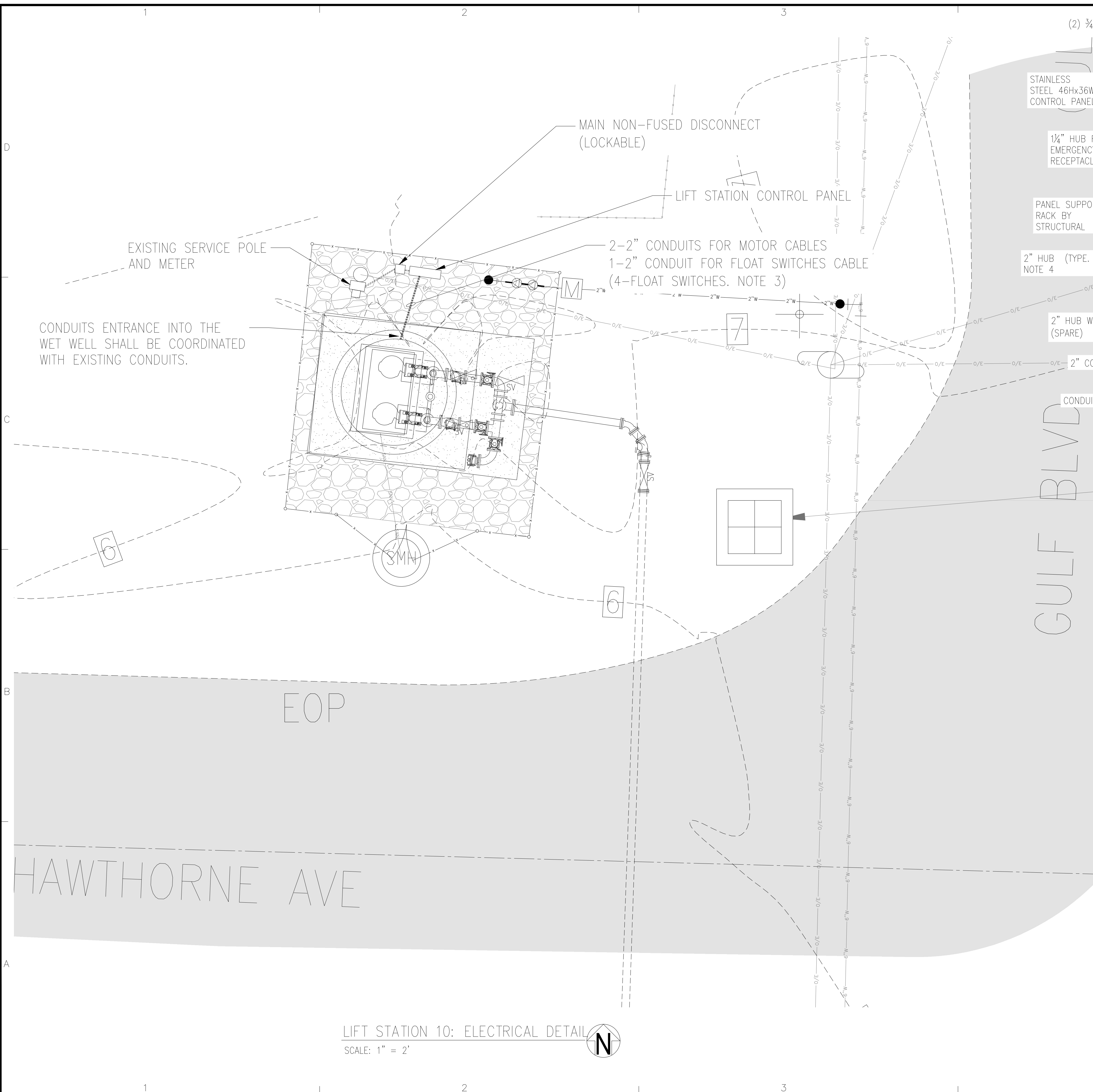
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- NOTES:
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BASKERVILLE-DONOVAN, INC. ENGINEERING THE SOUTH SINCE 1927 448 W. MAIN ST., PENSACOLA, FL 32502 (850)438-9661 ENGINEERING BUSINESS: EB-000340 Pensacola - Panama City Beach - Tallahassee - Mobile <small>This drawing is the property of BASKERVILLE-DONOVAN, INC. and is not to be reproduced in whole or in part. It is not to be used on any other project and is to be returned upon request.</small>	
CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION	
PROJECT NO: 123503.01	REVISION/ACTION TAKEN 100% SUBMITTAL
DESIGNED BY: DRAWN BY: CHK'D BY: PROJ. MGR: JMW DATE: FEBRUARY 2023	APPR: DATE: 1-31-24 NOT RELEASED FOR CONSTRUCTION BY: _____ DATE: _____
LS 9 ELECTRICAL CONTROL PANEL LAYOUT	
E-115	

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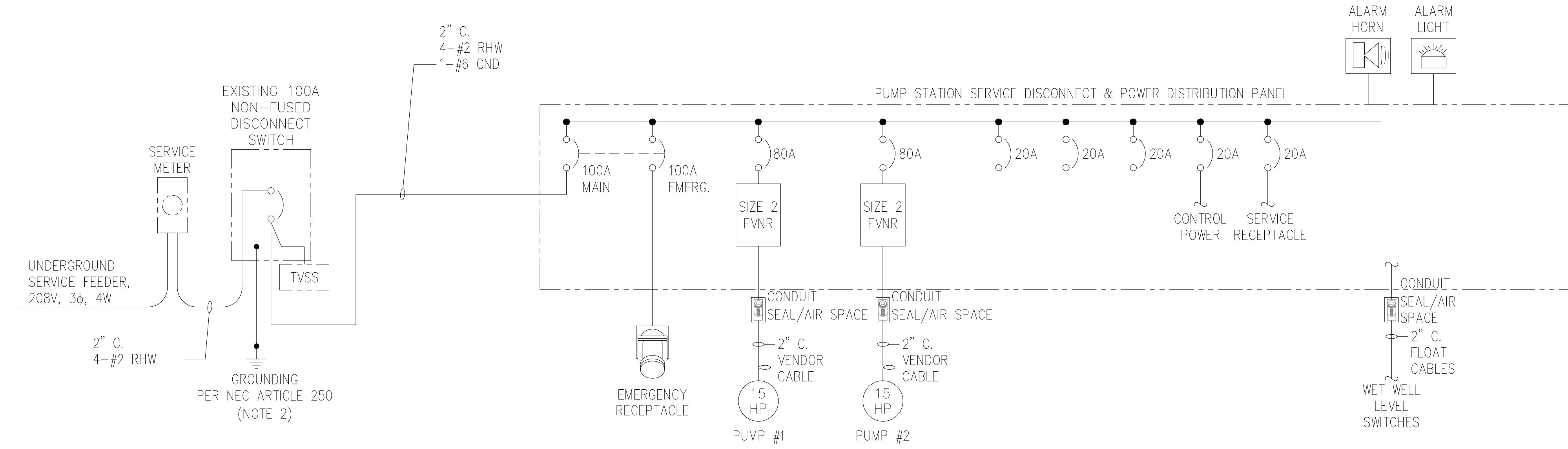


- NOTES:
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 - 2] THE CONTROL PANEL SHALL BE INSTALLED ON THE SUPPORT STRUCTURE (SUPPLIED BY OTHERS) AT 5'-6" ABOVE GRADE TO THE BOTTOM OF THE PANEL. THE SUPPLY AND INSTALLATION OF STRUT/HARDWARE TO MOUNT THE PANEL TO THE SUPPORT IS PART OF THE ELECTRICAL WORK.
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LIFT STATION 10: ELECTRICAL DETAIL
SCALE: 1" = 2'

BASKERVILLE-DONOVAN, INC. ENGINEERING THE SOUTH SINCE 1927 448 W. MAIN ST. PENSACOLA, FL 32502 (850) 438-6661 ENGINEERING BUSINESS EB-0000340 <small>Pensacola - Panama City Beach - Tallahassee - Mobile</small> <small>This drawing is the property of BASKERVILLE-DONOVAN, INC. and is not to be reproduced in whole or in part. It is not to be used on any other project and is to be returned upon request.</small>	
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CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION	
PROJECT NO: 123503.01	REVISION/ACTION TAKEN 100% SUBMITTAL
DESIGNED BY: DRAWN BY: PROJ. MGR: JMU DATE: FEBRUARY 2023	APPR. DATE: 1-31-24 NOT RELEASED FOR CONSTRUCTION BY DATE
LS 10 ELECTRICAL SITE PLAN	
E-117	

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LIFT STATION 6 RISER DIAGRAM

- NOTE:
- PUMP STATION WET WELL IS A CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATION THAT REQUIRES THE USE OF CONDUIT SEALS, OR AIR SPACE PROVISION, BETWEEN THE WET WELL AND POSSIBLE SOURCES OF IGNITION. CONDUIT SEALS, OR AIR SPACE, SHALL BE PLACED WITHIN (18)EIGHTEEN INCHES OF THE PUMP STATION CONTROL PANEL ENCLOSURE.
 - GROUNDING SHALL BE TESTED TO VERIFY THAT RESISTANCE TO EARTH/GROUND IN LESS THAN 26 OHMS. ADDITIONAL GROUND RODS SHALL BE INSTALLED (AS REQUIRED) TO ESTABLISH A GROUNDING RESISTANCE OF LESS THAN 26 OHMS. THE GROUNDING TEST SHALL BE COORDINATED WITH AND WITNESSED BY THE OWNER'S REPRESENTATIVE. REFER TO THE OWNER'S STANDARD SPECIFICATIONS.

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	NEMA 6P ENCLOSURE W/6P HINGED DOOR AND GASKETS 304SS 48Hx36Wx12D NOMINAL	NEMACO	N6P-483612-304	1
2	BACK PANEL EPOXY COATED STEEL	NEMACO	N69-IP4836	1
3	HINGED SWING-OUT PANEL - 304SS W/3 POINT TURN LATCH HANDLE	NEMACO	-	1
4	POWER DISTRIBUTION BLOCK 3-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA363106	1
5	POWER DISTRIBUTION BLOCK 1-POLE 400-#6 1 IN. 2-#14 6 OUT	SQUARE-D	9080LBA163106	1
6	EQUIPMENT GROUND BAR	SQUARE-D	PK9GTA	1
7	PHASE MONITOR RELAY SOCKET	ATC DIVERSIFIED	SLA-230-ALA RB-08	1
8	ALTERNATING RELAY - DUPLEX	ATC DIVERSIFIED	ARA-24-ADA	1
9	BREAKER-60A, THREE POLE	SQUARE-D	HDL36060	2
9A	EMERGENCY BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9B	MAIN BREAKER - 100A, THREE-POLE	SQUARE-D	HDL36100	1
9C	H/J FRAME MECHANICAL INTERLOCK FOR TOGGLE HANDLE	SQUARE-D	S29354	2
10	BREAKER-20A, SINGLE POLE	SQUARE-D	BDL16020	5
11	FULL VOLTAGE NON-REVERSING SIZE 2 STARTER	SQUARE-D	85365D01V02H305	2
12	SURGE PROTECTIVE DEVICE	SURGE SUPPRESSION, INC	LSED-3Y1-D1XS	1
13	35mm DIN RAIL	SQUARE-D	9080MH320	AS REQ'D
14	FEED THROUGH TERMINAL	SQUARE-D	9080GM6	AS REQ'D
15	END BARRIER	SQUARE-D	9080GM6B	AS REQ'D
16	END CLAMP	SQUARE-D	9080MH410	AS REQ'D
17	INTRINSICALLY SAFE RELAY	R-K ELECTRONICS	ISR-24V-10K	2
18	GEMS ZENER BARRIER	TEQUIPMENT	54801	2
19	PUMP MONITORING/CONTROL RELAY w BASE	PUMP VENDOR		2
20	RELAY, OCTAL PLUG-IN, 3PDT 120VAC w/RELAY SOCKET	EATON	D3RF3A D3PA7	2
21	(NOT USED)	-	-	-
22	RELAY, OCTAL PLUG-IN, 3PDT 24VDC w/RELAY SOCKET	SQUARE-D	D3RF3T1 D3PA7	7
23	MINIATURE PLUG-IN RELAY - 24VDC	SQUARE-D	RXM4AB2BDPVM	1
24	PILOT LIGHT - w/GREEN LENSE	ALLEN-BRADLEY	800T-QTH2G	2
25	3 POSITION SELECTOR SWITCH w/"H-O-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2B 800T-X511	2
26	HOUR COUNTER PANEL METER	GRASSLIN	UMZ48E-12050U	3
27	PILOT LIGHT - w/RED LENSE	ALLEN-BRADLEY	800T-QTH2R	7
28	EXTERNAL RESET MECHANISM	SQUARE-D	9066RA1	1
29	DUPLEX SERVICE RECEPTACLE 20A, 125VAC, G.F.I. w/COVER	LEVITON	GFWT2-T	1
30	WIREWAY DUCT 2"x4" w/COVER	HOFFMAN	A200400WH A200CWH	AS REQ'D
31	LED ALARM BEACON - 12-24VDC, NEMA 4X	EDWARDS SIGNALING	94PLEDMR24AD	1
32	ALARM HORN - WEATHERPROOF, 24VDC, NEMA 4X	EDWARDS SIGNALING	877-G1	1
33	PUSH BUTTON - MOMENTARY CONTACT, BLACK, 1 NO	ALLEN-BRADLEY	800T-B2D1	1
34	BREAKER-10A, THREE POLE	SQUARE-D	QOU310	1
35	EMERGENCY RECEPTACLE - 100A, 3φ 4 WIRE, NEMA 6P/IP67 W/BACK BOX	LEVITON	4100R9W BX100-V	1
36	VIBRATING HORN 120VAL NEMA 4X	EDWARDS	876-N5	1
37	FLASHING ALARM LIGHT - RED LED MICROLERT NEMA 6P CAPABLE	TOMAR ELECTRONICS	290LF-120-240	1

BOM NOTES:
 1 VIBRATING HORN HAS A NEMA 4X ENCLOSURE. THEREFORE CONDUIT INTO THE NEMA 6P PANEL SHALL BE SEALED WITH SILICONE OR SIMILAR SEALANT.

BASKERVILLE-DONOVAN, INC.
 ENGINEERING THE SOUTH SINCE 1927
 448 W. MAIN ST. PENSACOLA, FL 32502 (850)438-9681
 ENGINEERING BUSINESS EB-000040
 Pensacola - Panama City Beach - Tallahassee - Mobile
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CEDAR KEY
 SANITARY SEWER
 LIFT STATION
 REHABILITATION

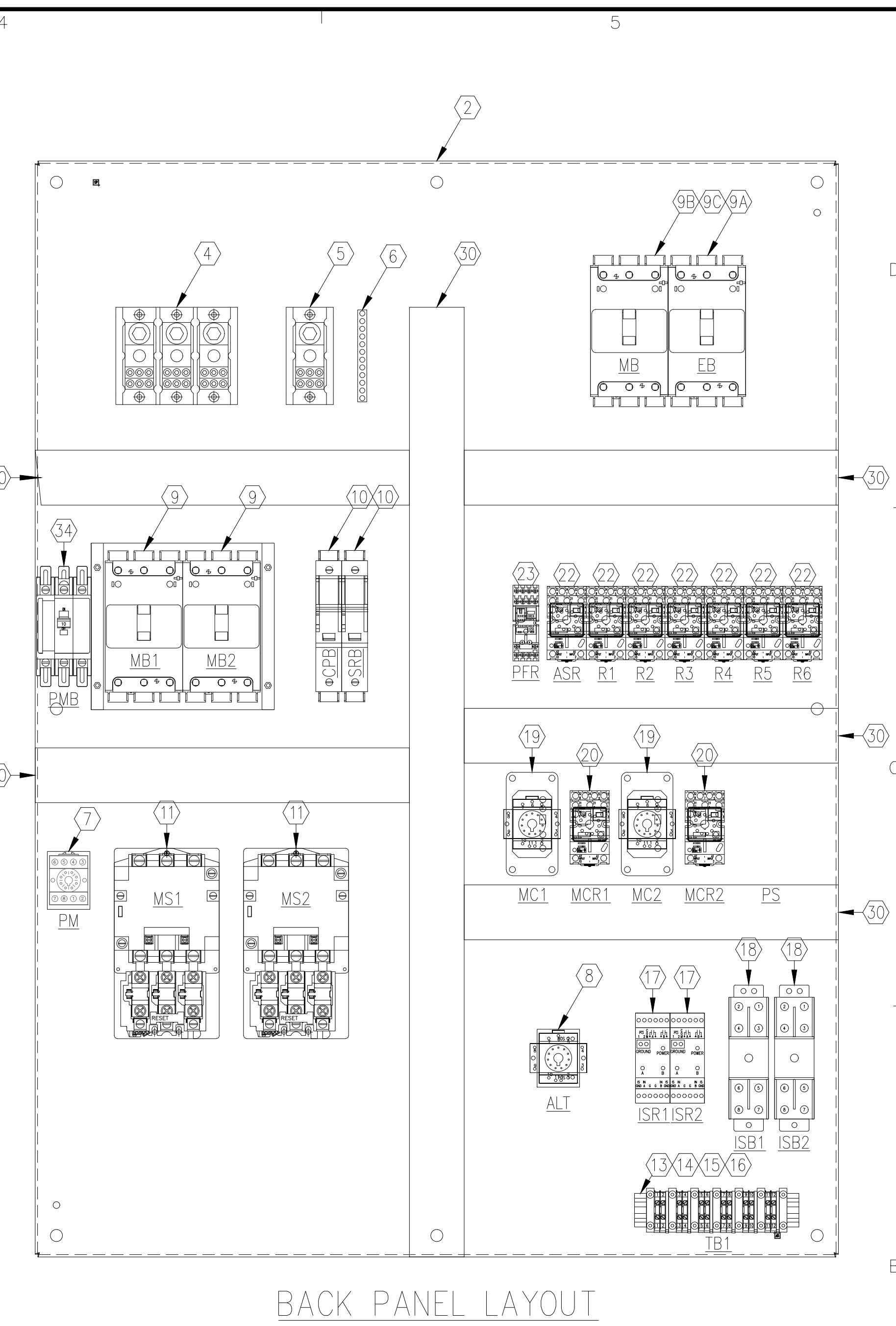
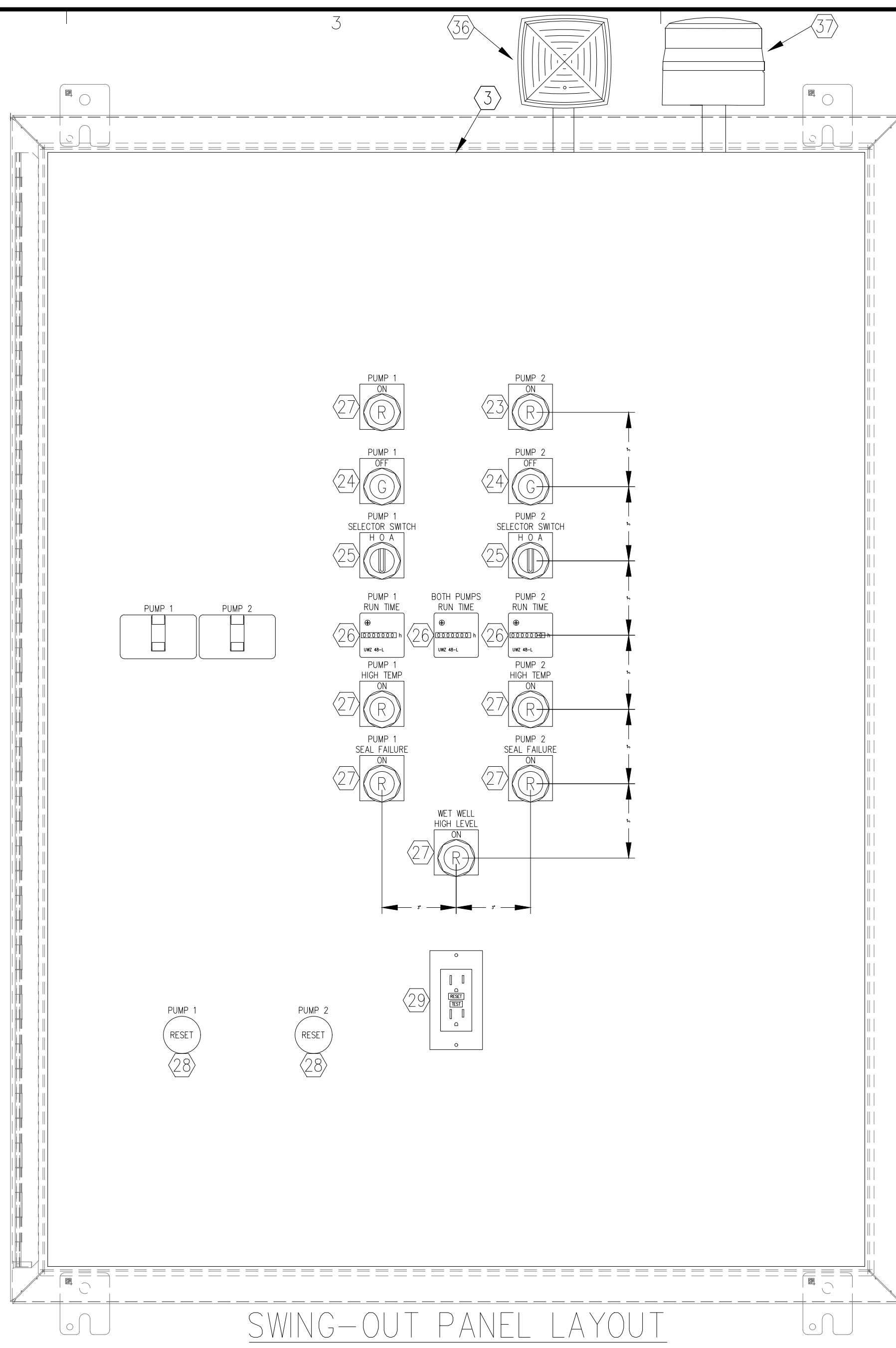
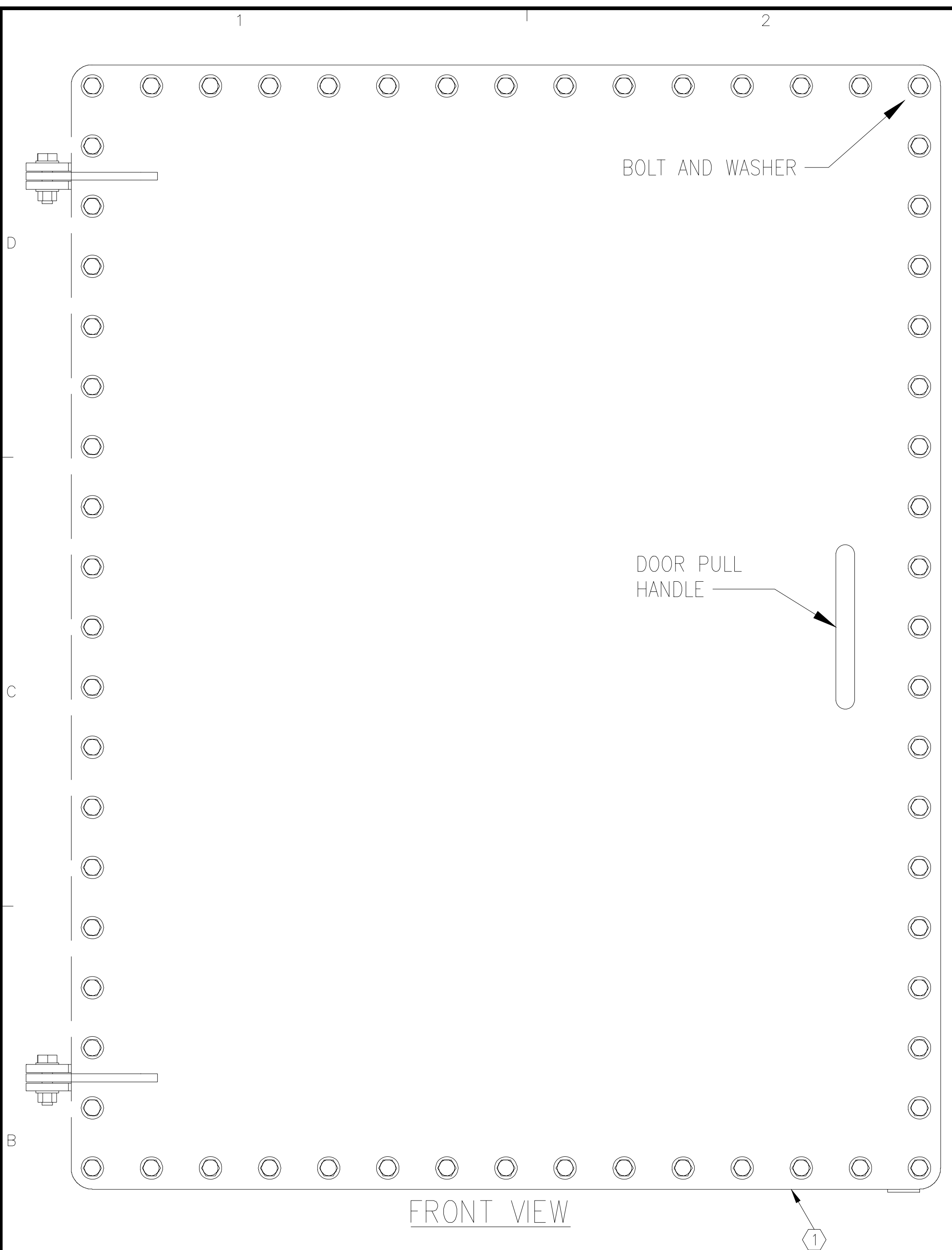
PROJECT NO.	DESIGNED BY:	DRAWN BY:	CHK'D BY:	PROJ. MGR:	DATE:
123503.01				JWJ	FEBRUARY 2023

NO.	DATE	APPR.	REVISION/ACTION TAKEN
1	1-31-24	-	100% SUBMITTAL

NO.	DATE	APPR.	REVISION/ACTION TAKEN
			NOT RELEASED FOR CONSTRUCTION BY

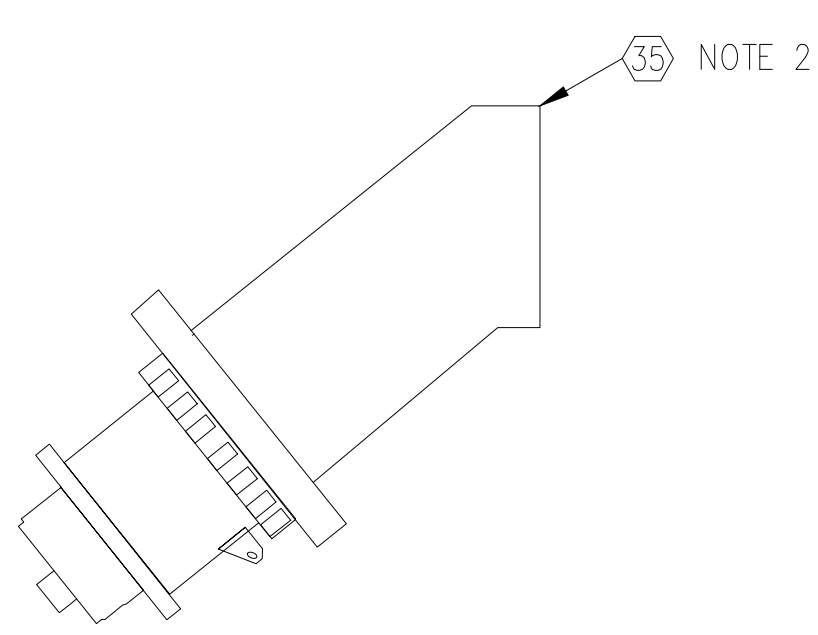
LS 10
 ELECTRICAL
 RISER/1-LINE DIAGRAM

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NOTES:

- 1 THE EQUIPMENT AND MATERIALS REFERENCED ON THESE DRAWINGS ARE MEANT TO ESTABLISH A MINIMUM STANDARD FOR CAPABILITY AND QUALITY ASSURANCE. SUBSTITUTIONS OF ANY EQUIPMENT AND/OR MATERIALS ARE TO BE EQUAL OR BETTER THAN THE AFOREMENTIONED EQUIPMENT AND MATERIALS AND ARE SUBJECT TO APPROVAL BY THE OWNER/ENGINEER.
- 2 THE EMERGENCY RECEPTACLE IS TO BE MOUNTED ON THE LEFT SIDE OF THE ENCLOSURE 4" FROM THE TOP. UTILIZE THE 1/4" HUB OF THE ENCLOSURE TO CONNECT THE BACK BOX AND RECEPTACLE.



<p>BASKERVILLE-DONOVAN, INC. ENGINEERING THE SOUTH SINCE 1927 448 W. MAIN ST., PENSACOLA, FL 32502 (850) 438-9661 PENSACOLA - PANAMA CITY BEACH - TALLAHASSEE - MOBILE ENGINEERING BUSINESS: EB-000040</p>	
<p>CEDAR KEY SANITARY SEWER LIFT STATION REHABILITATION</p>	
<p>PROJECT NO: 123503.01</p>	<p>REVISION/ACTION TAKEN</p>
<p>DESIGNED BY:</p>	<p>100% SUBMITTAL</p>
<p>DRAWN BY:</p>	<p>DATE: 1-31-24</p>
<p>CHK'D BY:</p>	<p>APPR:</p>
<p>PROJ. MGR: JNU</p>	<p>NOT RELEASED FOR CONSTRUCTION BY DATE</p>
<p>DATE: FEBRUARY 2023</p>	
<p>LS 10 ELECTRICAL CONTROL PANEL LAYOUT</p>	
<p>E-119</p>	

APPENDIX I
LEGAL ADVERTISEMENT

LEGAL ADVERTISEMENT

CEDAR KEY WATER AND SEWER DISTRICT

INVITATION TO BID ITB 2024-02

FOR:

SANITARY SEWER LIFT STATION REHABILITATION

Advertisement Begin Date: March 27, 2024

Bids Due Date/Time: April 30, 2024 @ 3:00 p.m. EST

The Cedar Key Water and Sewer District (the “District”) is seeking bids from qualified Contractors to provide construction services for the construction and rehabilitation of five of the District’s sanitary sewer lift stations. The lift station rehabilitation includes the demolition of the existing lift station mechanical & electrical components, the installation of new pumps, new discharge piping, valves, and fittings, lining the interior of the existing wet well structure, a new wet well lid and concrete pad, and electrical modifications to make the lift station a complete and operable system.

Sealed proposals for the above-described construction project will be received at the **Cedar Key Water and Sewer District Office, Attn: Alicia M. Johns, 510 3rd Street, Cedar Key, Florida 32625, until April 30, 2024 @ 3:00 p.m. Eastern Standard Time (EST)**, at which time the bids will be opened and read aloud. Bids received after said time will be returned unopened.

If you are interested in submitting a proposal, you **must** obtain the complete solicitation package, which contains additional information regarding this solicitation including detailed technical specifications and construction plans and instructions related to submitting a bid, from the District’s website at www.ckwater.org or by contacting the District’s Office at:

Alicia M. Johns
alicia@ckwater.org
(352) 543-5285

All inquiries and requests for clarification concerning the solicitation shall be submitted in writing and in accordance with the solicitation. Verbal clarifications will not be provided.

The District reserves the right to waive informalities in any bid; reject any or all proposals, in whole or in part; re-bid a project, in whole or in part; and to accept a proposal that in its judgment is the lowest and best bid of a responsible bidder. The District does not discriminate on the basis of race, color, national origin, sex, religion, age, marital status and disability/handicapped status in employment or provision of service.

ADA – Special Accommodations: Any person requiring accommodations by the District due to a disability should call Alicia M. Johns at (352) 543-5285 at least five (5) days prior to any pre-response conference, response opening, or meeting. If you are hearing or speech impaired, please

contact Alicia M. Johns via the Florida Relay Service, which can be reached at 1-800-955-8771 (TDD).