



ADDENDUM NO. 02

To: Prospective Bidders & Plan Holders

From: Craig A. Johnson, P.E.
Crist Engineers, Inc.

Date: June 21, 2023

Project: Gulpha Basin Pump Station Improvements
Hot Springs, Arkansas

Original Bid Date: June 26, 2023

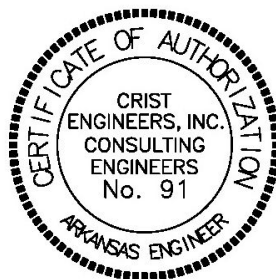
Revised Bid Date: July 17, 2023

Bid Time: 2:00 PM

Location: Hot Springs Purchasing Office
324 Malvern Avenue
Hot Springs, Arkansas 71901

The BIDDER shall properly acknowledge Addendum No. 02 as required in Article 3 of Document 004100 on the Bid Form as confirmation that the BIDDER has examined the following Addenda and the related changes to the Contract Documents. Lack of proper acknowledgement on the Bid Form may deem a bid non-responsive.

The Contract Documents dated May 31, 2023, are hereby amended as follows:





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IMPORTANT REMINDERS:

The bid opening for this project has changed from the Bid Set documents.

The Bid Date per this Addendum (Addendum No. 02) is **July 17, 2023, at 2:00 PM**

Please reference Section 002113 - Instructions to Bidders, provided in the contract documents for information required for the bid submission.

Please reference Article 7 for attachment to the bid.

CLARIFICATIONS:

1. Contractor Questions

- A. A list of all contractor questions received to date is attached to this addendum as supplemental information for contractors use.

BID DOCUMENTS:

1. Table of Contents

- A. Delete in its entirety and replace with Table of Contents, attached hereto.

2. Invitation to Bid

- A. Delete in its entirety and replace with Invitation to Bid, attached hereto.

3. Statement of Compliance

- A. Article 7.01.D - Statement of Compliance is hereby deleted.

4. Advertisement for Bids

- A. Modify the first paragraph as follows:

- i. Sealed Bids for BID #HS-23-055 Gulpha Basin Pump Station Improvements will be received by the City of Hot Springs Purchasing Department at the Hot Springs Purchasing Office, 324 Malvern Avenue, Hot Springs, Arkansas 71901 until ~~2:00 PM CST on June 26, 2023, 2:00 PM CST on July 17, 2023~~, at which time the Bids received will be publicly opened and read aloud. The Project generally consists of constructing a sanitary sewer pump station with a firm capacity of 22 million gallons per day. Components of the pump station include the installation of owner procured submersible pumps, owner procured generator and automatic transfer switch, screening structure, wetwell,



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valve vault, surge tanks, slide gates with electric motor operators, gravity sanitary sewer, manholes, electrical components, support building, fencing, yard piping and associated appurtenances, located near Catherine Heights Road and Highway 70 in Hot Springs, Arkansas.

5. Section 004100 – Bid Form

- A. Item No. **"4"** Pump Station shall be modified to Item No. **"4A"** Pump Station.

6. Appendices:

- A. Add Appendix D **Section 333219 Submersible Wastewater Pumps "Owner Precured Equipment" Scope of Supply**, attached hereto:
B. Add Appendix E **Section 264810 and Section 264820 Generator "Owner Precured Equipment" and Automatic Transfer Switch "Owner Precured Equipment" Scope of Supply**, attached hereto:

SPECIFICATIONS:

1. Section 068310 – Fiberglass Reinforced Paneling

- A. Add specification 068310 – Fiberglass Reinforced Paneling, attached hereto.

2. Section 331216 – Wastewater Valves

- A. Delete in its entirety and replace with Wastewater Valves, attached hereto.

3. Section 333623 – Bladder Style Sewage Surge Tanks

- A. Paragraph 2.2.D: Modify as follows:
i. 1. Materials for the tank shall be Carbon Steel grade SA516 grade 70 with the steel shell and end caps from USA foundry with MTR's required, design, and shop fabrication and inspection shall comply with Section VIII, Division 1, of the ASME Boiler and Pressure Vessel Code with only the plate steels in Table UCS-23 of said code being used. Provide ASME code stamp, National Board Registration number and pressure rating on tank. ~~Tank materials will be in full compliance with the American Iron and Steel (AIS) Provision.~~

4. Section 400559 – Stainless Steel Slide Gates & Weir Gates

- A. Delete in its entirety and replace with Stainless Steel Slide Gates & Weir Gates, attached hereto.



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5. Section 444613 – Shaftless Spiral Conveyor

A. Paragraph 3.2.: Add the following:

- i. **B. The manufacturer shall be responsible for the cost of freight for the existing screens and existing control panel. Contractor shall be responsible for loading/unloading and installation.**

B. Paragraph 2.3.: Add the following:

- i. **J. The manufacturer shall provide an interconnect to the new conveyor control panel to the existing screen panel to turn the screen off for any alarm indication for the conveyor panel and provide notification of fault through the existing screen panel.**

DRAWINGS:

1. Drawing G-2 – GENERAL CONSTRUCTION NOTES

A. Add the following General Note No. 16:

- i. **16. THE ANNUAL DRAWDOWN FOR LAKE CATHERINE BEGINS ON NOVEMBER 1 OF EACH YEAR AND THE REFILL OF BOTH LAKES WILL BEGIN BETWEEN MARCH 1 AND MARCH 8 OF THE FOLLOWING YEAR. THE REFILL IS SCHEDULED TO BE COMPLETED EACH YEAR BY MARCH 15. LAKE DRAWDOWN IS CONTROLLED BY ENTERGY. TARGET IS 298 TO 330 MSL.**

B. Modify General Construction Notes - Site Piping Note 1 as follows:

- i. **1. ALL DUCTILE IRON ~~WATER LINES~~ PIPE SHALL BE CONSTRUCTED BY ONE OF THE FOLLOWING METHODS:**

2. Drawing G-6 – DESIGN INFORMATION II

A. Modify this drawing as shown on Addendum No. 02 – DESIGN INFORMATION II, attached hereto.

3. Drawing G-9 – HGL PLAN & PROFILE – SCHEME 1

A. Modify this drawing as shown on Addendum No. 02 – HGL PLAN & PROFILE – SCHEME 1, attached hereto.

4. Drawing G-10 – HGL PLAN & PROFILE – SCHEME 2

A. Modify this drawing as shown on Addendum No. 02 – HGL PLAN & PROFILE – SCHEME 2, attached hereto.



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5. Drawing G-11 – HGL PLAN & PROFILE – SCHEME 3
 - A. Modify this drawing as shown on Addendum No. 02 – HGL PLAN & PROFILE – SCHEME 3, attached hereto.
6. Drawing P-3 – PROCESS OVERALL DIAGRAM
 - A. Modify this drawing as shown on Addendum No. 02 – PROCESS OVERALL DIAGRAM, attached hereto.
7. Drawing Q-1 – BYPASS CONSTRUCTION SEQUENCE 1 & 2
 - A. Modify this drawing as shown on Addendum No. 02 – BYPASS CONSTRUCTION SEQUENCE 1 & 2, attached hereto.
8. Drawing Q-2 – BYPASS CONSTRUCTION SEQUENCE 3 & 4
 - A. Modify this drawing as shown on Addendum No. 02 – BYPASS CONSTRUCTION SEQUENCE 3 & 4, attached hereto.
9. Drawing Q-3 – BYPASS CONSTRUCTION SEQUENCE 5
 - A. Modify this drawing as shown on Addendum No. 02 – BYPASS CONSTRUCTION SEQUENCE 5, attached hereto.
10. Drawing C-5 – SITE PLAN NORTH
 - A. Modify this drawing as shown on Addendum No. 02 – SITE PLAN NORTH, attached hereto.
11. Drawing C-6 – SITE PLAN SOUTH
 - A. Modify this drawing as shown on Addendum No. 02 – SITE PLAN SOUTH, attached hereto.
12. Drawing C-7 – SANITARY SEWER PROFILES
 - A. Modify this drawing as shown on Addendum No. 02 – SANITARY SEWER PROFILES, attached hereto.
13. Drawing C-12A – WEIR BOX AND ODOR CONTROL LOCATION MAP
 - A. Add new sheet C-12A as shown on Addendum No. 02 – WEIR BOX AND ODOR CONTROL LOCATION MAP, attached hereto.



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14. Drawing C-13 – WEIR BOX AND ODOR CONTROL SITE PLAN

- A. Add new sheet C-13 as shown on Addendum No. 02 – WEIR BOX AND ODOR CONTROL SITE PLAN, attached hereto.

15. Drawing C-14 – WEIR BOX DETAIL

- A. Modify this drawing as shown on Addendum No. 02 – WEIR BOX DETAIL, attached hereto.

16. Drawing C-15 – WEIR BOX AND ODOR CONTROL PROFILE

- A. Modify this drawing as shown on Addendum No. 02 – WEIR BOX AND ODOR CONTROL PROFILE, attached hereto.

17. Drawing CZ-4 – CIVIL STANDARD BEDDING

- A. Modify this drawing as shown on Addendum No. 02 – CIVIL STANDARD BEDDING, attach hereto.

18. Drawing CZ-5 – CIVIL STANDARD DETAILS V

- A. Modify this drawing as shown on Addendum No. 02 – CIVIL STANDARD DETAILS V, attach hereto.

19. Drawing S-5 – ELECTRICAL BUILDING STRUCTURAL DETAILS

- A. Modify this drawing as shown on Addendum No. 02 – ELECTRICAL BUILDING STRUCTURAL DETAILS, attached hereto.

20. Drawing S-10 – HEADWORKS FOUNDATION AND WALL PLANS

- A. Modify this drawing as shown on Addendum No. 02 – HEADWORKS FOUNDATION AND WALL PLANS, attached hereto.

21. Drawing S-11 – HEADWORKS SECTIONS I

- A. Modify this drawing as shown on Addendum No. 02 – HEADWORKS SECTIONS I, attached hereto.

22. Drawing S-12 – HEADWORKS SECTIONS III

- A. Modify this drawing as shown on Addendum No. 02 – HEADWORKS SECTIONS II, attached hereto.



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23. Drawing S-13 – HEADWORKS GRATING & FRAMING PLAN

- A. Modify this drawing as shown on Addendum No. 02 – HEADWORKS GRATING & FRAMING PLAN, attached hereto.

24. Drawing M-1 – HEADWORKS PLAN & SECTION

- A. Modify this drawing as shown on Addendum No. 02 – HEADWORKS PLAN & SECTION, attached hereto.

25. Drawing M-2 – PUMP STATION PLAN

- A. Modify this drawing as shown on Addendum No. 02 – PUMP STATION PLAN, attached hereto.

26. Drawing M-3 – PUMP STATION SECTION

- A. Modify this drawing as shown on Addendum No. 02 – PUMP STATION SECTION, attached hereto.

27. Drawing MZ-3 – MECHANICAL STANDARD DETAILS III

- A. Modify this drawing as shown on Addendum No. 02 – MECHANICAL STANDARD DETAILS III, attached hereto.

28. Drawing E3 – ELECTRICAL SITE PLAN NORTH

- A. Modify this drawing as shown on Addendum No. 02 – ELECTRICAL SITE PLAN NORTH, attached hereto.

29. Drawing E14 – ELECTRICAL ONE-LINE DIAGRAM

- A. Modify this drawing as shown on Addendum No. 02 – ELECTRICAL ONE-LINE DIAGRAM, attached hereto.

30. Drawing E15 – ELECTRICAL SCHEDULES I

- A. Modify this drawing as shown on Addendum No. 02 – ELECTRICAL SCHEDULES I, attached hereto.

END ADDENDUM NO. 02

City of Hot Springs

Gulpha Basin Pump Station Improvements

CONTRACTOR QUESTIONS RECEIVED TO DATE:

1. Please confirm that Protecto 401 Lining shall be used on all DIP sewer piping
Yes. Reference Specification 333100 and 333400.
2. Please confirm that primed DIP that is to be finished coated, should have the special Zink primer in lieu of the standard primer.
Above ground DIP shall be primed per section 099000 – No Zink.
3. Please advise if fully restrained piping (MJ fittings, restrained joint pipe, thrust collars) are used for sewer and water line construction, will thrust blocking still be required ?
Reference Addendum No. 02, Item 1.B, Drawing G-2 – GENERAL CONSTRUCTION NOTES.
4. Please clarify if piping under new concrete and gravel surfaced areas are subject to the " special roadway conditions " bedding details.
All pipe under asphalt and concrete shall adhere to Detail B, Sheet CZ-4. Reference Addendum No. 02, Item 17 - Drawing CZ-4 – CIVIL STANDARD BEDDING.
5. " BYPASS CONSTRUCTION SEQUENCE 1 " states to core drill screen wall and install pipe with wall collar. Pipe material is 30" PVC pipe. Please provide detail for connecting to the existing wall with wall collar. Is a DI wall spool required?
Reference Addendum No. 02, Item 11 - Drawing C-6 – SITE PLAN SOUTH.
6. Sheet Q-1 calls for 30" dia DIP from MH-A1 to the new screen structure. Sheet C-5 and C-7 call for a 24" PVC line from MH - A1 to the new screen structure. Please clarify size and material
Reference Addendum No. 02, Item 12 - Drawing C-7 – SANITARY SEWER PROFILE.
7. Please provide dimensional details for the side walk and access ramp at the Electrical Building.
Reference Addendum No. 02, Item 10 - Drawing C-5 – SITE PLAN NORTH.
8. Please provide dimensional details for the transformer pad shown in E2 and E3
Reference Addendum No. 02, Item 10 - Drawing C-5 – SITE PLAN NORTH.
9. Please clarify the hatching detail for the Asphalt Drive in C-9. The hatching does not correlate to the detail shown in C-6
Reference Addendum No. 02, Item 11 - Drawing C-6 – SITE PLAN SOUTH.
10. Please confirm that the dashed lines in the bottom of the Weir Box, Section 5, represent substantial grouting.
Yes. Reference Addendum No. 02, Item 15 - Drawing C-14 – WEIR BOX DETAIL.
11. S-8, Section 1, shows a pipe support under the header that can not be seen in the Valve Pit Plan shown in S-7. Please clarify material, size, etc. for this / these supports.
Pipe supports for the valve pit shall be in accordance with Section 2 / S-8
12. Please provide additional details for the slab turn - down, rebar placement, corner chamfer and CMU tie - in.
Provide ½" wash at the roll-up door, ease the corner all around with rubbing stone, locate slab bars 2" clear from top of slab, suspend footing bars with wire or #3 bars, run the vapor barrier 12" past the slab-footing transition, cast-in L-bars or drill in dowels per 6/S-5, footing can be cast before or with the slab.

13. Please clarify the material requirement for the trusses used in the Electrical Building. S-5 calls out for Cold Formed Steel Roof Trusses, the Spec Book has DIV 06 17 23, Wood Trusses
Reference Addendum No. 02, Item 19 - [Drawing S-5 – ELECTRICAL BUILDING STRUCTURAL DETAILS.](#)
14. Please clarify the requirements for rain gutters and down spouts. The elevations in S-3 show aluminum down spouts and gutters along the N / S walls. Are there any gutters on the E / W walls ? Please verify the roof and gutter details shown on Sheet S-5
Gutter shall be pre-finished aluminum metal downspout color as selected by the owner, provide tie clips to building structure as required, color to match downspout and gutter provided at each building corner. Provide precast downspout splash pad for each gutter location. Reference Section 3 / S-11.
15. Please clarify " HOLD DOWN TOP OF WALLS.... " and where this detail can be found.
Reference Section 3, Sheet S-11 and Section 3, Sheet S-13.
16. Please clarify the ceiling Specification calling out for 0.09" Glassboard over 5/8" Gypsum Board. Please also indicate location of Access Hatch and basic design requirements thereof.
Reference Addendum No. 02, Specification Item 1 – [Section 068310 – Fiberglass Reinforced Paneling](#) and reference Specification 092116 Gypsum Board Assemblies, Access hatch to be located by owner and trimmed with painted 1"x4" treated #2 grade lumber.
17. Please confirm that none of the Man Holes, Wet Wells or Headworks require Epoxy Coatings or similar.
Reference Specification 033000 Section 3.11.
18. Please confirm that the interior of the Electrical Building will not need to be Block Filled and / or Coated.
Reference Sheet S-5 for electrical building structural details.
19. Sheet P-1 calls for 1 1/4" Potable Water Line to building, Sheet C-5 calls for 1". Please clarify size.
Reference Addendum No. 02, Item 10 - [Drawing C-5 – SITE PLAN NORTH.](#)
20. Sheet P-1 calls for a 4" Drain from the building, Sheet C-5 calls for a 6" Drain. Please clarify size.
Reference Addendum No. 02, Item 10 - [Drawing C-5 – SITE PLAN NORTH.](#)
21. Sheets M-2 and M-3, Item #14 refer to a Valve Vault Drain detail H/CZ-3. Please confirm the appropriate details is B/MZ-1.
Reference Addendum No. 02, Item 23 - [Drawing M-2 – PUMP STATION PLAN](#) and Item 24 – [Drawing M-3 – PUMP STATION SECTION.](#)
22. Sheet C-6 calls for a 24" x 12" Tee going to the small Surge Tank. The piping and Plug Valve are labeled as 16". Please confirm the Tee to be 24' x 16' or the pipe and Plug Valve to be 12".
Reference Addendum No. 02, Item 11 - [Drawing C-6 – SITE PLAN SOUTH.](#)
23. Sheet M-2, Item #4 and Item #7 on the combined Header Piping are called out as 24". Please confirm the diameter to be 30".
Reference Addendum No. 02, Item 25 - [Drawing M-2 – PUMP STATION PLAN](#)
24. Sheets M-2 and M-3, Item #18 refer to F/MZ-3 for details on the 3" Air Release / Vacuum Valve Assembly. This detail is not provided, please provide.
Reference Addendum No. 02, Item 27 - [Drawing MZ-3 – MECHANICAL STANARD DETAILS III.](#)

25. Sheet C-13 shows 10" piping to Oder Control Unit, Sheet C-15 shows 12" piping with slightly different configuration. Please clarify size and configuration.
Reference Addendum No. 02, Item 14 - Drawing C-13 – WEIR BOX AND ODOR CONTROL SITE PLAN.
26. Location of the proposed Weir Box and Odor Control.
Reference Addendum No. 02, Item 13 - Drawing C-12A – WEIR BOX AND ODOR CONTROL LOCATION MAP.
27. Per our conversation at the pre-bid meeting, we would like to submit an RFI regarding clarification on what part of the (261250) Fiber Optics Cable and Appurtenances (and integration) will be owner furnished and what will remain a part of the electrical scope.
Reference Process and Instrumentation Diagrams Sheets.
28. Sheets M-2 and M-3, Item #2 refer to F/MZ-3 for details on the Pressure Gauge & Transmitter Switch. This details is not provided, please provide.
Reference Addendum No. 02, Item 27 - Drawing MZ-3 – MECHANICAL STANARD DETAILS III.
29. Please confirm that the inner weir edges in the center wall will have a " SS PL. 1/2" x6" x3'-2" LONG W / 5/8" DIA x36' DEFORMED BAR ANCHOR " embedded.
Reference Sheets S-11, S-12, and S-13.
30. Please clarify if the pipe insulation and heat tracing requirements in the Valve Box
No equipment has been identified for Pipe Insulation and Heat Tracing in the Valve Vault.
31. Please clarify the requirements for a Neutral at the Transformer Service Feed
The service feed from the utility transformer shall be a "SF4000" type feeder as indicated on the site plan (E3), one-line (E14) and as defined by the feeder schedule (E16).
32. Does backfill of manholes need to comply with the C-67 and CL-7 backfilling at the elevations shown on C-11
Reference Sheets C-11 and C-12.
33. Please provide detailed specifications for the two (2) Pressure Relieve Valves shown in S-7 and S-8.
Wall pressure relief valves shall be 4-in. Clow Valve Company F-1496-T or approved equal.
34. 09900 calls for interior pipe painting. The pipe specifications calls for P401 Factory Lining. Please clarify the desired pipe interior lining.
Interior Exposure as outlined in 099000 under the painting scheduled is for DIP that is within an interior of a structure, and not for interior pipe lining as defined under the Section 333400
35. Item #25 refers to details in C/MZ-3 and F/MZ-3. These details do not exsit. Please provide the missing details.
Reference Addendum No. 02, Item 27 - Drawing MZ-3 – MECHANICAL STANARD DETAILS III,
Item 25 - Drawing M-2 – PUMP STATION PLAN and Item 26 – Drawing M-3 – PUMP STATION SECTION.
36. Please clarify on what part of the Fiber Optics Cable and Appurtenances (and integration) will be Owner furbished and what will remain a part of the electrical scope.
Please indicate where FO is indicated on the drawings for contractor installation. Owner integration is shown on the Instrumentation drawings.
37. D Sheet C-6 has a note pointing to the old screen structure that states " INSTALL EX. SCREEN ". I do understand, that the current screen is to be retrofitted with a conveyor and placed

into the new headworks structure (see C-5). Does the old screen structure stay empty or, is any other screen or equipment getting placed back into this structure ?

This structure remains in place as a junction structure.

38. Please provide details for 4" Blk. Epoxy Dipped Line Post and Fence Bracket for Stringer mounting.

Reference Addendum No. 02, Item 18 – Drawing CZ-5 – CIVIL STANDARD DETIALS V.

39. Will it be possible to replace the specified 2" x 4" Wood Frame with metal Frame? The gate width will have issue with sagging and warping.

Reference Addendum No. 02, Item 18 – Drawing CZ-5 – CIVIL STANDARD DETIALS V.

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A	OSHA Excavation and Trench Safety	
B	Existing Bar Screen Submittal (Electronic Copy Only)	
C	RFP 1 Submersible Wastewater Pumps (Electronic Copy Only)	
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INVITATION TO BID (ITB) PROJECT
TERMS AND CONDITIONS OF BIDDING
BID # HS-23-055

***Bidders are responsible for reading and complying with the following
Terms and Conditions of Bidding and preparing bid responses accordingly.***

1. DEFINITIONS: The following words, terms, and phrases, when used in this document, shall have the following meaning.

Bidder means the individual, firm, partnership, or corporation offering a bid in response to this invitation to bid. The terms vendor and seller are synonymous with Bidder.

City means the City of Hot Springs, Arkansas, a municipal corporation and its authorized agents. The terms owner or buyer are synonymous with City.

Contractor means the individual, firm, partnership, or corporation to whom a contract or purchase order is awarded as a result of this invitation to bid.

ITB means the invitation to bid and includes the entire bid packet issued by the City for this procurement.

Addendum means any official document issued by the City to all bidders during the bidding period containing additional or amended information about the bid.

Contract means the document of an agreement signed by both the City and the successful bidder whereby the successful bidder will perform the described work for an established amount of compensation. At the City's discretion, the City's Invitation to Bid packet, the bidder's response thereto, and the City's issued purchase order may constitute the "Contract."

Furnish means supply and deliver, to the site designated by the City, ready for unloading, unpacking, assembly, installation, and similar operations, as applicable in each instance, together within each instance where such term is defined in greater detail (or where reasonable and prudent persons would expect further performance), all operations included in such more detailed definition.

Install means to unload, unpack, assemble or otherwise prepare for and erect, place, anchor, apply, attach, work to dimension, finish, cure, test, clean, protect, and any and all actions necessary to create an operational or ready for operation status, or as may be defined in greater detail, or as reasonable and prudent persons would expect further performance.

Provide means to furnish and install.

Scope of Work means the description/specifications of the item or items to be furnished, and/or installed and/or provided and the work to be performed in conjunction therewith or otherwise as determined and described by the City as identified by drawings, specifications, and instructions included in this packet.

2. BID SUBMISSION REQUIREMENTS: All bids must be received in the City Purchasing Division on or before the bid opening date and time, regardless of delivery method. Please advise the City Purchasing Division immediately if you wish to submit a quotation but are unable to meet this requirement. Requests for extensions to the bid closing date, although not encouraged, will be considered with the proper justification and if received in writing at least one week prior to the established bid closing date. A non-response by the city of hot springs to a requested bid extension will indicate that the request has been denied. In this regard, the City reserves the right to postpone bid opening for cause or convenience. Bids shall be valid for a period of ninety (90) days after the bid opening date of this ITB. The bid must be signed by an authorized officer of the entity submitting the bid and his/her title must be shown. In order to be considered "responsive," the Bidder must submit a base bid signed by an authorized official of the Bidder and consisting of the following properly executed forms:

- Bid Form
- Statement of Requirement
- Federally Required Certifications (if required)

3. SEALED BID INSTRUCTIONS: Sealed paper bids must be sealed in a bid container (envelope). It is mandatory for the Bidder to identify the envelope containing the bid as such and show the bid number and bid item. This applies to express delivery type envelopes, as well. When the Bidder's proposal consists of more than one envelope or box, the Bidder must mark on the mailing label how many envelopes or boxes are contained in the bid. For example, "box 1 of 6." The Bidder shall also identify the other boxes by the number of boxes and the City's ITB number as found on the Invitation to Bid Cover Sheet. For example, "box 2 of 6 for ITB XXXXX." Sealed bids will be accepted until the stated time (Central Time) on the bid opening date. Late bids will not be considered. Facsimile, electronic, telegraphic, or telephone bids are not acceptable.

4. COMPLIANCE: The Bidder shall review all attachments and instructions with care. Failure to make a complete review of all attachments and notes will not be deemed just cause for claims or errors. To be considered for an award, the Bidder must certify bid is in exact accordance with the specifications, drawings, terms and conditions, and other requirements of this ITB with no exceptions. The original language of the bid shall not be changed or altered except by an approved written addendum. (Addendum No. 02)

5. GOVERNING TERMS AND CONDITIONS: The Bidder's quotation shall be submitted subject to the City's Terms and Conditions of Purchase (Contract Provisions). The Bidder's terms and conditions of sale will not be considered. The Bidder shall be deemed to have accepted the City's Terms and Conditions of Purchase unless the Bidder has noted specific exceptions thereto in the Bidder's proposal. Any exceptions not acceptable to the City shall be cause for rejection of the Bidder's proposal.

6. COMMUNICATIONS: Please direct your bid and all communications to:

Olivia Thomason

Purchasing Division

City of Hot Springs

324 Malvern Ave

2nd Floor, Room 206

Hot Springs, AR 71901

Phone/Fax: (501) 321-6830

or

P O Box 6300

Hot Springs, AR 71902

7. PRICING: Prices must be submitted on a firm, fixed-price basis. Contracts for certain goods and services that may contain an escalation clause are noted on the Statement of Requirements. Unit prices are to be extended and a total price is shown on all bids. If unit prices and extensions thereof do not coincide, the City will assume the price most favorable to the City to be the correct price. Bids not prepared properly may not be considered for evaluation. If Bidder wishes to quote lower unit prices for the award of groups of items, Bidder may do so as an alternate to Bidder's base bid. If applicable, Bidder is to include the impact on pricing for quantity additions and/or deletions. All pricing is to be firm for the duration of the contract. The bid must include unless exceptions are identified by the City, all costs to the bidder for materials, labor, equipment, insurance, testing, compliance requirements, licenses, permits, and any and all items of expense, fees, taxes, duties, overhead, and profit for the bidders for his full and complete performance of the Scope of Work. All pricing information sought must be provided. Failure to do so may cause the bid to be rejected. The City reserves the right to request and have any bidder furnish any accounting breakdown of contract prices, and this request may be made after the contract price has been finalized. Contractors must comply with Arkansas and City licensing requirements; they must also obtain the required permits and licenses, including the General Building Permit. In the case of discrepancy between amounts written in words and amounts written in numbers, the written words will prevail; in the case of errors in addition or extension, unit rates will prevail.

8. TAX INFORMATION: The City is not exempt from sales tax. It is the vendor's responsibility to determine the taxing jurisdiction and remit sales taxes accordingly. The sales tax should be included in the bid as a cost of doing business just like any other cost, but does not need to be stated separately. Total sales tax (state and local) is 9.5% in the City of Hot Springs, and 8% in Garland County, outside of the City limits. All cost calculations should also consider the ceiling on local sales tax. Any unpaid sales tax is the liability of the vendor. Vendors outside the State of Arkansas must show their Arkansas sales tax permit number, if they have one, or indicate if they do not.

9. DELIVERY CHARGES: If freight charges are applicable, they should be included with the bid total. Freight charges cannot be added after the bid is opened. The earliest delivery time that can be accomplished should be shown, as delivery time may be a factor in awarding the bid.

10. PRODUCTS: All products offered, unless otherwise specified, must be new and of the latest design and production. Products must be complete and ready to use or operate with all the normal and usual features and capabilities. If an “equal” is acceptable relative to a named brand and model, the Bidder proposing an equal must provide documentation of support that their product is equal. Equality must be in design, size, appearance, capability, performance, endurance, and lifetime. The City shall consider the vendor to have not completed its obligations until all literature (operators manual, instructions, service manuals, parts manuals, owner manual) that is normally provided with the product or has been asked for in the ITB has been received.

11. BID SPECIFICATIONS: The specifications included hereinafter are to be interpreted as meaning the minimum acceptable by the City. The use of a manufacturer’s or vendor’s name, trade name, brand name, catalog number, or other identifying reference or description is for the purpose of describing and establishing general quality levels only unless otherwise noted in the specifications. Such references are not intended to be restrictive. Bids will be considered for any product which meets or exceeds the quality described by the specifications.

All Water and Wastewater projects shall conform to the City of Hot Springs “Water and Wastewater, Standards and Specifications, Policies, and Procedures, Code,” current edition, except as modified or augmented in these specifications. These standards may be referred to as the “City of Hot Springs Standard Specifications.” These standards can be downloaded at <https://www.cityhs.net/134/Engineering>.

12. INSURANCE: Insurance requirements of the Bidder, if any, will be shown on the “Statement of Requirements.” Certificates for those coverages checked must be provided with a bid response.

13. ALTERNATE BIDS: The Bidder’s base bid shall conform in all respects to applicable specifications, drawings, terms, and conditions or any other documents forming part of this ITB and shall include all costs to the Bidder for the supply of material and/or equipment as specified. The Bidder’s base bid must be in accordance with all notes, terms and conditions, and attachments to this ITB. At Bidder’s option, the Bidder may supplement the basic quotation with an alternative quotation providing the following conditions are met:

- significant process, price, or delivery advantage is indicated, or
- a superior product is offered at a justifiably higher price or a product of equal quality at a lower price.

Alternative bids must state all deviations from the specifications. Alternative bids may or may not be considered by the City.

14. INSPECTION & TESTING: The City reserves the right to test or inspect proposed bid items in order to determine the lowest responsive bidder. Bidders should inspect the site of the work (job site). Such inspection may be arranged by contacting the project overseer. The submission of a bid will be considered evidence that the bidder has made themselves aware of the conditions at the job site whether or not the conditions are referred to in the ITB.

15. WARRANTIES AND GUARANTEES: Guarantees and warranties (if any) should be attached as a part of the bid as they may be a consideration in determining the lowest responsive bidder and in awarding a bid or contract. The Contractor guarantees the City that the work shall comply strictly with the provisions of the Contract and all specifications, drawings, and standards referred to or hereafter furnished by the City and that the work shall be first-class in every particular and free from defects in materials and workmanship and any design and engineering furnished by the Contractor. The contractor further guarantees the City that all materials, equipment, and supplies furnished by Contractor for the work shall be new, merchantable, of the most suitable grade, and fit for their intended purpose. Without limitation of any other rights or remedies of the City, if any defect in the work in violation of the foregoing guarantees arises, Contractor shall, upon written receipt of such defect, promptly furnish, at no cost the City, design and engineering, labor, equipment and materials necessary to correct such defect and cause the work to comply fully with the foregoing guarantees.

16. QUESTIONS AND CLARIFICATIONS: Any questions or requests for clarification concerning the bid or bid specifications may be made by electronic mail or in writing to the Contract Engineer and City of Hot Springs, Purchasing Division, purchasing@cityhs.net. Any such questions or requests must be submitted not less than five (5) working days prior to the bid opening date. Should the question(s) pose substantial issues, the City may ask that they be submitted in writing. If such an inquiry results in a change in the bid or the specifications, such change will be put in writing, time permitting, and provided to all those who have received the bid request. This procedure shall be followed in order to ensure competitive fairness by providing all prospective bidders with the same information. Bidders should rely on written information (as opposed to verbal information) in preparing bids.

17. IDENTICAL BIDS: In the event of two or more identical low bids, the contract may be awarded arbitrarily or for any reason to any of such Bidder or split in any proportion between the Bidders at the discretion of the City.

18. AMBIGUITY IN BID: Any ambiguity in any bid as the result of omission, error, lack of clarity, or noncompliance by the Bidder with specifications, instructions, and all conditions of bidding shall be construed in the light most favorable to the City. An error in the extension of unit prices (unit price times quantity) may be corrected by the City utilizing a “unit prices govern” standard.

19. ADDITIONAL INFORMATION: All Bidders must be prepared to furnish additional information, within ten (10) working days, as may be sought by the City to determine responsiveness.

20. TERMS OF PAYMENT: Bidder shall clearly state the proposed terms of payment if different from the City’s preference. The City’s preferred term of payment is Net 30 Days. Discount terms will be accepted. Payment is upon accepted completion of the work. Progress payments will be considered if tied to specific milestones on accepted completed work.

21. BID HANDLING PROCEDURE: Bids will be opened and the dollar amount read at the stated time. Bidders are welcome to attend the bid opening but such attendance is not required. All bid openings are open to the public. Bid tabulations and bid documents are available for public viewing and inspection once the City has prepared such tabulations. A bid award decision will not be made at the bid opening. The City staff will take the bids under consideration and evaluation and prepare a recommendation for presentation to the Board of Directors if required. In this regard, bid awards exceeding \$60,000 must be approved by the Board. Bids under \$60,000 may be awarded by the City Manager or his designee. Once a bid award is approved, the City will issue a purchase order. The City may not formally notify unsuccessful bidders.

22. BID AWARD AND PURCHASE ORDER: The City will award a bid based on the lowest responsive, responsible bid considering any other pertinent factors such as freight, delivery, transportation, etc., that might affect overall City cost. Upon award of a bid, the City will issue its purchase order to the successful bidder. This ITB and the “Terms and Conditions of Purchase” contained in this ITB (if included) will be considered a part of the purchase order. The purchase order shall be a binding agreement between supplier and buyer upon the supplier signing and returning an acceptance copy of the purchase order without exception or commencing performance of this purchase order, whichever occurs first.

23. BIDDER INDEBTEDNESS: Acceptance by the successful Bidder of an award from this bid request indicates that the successful Bidder is in no way currently indebted to the City, Garland County, or the State of Arkansas and is in compliance with any and all applicable laws and ordinances thereof. Indebtedness to any of the above may be a basis for no award and/or cancellation of any award. Bidder must be properly licensed prior to signing a contract to perform this project. The successful Bidder may be required to obtain a City of Hot Springs business license.

24. PUBLIC INFORMATION: All bids, documents, correspondence, and material submitted to the City is considered public information and, as such, are subject to viewing and copying by the general public pursuant to the State of Arkansas Freedom of Information Act.

25. PROTEST PROCEDURE: Protest of bidding procedures, specifications, or bid/contract awards shall be made in accordance with the following procedures. Such protests may only be initiated by an authorized representative of a person, firm, or corporation who has a direct economic interest in the particular procurement in question.

1. **Protest Filing.** Any protest must be filed with the purchasing agent at the address specified in the bid specifications or a quotation request for the receipt of bids or quotes. The protest must be in writing and describe in full detail the basis for the protest and the particular bid or quote in controversy. In order to meet the time frames enumerated hereinafter, a protest may be received in person, by U.S. mail, facsimile, or electronic means; provided, however, that facsimile or electronic filing shall be followed with documents bearing original signatures as soon as practical thereafter.
2. **Bid Specifications (Pre-Award).** Protest of bid specifications or bidding procedures must be received by the Purchasing Division no later than five (5) business days prior to the scheduled bid opening or quotation closure period. Protests received on the day of bid opening or quotation closure will not be considered.
3. **Award.** Protests of procurement decisions shall be filed by the protestant within five (5) business days of the award decision. Upon a determination of vendor selection from the bid process, a "Notice of Intent to Award" will be posted on the ARBID and/or the City's bid website. The purchasing agent, in consultation with the City Attorney and City Manager, shall have the authority to settle and resolve the protest. If the protest is not resolved by mutual agreement, the City Manager or his designee shall issue a decision in writing to the protestant within ten (10) business days after receipt of the protest stating the reasons for the action taken.
4. **Post-award protests and protest timelines.** All post-award protests shall be referred to the City Manager for action. Furthermore, the City Manager, at his/her discretion, may extend the protest timelines.
5. **Stay of procurement award.** In the event of a timely protest pursuant to this section, the City shall not proceed with the solicitation or procurement until the protest is resolved by mutual agreement, the City Manager or his designee issues a final decision, the Board of Directors approves the procurement in controversy or a court decision is rendered if the controversy is filed in court. Provided, however, that the City may proceed with procurement in controversy if a written determination is made by the purchasing agent, in consultation with the City Attorney, that the items to be purchased are urgently required, the delivery or performance will be unduly delayed by failure to make the award promptly, or failure to make award will otherwise cause undue harm to the City.
6. **Award notification.** Notification of procurement decisions shall be available as soon as such decisions are final. Bid or contract award recommendations to be considered by the Board of Directors shall whenever possible, also be available in the office of the City Clerk seven (7) calendar days prior to the Board of Directors' meeting at which the bid or contract award is scheduled for consideration. It is the responsibility of all bidders to make inquiries to the Purchasing Division regarding procurement decisions for the purpose of rendering protests.
7. **Federal grants.** Protest of any procurement funded in whole or in part with federal grant funds may also be filed subsequently with the funding agency. The Department with primary oversight is responsible for a particular federal grant and shall ensure that federal agency bid protest procedures, if any, are made available and shall provide assistance in the administration of such agency protest procedures.

26. BIDDER TERMS: Other terms or conditions prepared by Bidder may or may not be considered by the City in awarding the bid. The City reserves the right to accept or reject any Bidder's proposed terms and conditions or any part thereof.

27. DISADVANTAGED BUSINESS ENTERPRISES: The City of Hot Springs encourages the participation of Disadvantaged Business Enterprises, Minority-Owned Business Enterprises, and Women-Owned Business Enterprises (DBE/MBE/WBE) in its procurement process and seeks bids from such entities. Certification is necessary to be formally recognized as a DBE/MBE/WBE. Bidders are encouraged to seek quotations from such businesses when utilizing subcontractors. When subcontractors are asked to be identified, D/M/WBE within that group should be identified.

28. COLLUSION: Submission of a signed bid shall constitute certification by the Bidder that its bid is being submitted without collusion or agreement with any competitor.

29. ESCALATION CLAUSE: This clause shall only be applicable to contracts with an option for annual extensions, for such goods and services as the City shall, in writing, so designate as subject to escalation.

30. FEDERALLY REQUIRED CLAUSES AND CERTIFICATIONS: Bids for goods and services to be purchased with federal funding may require the submission of additional federally required clauses and certifications. If required, such certifications will be included in the bid forms sections of this ITB and so noted on the Statement of Compliance.

31. THE CITY'S RIGHTS: The City reserves the right to reject any or all bids, to waive minor irregularities and/or formalities as determined by the City, to award the bid by item or groups of items or in total, and/or to award the bid in the manner most advantageous to the City. The City reserves the right to purchase additional units at its discretion, within a reasonable time, at the bid unit price, upon the concurrence of the Bidder. All qualified and responsible bidders are entitled to receive equal opportunities. Any activity such as, but not limited to, offering or receiving gifts, entertainment, payments, loans, or other favors for the purpose of favorable or privileged treatment is prohibited. Furthermore, in the event any bidder has been found to engage in such activity, that bidder may be refused further bid consideration by the City. The City may also pursue any legal remedies available.

32. ANTI-DISCRIMINATION: The contracting party shall not discriminate on the basis of race, sex, color, national origin, gender, sexual orientation, gender identity, or disability.

33. BIDDER'S MODIFICATION AND/OR WITHDRAWAL OF BID: Bidders may, without prejudice to themselves, modify or withdraw their bids by written request provided the request is received by the City prior to the time and at the address to which bids are to be submitted. If bid withdrawal action is taken, new bids may be submitted provided they are received by the City by the due date and time.

34. DISCREPANCIES, OMISSIONS, AND ADDENDA: Should any bidder need clarification of the requirements, such request must be made in writing and may be faxed to 501-321-6830 or emailed to purchasing@cityhs.net. The City may respond by issuing an addendum to all prospective bidders. The City will not be bound by nor should bidders rely upon oral information. Bidders must acknowledge in their bid submission the receipt of the addenda that has been issued. Should drawings disagree with one another or with specifications, or should specifications disagree with one another or drawings, the better quality of work or materials shall be included for bidding purposes and shall be performed or furnished.

35. BONDING: The laws of the State of Arkansas will be adhered to for bonding requirements. Bids over \$20,000 must be accompanied by a bid security in the form of a cashier's check only, (relative to other kinds of checks) drawn upon a bank or trust company doing business in Arkansas or a corporate bid bond and must be in the amount of five percent (5%) of the bid amount. All contracts exceeding \$20,000 must have a payment/performance bond for a hundred percent (100%) of the Contract Sum. Bidders should take this into consideration in calculating their bid. All bonds are to be in favor of the City. Sureties must be licensed to do business in the State of Arkansas. Contractors will not be allowed on the job site until all bonding is satisfactorily in place.

36. EXCEPTIONATIONS AND DEVIATIONS: The base bid must be submitted in strict accordance with this ITB. Any bidder, believing it advantageous to the City to deviate significantly from the requirements or descriptions herein, may present such deviations but only as an alternative to the base bid as requested, explaining in full detail the nature and extent of the proposed departure and the subsequent impact thereof on the bid. Specifications, datasheets, and or product descriptions must be included completely. Consideration of any proposed alternatives will be solely at the discretion of the City. The City is not responsible for identifying or resolving, during bid consideration, any deviations or alternatives that may be contained in the bid.

37. CITY OBLIGATIONS: City shall determine at its sole discretion which bid shall be accepted including but not limited to the following:

City need not accept any bid where:

- (A) there is an obvious, demonstrable error in the bid
- (B) the bid is incomplete or not prepared in accordance with the ITB
- (C) City is not satisfied with the performance of the bidder on any of its previous projects
- (D) the City does not consider that the bidder has the financial capability to execute the contract
- (E) the City does not consider that the bidder has the technical capability to execute the contract

The City may, at its discretion, accept an alternative bid. The City may, at its discretion, elect not to accept any bid and may proceed to purchase the equipment/materials (product) in any such manner as it may choose. The City may, at its discretion, reject any or all bids, accept part or parts of any bid; waive formalities or minor irregularities. The City makes no representations, covenants, warranties, or guarantees express or implied, other than those stated expressly in the ITB.

38. CRITERIA FOR AWARD: At its discretion, the City may utilize one or a combination of these criteria in awarding the bid:

- (1) lump sum price
- (2) unit prices included in the bid
- (3) alternates (requested and/or voluntarily submitted with the bid
- (4) MBE/WBE considerations as indicated in submitted bids
- (5) completeness and responsiveness to the ITB

The Contract shall be governed by and interpreted in accordance with the laws of the State of Arkansas. In the event any portion of the Contract is held to be void or unenforceable, the parties agree to negotiate in good faith to reach an equitable agreement which shall affect the intent of the parties as set forth in this agreement. Submission of a signed bid shall constitute a certification that the bidder has submitted their bid without collusion or agreement with any competitor.

39. SAFETY: Contractor shall take necessary safety and other precautions to protect property and persons from damage, injury, or illness arising out of the performance of the work. Contractor shall comply strictly with local, state, and federal laws, orders, and regulations, as and where applicable, pertaining to health or safety which are applicable to the Contractor or the work.

DOCUMENT 001113**ADVERTISEMENT FOR BIDS****CITY OF HOT SPRINGS****GULPHA BASIN PUMP STATION IMPROVEMENTS (BID #HS-23-055)**

Sealed Bids for **BID #HS-23-055 Gulpha Basin Pump Station Improvements** will be received by the **City of Hot Springs Purchasing Department** at the Hot Springs Purchasing Office, 324 Malvern Avenue, Hot Springs, Arkansas 71901 until **2:00 PM CST on June 26, 2023** **2:00 PM CST on July 17, 2023**, at which time the Bids received will be publicly opened and read aloud. The Project generally consists of constructing a sanitary sewer pump station with a firm capacity of 22 million gallons per day. Components of the pump station include the installation of owner procured submersible pumps, owner procured generator and automatic transfer switch, screening structure, wetwell, valve vault, surge tanks, slide gates with electric motor operators, gravity sanitary sewer, manholes, electrical components, support building, fencing, yard piping and associated appurtenances, located near Catherine Heights Road and Highway 70 in Hot Springs, Arkansas.

Bids may be delivered by any means available **except** electronically (facsimile or email). Facsimile or email bids will not be considered. It is the bidder's responsibility to ensure that the bid is in the City Purchasing Office by the time and day stated above. Those not received by that time will not be considered. A performance and payment bond written by a responsible surety company authorized to do business in Arkansas, in the amount of the contract, will be required on all contracts in excess of \$20,000. Bid security in the form of a **cashier's check only** (relative to other types of checks), drawn on a bank or trust company doing business in Arkansas, **or a corporate bid bond** in favor of the City of Hot Springs and in the amount of five percent (5%) of the bid amount is **required on bids exceeding \$20,000** and must be submitted with the bid. For bids over \$20,000, the contractor must be properly licensed for this activity prior to submitting a bid and provide proof thereof (show State contractor's license no.) with the bid. Arkansas prevailing Wage Laws will apply as appropriate. Bids may not be withdrawn within 30 days of the opening. Bidders must provide with their bid a certificate regarding *Equal Employment Opportunity*, as applicable. The City encourages the participation of disadvantaged, minority and woman owned business enterprises in the procurement of goods, services, and construction, either as contractor or subcontractor. The City reserves the right to reject any or all bids, to waive any formalities and to, in the opinion of the City, accept the bid that is in the City's best interest.

A non-mandatory pre-bid conference will held at the project site on June 15, 2023, at 1:30 PM. The Owner and the Engineer will be present to answer questions.

Bids will be received for a single prime Contract. Bids shall be on a lump sum basis. The Issuing Office for the Bidding Documents is:

**Crist Engineers, Inc.
205 Executive Court
Little Rock, AR 72205
(501)664-1552**

Prospective Bidders may examine the Bidding Documents at Hot Springs Purchasing Office, 324 Malvern Avenue, Hot Springs, Arkansas 71901, on Mondays through Fridays between the hours of 8:00 a.m. and 4:30 p.m.; and the Issuing Office on Mondays through Fridays between the hours of 8:00 a.m. and 5:00 p.m.

Printed copies of the Bidding Documents may be obtained from the Issuing Office online at www.cristengineers.com, upon payment of **\$225** for each set. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office. Bid security shall be furnished in accordance with the Instructions to Bidders.

Owner: **City of Hot Springs, Arkansas**

This publication was paid for by the Finance Department of the City of Hot Springs, Arkansas. The amount to be paid for this publication is \$562.06.

Publish Dates: May 28, 2023
 June 4, 2023

+ + END OF ADVERTISEMENT FOR BIDS + +



**JACK TYLER
ENGINEERING
INCORPORATED**

Monday, June 12, 2023

To: City of Hot Springs

Bid Number: HS-23-045

Bid Item: Submersible Wastewater Pumps

Engineer: Crist Engineers, Inc.

Scope of Supply: 06122023CJR

Jack Tyler Engineering, Inc. is pleased to offer the following items for your inclusion in the above referenced project. If you would like us to supply any items not listed below, please inform us as soon as possible. Please continue reading below for our detailed scope of supply. We look forward to working with you.

BID LINE ITEM #1 SUBMERSIBLE WASTEWATER PUMPS

Qty	Description
	Flygt NP 3312, 63-670, 540 mm Intended for semi permanent wet installation, guiding claw included other installation components to be ordered individually Hard iron impeller and insert ring Drive Unit: 875 6 pole, 470 hp, 460 V, Std motor Approval: FM Ex Cooling jacket for direct media cooling Large connection housing Insulated support bearing
3	Cables Power: 3 x 65ft SUBCAB screened S3X95+3X50/3 S 2S(2X0.5) 45.5MM Cable Grip included. Material Shaft: AISI 431 Stainless steel Supervision FLS, leakage detector, in junction box FLS, leakage detector, in stator housing PT-100 in one stator winding PT-100 in lower bearing PEM Unit
2	Deep Lift 13,500 LBS w/ Flag+TA

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PH: (501) 562.2296

www.jteng.com

	Guide, Deep Lift	
3	Bail, Deep Lift for 8x5 Drive+ 13,500 LBS w/ Pin	
3	12" Discharge Connection	
180	Pipe, 3" SST	
3	Cable Holder, Flygt, Product N	
3	Intermediate Guide Rail Bracket	
3	Upper Guide Rail Brackets	
15	Anchor Bolts	
1	1 year supply of lubricants	
1	Extended Warranty	
3	Pump Basic Repair Kit (O-Ring Kit, Roller Bearings, Ball Bearings, Mechanical Seals)	
1	120VAC MAS 801 Monitoring Panel, 3A Max	
	NEMA 4/3R Painted Steel Enclosure with Pad-Lockable Wing Knob.	
	120VAC Main Breaker with Neutral and Grounds.	
	Power Supply.	
	MAS801 Control Unit with 3 MAS811 Base Units, 3 PAN312 Power Analyzers, and 6 MRM-01 Relay Modules	
	Installed and Wired for Comms.	
	12" HMI Installed.	
	Unused I/O Wired to Field Wiring Terminals.	
	UL508A Listed.	
3	NEMA 4X Juntion Box	
	NEMA 4X, 304 Stainless Steel Junction Box.	
	Ground Lugs.	
	Power Distribution Block with Covers.	
	Communication Termianls with Gounds.	
	UL508A Listed	

BID LINE ITEM #1 SUBMERSIBLE WASTEWATER PUMPS PRICE:	\$742,948.06
<u>EQUIPMENT PRICE WITH APPLICABLE TAXES ADDED AT 9.5%</u>	<u>\$813,528.12</u>

BID LINE ITEM #1 OPTIONAL DEDUCTS:

- | | |
|---|--------------|
| • FLYGT Standard Pro-Rated 5 Year Warranty In-Place Of Extended Warranty: | -\$54,102.00 |
| • Three (3) Pump Basic Repair Kit | |
| ○ (O-Ring Kit, Roller Bearings, Ball Bearings, Mechanical Seals) | -\$56,793.00 |

BID LINE ITEM #2 PRICE FREIGHT/DELIVERY:	\$3,500.00
<u>FREIGHT PRICE WITH APPLICABLE TAXES ADDED AT 9.5%</u>	<u>\$3,832.50</u>

ENGINEERED SOLUTIONS FROM PEOPLE WHO CARE

6301 S University Ave, Little Rock, AR 72209

PH: (501) 562.2296

www.jteng.com

BID LINE ITEM #3 TESTING & START-UP

Qty	Description
4	TEST FAL 2.2 3001-7000 + HI GRADE 1 FAL 15-900006
4	TEST FAL 2.3 HYDRO 3001-7000+ VOLUTE ONLY FAL 15-900010
4	TEST FAL 2.4 INSUL 3001-7000 FAL 15-900011
4	TEST FAL 2.8 VIBRATN 3001-7000 FAL 15-900015
1	ENG SERVICES-FINITE ELEMENT ANALYSIS LEVEL 3 (NO TAX)
1	STARTUP

BID LINE ITEM #3 TESTING & START-UP PRICE:	\$48,630.91
PRICE WITH APPLICABLE TAXES ADDED AT 9.5%	<u>\$53,250.85</u>

Respectfully Submitted,

Calvin Reynolds
Engineered Municipal Sales
Jack Tyler Engineering, Inc.

ENGINEERED SOLUTIONS FROM PEOPLE WHO CARE

6301 S University Ave, Little Rock, AR 72209

PH: (501) 562.2296

www.jteng.com



JACK TYLER ENGINEERING, INCORPORATED

6112 PATTERSON AVENUE, LITTLE ROCK, ARKANSAS 72209
(501) 562-2296 • FAX (501) 562-4273 • ARKANSAS WATS 1-800-562-2296

STATEMENT OF TERMS AND CONDITIONS

TERMS/PAYMENTS: Our terms of payment are net cash 15 days from date of the invoice subject to

Seller's prior credit approval. If the Buyer shall fail to make any payments in accordance with the terms and conditions of sale, the Seller, in addition to its other rights and remedies, but not in limitation thereof, may, at its option, without prior notice, cancel this order as to any undelivered products or defer shipments or deliveries hereunder, or under any other agreement between Buyer and Seller, except upon Seller's receipt of cash before shipment or such security as Seller considers satisfactory. Seller reserves the right to impose an interest charge of 16% on the balance of each invoice not paid on its due date for the period from the due date to the date of receipt of payment by Seller. In the event Buyer's failure to make timely payments to Seller results in Seller incurring additional costs, including but not limited to collection expenses and attorneys' fees, said costs shall be added to the amount due Seller from Buyer. Buyer shall have no right to any discount or retainage and shall not withhold payment as a set-off on Seller's invoice in any amount. Visa, MasterCard, Discover, and American Express credit card purchases are accepted.

SHIPMENT: The date of shipment is subject to our receiving your order with complete information at our office, final approval of any prints or drawings as may be required, credit approval, and the acceptance of your order by the company. Freight Charges are not included in the quoted price.

EXPIRATION: Quotation expires 30 days from the date of proposal and, in the interim, is subject to change without notice.

TAXES: Unless otherwise stated in the proposal, the prices quoted herein are exclusive of all sales, use and similar taxes and, wherever applicable, such taxes will be added to the invoice as separate items.

RETURNS/REFUNDS: Items wished to be returned are subject to prior approval and must be accompanied by a Return Merchandise Authorization (RMA). Items returned without proper approval and/or paperwork will be returned to the customer at their expense. Returns past 30 days of initial receipt will not be accepted.

All returned items are subject to a restocking fee. The customer's credit will be equal to the credit Jack Tyler Engineering, Inc. receives from the vendor, minus original freight and freight back to the vendor. Please note that all items must be returned to JTEI, who will return the item to the vendor. Credit will only be issued once JTEI receives credit from the vendor.

SPECIAL NOTE:

THIS PROPOSAL IS BASED ON CURRENT PRICES. EQUIPMENT IS SUBJECT TO THE SAME PERCENTAGE INCREASE AS MADE BY OUR SUPPLIERS AND THE INVOICE WILL REFLECT PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS SPECIFICALLY EXCEPTED. **WE WILL NOT ACCEPT RETAINAGE ON ANY OF OUR INVOICES!**

******* A \$50.00 minimum order charge will apply *******

WARRANTY:

"The products sold by Jack Tyler Engineering, Inc. hereunder are manufactured by others, and the only warranties that apply to these products are those of the manufacturer of the products which can be passed on by Jack Tyler Engineering, Inc. to its customers. No other warranty of any kind is given in connection with the sale of any of the above products, and JACK TYLER ENGINEERING, INC. MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR AS TO ANY OTHER MATTER RESPECTING THESE PRODUCTS. Jack Tyler Engineering, Inc. shall not be liable in connection with the sale of the above products for any incidental or consequential damages of any kind."

An electronic copy of the latest version is available online at www.jteng.com.



Nixon Power Services
7777 Northshore Place
North Little Rock, AR 72118
P: 501-568-3000

Job Name: Hot Springs Gulpha Pump Station
Offer: KD1250A
Quote Number:0026992706

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From: Taylor Hudson | Industrial Sales
7777 Northshore Place
North Little Rock, AR 72118
501-831-3038 | thudson@rppower.com

Generator

Kohler Model: KD1250-A

This diesel generator set equipped with a KH03850TO4D alternator operating at 277/480 volts is rated for 1250kW/1562 kVA. Output amperage: 1879

Standard Features:

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO) / Renewable Diesel (RD) fuels compliant with EN15940/ASTM D975.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A standard three-year or 1000-hour limited warranty for standby applications. Five-year basic, five-year comprehensive, and ten-year extended limited warranties are also available.
- A standard two-year or 8700-hour limited warranty for prime power applications.
- Tier 2 EPA-certified for Stationary Emergency Applications
- Closed Crankcase Ventilation (CCV) Filters
- Customer Connection
- Generator Heater (4160 Volt)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain and Coolant Drain Extension
- Operation and Installation Literature

Alternator Features:

- The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
- All models are brushless, rotating-field alternators.
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and drip-proof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.

Other Features:

- Kohler designed controllers for one-source system integration and remote communication.
- The low coolant level shutdown prevents overheating (standard on radiator models only).



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Qty	Description
	KD1250-A Generator System
1	KD1250-A Generator Set Includes the following: ES Description 01 Literature Languages Approvals and Listings Engine Nameplate Rating Voltage Alternator Cooling System Skid and Mounting Air Intake Controller Enclosure Type Enclosure Material Enclosure Silencer Enclosure Electrical Package Enclosure Service AMPs Enclosure Electrical Acc. Enclosure Electrical Acc. Enclosure Electrical Acc. Enclosure Heater Enclosure DC Lighting Enclosure Emergency Stop Fuel Tank Type Subbase Fuel Tank Capacity Fill Pipe/Spill Fill Options Starting Aids, Installed Electrical Accy.,Installed Electrical Accy.,Installed Electrical Accy.,Installed Electrical Accy.,Installed Rating, LCB 1 Right Amps, LCB 1 Right Trip Type, LCB 1 Right LCB1 Right Interrupt Rating Aux Trip, LCB 1 Right LCB Accy. Installed Fuel Lines, Installed Fuel System Acc.,Installed Exceeds LTL Shipping Height Miscellaneous Accy,Installed Miscellaneous Accy,Installed ZSI Adder to 1200A LCB1 English UL2200 Listing KD1250-A,60Hz, EPA Tier 2 Standby 130C Rise 60Hz, 277/480V, Wye, 3Ph, 4W KH03850TO4D Unit Mounted Radiator, 50C Skid, Standard Iso Mount Standard Duty APM603 Sound Level 2 Aluminum Internal Silencer Basic Electrical Pkg, 3 Ph 100 AMP Enclosure Service Wire Generator Heater Wire Block Heater Wire Battery Charger Enclosure Heater DC Lights Emergency Stop Switch, Qty 1 State 2,605 Gallons 5 Gal Spill Fill Containment 9000W,208V,1Ph,w/Valves Battery, 4/12V, AGM Batt. Rack & Cables Battery Charger, 24V-20AMP Generator Heater 100% Rated 2,500 Electronic, LSI 65kA At 480V Shunt Trip Shunt Trip Wiring Flexible Fuel Lines Fuel/Water Separator Add'l Shipping Charge Accepted Air Cleaner Restriction Ind. Coolant in Genset



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	Miscellaneous Accy,Installed	Oil in Genset
	Warranty	Standard
	Testing, Additional	Power Factor Test,0.8,3Ph Only
	Total unit length in inches	444
	Total unit width in inches	121
	Total unit height in inches	165
	Total unit weight (lbs)	46,882
	Weight/Dimensions Disclaimer *	Estimates-Not for Construction
1	RSA III, ATS Annunciator	

Automatic Transfer Switch

Qty (1)

3 Pole, 4 Wire, Solid Neutral, 4000 amp, Service Entrance rated Programmed automatic transfer switch, rated 480V, 60 Hz complete with all standard equipment and housed in a NEMA Type 3R enclosure.

Clarifications

Clarifications

RELATED ITEMS NOT INCLUDED:

Third party testing such as NETA Testing and Infrared Scanning, is not included in this proposal. If required, these services are to be provided by others.

Off-Loading, Permits, Concrete Pad, Installation, Exhaust Installation, Extended Wiring, Fuel, Extended Exhaust, Anchor Bolts, Cooling Piping, and Insulation are NOT included unless specifically listed in the above bill of materials. Current Lead Time: Approx. 45 weeks ARO. Lead times are based on firm order levels and current line capacities. Lead times are subject to change during "High Volume" period.

Distributor Startup & Freight

A FACTORY TRAINED TECHNICIAN shall perform startup inspection and necessary installation checks and testing per the written specifications once the equipment is furnished and installation is completed. The above pricing is based on same day start-up and training (unless otherwise stated in specification). Startup inspection and testing is included, and will be completed during normal business hours Monday thru Friday 8:00 am to 5:00 pm. We can perform start up after hours and weekends at additional cost.

Proposal includes freight via FOB Factory to first destination only. FOB Factory with freight allowed to your jobsite (or office) if accessible by a semi. All deliveries are drop-shipped. Offloading and placement of equipment is excluded. All deliveries are Monday through Friday 8:00 a.m. to 5:00 p.m. Deliveries outside the normal business hours will be invoiced as necessary.

Miscellaneous

Price subject to change if additional drawings or specification information becomes available.

Due to Market Volatility, pricing will be held for 30 Days.



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OFFER TOTAL SELL PRICE: \$697,810.00

Price does not include any applicable taxes or installation

OFFER ACCEPTANCE

I hereby authorize Nixon Power Services to use this form as a bona fide purchase order of the equipment shown on Offer Number: KD1250A, which clearly establishes definite price and specifications of material ordered. The person signing is doing so according to the terms and conditions.

Proposed by:

Company Nixon Power Services

Print Name: Taylor Hudson

Title: Outside Sales

Signature: _____

Date: _____

Accepted by:

Company: _____

Print Name: _____

Title: _____

Signature: _____

Date: _____

PO Number: _____



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STANDARD TERMS AND CONDITIONS OF SALE

These Standard Terms and Conditions of Sale ("Terms") shall, unless otherwise explicitly stated in writing by Nixon Power Services, govern all sales of goods ("Goods") or services, including without limitation repairs, maintenance, warranty repairs, or services provided pursuant to a maintenance agreement (collectively, "Services"), by Nixon Power Services ("Nixon") to the customer purchasing such Goods or Services (the "Buyer"). Special Conditions of Sale, where applicable, are included at Exhibit B, attached hereto.

1.Contract- These Terms, together with any: price list or schedule, quotation, acknowledgement, or scope of work provided by Nixon; or documents incorporated by specific reference herein or therein, constitute the complete and exclusive statement of the terms of the agreement governing the sale of Goods or Services by Nixon to Buyer. Nixon's acceptance of Buyer's authorization to proceed is expressly conditioned on Buyer's assent to all of Nixon's Terms, including terms and conditions that are different from or additional to any terms or conditions in Buyer's purchase order. Buyer's placement of an order with Nixon and/or acceptance of Goods or Services constitute Buyer's assent to Nixon's Terms.

2.Service, Repair, Maintenance- Nixon reserves the right in its sole discretion to refuse to provide service or repair. All maintenance plans exclude and do not cover or apply to rotors, stators or engine crank shafts. The cost of providing a rental generator while a permanent generator is being maintained or repaired, regardless of whether the repair is a warranty repair or a non-warranty repair or whether the service or maintenance is provided under warranty or pursuant to a maintenance agreement, and regardless of whether the service, maintenance or repair is the responsibility of the manufacturer of the Goods or of Nixon, is excluded from any service or maintenance plan or product warranty and shall be the responsibility of Buyer. Service or maintenance of any fire pump covers only the diesel engine component and no other component. Waste oil and coolant from emergency generators are hazardous materials and must be handled as such. Disposal of hazardous materials is Buyer's responsibility and done at Buyer's expense, and when handling or disposing of such materials is Nixon's responsibility, Nixon charges an additional "hazmat fee" and safely removes and recycles such materials.

3.Quotations And Published Prices- Prices quoted in writing by Nixon shall remain in effect for thirty (30) calendar days from the date of issuance by Nixon, unless withdrawn in writing by Nixon before that time expires, and may be accepted only by an unconditional authorization or purchase order from Buyer that is received and accepted by Nixon within this period.

3b. SCOPE- Nixon Power shall supply power generation equipment and any related parts, materials and/or services expressly identified in this Agreement (collectively, "Equipment"). No additional services, parts or materials are included in this Agreement unless agreed upon by the parties in writing. The Quote is based upon the assumption that the Equipment will be reasonably available and is not subject to unusual market fluctuations. In the event of unusual and/or unanticipated price fluctuations and/or shortage of materials ("Fluctuations"), Nixon Power reserves the right to adjust the estimated delivery time and/or the price to reflect such Fluctuations. Subject to the foregoing, any Quote is valid for the duration of time as listed in clarifications above and the price is firm provided drawings are approved and returned within specified dates quoted. Any delays may result in escalation charges. A Sales Order for Equipment is accepted on hold for release basis. The Sales Order will not be released and scheduled for production until written approval to proceed is received. A Quote is limited to plans and specifications section set forth in the Quote. No other sections shall apply. Additional requirements for administrative items may require additional costs. The Quote does not include off unit wiring, off unit plumbing, offloading, rigging, installation, exhaust insulation or fuel, unless otherwise stated.

4.Taxes- Nixon's prices do not include any applicable sale, use, excise or similar taxes, and the amount of any such tax that Nixon may be required to pay or collect is Buyer's responsibility and will be added to Buyer's invoice unless Buyer timely furnishes Nixon with a valid tax exemption certificate acceptable to the appropriate taxing authorities. Where Buyer fails to furnish the required documentation, any unpaid sales, use, excise, or similar tax will be billed to Buyer. If at any time the appropriate taxing authority



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determines, for whatever reason, that an exemption certificate provided to Nixon by Buyer is invalid, Nixon will make a reasonable, good-faith attempt to acquire a valid exemption certificate, notarized affidavit of exempt use, or other necessary documentation from Buyer, and Buyer agrees to cooperate fully and promptly with Nixon in such circumstances. If Buyer fails to timely furnish a valid exemption certificate, notarized affidavit, or other necessary documentation, or fails to cooperate with Nixon, or if the appropriate taxing authority does not accept the additional documentation provided, the sales, use, excise or similar tax will be billed to Buyer.

5.Payment Terms- Unless otherwise specified by Nixon and subject to Nixon's review and approval of Buyer's credit, payment terms are net thirty (30) days from date of Nixon's invoice, payable in U.S. currency. If Buyer wishes to use a Visa or MasterCard as the form of payment, Nixon may charge a 5% convenience fee (5% of the total invoice), which Buyer agrees to pay. Nixon shall have the right to cancel or suspend any order for Goods or Services if Buyer fails to make any payments when due. Buyer shall be liable for all expenses, including attorneys' fees, relating to the collection of past due amounts. Amounts past due are subject to a service charge of the lower of one-and-a-half percent (1.5%) per month (or fraction thereof) or the maximum rate allowed by law, from the date on which they are due until they are paid, and any payments will be applied first to service charges due. Nixon reserves the right, in its sole discretion based on Nixon's determination of Buyer's creditworthiness, to require payment in advance of shipping Goods or providing Services and/or payment of a deposit before accepting and processing any order. If such cash payment or security is not provided, Nixon may refuse to accept and process Buyer's order and/or may suspend or cancel production and/or delivery of Goods or Services. Buyer hereby grants Nixon a security interest in all Goods sold to Buyer by Nixon, which security interest shall continue until all such Goods are fully paid for, and Buyer, upon Nixon's demand, will execute and deliver to Nixon such instruments as Nixon requests to protect and perfect such security interest.

6.Delivery- While Nixon will use all reasonable commercial efforts to maintain the shipping and/or performance date(s) quoted by Nixon, all shipping dates and/or performance dates are approximate and not guaranteed. Nixon shall not be bound to tender delivery of any Goods for which Buyer has not provided shipping instructions or other required information. If shipment of any Goods is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse Nixon for any and all storage costs and other additional cost or expenses resulting from the postponement or delay. All shipments of Goods are F.O.B. Nixon's facility. All shipments are made at Buyer's risk. Risk of loss and legal title shall pass from Nixon to Buyer upon delivery to and receipt by carrier at Nixon's shipping point. Any claims for shortages or damages suffered in transit are the responsibility of Buyer and must be submitted by Buyer directly to the freight carrier. Shortages or damages must be identified and signed for at the time of delivery.

7.Manufacturer's Limited Warranty- The manufacturer of the Goods warrants its product(s) to be free from defects in materials and workmanship for a period of ninety (90) days, commencing on the start-up date. In the sole discretion of the manufacturer, repair, replacement, or an appropriate price adjustment will be provided by the manufacturer if, but only if, Goods are found by the manufacturer and Nixon (1) to have been and to be properly installed, operated, and maintained in accordance with manufacturer's instruction manuals; and (2) defective in materials or workmanship, within the warranty period. This warranty does not apply to defects or malfunctions caused by damage, unreasonable use, misuse, repair or service by unauthorized persons, or normal wear and tear. For more information regarding the specific manufacturer's warranty coverage applicable to the Goods, refer to the applicable Warranty Technical Publication, which will be made available by Nixon upon request. Replacement or installation of Goods, including without limitation equipment, components or accessories, which fail to provide satisfactory performance due to obsolescence or design conditions are not covered by the manufacturer's warranty or included in the manufacturer's warranty obligations. Nixon is not the manufacturer of the Goods and does not warrant the Goods in any way.

8.Disclaimer Of Warranty- LIMITATION OF LIABILITY, EXCEPT AS EXPRESSLY PROVIDED IN MANUFACTURER'S WARRANTY, NEITHER MANUFACTURER NOR NIXON MAKES ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The manufacturer's obligation under its warranty, and Buyer's sole and exclusive remedy for breach of any warranty hereunder, shall be limited to repair, replacement, or price adjustment, at the manufacturer's election. Under no circumstances shall Nixon be liable for any damages incurred by Buyer or any third party that result from or arise out of: any breach of the manufacturer's warranty; or any delay in performance by Nixon or manufacturer, and the remedies of Buyer set forth herein are exclusive. In no event,



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regardless of the form of the claim or cause of action (whether based in contract, infringement, negligence, strict liability, other tort or otherwise), shall Nixon's liability to Buyer, its customer(s), or any other third party exceed the price paid by Buyer for the specific Goods provided by Nixon giving rise to the claim or cause of action. All reasonable efforts shall be extended in performing Services, but Nixon shall not be liable for any losses or consequential damage(s) that arise out of delays or misuse or improper use by Buyer, its agents or employees.

9.Incidental, Consequential or Punitive Damages- The term "consequential damages" shall include but is not be limited to: loss of anticipated profits; business interruption; loss of use, revenue, reputation or data; costs incurred, including without limitation, for capital, fuel, or power; and loss or damage to reputation, property or equipment. Buyer agrees that under no circumstances shall Nixon be responsible or liable for any consequential, incidental or punitive damages arising out of or relating to any purchase of any Goods or Services.

10. Technical Support- It is expressly understood that any technical advice furnished by Nixon with respect to the use of Goods is given without charge, and Nixon assumes no obligation or liability for the advice given or results obtained, all such advice being given and accepted at Buyer's risk.

11.Excuse Of Performance- Nixon shall not be liable for delays in performance or for non-performance due to acts of God, actions or inactions of Buyer, war, epidemic, fire, flood, weather, sabotage, strikes or labor disputes, civil disturbances or riots, governmental requests, restrictions, allocations, laws, regulations, orders or actions, unavailability of or delays in transportation, default of suppliers, or unforeseen circumstances, or any events or causes beyond Nixon's reasonable control. Shipments of Goods or the provision of Services may be suspended or canceled by Nixon upon notice to Buyer in the event of any of the foregoing, but the balance of any related order shall otherwise remain unaffected. If Nixon determines that its ability to supply the demand for Goods, or to obtain material used directly or indirectly in the provision of Goods, is hindered, limited or made impracticable due to any of the causes set forth in this paragraph, Nixon may allocate its available supply of Goods and/or such material, without obligation to acquire other supplies of Goods or materials, among its purchasers on such basis as Nixon determines to be equitable, without liability for any failure of performance which may result therefrom.

12.Changes- Buyer may request changes or additions to Goods consistent with Nixon's specifications and criteria. Any such request must be made in writing and is subject to acceptance in Nixon's sole discretion. In the event such changes or additions are accepted by Nixon, Nixon may revise as it deems appropriate the price(s) of Goods or the dates of shipping or performance. Nixon reserves the right to change designs and specifications for Goods without prior notice to Buyer. Nixon shall have no obligation to install or make such changes in any Goods manufactured prior to the date of such change.

13.Cancellation- Undelivered parts of any order may be canceled by Buyer only with the prior written approval of Nixon. If Buyer makes an assignment for the benefit of creditors or in the event that Nixon for any reason feels insecure about Buyer's willingness or ability to perform, Nixon has the right to cancel any open orders. In the event a request by Buyer to cancel an order is agreed to by Nixon, Buyer shall forfeit its deposit, if any, and shall pay to Nixon the reasonable costs and expenses (including without limitation engineering expenses and commitments, such as deposits, quotes, or agreements, to suppliers and subcontractors) incurred by Nixon prior to receipt of notice of such cancellation, plus Nixon's usual profit for similar work. In the event Nixon agrees to accept equipment for restocking, a minimum restocking charge of twenty-five percent (25%), based on the sales price to Buyer of said equipment, will apply.

14.Default- Upon default and placing of any invoice with an attorney for collection or repossession of Goods or related equipment or materials, Buyer agrees to reimburse Nixon for its reasonable attorney's fees and other costs, including without limitation court costs, incurred in connection therewith.



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15.Buyer Acceptance- Any Goods delivered hereunder shall be deemed to be fully accepted by Buyer unless Nixon receives written notice of rejection of any such Goods within ten (10) days after the date of delivery to Buyer.

16.Regulatory Laws and/or Standards- The manufacturer takes reasonable steps to keep the Goods in conformity with certain nationally-recognized standards and such regulations which may affect them; however, Buyer understands and acknowledges that the Goods are utilized in many regulated applications and that, from time to time, standards and regulations are in conflict with each other. Nixon makes no promises or representations that the Goods will conform to any federal, state or local laws, ordinances, regulations, codes or standards, except as particularly specified and agreed upon in writing as a part of the contract between Buyer and Nixon. Nixon's prices do not include the cost of any related inspections or permits or inspection fees, all such costs to be paid by Buyer.

17.Non-assignment- No order for Goods may be assigned by Buyer, in whole or in part, without Nixon's prior written consent, which may be withheld in Nixon's sole discretion.

18.Billable Services- Additional charges will be billed to Buyer at Nixon's then-prevailing labor rates for any services not specified in Nixon's quotation or subsequent engineering submittal. If reasonable site and/or equipment access is denied by the Nixon service representative and if it is necessary, due to local circumstances, to hire a third-party contractor, Nixon service personnel will provide supervision only and the cost of such contract labor will be charged to and paid by Buyer.

19.General Provisions- These Terms supersede all other communications, negotiations and prior oral or written statements regarding the subject matter. No change, modifications, rescission, discharge, abandonment or waiver of these Terms shall be binding upon Nixon unless made in writing and signed on its behalf by a duly authorized representative. No conditions, usage of trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain or supplement these Terms shall be binding unless made in writing and signed by the party to be bound, and no modification or additional terms shall be applicable to any order simply by Nixon's receipt, acknowledgement, or acceptance of purchase orders, shipping instruction forms, or other documentation containing terms at variance with, or in addition to, those set forth herein. Any such modifications or additional terms are deemed a material alteration hereof and are specifically rejected. If this document shall be deemed an acceptance of a prior offer by Buyer, such acceptance is expressly conditioned upon Buyer's assent to any additional or different terms set forth herein. No waiver by either party with respect to any breach or default or of any right or remedy, nor any course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default of any other right or remedy, unless such waiver be expressed in writing and signed by the party to be bound. All typographical or clerical errors made by Nixon in any quotation, acknowledgement or publication are subject to correction.

20.Hours of Operation- Nixon's normal business hours are from 8:00 AM to 4:30 PM, local time at Nixon's place of business, Monday through Friday. Services will be provided only during these normal business hours unless otherwise specified. Should Buyer require Services during a time other than Nixon's normal business hours, Buyer shall pay Nixon the additional overtime portion of the normal service rates. Non-holiday overtime is time-and-a-half, or the normal service rate multiplied by one-and-a-half (1.5). Holiday overtime is double time, or the normal service rate multiplied by two (2).

EXCLUSIONS: The following are specifically excluded from coverage under any warranty provided by either the manufacturer or Nixon and from any scope of work provided or approved by Nixon:

- All equipment, components and supporting systems NOT specifically listed on the "Equipment covered" list.
- Loss of, partial failure of, or insufficient capacity of, utilities, such as, but not limited to, electrical service, open circuit breakers or fuses.
- External power wiring, circuit breakers, and disconnects supplying electrical service to the listed equipment.
- Refinishing, repair, replacement, cleaning, or modification of duct work louvers, cabinetry, housings, bases, mountings, foundations, supporting structures, or trim.



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- Any emergency freight or expediting charges.
- Additional maintenance and adjustments required or requested by Buyer that are not within the scope of work agreed to by Nixon.

SECTION 068310

FIBERGLASS REINFORCED PANELING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fiberglass reinforced plastic (FRP) wall panels.

1.2 RELATED REQUIREMENTS

- A. Section 07920 – Joint Sealants.

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM) (www.astm.org):

1. ASTM D 2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
2. ASTM D 5319 – Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
3. ASTM D 5420 – Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
4. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

- B. FM Global (FM) (www.fmglobal.com):

1. ANSI FM Approval 4880 – Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings, and Exterior; Wall Systems.

- C. UL (www.ul.com):

1. UL 2818 – GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings.

1.4 PREINSTALLATION MEETINGS

- A. Convene pre-installation meeting 1 week before start of Work of this Section.
- B. Require attendance of parties directly affecting Work of this Section, including Contractor, installer, and manufacturer's representative.
- C. Review the Following:
 1. Materials.
 2. Preparation.
 3. Installation.
 4. Field quality control.
 5. Adjusting.
 6. Cleaning.
 7. Protection.
 8. Coordination with other Work.

1.5 ACTION SUBMITTALS

- A. Comply with Division 01.
- B. Product Data: Submit manufacturer's product data for each type of product required.
- C. Samples: Submit manufacturer's selection and verification samples for finish, colors, patterns, and textures.
- D. Submit 2 samples of each type of panel, trim, and fastener.
- E. Certificates: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Test and Evaluation Reports: Submit reports showing compliance with specified performance characteristics and physical properties.
- G. Manufacturer's Instructions: Submit manufacturer's installation and storage instructions.
- H. Manufacturer's Project References: Submit manufacturer's list of successfully completed FRP panel projects, including project name and location, name of architect, and type and quantity of FRP panels furnished.
- I. Installer's Project References: Submit installer's list of successfully completed FRP panel projects, including project name and location, name of architect, and type and quantity of FRP panels installed.

1.6 CLOSEOUT SUBMITTALS

- A. Comply with Division 01.
- B. Care and Maintenance Instructions: Submit manufacturer's care and maintenance instructions, including cleaning and repairing instructions.
- C. Warranty Documentation: Submit manufacturer's standard warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Comply with Division 01.

1.8 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged, for a minimum of 10 years, in the manufacturing of FRP panels of similar type to that specified.
- B. Installer's Qualifications:
 - 1. Installer regularly engaged, for a minimum of 5 years, in installation of FRP panels of similar type to that specified.
 - 2. Employ persons trained for installation of FRP panels.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.

2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors at temperature and humidity conditions in accordance with manufacturer's instructions.
4. Store materials on flat, level surface, raised above floor, with adequate support to prevent sagging.
5. Store materials out of direct sunlight.
6. Protect materials and finish during storage, handling, and installation to prevent damage.

1.10 AMBIENT CONDITIONS

A. Do Not Begin Installation Until:

1. Building is enclosed.
2. Permanent heating and cooling equipment is in operation.
3. Residual moisture from plaster, concrete, or terrazzo has dissipated.

B. During installation and within 48 hours before installation, maintain ambient temperature and relative humidity within limits required by type of FRP panel adhesive used and adhesive manufacturer's instructions.

1.11 WARRANTY

A. Warranty Period: 1 year from date of purchase.

B. Limited Warranty Period: Prorated years 2 to 10 from date of purchase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Crane Composites, Inc. (formerly Kemlite) 23525 West Eames Street, Channahon, Illinois 60410. Toll Free 800-435-0080. Phone 815-467-8600. Fax 815-467-8666. Website www.cranecomposites.com. Email salesbp@cranecomposites.com.

B. Substitutions: Submissions of equal assemblies will be considered if submitted 15 days prior to the bid date for review.

C. Single Source: Provide FRP panels and accessories from single manufacturer.

2.2 FRP PANELS

A. Fiberglass Reinforced Plastic (FRP) Panels: Crane Composites "Glasbord PIF".

1. Class C.
2. Use: Walls.
3. Surface Finish: Pebbled embossed texture.
4. Scratch Resistance, ASTM D 2583, Barcol Hardness: 35.
5. Abrasion Resistance, Taber Abrasion Test, CS-17 abrasive wheels with 1,000 g weight: Weight loss after 25 cycles of no more than 0.038 percent.
6. Impact Strength, ASTM D 5420: 6.0 in-lbs (0.32 J), showing no visible damage on finish side.

B. Panel Compliance: ASTM D 5319.

C. Panel Low-Emitting Materials: Comply with testing and product requirements of California Department of Health Services standards for Volatile Organic Emissions.

- D. Panel Surface Protection: "Surfaseal" molecularly-bonded surface protection film for impact, abrasion, and scratch resistance.
- E. Panel Color: 85 White.
- F. Panel Dimensions:
 - 1. Nominal Thickness: 0.09 inch.
 - 2. Wall Panel Size: 4 feet by 12 feet.

2.3 ACCESSORIES

- A. Moldings, Trim, and Caps: 1-piece extruded polypropylene or PVC, configured to cover panel edges and corners.
 - 1. Color: 85 White.
- B. Panel Adhesive: As recommended by FRP panel manufacturer for required substrates.
 - 1. VOC Content: Maximum 50 g/L.
- C. Panel Seam Sealant: Bright white, 2-part urethane sealant, as recommended by FRP panel manufacturer.
 - 1. VOC Content: 0.0 g/L.
- D. Rivets:
 - 1. Color: White.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive FRP panels.
- B. Examine Substrate Surfaces to Determine:
 - 1. Corners: Plumb and straight.
 - 2. Surfaces: Smooth, sound, and uniform.
 - 3. Nails or Screw Fasteners: Countersunk.
 - 4. Joints and Cracks: Filled flush and smooth with adjoining surfaces.
- C. Notify Architect of conditions that would adversely affect installation or subsequent use.
- D. Do not begin preparation or installation until unacceptable conditions are corrected.

3.2 PREPARATION

- A. Clean substrates to remove substances that could impair bond of adhesive, including oil, grease, dirt, dust, or other contaminants.
- B. Acclimate FRP panels by unpacking and placing in installation space a minimum of 24 hours before installation.
- C. Lay out FRP panels before beginning installation.
 - 1. Locate panel joints to provide equal panel widths at ends of walls.

2. Locate panel joints to provide trimmed panels at corners a minimum of 12 inches (300 mm) wide.

3.3 INSTALLATION

- A. Install FRP panels in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install FRP panels plumb, level, square, flat, and in proper alignment.
- C. Install FRP panels to be water resistant and washable.
- D. Install FRP panels with manufacturer's recommended gap for panel field and corner joints.
- E. Fasteners:
 1. Use fasteners in accordance with manufacturer's instructions to install FRP panels securely to supports.
 2. Pre-drill fastener holes in FRP panels, 1/8 inch (3.2 mm) greater in diameter than fasteners.
- F. Adhesive:
 1. Install FRP panels in full spread of adhesive.
 2. Follow adhesive manufacturer's instructions for application of adhesive.
- G. Install trim accessories with adhesive and nails or staples.
 1. Do not fasten through FRP panels.
- H. Sealant:
 1. Fill grooves in trim accessories with sealant before installing FRP panels.
 2. Bed inside corner trim in bead of sealant.
 3. Remove excess sealant and smears as FRP panels are installed.
 4. Clean in accordance with sealant manufacturer's instructions.
- I. Tolerances: Install FRP panels within manufacturer's installation tolerances.

3.4 ADJUSTING

- A. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- B. Remove and replace with new material, damaged components that cannot be successfully repaired, as determined by the Owner and/or Architect.

3.5 CLEANING

- A. Clean FRP panels promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.6 PROTECTION

- A. Protect installed FRP panels and finish surfaces from damage during construction.

END OF SECTION

SECTION 331216
WASTEWATER VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Valves shall be sized, furnished, and installed as detailed on the Drawings complete in place all in accordance with these Specifications.

1.2 REFERENCES

- A. American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
 - 1. AWWA C500 - Gate Valves for Water and Sewerage Systems.
 - 2. AWWA C509 - Resilient-Seated Gate Valves for Water and Sewage Systems.
 - 3. AWWA C517 – Resilient-Seated Cast-Iron Eccentric Plug Valves
 - 4. AWWA C550 – Protective Interior Coatings for Valves and Hydrants
 - 5. AWWA C800 – Underground Service Line Valves and Fittings
- B. American Society for Testing and Materials, 1961 Race Street, Philadelphia, Pennsylvania 19103.
 - 1. ASTM A48 – Standard Specification for Gray Iron Pipe
 - 2. ASTM A126 - Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - 3. ASTM A536 – Standard Specification for Ductile Iron Castings

1.3 SUBMITTALS

- A. Submit in accordance with Section 013300 - Submittals

PART 2 - PRODUCTS

2.1 GENERAL

- A. Valves to be complete and arrive at job site assembled with all necessary operators, valve boxes, extension stems, floor stands, worm and gear operators, operating nuts, etc., required for proper completion of work.
- B. Units shall have name of manufacturer and size of valve cast on the body or bonnet or shown on a permanently attached plate in raised letters.

2.2 PLUG VALVES

- A. 100% Port Plug Valves shall have a minimum 100% open port area as defined as the geometric opening of the plug valve that is greater than or equal to the open area of the connecting pipe.
- B. Manufacturer shall provide certified calculations that the port area meets or exceeds the 100% requirement as compared to pipe per ANSI B16.1.
- C. Plugs shall be solid one piece, cast of ASTM A536 ductile iron. The plug shall have a cylindrical seating surface eccentrically offset from the center of the shaft. Plug shall not contact the seat prior to 90% closed. Plug facing shall be Chloroprene (CR), or other resilient facing suitable for the application.

- D. Bodies shall be of ASTM A126 Class B cast iron. Port area shall be 100% of Standard class pipe area. Bearings shall be sleeve type and made of sintered, oil-impregnated permanently lubricated type 316 stainless steel per ASTM A743 Grade CF8M.
- E. Seats shall be 1/8" thick welded overlay of not less than 95% pure nickel. Seat shall be at least 1/2" wide and raised. The raised surface shall be completely covered with nickel to ensure that the resilient plug face contacts only the nickel seat.
- F. Adjustable Packing shall be of the multiple V-ring type, with a packing gland follower. Shaft seals shall permit inspection, adjustment, or complete replacement of packing without disturbing any part of the valve or actuator assembly except the packing gland follower.
- G. Grit Excluders made of PTFE Shall be provided to prevent the entry of grit and solids into the bearing areas.
- H. Pressure ratings shall be bi-directional and 175 psi (1,207 kPa) on sizes 3"-12" (80-300mm) and 150 psi (1,034 kPa) for 14"-36" (350-900mm). Every valve shall be given a certified hydrostatic and seat test, with test reports being available upon request.
- I. Worm gear actuators shall be provided on all valves six inches and larger. Actuators shall be enclosed in a cast iron housing, with outboard seals to protect the bearings and other internal components. The actuator shaft and gear quadrant shall be supported on permanently lubricated bronze bearings.
- J. Buried valves should have extended bonnets (ENK) to bring the Rotork electric motor operator above grade and eliminate the need for valve box. Length should be specified from centerline of valve to motor operator flange. Extension shall be provided by the valve manufacturer.
- K. Eccentric plug valves and actuators shall meet or exceed the latest revisions of AWWA C517 and other applicable standards. Flanged ends shall be per ANSI B16.1 and mechanical joint ends per AWWA C111.
- L. All full port plug valves shall be manufactured by DeZurik, Val-Matic or engineer pre-approved equal. Manufacturers requesting approval shall supply pre-submittal information at least 10 days prior to bid.

2.3 ELECTRIC MOTOR OPERATORS

A. General

- 1. The actuators shall be suitable for use on a nominal 230-volt, single phase, 60 Hz power supply and are to incorporate motor, integral reversing starter, local control facilities and terminals for remote control and indications connections housed within a self-contained, sealed enclosure. As a minimum the actuators should meet the requirements set out in EN15714-2 and ISA SP96.02.
- 2. The actuator shall include a device to ensure that the motor runs with the correct rotation for the required direction of valve travel irrespective of the connection sequence of the power supply.
- 3. Actuator Sizing shall be Rotork IQS20 for open/close service on all 24" Plug Valves.

4. The actuator shall be sized to guarantee valve opening and closure at the specified differential pressure of 100 psi. The safety margin of motor power available for seating and unseating the valve shall be sufficient to ensure torque switch trip at maximum valve torque with the supply voltage 10% below nominal. For linear operating valves, the operating speed shall be such as to give valve closing and opening at approximately 10-12 inches per minute unless otherwise stated in the data sheet. For 90° valve types the operating time will be specified.

B. Environmental

1. Actuators shall be suitable for indoor and outdoor use. The actuator shall be capable of functioning in an ambient temperature ranging from -33°C (22°F) to 70°C (140°F), up to 100% relative humidity. Actuators for hazardous area applications shall meet the area classification, gas group and surface temperature requirements specified in data sheet.

C. Enclosure

1. Actuators shall be o-ring sealed, watertight to IP66/IP68 7m for 72hrs, NEMA 4, 6. The motor and all other internal electrical elements of the actuator shall be protected from ingress of moisture and dust when the terminal cover is removed for site for cabling, the terminal compartment having the same ingress protection rating as the actuator with the terminal cover removed.
2. Enclosure must allow for temporary site storage without the need for electrical supply connection.
3. All external fasteners shall be plated stainless steel. The use of un-plated stainless steel or steel fasteners is not permitted.

D. Motor

1. The motor shall be an integral part of the actuator, designed specifically for valve actuator applications. It shall be a low inertia high torque design, class F insulated with a class B temperature rise giving a time rating of 15 minutes at 40°C (104°F) at an average load of at least 33% of maximum valve torque. Temperature shall be limited by 2 thermostats embedded in the motor end windings and integrated into its control.
2. Electrical and mechanical disconnection of the motor should be possible without draining the lubricant from the actuator gearcase.

E. Motor Protection

1. Protection shall be provided for the motor as follows:
2. Stall - the motor shall be de-energized within 8 seconds in the event of a stall when attempting to unseat a jammed valve.
3. Over temperature - thermostat will cause tripping of the motor. Auto-reset on cooling
4. Single phasing - lost phase protection.
5. Direction – phase rotation correction.

F. Gearing

1. The actuator gearing shall be totally enclosed in an oil-filled gearcase suitable for operation at any angle. Grease lubrication is not permissible.
2. All drive gearing and components must be of metal construction and incorporate a lost-motion hammer blow feature. For rising spindle valves the output shaft shall be hollow to accept a rising stem and incorporate thrust bearings of the ball or roller type at the base of the actuator.

3. The design should be such as to permit the opening of the gearcase for inspection or disassembled without releasing the stem thrust or taking the valve out of service.
4. For 90° operating type of valves drive gearing shall be self-locking to prevent the valve back-driving the actuator.

G. Hand Operation

1. A handwheel shall be provided for emergency operation, engaged when the motor is declutched by a lever or similar means, the drive being restored to electrical operation automatically by starting the motor.
2. The handwheel or selection lever shall not move on restoration of motor drive. Provision shall be made for the hand/auto selection lever to be locked in both hand and auto positions.
3. It should be possible to select hand operation while the actuator is running or start the actuator motor while the hand/auto selection lever is locked in hand without damage to the drive train.
4. Clockwise operation of the handwheel shall give closing movement of the valve unless otherwise stated in the data sheet. For linear valve types the actuator handwheel drive must be mechanically independent of the motor drive and should be such as to permit valve operation in a reasonable time with a manual force not exceeding 400N through stroke and 800N for seating/unseating of the valve.

H. Drive Interface

1. The actuator shall be furnished with a drive bushing easily detachable for machining to suit the valve stem or gearbox input shaft. The drive bush shall be positioned in a detachable base of the actuator. Thrust bearings shall be sealed for life and the base shall be capable of withstanding five times the rated thrust of the actuator.

I. Local Controls

1. The actuator shall incorporate local controls for Open, Close and Stop and a Local/Stop/Remote mode selector switch lockable in any one of the following three positions: local control only, stop (no electrical operation), remote control plus local stop only. It shall be possible to select maintained or non-maintained local control.
2. The local controls shall be arranged so that the direction of valve travel can be reversed without the necessity of stopping the actuator.
3. The local controls and display shall be rotatable through increments of 90 degrees to suit valve and actuator orientation.

J. Torque and Limits

1. Torque and turns limitation to be adjustable as follows:
2. Position setting range – multi-turn: 2.5 to 8,000 turns, with resolution to 7.5 deg. of actuator output.
3. Position setting range – direct drive part turn actuators: 90° +/-10°, with resolution to 0.1 deg. of actuator output.
4. Torque setting: 40% to 100% rated torque.
5. Position measurement – Absolute position measurement should be incorporated within the actuator. The technology must be capable of reliably measuring position even in the case of a single fault. The design must be simple with the minimum amount of moving parts (no more than 5). Technologies such as LEDs or potentiometers for position measurement are considered unreliable and therefore not preferred.

6. Measurement of torque shall be from direct measurement of force at the output of the actuator. Methods of determining torque-using data derived from the motor such as motor speed, current, flux etc. are not acceptable.
7. A means for automatic "torque switch bypass" to inhibit torque off during valve unseating and "latching" to prevent torque switch hammer under maintained or repeated control signals shall be provided.
8. The electrical circuit diagram of the actuator should not vary with valve type remaining identical regardless of whether the valve is to open or close on torque or position limit.

K. Remote Valve Position and Status Indication

1. Four contacts shall be provided which can be selected to indicate any position of the valve; Provision shall be made for the selection of a normally closed or open contact form. Contacts shall maintain and update position indication during handwheel operation when all external power to the actuator is isolated.
2. The contacts shall be rated for 5mA to 5A, 240V AC, 30V DC.
3. As an alternative to providing valve position indication any of the four above contacts shall be selectable to signal one of the following:
 - a. Valve opening, closing, or moving.
 - b. Thermostat tripped, lost phase.
 - c. Motor tripped on torque in mid travel, motor stalled.
 - d. Remote selected
 - e. Actuator being operated by handwheel.
 - f. Actuator fault
4. Provision shall be made in the design for an additional eight contacts having the same functionality.
5. A configurable monitor relay shall be provided as standard, which can be used to indicate either Availability or Fault. The relay should be a spring return type with a Normally Open / Normally Closed contact pre-wired to the terminal bung.
6. The Monitor (availability or fault) relay, being energized from the control transformer will de-energise under any one or more the following conditions:
 - a. Available Mode
 - 1) Loss of main or customer 24V DC power supply
 - 2) Actuator control selected to local or stop.
 - 3) Motor thermostat tripped.
 - 4) Actuator internal fault
 - b. Fault Mode
 - 1) Loss of main or customer 24V DC power supply
 - 2) Motor thermostat tripped.
 - 3) Actuator internal fault
7. Provision shall be made in the design for the addition of a contactless transmitter to give a 4-20mA analogue signal corresponding to valve travel and / or torque for remote indication when required. The transmitter will auto range to the set limits.

L. Local Position Indication

1. The actuator display shall include a dedicated numeric/symbol digital position indicator displaying valve position from fully open to fully close in 0.1% increments. Valve closed and open positions shall be indicated by symbols showing valve position in relation to the pipework to ensure that valve status is clearly interpreted. With mains power connected, the display shall be backlit to enhance contrast at all ambient light levels and shall be legible from a distance of at least 5m (16ft).
2. Red, green, and yellow LEDs corresponding to open, closed, and intermediate valve positions shall be included on the actuator display when power is switched on. The yellow LED should also be fully programmable for on/off, blinker and fault indication. The digital display shall be maintained and updated during handwheel operation when mains power to the actuator is isolated.
3. The actuator display shall include a fully configurable dot-matrix display element with a minimum pixel resolution of 168 x 132 to display operational, alarm, configuration and graphical datalogger information. The text display shall be selectable between English and other languages such as: Spanish, German, French, and Italian. Provision shall be made to upload a different language without removal of any covers or using specialized tools not provided as standard with the actuator.
4. Provision shall be made for the addition of an optional environmental cover to protect the display from high levels of UV radiation or abrasive materials.
5. The local controls and display shall be rotatable through increments of 90 degrees to suit valve and actuator orientation.

M. Integral Starter and Transformer

1. The reversing starter, control transformer and local controls shall be integral with the valve actuator, suitably housed to prevent breathing and condensation. The starter shall be suitable for 60 starts per hour and of rating appropriate to motor size. The controls supply transformer shall be fed from two of the incoming phases and incorporate overload protection. It shall have the necessary tapping and be adequately rated to provide power for the following functions:
 - a. Energizing of the contactor coils.
 - b. 24V DC output for remote controls (maximum 5W/VA)
 - c. Supply for all the internal electrical circuits.

N. Remote Control Facilities

1. The necessary control, wiring and terminals shall be provided integral to the actuator enclosure. Open and close external interlocks shall be made available to inhibit local and remote valve opening / closing control. It shall be possible to configure the interlocks to be active in remote control only.
2. Remote control signals fed from an internal 24V DC supply and/or from an external supply between 20V and 60 VDC or 40V and 120VAC, to be suitable for any one or more of the following methods of control:
 - a. Open, Close and Stop control.
 - b. Open and Close maintained or "push to run" (inching) control.
 - c. Overriding Emergency Shut-down to close (or open) valve from a normally closed or open contact.
 - d. Two-wire control, energize to close (or open), de-energize to open (or close).

3. It shall be possible to reverse valve travel without the necessity of stopping the actuator. The motor starter shall be protected from excessive current surges during rapid travel reversal. The internal circuits associated with the remote control and monitoring functions are to be designed to withstand simulated lightning impulses of up to 2kV.

O. Wiring and Termination

1. Internal wiring shall be tropical grade PVC insulated stranded cable of appropriate size for the control and 3-phase power. Each wire shall be clearly identified at each end. The terminals shall be embedded in a terminal block of high tracking resistance compound.
2. The terminal compartment shall be separated from the inner electrical components of the actuator by means of a watertight seal and shall be provided with a minimum of 3 threaded cable entries with provision for an additional 5 extra conduit entries.
3. All wiring supplied as part of the actuator to be contained within the main enclosure for physical and environmental protection. External conduit connections between components are not acceptable. A durable terminal identification card showing a plan of terminals shall be provided attached to the inside of the terminal box cover indicating:
 - a. Serial number
 - b. External voltage values
 - c. Wiring diagram number
 - d. Terminal layout
4. The code card shall be suitable for the contractor to inscribe cable core identification alongside terminal numbers.

P. Commissioning Kit

1. Each actuator shall be supplied with a start-up kit comprising installation instruction manual, electrical wiring diagram and cover seals to make good any site losses during the commissioning period. In addition, sufficient actuator commissioning tools shall be supplied to enable actuator set up and adjustment during valve/actuator testing and site installation commissioning.

Q. Performance and Test Certificate

1. Each actuator must be performance tested and individual test certificates shall be supplied free of charge. The test equipment should simulate a typical valve load, and the following parameters should be recorded.
 - a. Current at maximum torque setting
 - b. Torque at max. torque setting
 - c. Flash test voltage
 - d. Actuator output speed or operating time.
2. In addition, the test certificate should record details of specification such as gear ratios for both manual and automatic and second stage gearing if provided, drive closing direction, wiring diagram number.

2.4 EXTENSION STEMS FOR VALVE OPERATORS

1. Where the depth of the valve is such that its centerline is more than 4 feet below grade, provide operating extension stems to bring the operating nut to a point 6 inches below the surface of the ground and/or box cover.

2. Valve extensions shall be constructed of steel and shall be complete with 2-inch square operating nut.
3. Valve extension shall be bolted to valve stem to prevent separation.

2.5 VALVE BOXES

- A. All buried gate valves shall be provided with cast iron valve boxes with cast iron lids.
- B. Valve boxes shall be the screw type suitable for the depth of bury as required.
- C. Valve boxes shall have 5-1/4 inch shaft.
- D. Valve boxes for valves on the water line shall have the word ASEWER@ cast into the top of the lid.
- E. Extension pieces, if required, shall be the manufacturer's standard type.
- F. Round precast concrete collars shall be provided for all valve boxes as detailed on the Drawings.
- G. Support valve boxes with concrete blocks so that no weight exerted on the valve box will be transmitted to the valve.
- H. Boxes shall be as by Tyler, Mueller, or approved equal.
- I. Valve boxes for 2 inch and smaller valves shall be large flanged base type.

2.6 COMBINATION AIR VALVE (SEWAGE FORCE MAIN)

- A. Air and vacuum relief valves for the sewage force main shall be constructed with a stainless-steel body and have a working pressure rating of 150 psi minimum. All interior operating parts shall be constructed of stainless steel.
- B. Air and vacuum relief valves shall have an integral type assembly which functions both as an air release and vacuum relief valve.
- C. Combination air valves shall be installed at the approximate locations as detailed on the Drawings and field located during construction. Combination air valves shall be installed at the high points along the pipeline.
- D. Combination air valve assemblies shall be as detailed on the Drawings. All piping shall be stainless steel and conform to AWWA Standard C800. Connections on the outlet side of the valve shall be threaded and shall be as detailed on the Drawings.
- E. Combination air valves shall be the size as indicated Model D-026-NS manufactured by A.R.I. USA or approved equal.
- F. All nipples and piping shall be stainless steel.

2.7 CHECK VALVES

- A. Bottom Mounted Buffer permits free opening, but positive non-slam closure of the disc. The oil hydraulic buffer shall make contact with the disc during the final 10% of closure to control the disc until shut-off in a manner to prevent slam and water hammer.
- B. The buffer rod shall be 303 stainless-steel per ASTM A582. The final closure is to be adjustable by means of a color-coded micrometer type control valve. Control valve to have a locking set screw to secure final setting.

- C. The Oil Reservoir shall be 316 stainless-steel per ASTM A240. Hydraulic hoses are to be S.A.E. certified.
- D. Body shall be ASTM A536 ductile iron. End connections shall be flanged class 125/150 per ASME B16.1. Valves 8" and larger shall have a drain plug located on the bottom of the valve.
- E. Body Seat shall be 316 stainless steel per ASTM A276 with an O-ring seal and locked into place with stainless screws.
- F. Swing Check Valves with Bottom Mounted Buffer to be APCO model CVS-6000-BMB (Series 6000B) as manufactured by DeZurik, Val-Matic or engineer pre-approved equal.

2.8 APPURTENANCES

- A. Rubber Expansion Joints:
 - 1. Rubber Expansion Joints Shall be Proco Style 232 Double Wide - Arched Expansion Joint or approved equal.
 - 2. Expansion Joints shall be constructed of a material approved for wastewater applications.
 - 3. All expansion joints shall be provided with stainless-steel control rods, retaining rings, and hardware.
- B. Flanged Coupling Adapters
 - 1. Flanged coupling adapters shall be Dresser Style 128 or equal
 - 2. All couplings shall be provided with stainless-steel hardware.
- C. Dismantling Joints (Restrained)
 - 1. Working pressure shall be 150 psi
 - 2. Steel follower shall be Carbon steel C1020 per ASTM A576 or A36 or A283C with manufacturer fusion bonded epoxy finish and integral bolt head pocket for one wrench.
 - 3. Sleeve shall be carbon steel per ASTM A283C with manufacturer fusion bonded epoxy finish and provided with hanging rings for ease of installation.
 - 4. Flanges shall be carbon steel per ASTM A36 in accordance with AWWA C207 Class D 150 lb.
 - 5. Spool weldment shall be same of the sleeve but larger for a through -bore design telescoping to travel through the sleeve.
 - 6. Gaskets shall be capable of sustaining test pressure without leakage specific and be EPDM.
 - 7. All bolts, nuts and restraining rods shall be SS316.
 - 8. Approved manufacturer and model: Smith-Blair Model 975 or approved equal.
- D. Ductile Iron Pipe and Fittings
 - 1. Pipe shall be furnished as follows, as noted on the Drawings. Ductile iron pipe and fittings shall be furnished with flanged joints unless otherwise noted.
 - 2. Flanged Joints (Pipe): Pipe for 4" - 54" flanged pipe thread-fabrication shall be Special Thickness Class 53 in accordance with AWWA C115. Bolt circle and bolt holes shall match those of ANSI B16.1 class 125 and ANSI B16.5 class 150 flanges. The flanges shall be rated for at least 250 psi working pressure. Bolts, gaskets, and installation shall be in accordance with AWWA C115. Flange facing shall be smooth or with shallow serrations per AWWA C115.

3. Ductile iron pipe and fittings shall be internally lined with Protecto 401 epoxy lining or other approved lining authorized for use in a wastewater application.

2.9 VALVE SCHEDULE

LOCATION	TAG	QUANTITY	CONNECTION TYPE	SIZE	DESCRIPTION
PLUG VALVES					
Yard Piping	30"-PV-05	1	MJ X MJ	30"	Full Port Plug Valve with worm gear side operator and operating wheel.
Mag Meter	30"-PV-04	1	MJ X MJ	30"	Full Port Plug Valve with worm gear side operator and operating wheel.
Mag Meter	24"-PV-01	1	MJ X MJ	24"	Full Port Plug Valve with worm gear side operator and operating wheel.
Yard Piping	24"-PV-06, 24"-PV-07 & 24"-PV-08	3	MJ X MJ	24"	Full Port Plug Valve with worm gear side operator and operating wheel.
Valve Vault	24"-PV-W02, 24"-PV-W03 & 24"-PV-W04	3	FL X FL	24"	Full Port Plug Valve with worm gear side operator and operating wheel.
Surge Tank	18"-PV-03	1	MJ X MJ	18"	Full Port Plug Valve with worm gear side operator and operating wheel.
Surge Tank	16"-PV-02	1	MJ X MJ	16"	Full Port Plug Valve with worm gear side operator and operating wheel.
AIR RELEASE VALVES					
Valve Vault	3"-ARV-W02, 3"-ARV-W03 & 3"-ARV-W04	3	-	3"	Combination Air Release/Vacuum Valve
CHECK VALVES					
Valve Vault	24"-CK-W02, 24"-CK-W03 & 24"-CK-W04	3	FL X FL	24"	Swing Check Valves with Bottom Mounted Buffer

2.10 **MUD VALVES (Addendum No. 02)**

- A. **Mud valves shall be stainless steel with resilient seats as described herein. Valves shall be the non-rising stem type and be a heavy-duty design.**
- B. **The body flange, yoke, guides, and gate shall be cast stainless steel, type 316. After machining, all castings shall be passivated in accordance with ASTM A-380. Valves which include components welded from stainless steel are not acceptable. The resilient seat shall be of SBR rubber and mechanically retained. Resilient seats which are retained to the gate by adhesive or tension are not acceptable. Fasteners shall be stainless steel.**
- C. **The valve stem shall be one piece with an integral thrust collar and be cast or machined from type 316 stainless steel. Designs which pin a collar to the stem are not acceptable. The valve stem shall have Acme threads with the minimum diameters as shown below:**

Valve Size	Minimum Stem Diameter
6"	1-1/4"

- D. **The valve shall be capable of withstanding a minimum input torque of 450 foot pounds, without damage to the valve. The valve shall not leak more than one quart per hour, when the valve is closed to a stem torque of 35 foot pounds. The manufacturer shall support leakage and torque testing with a report from an independent test laboratory.**
- E. **The stem shall be coupled to the extension stem with a stainless-steel machined coupling or a cast stainless 2" square operating nut and retained with a 5/16" stainless steel spring pin. No welded components of stainless are permitted for this connection or to the valve stem. Stems shall be retained with stainless fasteners assembled through holes drilled in the valve guide and yoke and retained with stainless hex nuts. Valve designs which retain the valve stem by threading stainless screws into tapped holes are not acceptable.**
- F. **The stem shall have a permanently bonded coating to prevent galling with other stainless components. The coating shall be safe for potable water use and capable of enduring a minimum of 15,000 open-close cycles without galling or excessive wear. The manufacturer shall support cycle testing with a report from an independent test laboratory.**
- G. **The base flange shall be drilled per ANSI 125# standard and have a minimum thickness of 3/4". The base flange shall be machined to provide a smooth seating surface. Mud valves shall be as manufactured by Trumbull Industries, Youngstown, Ohio.**
- H. **The extension stem shall be type 316 stainless steel, of either schedule 40 pipe or solid round bar. The top nut, bottom coupling and connecting couplings shall be either cast or machined from type 316 stainless steel, but not include any welded components.**
- I. **Position Indication (Indicating Floorstand or Position Indicator):**
 - 1. **The position of the mud valves shall be visible by one of the following installations,
as shown on the drawings:**

a. **36" Indicating Floorstand, Stainless Steel –**

- 1) **The pedestal shall be cast stainless steel, type 316 and have a vertical indicating slot. The indicating slot shall be covered with a Lexan window and sealed. A bronze indicator shall travel on a threaded stem to indicate the position of the valve. The floorstand shall be operated by a 14" diameter handwheel of cast stainless steel, type 316. The word "OPEN" shall be cast in the pedestal at the top of the indicating slot. A "CLOSED" tag will be field mounted to the pedestal, to indicate the closed position of the valve. Floorstands fabricated by welding flanges to pipe shall not be accepted. The coupling used to connect the floorstand stem to the extension stem shall be stainless steel, type 316. Where a floor is not directly over the valve and extension stem, position indicators or floorstands shall be supported by a cast stainless wall bracket mounted to the side wall. Wall brackets shall contain a plate designed to support the floorstand.**

J. **Stem Guides:**

1. **Stem Guides shall be constructed of cast stainless steel, type 316. Stem guides fabricated by welding stainless steel shall not be permitted. Stem guides shall include a bronze bushing with an inside diameter 1/16" larger than the outside diameter of the extension stem and shall be retained with two stainless steel screws.**
2. **The stem guide shall be of the adjustable design for plumb alignment. The adjusting bolt and washer shall be type 316 stainless. Stem guides shall be spaced so that the unsupported length between extension stems shall not exceed 7 feet. Mud valves shall be operated with extension stems, stem guides and either position indicators or indicating floorstands, as shown on the valve schedule or drawings. Stem guides shall be as manufactured by Trumbull Industries, Youngstown, Ohio.**

2.11 **VALVE OPERATORS - MANUALLY ACTUATED**

- A. **Valve manufacturer shall supply and integrally, rigidly mount all actuators, including any type of manual or powered actuator, on valves.**
- B. **Unless otherwise noted, valves shall be capable of both electrically actuated and manual actuation; non-buried valves shall have an operating wheel, handle, or lever mounted on the operator. Those with operating nuts shall have a non-rising stem with an AWWA 2-inch nut.**
- C. **Actuator for valves up to and including 8-in. shall be equipped with 2-in. square nut for direct quarter turn operation with a hand lever. The packing gland shall include a friction collar and an open position memory stop. The friction collar shall include a nylon sleeve to provide friction without exerting pressure on the valve packing.**

- D. Actuators for valves larger than 8-in., unless specified or noted otherwise, shall include totally enclosed and sealed worm gear actuator with position indicator and externally adjustable open and closed stops. The worm segment gear shall be ASTM A536 Grade 65-45-12 ductile iron with a precision bore and keyway for connection to the valve shaft. Bronze radial bearings shall be provided for the segment gear and worm shaft. Alloy steel roller thrust bearings shall be provided for the hardened worm. Exposed worm shafts shall be stainless steel. Input torque capacity shall be 300-ft-lbs. The buried service actuator shall be packed with grease and sealed for temporary submergence to 20-feet of water. Exposed worm shafts for buried service shall be stainless steel.
- E. Valves located more than seven (7) feet above the floor shall be provided with chainwheel actuator, if not otherwise specified. Chainwheel actuator shall be provided complete with chain guides and hot dipped galvanized steel chain, which loop within 4-feet of the operating floor.
- F. All actuators shall be capable of moving the valve from the full open to full close position and in reverse and holding the valve at any position part way between full open or closed.
- G. Actuator shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. Each operating device shall have cast on it the word "OPEN" and an arrow indicating the direction of operation.
- H. Valves and actuators for submerged/buried service shall have seals on all shafts, and gaskets on valve and actuator covers, to prevent the entry of water.
- I. Actuator mounting brackets for submerged service shall be totally enclosed and shall have gasket seals.
- J. Valve stem extension shall be extended to within 12-inches of finished grade or operating level.
- K. Valves shall be 'opened' by turning operator counterclockwise (left).
- L. Worm and gear operators to be of totally enclosed design, so proportioned as to permit operation of the valve under full operating head with a maximum pull of 40 pounds on the operator.
- M. Self-locking type to prevent the disc or plug from creeping.
- N. Self-locking worm gears to be a one-piece design of gear bronze material, accurately machine cut.
- O. Worm to be hardened alloy steel with thread ground and polished.
- P. Reduction gearing to run in a proper lubricant.
- Q. Provide gear operators with position indicators, where specified, to show the position of the valve disc or plug.
- R. Handwheels shall be stainless steel. Handwheel nut shall be stainless-steel. The various actuator options include: handwheel, chainwheel, bevel-gear, lever, fail safe spring cylinder, pneumatic cylinder, hydraulic cylinder, and electric motor. Corrosion resistant cylinder actuator materials. Submit operation plans and actuator type with valve submittal. Include in submittal, for each valve shown on the drawings, the installation orientation and actuator type. Actuator superstructure shall be cast stainless steel.

- S. Actuator shall have mechanical stops that will withstand an input torque of 450 lbs. against the stop. Actuators shall be able to provide 1.25 times the required operating torque under full rated line pressure combined with a flow velocity of 8 feet per second.

PART 3 - EXECUTION

3.1 INSTALLATION OF VALVES

- A. Buried valves shall be set with operating stems in true vertical or horizontal positions as may be required unless otherwise detailed on the Drawings.
- B. Valve boxes shall be furnished and installed with all buried valves.
- C. Buried valves shall have stainless steel bolts protected by wrapping in polyethylene material unless otherwise detailed on the Drawings.
- D. Support valve boxes with concrete blocks so that no weight exerted on the valve box will be transmitted to the valve.
- E. All gate and plug valves shall be provided with valve boxes properly adjusted so that the covers conform to the adjacent finished grade.
- F. Round precast concrete collars shall be provided for all valve boxes as detailed on the Drawings.
- G. Use teflon tape on all threaded connections.

END OF SECTION

SECTION 400559

STAINLESS STEEL SLIDE GATES & WEIR GATES ADDENDUM NO. 02

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and install complete, slide gates, weir gates, operators, operating systems, and non-intrusive multi-turn electric gate operators, and appurtenances as shown on the Drawings and as specified herein. Upward opening gates shall be designated as "slide gates" and downward opening gates shall be designated as "weir gates".

1.2 RELATED WORK

- A. Not Used

1.3 SUBMITTALS

- A. Submit, in accordance with Section 013300, shop drawings and product data showing materials of construction and details of installation for:
 - 1. Complete description of all materials.
 - 2. Certified shop and installation drawings showing all details of construction including material thickness, dimensions, tolerances and clearances, and anchor bolt locations.
 - 3. Descriptive literature, bulletins and/or catalogs of the equipment.
 - 4. A complete bill of materials.
 - 5. The weight of each component.
 - 6. Description of gate material and components.
 - 7. Description of electric actuators
 - 8. The manufacturer shall demonstrate experience and capability of coordinating the installation of multi-turn electric operators for similar gates specified.
 - 9. A list of manufacturer's recommended spare parts with the manufacturer's current price for each item. Include gaskets, packing, etc. on the list. List bearings by bearing manufacturer's numbers only.
 - 10. Loading and unloading instructions and on-site storage protection
 - 11. Complete data on multi-turn electric gate actuators.
- B. Test Reports to be Submitted:
 - 1. Description of test procedures and equipment.
 - 2. Copies of all test results.
- C. Operation and Maintenance Data
 - 1. Operating and maintenance instructions for each type of equipment shall be furnished to the Engineer as provided for in Section 01730.
- D. In the event it is not possible to conform to certain details of this Section, describe completely all non-conforming aspects.

1.4 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - 2. ASTM A249– Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - 3. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
 - 4. ASTM B98 - Standard Specification for Copper-Silicon Alloy Rod, Bar and Shapes.
 - 5. ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
 - 6. ASTM F594, Standard Specification for Stainless Steel Nuts
 - 7. ASTM D4020, Standard Specification for Ultra High Molecular Weight Polyethylene
- B. American Water Works Association
 - 1. ~~AWWA C513, Standard Specification for Open Channel, Fabricated Metal Slide Gates~~
 - 2. AWWA C561, Standard Specification for Fabricated Stainless Steel Slide Gates
- C. AWS D1.6/D1.6M, Structural Welding Code - Stainless Steel
- D. AWS B2.1/B2.1M: Specification for Welding Procedure and Performance Qualification
- E. National Electrical Manufacturers Association (NEMA)
- F. Factory Mutual (FM)
- G. Underwriters Laboratories (UL)
- H. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

- A. All equipment specified under this Section shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the equipment furnished. The equipment shall be designed, constructed, and installed in accordance with the best practices and methods and shall operate satisfactorily when installed in accordance with AWWA C561 "Standard for Fabricated Stainless Steel Slide Gates", most recent edition.
- B. The gates shall be furnished by a single manufacturer with a minimum of 10 years of experience designing and manufacturing water control gates including coordination with the selection, assembly, mounting, and testing of gates with multi-turn electric gate operators.
- C. The slide and weir gates shall be designed for watertightness for both seating and unseating differential head per the actual site requirement per the stainless-steel slide gate schedule at the height of the gate.

- D. All welds shall be full **penetration** and continuous performed by welders with certification for the stainless-steel grades required of AWS D1.6 Structural Welding Stainless Steel.
- ~~E. Weld quality shall be verified utilizing a dye penetration inspection (DPI) test for all welded joints and approved by a quality control inspector that is qualified and certified through ISO 9712:2012 Non-Destructive Testing – Qualification and Certification of NDT Personnel.~~
- F. Heatless cutting of stainless steel by CNC water jet shall be utilized to ensure there is no change in corrosion resistance properties of the stainless steel. Cutting method utilizing heat will not be accepted.
- G. The slide and weir gates shall be shop tested to verify the leakage performance at operating head in the un-seating direction, where sealing configuration permits, hydrostatic testing will be conducted at 1.5 times operating head to demonstrate structural integrity.
- H. The allowable leakage rate for the slide and weir gates shall be ½ the allowable leakage listed in the AWW C561, 0.05 gpm/ft of wetted sealed perimeter in seating head and unseating head conditions.
- I. The slide and weir gate manufacturer shall be responsible for the coordination and installation of multi-turn electric gate operators regarding sizing for correct operation of the complete gate operation in accordance with this specification.
- ~~J. The slide and weir gate multi-turn electric operator shall be factory mounted and assembled and tested at the gate manufacturer's facility. The assembly shall be tested with preset torque requirements specific for each gate for correct operation. Prior to shipment of the complete system, the manufacturer shall submit to the Owner certified statement that each gate and electric operator assembly has been tested at the factory for correct operation. The preset torque shall be listed for each gate on the certification utilizing the identifier in the stainless-steel gate schedule.~~
- K. All equipment furnished under this Section shall be new and unused and shall be the standard products of manufacturers having a successful record of manufacturing and servicing the equipment and systems specified herein for a minimum of five (10) years.
- L. At the completion of installation by others, the gate manufacturer shall supply to the project site a factory trained and certified technician of the gate and a certified factory trained technician of the electric operator for a one eight (8) hour day, exclusive of travel to validate installation and the correct gate and electric operator. The technicians shall provide a field report of all findings and provide to the Owner within 16 hours of the field visit.
- M. After installation, all gates shall be field tested in the presence of the ENGINEER and OWNER to ensure that all items of equipment are in full compliance with this Section. Each gate shall be cycled to confirm that they operate without binding, scraping, or distorting. The effort to open and close manual operators shall be measured and shall not exceed the maximum operating effort specified above. Electric motor actuators shall function smoothly and without interruption. Each gate shall be water tested by the CONTRACTOR, at the discretion of the ENGINEER and OWNER, to confirm that leakage does not exceed the specified allowable leakage.
- N. A factory representative of the gate manufacturer and a factory representative of the

electric operator who has complete knowledge of proper operation and maintenance of the equipment provided under this section shall be provided for one 8-hour day (exclusive travel time) to instruct representatives of the Owner and Engineer on the proper operation and maintenance of the equipment. This work may be conducted in conjunction with the inspection of the installation and test runs as provided under PART 3 but shall be in addition to time provided for inspection and testing.

- O. This instruction period shall be scheduled with the Owner at least 10 days in advance and shall take place prior to start-up and acceptance by the Owner. The instruction period can be combined with the start-up field validation if approved by the Owner.

1.6 ACCEPTABLE GATE MANUFACTURERS

- A. WACO Products, Inc.
- ~~B. Rodney Hunt Inc.~~
- ~~C. Hydro Gate~~
- D. Whipps, Inc.
- E. Or Approved Equal

1.8 ACCEPTABLE MULT-TURN ELECTRIC GATE ACTUATORS

- A. Limitorque MX Standard/Modulating (As Specified)
- B. Rotork IQ Standard/Modulating (As Specified)

PART 2 - PRODUCTS

2.1 STAINLESS STEEL SLIDE GATES AND WEIR GATES

- A. General:
 - 1. Gates components to be welded shall be fabricated from Type 316L stainless steel alloy and shall be designed and manufactured to meet or exceed all AWWA C561 "Standard for Fabricated Stainless Steel Slide Gates" from the same manufacturer.
 - 2. Gate components such as attachments bolts, nuts, washers, and ancillary components not to receive a weld can be Type 316 or 316L stainless steel designed and manufactured to meet or exceed all AWWA C561 "Standard for Fabricated Stainless Steel Slide Gates" from the same manufacturer.
 - 3. The slide gates (opening upward) and weir gates (opening downward) shall have the characteristics and dimensions as shown in the stainless-steel gate schedule included herein for the functional location of the installation provided on the Drawings located in the Appendix.
 - 4. The stainless-steel slide gates/weir gates and accessories shall be fabricated Type 316 stainless steel type with the disc arranged to lower or raise to open and with the guides designed to mount on the face of, or to be embedded in concrete as required by the Drawings.
- B. Frame and Plate:
 - 1. The slide/weir gate plate shall be fabricated from minimum ¼-inch thickness Type 316 stainless steel plate and reinforced as required to maintain a deflection under full design head of not more than ~~1/720~~ ~~1/360~~ or 1/16-in, which is smaller, of the span gate width.

2. The guide frame is fabricated from a minimum of ¼-inch Type 316 stainless steel structural members to resist loads imposed by the design head.
3. Self-contained frames where required will require no additional reinforcing where it extends above the operating floor to support the operator.
4. Guide frames shall be a one piece formed section without through hole, reinforced with welded gussets to meet loading conditions with a dual slot type to limit gate plate edge loading in the seated position. Bolted guide frames with bolted/sandwiched construction shall not be allowed.
5. The frame shall be designed to accommodate a one-piece Ultra High Molecular Weight Polyethylene (UHMW) bearing bar/seal extruded from black virgin resins with an ultraviolet inhibiting formula with flex fatigue reliefs.
6. Self-contained frames to support operators shall be of structural shapes to support the operators inclusive of the electric actuator, when specified, and welded or bolted to the guide frame to provide a complete rigid assembly capable of supporting all loads imparted by the operator or actuator that does not exceed a deflection under full design head operation of no more than 1/360 of the span width of the gate.
7. **Self-contained frames with an overall height above grade exceeding 4 feet shall be constructed to resist sustained wind speeds up to 100mph, with wind load directly perpendicular to the plane of the gate plate and with the gate in the fully raised position. Stem covers for these gates shall be aluminum pipe type with turnbuckle adjusted cable stays secured to the gate frame bench.**

C. Inverts and Seals:

1. Inverts for slide gates invert is a flush-bottom design formed by a neoprene block held within a one-piece formed structural frame, or for embedded or surface anchor-mounted applications is sandwiched between two structural members with a welded bottom member to form a seating surface for the edge of the plate bottom and to retain the neoprene. The invert frame shall be welded to the guide frame to form a continuous frame and seal assembly. The flush-bottom design maximizes flow to that of the channel, port, or pipe opening and is required for all gates except for surface anchor-mounted invert frames.
2. Inverts for weir gates shall use UHMW self-adjusting seals that attach to the invert frame which is welded to the guide frame sides across the bottom to form a continuous frame and seal assembly. The frame is mounted so that the gate invert is flush with the channel or port bottom.
3. All gate side frames, slide gate upper seals, and weir gate invert seals shall prevent leakage using a UHMW bearing bar/seal that requires no adjustment.
4. The seats and seals shall extend to accommodate 1.5 times the height of the slide when the slide is fully closed or fully opened position and mounted to not obstruct or project into the waterway.
5. Seal systems that require pressure pads and, p-seals, j-bulbs, or adjustable wedge systems to seal the gate shall not be permitted.

D. Operators:

1. Manual operators where specified will be a horizontal hand wheel type mounted on a yoke/frame unless otherwise specified.
2. The gate manufacturer shall select the proper gear ratio to ensure that the gate can be operated with no more than a 40 lb. effort when the gate is the closed position and experiencing the maximum operating head.
3. An arrow with the word "OPEN" shall be permanently attached or cast onto the operator to indicate the direction or rotation to open the gate.
4. Handwheel operators shall be fully enclosed and shall have a cast aluminum **or iron** housing.
 - a. Handwheel operators shall be provided with a threaded cast bronze lift nut to engage the operating stem.
 - b. Handwheel operators shall be equipped with roller bearings above and below the operating nut.
 - c. Positive mechanical seals shall be provided above and below the operating nut to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
 - d. The handwheel shall be removable and shall have a minimum diameter of 15 inches.
5. Cranked-operated gearboxes shall be fully enclosed and shall have cast aluminum **or iron** housing.
 - a. Gearboxes shall have either single or double gear reduction depending upon the lifting capacity required.
 - b. Gearboxes shall be provided with a threaded cast bronze lift nut to engage the operating stem.
 - c. Bearings shall be provided above and below the flange on the operating nut to support both opening and closing thrusts.
 - d. Gears shall be steel with machined cut teeth designed for smooth operation. The pinion shaft shall be stainless steel and shall be supported on ball or tapered roller bearings.
 - e. Positive mechanical seals shall be provided on the operating nut and the pinion shafts to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.
 - f. The crank shall be cast aluminum with a revolving nylon grip. The crank shall be removable.
 - g. All gates having widths more than 48 in. and widths greater than twice their height shall be provided with two gearboxes connected by an interconnecting shaft for simultaneous operation.
 - 1) Interconnecting shafting shall be constructed of aluminum or stainless steel
 - 2) Flexible couplings shall be provided at each end of the interconnecting shaft. One crank shall be provided to mount on the pinion shaft of one of

the gearboxes.

- 3) Dual stem gates wider than 10 feet shall have a center gearbox drive to eliminate differential backlash between the stem drives and weir plate height offset.
- h. An extended operator system utilizing ~~chain and sprockets~~ **bevel gears, couplings, and interconnecting solid stainless steel shafts** shall be furnished by the manufacturer when the centerline of the crank or handwheel, on a non-geared operator, is located over 42 in above the operating floor. Chain wheels are not acceptable.
 - 1) A removable stainless steel or aluminum cover shall be provided to enclose ~~chain and sprockets~~ **all moving parts**.
 - 2) The extended operator system shall lower the centerline of the pinion shaft to 36 in above the operating floor.
 - 3) A handwheel may be utilized in conjunction with a gearbox in lieu of the extended operator system if the centerline of the pinion shaft is 60 in or less above the operating floor
- i. Operators shall be equipped with polycarbonate plastic stem covers. **except where the bottom of the cover support is at or above 4 feet above the operating elevation where covers shall be constructed of aluminum pipe.**
 - 1) The top of the stem cover shall be closed and vented. ~~Gate opening indication will be provided on the stem cover for all non-rising stem gates~~ **and an indicator nut mounted on the rising stem**. A full height scale will be mounted on the side of the stem cover to show gate position. The scale graduation will be 1".
 - 2) The bottom end of the stem cover shall be mounted in a housing or adapter for easy field mounting. Stem covers shall be complete with indicator markings to indicate gate position

E. Stem:

1. A threaded operating stem shall be utilized to connect the operating mechanism to the slide. On rising stem gates, the threaded portion shall engage the operating nut in the manual operator or motor actuator. On non-rising stem gates, the threaded portion shall engage the nut on the slide.
 - a. The threaded portion of the stem shall have a minimum outside diameter of 1-1/2 inches. Stem extension pipes are not acceptable.
 - b. The stem shall be constructed of solid 316 stainless steel bar for the entire length, the metal having a tensile strength of not less than 75,000 psi.
 - c. The stem shall be threaded to allow full travel of the slide unless the travel distance is otherwise shown on the Contract Drawings.
 - d. Maximum L/R ratio for the unsupported part of the stem shall not exceed 200.
 - e. The operating stem shall be designed to transmit in compression at least 2 times the rated hoist output with an effort of 40 lb on the crank or handwheel.

The Euler column formula shall be utilized. Where a hydraulic or electric actuator is used, the stem design load shall not be less than 1.25 times the output thrust of the hydraulic cylinder with a pressure equal to the maximum working pressure of the fluid supply or ~~1:50~~ ~~4-25~~ times the output thrust of the electric actuator at the stalled condition at full torque load.

- f. The stem shall be designed to withstand the tension load caused by the application of a 40 lb effort on the crank or handwheel without exceeding 1/5 of the ultimate tensile strength of the stem material.
- g. The threaded portion of the stem shall have machine rolled **or cut** threads of the full Acme type with a 16 microinch finish or better. Stub threads are not acceptable.
- h. Stems of more than one section shall be joined by stainless steel couplings. The coupling shall be bolted to the stems.
- i. Stems, on manually operated gates, shall be provided with adjustable stop collars to prevent over closing of the slide.

F. Stem Guides

- 1. Stem guide shall be provided when necessary to ensure that the maximum L/R ratio for the unsupported part of the stem is 200 or less.
 - a. Stem guide brackets shall be fabricated of 316 stainless steel and shall be outfitted with UHMW bushings.
 - b. Adjustable in two directions.

G. Anchor Bolts

- 1. Anchor bolts shall be provided by the gate manufacturer for mounting the gates and appurtenances and be fabricated from 316 stainless steel.
 - a. Quantity and location shall be determined by the gate manufacturer.
 - b. If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.
 - c. Anchor bolts shall have a minimum diameter of 1/2-inch.

2.2 NON-INTRUSIVE MULTI-TURN ELECTRIC MOTOR GATE OPERATORS

A. General:

- 1. Electric actuators shall be in accordance with ANSI/AWWA C542 "Electric Actuators for Valves and Slide Gates" most recent edition.
- 2. Orientation and mounting of the electric motor gate operator will provide clear line of site and access to the operator and operator-controlled interface. Accessibility shall not be greater than 42-in. above the floor level.
- 3. The actuators shall be suitable for use on a nominal 480 volt, 3 phase, 60 Hz power supply and are to incorporate motor, integral reversing starter, local control facilities and terminals for remote control and indication connections housed within a self-

contained, sealed enclosure.

4. As a minimum the actuators should meet the requirements set out in EN15714-2 and ISA SP96.02
5. To maintain the integrity of the enclosure, setting of the torque levels, position limits and configuration of the indication contacts etc. must be **able to be** carried out without the removal of any actuator covers and without mains power **if necessary** over an infrared or wireless interface.
6. The actuator shall include a device to ensure that the motor runs with the correct rotation for the required direction of valve travel irrespective of the connection sequence of the power supply.

B. Actuator Sizing

1. The actuator must be sized to guarantee gate closure at the design differential pressure and temperature.
2. The safety margin of motor power available for seating and unseating the gate must be sufficient to ensure torque switch trip at maximum valve torque with the supply voltage 10% below nominal.

C. Environmental

1. Actuators must be suitable for indoor and outdoor use with a standard corrosivity category, C4 medium durability as per ISO 12944.
2. The actuator must be capable of functioning in an ambient temperature ranging from -30°C (-22°F) to +70°C (+158°F), up to 100% relative humidity.
3. Actuators must meet the area classification, gas group and surface temperature requirements for Class I, Division 2, for exterior use.

D. Enclosure

1. Actuators shall be O-ring sealed, watertight to IP68, NEMA 6.
2. The motor and all other internal electrical elements of the actuator must be protected from ingress of moisture and dust when the terminal cover is removed for site cabling.
3. The terminal compartment must maintain the same ingress protection rating with the terminal cover removed. The actuator enclosure must allow for temporary site storage without the need for electrical supply connection. All external fasteners shall be stainless steel Type 316.

E. Motor

1. The motor must be an integral part of the actuator, designed specifically for gate actuator applications. The motor shall be a low inertia, high torque design and class F insulated, resulting in class B temperature rise with a time rating of 15 minutes at 40°C (104°F) at an average load of at least 33% of maximum gate torque.
2. Temperature shall be limited by thermostat device embedded in the motor end windings and integrated into the actuator control.

3. Electrical and mechanical disconnection of the motor shall be possible without draining the lubricant from the actuator gearcase.
4. The actuator shall include a device to ensure that the motor runs with the correct rotation for the required direction of valve travel irrespective of the connection sequence of the power supply.
5. Motor protection shall be as follows:
 - a. Stall - the motor must be de-energized within 8 seconds in the event of a stall when attempting to unseat a jammed gate.
 - b. Over temperature - thermostat will cause tripping of the motor. Auto-reset on cooling
 - c. Single phasing - lost phase protection
 - d. Direction – phase rotation correction.

F. Gearing

1. The actuator gearing must be totally enclosed in an oil-filled gearcase suitable for operation at any angle. Grease lubrication is not permissible. All drive gearing and components must be of metal construction and incorporate a lost-motion hammer blow feature.
2. For rising ~~spindle valves stem gates~~ the **output shaft drive sleeve** shall be **hollow to accept a rising threaded to match the stem**, and incorporate thrust bearings of the ball or roller type at the base of the actuator.
3. The design should be such as to permit the ~~opening of the gearcase for inspection or disassembled removal of the actuator from the drive base~~ without releasing the stem thrust or taking the **valve gate** out of service. ~~For 90° operating type valves, drive gearing shall be self-locking to prevent the valve back-driving the actuator.~~

G. Hand Operation

1. A handwheel must be provided for emergency operation, engaged when the motor is declutched by a lever or similar means, the drive being restored to electrical operation automatically by starting the motor.
2. The handwheel or selection lever must not move on restoration of motor drive. Provision shall be made for the hand/auto selection lever to be locked in both hand and auto positions. It should be possible to select hand operation while the actuator is running or start the actuator motor while the hand/auto selection lever is locked in hand without damage to the drive train.
3. Clockwise operation of the handwheel must give closing movement of the **valve slide gates** unless otherwise stated. **Counter-clockwise operation of the handwheel must give closing movement of the weir gates unless otherwise stated.**

H. Drive Interface

1. The actuator shall be furnished with a drive bushing easily detachable for machining to suit the valve stem or gearbox input shaft. The drive bush shall be positioned in the base of the actuator.
2. Thrust bearings shall be **sealed for life regreasable** and the base shall be capable of withstanding five times the rated thrust of the actuator.

I. Local Controls:

1. The actuator must incorporate local controls for Open, Close and Stop operation and a Local/Stop/Remote mode selector switch.
2. Mode selection must be lockable in any one of the following three positions: local control plus local stop only, stop (no electrical operation), remote control plus local stop only. It must be possible to select maintained or non-maintained local control.
3. The local controls shall be arranged so that the direction of valve travel can be reversed without the necessity of stopping the actuator.
4. The local controls and display shall be rotatable through increments of 90 degrees to suit valve and actuator orientation.

J. Torque Limits

1. Torque and turns limitation to be adjustable as follows:
 - a. Position setting range – multi-turn: 2.5 to 8,000 turns, with resolution to 7.5° of actuator output.
 - b. Position setting range – direct drive part turn actuators: 90° +/-10°, with resolution to 0.1° of actuator output.
 - c. Torque setting: 40% to 100% rated torque.
2. Position measurement – Absolute position measurement should be incorporated within the actuator. The technology must be capable of reliably measuring position even in the case of a single fault. The design must be simple with the minimum amount of moving parts (no more than 5). Technologies such as LEDs or potentiometers for position measurement are considered unreliable and therefore not preferred.
3. Measurement of torque for multi-turn actuators must be from direct measurement of force at the output of the actuator. Methods of determining torque-using data derived from the motor such as motor speed, current, flux etc. are only acceptable for part-turn actuators.
4. A means for automatic “torque switch bypass” to inhibit torque off during valve unseating and “latching” to prevent torque switch hammer under maintained or repeated control signals shall be provided.
5. The electrical circuit diagram of the actuator should not vary with valve type remaining identical regardless of whether the valve is to open or close on torque or position limit.

K. Remote Valve Position and Status Indication

1. Four contacts must be provided which can be selected to indicate any position of the valve; provision must be made for the selection of a normally closed or open contact

form.

2. Contacts shall maintain and update position indication during handwheel operation when all external power to the actuator is isolated.
3. The contacts must be rated for 5mA to 5A, 120V AC, or 30V DC.
4. Four contacts shall be selectable to signal one of the following:
 - a. Valve opening, closing or moving
 - b. Thermostat tripped, lost phase
 - c. Motor tripped on torque in mid travel, motor stalled
 - d. Remote selected, Local selected, Stop selected
 - e. Actuator being operated by handwheel
 - f. Actuator fault
5. Provision shall be made in the design to support an additional eight contacts with the same configurable functionality.
6. A configurable monitor relay must be provided as standard, which can be used to indicate either Availability or Fault. The relay should be a spring return type with a Normally Open / Normally Closed contact pre-wired to the terminal block.
7. The Monitor (availability or fault) relay, being energized from the control transformer will de-energise under any one or more the following conditions:
 - a. Available Mode; loss of main or customer 24V DC power supply, Actuator control selected to local or stop, motor thermostat tripped, actuator internal fault
 - b. Fault Mode; loss of main or customer 24V DC power supply, motor thermostat tripped, actuator internal fault.
8. ~~Provision shall be made in the design for the addition of~~ All actuators shall have a contactless transmitter to give a 4-20mA analogue signal corresponding to **valve gate** travel and / or torque for remote indication when required. The transmitter will auto range to the set limits

L. Local Position Indication

1. The actuator display must include a dedicated numeric/symbol digital position indicator displaying valve position from fully open to fully close in 0.1% increments.
2. Valve closed and open positions shall be indicated by symbols showing valve position in relation to the pipework to ensure that valve status is clearly interpreted.
3. With mains power connected, the display must be backlit to enhance contrast at all ambient light levels and must be legible from a distance of at least 5m (16ft). A power save mode shall be available to switch off the display backlight during long periods of inactivity.
4. Red, green, and yellow LEDs corresponding to open, closed, and intermediate valve positions must be included on the actuator display when power is switched on.
5. The yellow LED should also be fully programmable for on/off, blinker and fault indication. The digital display must be maintained and updated during handwheel operation when mains power to the actuator is isolated.

6. The actuator display shall include a fully configurable dot-matrix display element with a minimum pixel resolution of 168 x 132 to display operational, alarm, configuration and graphical datalogger information. The text display shall be selectable between English.
7. Datalogger graphical displays and trend graphs must be available on the local LCD for the following functions:
 - a. Torque versus Position
 - b. Number of Starts versus Position
 - c. Number of starts per hour
 - d. Dwell Time
 - e. Average temperature
8. The main display must include configurable a minimum of four different home-screens that include the following information:
 - a. Position and status
 - b. Position and torque (analogue)
 - c. Position and torque (digital)
 - d. Position and demand (positioning)
9. An environmental cover to protect the display from high levels of UV radiation or abrasive materials ~~must be available~~ and shall be ~~fitted~~ **provided** without the need for any special tooling.
10. The local controls and display must be rotatable through increments of 90 degrees to suit valve and actuator installation orientation.

M. Integral Starter and Transformer

1. The reversing starter, control transformer and local controls must be integral to the valve actuator and suitably housed to prevent breathing and condensation. The starter shall be suitable for 60 starts per hour during ~~standard service or 1,200 starts per hour under reduced load conditions and of rating appropriate to motor size for modulating service.~~
2. The controls supply transformer shall be fed from two of the incoming three phases and incorporate overload protection.
3. It must have the necessary voltage tapping and be adequately rated to provide power for the following functions:
 - a. Energizing of the contactor coils
 - b. 24V DC output for remote controls (maximum 5W)
 - c. Supply for all the internal electrical circuits
4. An alternative solid state motor starter is permissible for applications requiring up to 1,200 starts per hour.
 - a. 24VDC remote controls shall be used in combination with a solid state starter to maximize response time.
 - b. The solid state starter must facilitate configurable electrical braking functionality.
5. Speed adjustable actuators must have an integral motor controller to manage starting, speed and operation.

N. Remote Control Facilities

1. The necessary control, wiring and terminals must be contained within the actuator enclosure.
2. Open and close external interlocks must be made available to inhibit local and remote valve opening / closing control. It must be possible to configure the interlocks to be active in remote control only.
3. Remote control signals fed from an internal 24VDC supply and/or from an external supply between 20V and 60VDC or 40V and 120VAC, must be suitable for any one or more of the following methods of control:
 - a. Open, Close and Stop control
 - b. Open and Close maintained or “push to run” (inching) control
 - c. Overriding Emergency Shut-Down; to close (or open) valve from a normally closed or open contact
 - d. Two-wire control; energise to close (or open), de-energise to open (or close)
4. Additionally, provision shall be made for a separate ‘drive enable’ permissive input to prevent any unwanted electrical operation.
5. **All actuators shall be capable of accepting a 4-20mA analogue signal corresponding to gate travel for remote control and positioning.**
6. It must be possible to reverse valve travel without the necessity of stopping the actuator or moving through an intermediate stop control position. The motor starter must be protected from excessive current surges during rapid travel reversal.
7. The internal circuits associated with the remote control and monitoring functions are to be designed to withstand simulated lightning impulses up to 2kV.
8. ~~Operation by distributed control system must be possible utilizing DeviceNet~~

O. Monitoring Facilities

1. Actuator availability and monitor operation must be included as standard.
2. Actuator text display indication of the following status/alarms:
 - a. Closed Limit, open limit, moving open, moving closed, stopped
 - b. Torque trip closing, torque trip opening, motor stalled
 - c. ESD active, interlock active
 - d. Thermostat trip, phase lost, 24V supply lost, local control failure
 - e. Configuration error, position sensor failure, torque sensor failure
 - f. Battery low, battery discharged, power loss inhibit
3. Integral datalogger to record time and date of each event to store the following operational data:
 - a. Opening last / average torque against position
 - b. Closing last / average torque against position
 - c. Opening motor starts against position
 - d. Closing motor starts against position
 - e. Total open / closed operations

- f. Maximum recorded opening and closing torque values
 - g. Event recorder logging operational conditions (valve, control, and actuator)
4. Logged data must be accessible via non-intrusive communication and also visible on the actuator display.
 5. An intrinsically safe portable tool must be provided to extract datalogger and actuator configuration files from the actuator. The portable tool must permit *Bluetooth®* connection with a PC to perform file transfer.
 6. The actuator manufacturer must supply PC software to enable extracted actuator files to be viewed and analysed.

P. Wiring and Termination

1. Internal wiring shall be tropical grade PVC insulated stranded cable of appropriate size for the control and power. Each wire shall be clearly identified at both ends. The terminals shall be embedded in a terminal block of high tracking resistance compound.
2. The terminal compartment must be separated from the inner electrical components of the actuator by means of a watertight seal. A minimum of four threaded cable entries with provision for an additional four extra conduit entries must be available to accommodate wiring connections.
3. All wiring supplied as part of the actuator must be contained within the main enclosure for physical and environmental protection.
4. External conduit connections between components are not acceptable.
5. A durable terminal identification card showing a plan of terminals must be attached to the inside of the terminal box cover indicating:
 - a. Serial number
 - b. External voltage values
 - c. Wiring diagram number
 - d. Terminal layout
6. The code card must be suitable for the contractor to inscribe cable core identification alongside terminal numbers.

Q. Commissioning Kit

1. Each actuator must be supplied with a start-up kit comprising installation instruction manual, electrical wiring diagram and cover seals to make good any site losses during the commissioning period.
2. Actuator commissioning tools shall be supplied to enable actuator set up and adjustment during valve/actuator testing and site installation commissioning.

R. Performance and Test Certificate

1. Each actuator must be performance tested by the manufacturer and individual test certificates are to be supplied free of charge. Test certificates must be retained by the manufacturer for the serviceable life of the product. The test certificate must include details of the equipment specification such as:

- a. Serial number
 - b. Test date
 - c. Manufacturing site address
 - d. Customer
 - e. Customer order number (where applicable)
 - f. Actuator size
 - g. Mounting flange
 - h. Enclosure type
 - i. Lubricant
 - j. Paint coating
 - k. Power supply
 - l. Operating speed/time
 - m. Drive close direction
 - n. Gear ratio for second stage gearbox (where applicable)
 - o. Electrical optional extras
 - p. Catalogue performance
2. The test equipment should simulate actual valve load tested at the gate manufacture after actuator mounting and installation. The following parameters must be recorded and clearly stated on the certificate:
- a. Torque at maximum torque setting in both directions
 - b. Current at maximum torque setting in both directions
 - c. Flash test statement
 - d. Test power supply voltage

2.3 GATE SCHEDULES

UPWARD OPENING SLIDE GATE SCHEDULE											
DESCRIPTOR	QTY	CHANNEL DEPTH (FT.)	WIDTH (FT.)	HEIGHT (FT.)	TYPE	BENCH HEIGHT ABOVE TOP OF WALL (FT.)	MOUNTING	OPERATOR	MOUNTING POSITION	ACTUATION SERVICE	COMMENTS
SG-01A & SG-08	2	15.75	2.50	2.50	NON-SELF-CONTAINED	-	WALL MOUNTED	HANDWHEEL	BENCH MOUNTED	OPEN/CLOSE	NONE
SG-03, SG-04, SG-05 & SG-06	4	15.75	5	14.75	SELF-CONTAINED	13.25	EMBEDDED	HANDWHEEL	BENCH MOUNTED	OPEN/CLOSE	RIGHT SIDED BEVEL GEAR OFFSET OPERATOR – 4. 2.5-FT ABOVE TOP OF THE WALL
SG-02	1	15.75	4.00	4.00	NON-SELF-CONTAINED	-	WALL MOUNTED	HANDWHEEL	BENCH MOUNTED	OPEN/CLOSE	NONE
SG-01	1	15.75	5.00	4.00	NON-SELF-CONTAINED	-	WALL MOUNTED	HANDWHEEL	BENCH MOUNTED	OPEN/CLOSE	NONE
SG-07	1	15.75	3.00	3.00	NON-SELF-CONTAINED	-	WALL MOUNTED	HANDWHEEL	BENCH MOUNTED	OPEN/CLOSE	NONE
DOWNWARD OPENING WEIR GATE SCHEDULE											
DESCRIPTOR	QUANTITY	CHANNEL DEPTH (FT.)	WIDTH (FT.)	HEIGHT (FT.)	TYPE	BENCH HEIGHT ABOVE WALL (FT.)	MOUNTING	OPERATOR	MOUNTING POSITION	ACTUATION SERVICE	COMMENTS
WG-01	1	15.75	8.00	4.00	SELF-CONTAINED	2.50	EMBEDDED	ELECTRIC	BENCH MOUNTED	MODULATING	DUAL STEM
WG-02	1	15.75	5.00	4.00	SELF-CONTAINED	2.50	WALL MOUNTED	ELECTRIC	BENCH MOUNTED	MODULATING	NONE

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation of all gates and guides shall be done in a workmanlike manner by others. Handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's drawings and recommendations. Frames and guides shall be installed in a true vertical plane and shall be installed with 90 degree corners.
- B. Gates with embedded guides and inverts shall be installed in accordance with the recommendations of the manufacturer subject to the Engineer's approval.
- C. The installation of all gates shall be under the supervision of a representative of the manufacturer furnishing the gates.
- D. Initial setting of the slide weir gates shall be done utilizing a surveyor's laser transit. This setting shall be indicated in permanent marker or paint on the clear plastic stem cover. This mark shall allow the gate to be returned to the appropriate weir crest setting after the gate has been in the fully closed or open position. Submit plan with gate shop drawing for Engineer's approval.

3.2 FIELD TESTING (BY CONTRACTOR UNDER COORDINATION BY MATERIALMAN)

- A. Furnish the services of a factory representative for the gate manufacturer and a factory representative for the electric actuator, as provided under PART 1.5, who has complete knowledge of proper operation and maintenance to inspect the final installation and supervise a test of the equipment. These services may be combined with those provided under PART 1.
- B. After installation, all slide gates and weir gates shall be field tested at maximum differential head to ensure that all items of equipment are in compliance with this Section, including the leakage requirements as specified in AWWA C561.
 - 1. Maximum allowable leakage for slide gates and weir gates shall be 0.05 gpm/ft of perimeter under the design seating head.
- C. Each gate shall be cycled through a minimum of three consecutive full open/close cycles. Gates shall operate without binding, scraping, or distorting. Electric motor operators shall function smoothly and without interruption.
- D. In the event that any unit fails to meet the above requirements, the necessary changes shall be made and the unit retested. If the unit remains unable to meet the test requirements to the satisfaction of the Engineer, it shall be removed and replaced with a satisfactory unit and retested at no change in Contract Price or Time.

3.3 WARRANTY

- A. All slide gates, weir gates, and electric operators shall have a full-service warranty for one year after substantial completion.

END OF SECTION

2

16. THE ANNUAL DRAWDOWN FOR LAKE CATHERINE BEGINS ON **NOVEMBER 1 OF EACH YEAR** AND THE REFILL OF BOTH LAKES WILL BEGIN BETWEEN MARCH 1 AND MARCH 8 OF THE FOLLOWING YEAR. THE REFILL IS SCHEDULED TO BE COMPLETED EACH YEAR BY MARCH 15. THE LAKE DRAWDOWN IS CONTROLLED BY ENTERGY. TARGET DRAWDOWN IS 298 TO 330 MSL.

 CRIST ENGINEERS, INC. CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS		HOT SPRINGS, ARKANSAS	
		GULPHA P. S. IMPROVEMENTS CITY OF HOT SPRINGS GENERAL NOTES & CONTACTS	
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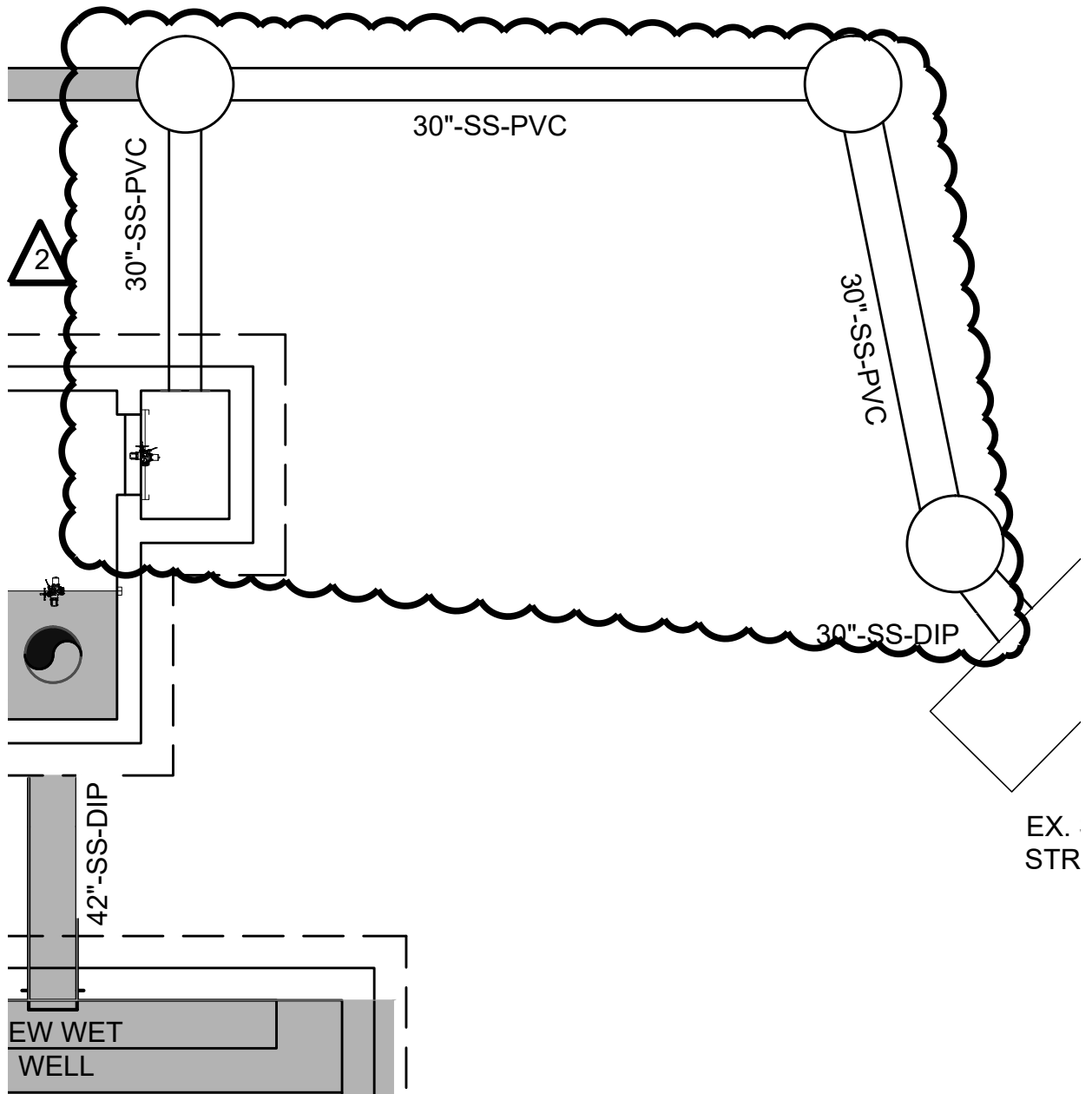
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DOWNWARD OPENING WEIR GATE SCHEDULE							
DESCRIPTOR	QUANTITY	CHANNEL DEPTH	WIDTH	HEIGHT	TYPE	OPERATOR	ACTUATION SERVICE
WG-01	1	15.75'	8'	4'	SELF-CONTAINED	ELECTRIC	MODULATION
WG-02	1	15.75'	5'	4'	SELF-CONTAINED	ELECTRIC	MODULATION

SLIDE GATE SCHEDULE							
DESCRIPTOR	QUANTITY	CHANNEL DEPTH	WIDTH	HEIGHT	TYPE	OPERATOR	ACTUATION SERVICE
SG-01A	1	15.75	2.50	2.50	NON SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-01	1	15.75	5	4	NON SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-02	1	15.75	4	4	NON SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-03	1	15.75	5	14.75	SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-04	1	15.75	5	14.75	SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-05	1	15.75	5	14.75	SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-06	1	15.75	5	14.75	SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-07	1	15.75	5	14.75	NON SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE
SG-08	1	15.75	2.50	2.50	NON SELF-CONTAINED	HANDWHEEL	OPEN/CLOSE

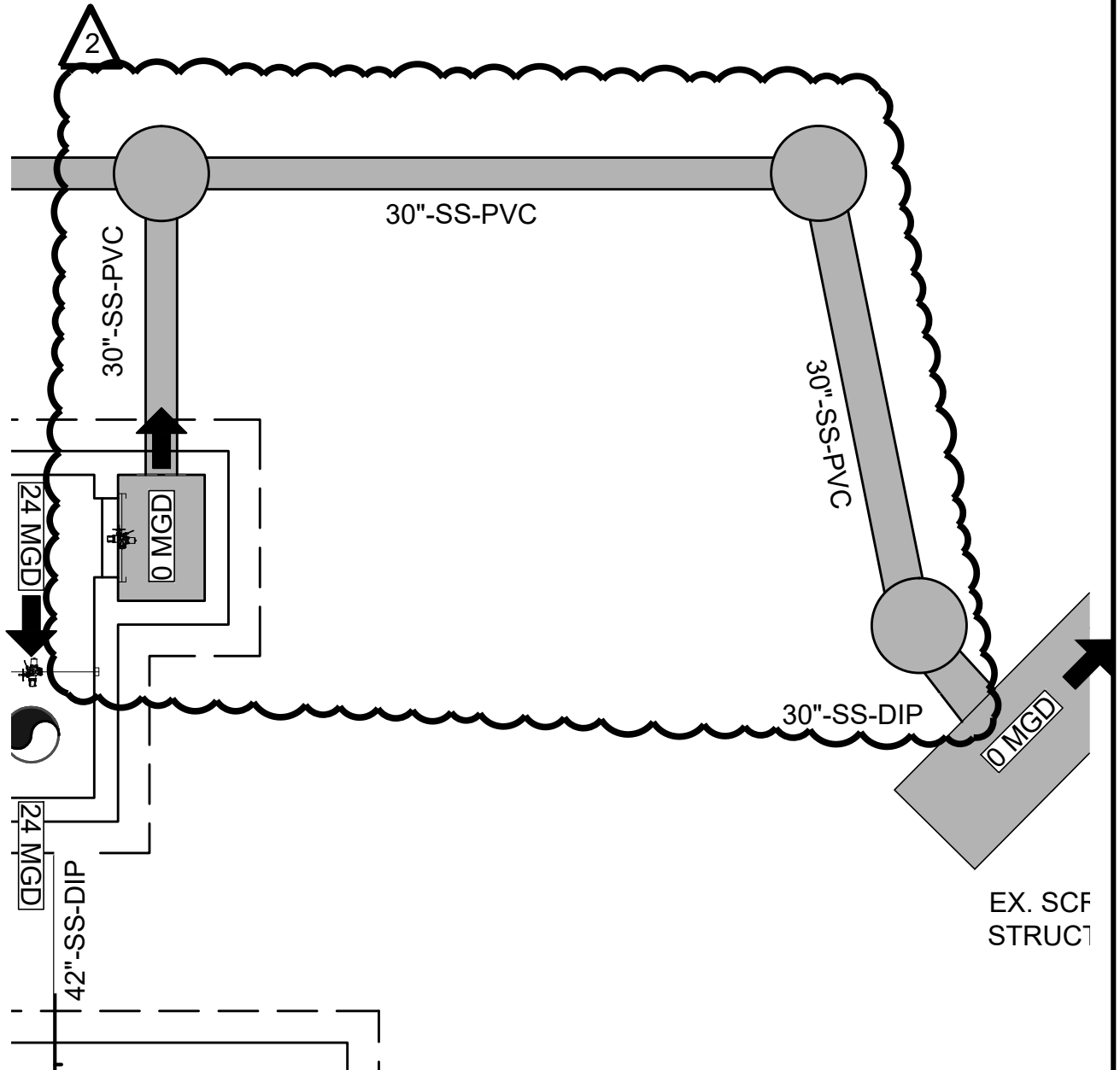
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CITY OF HOT SPRINGS			
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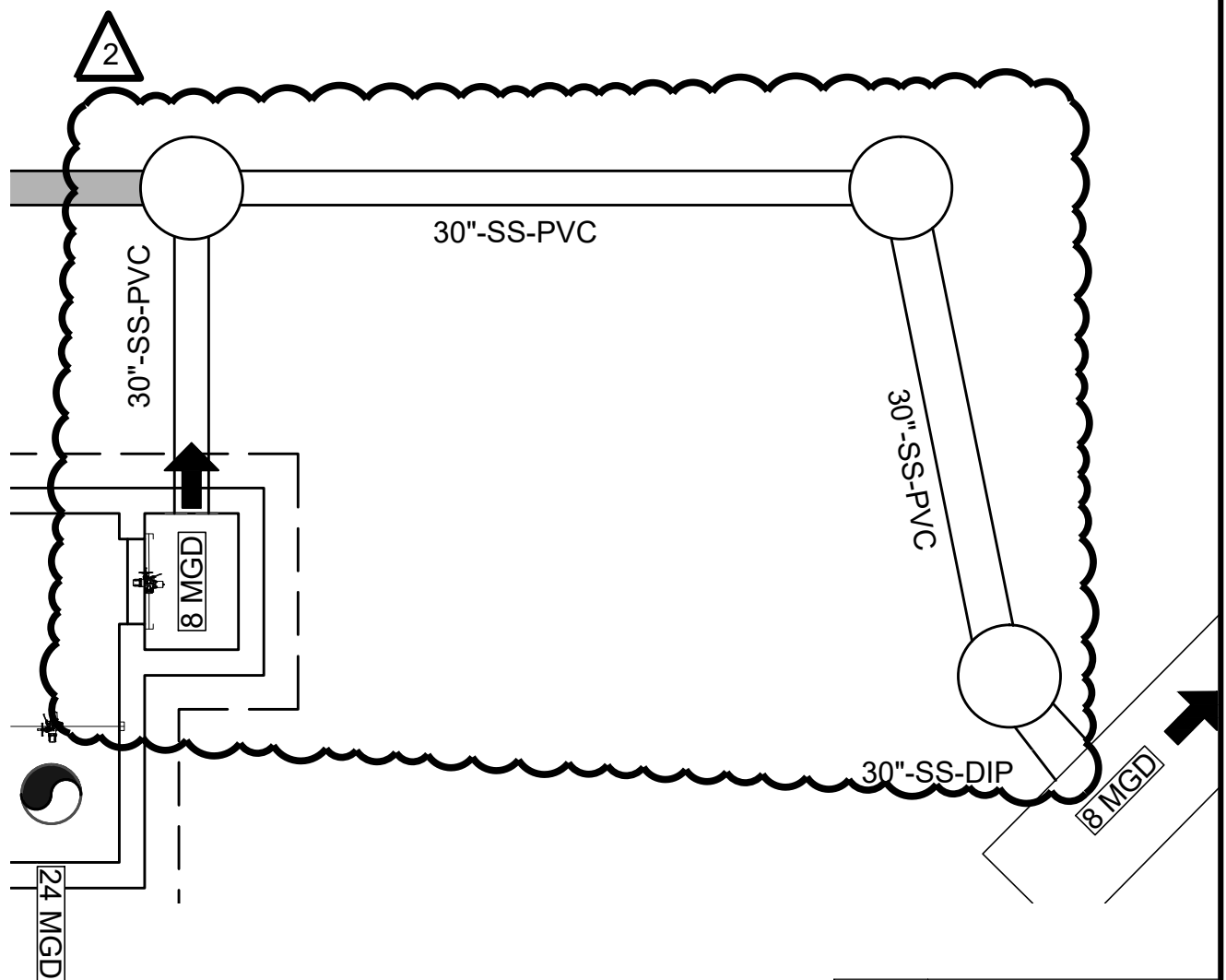
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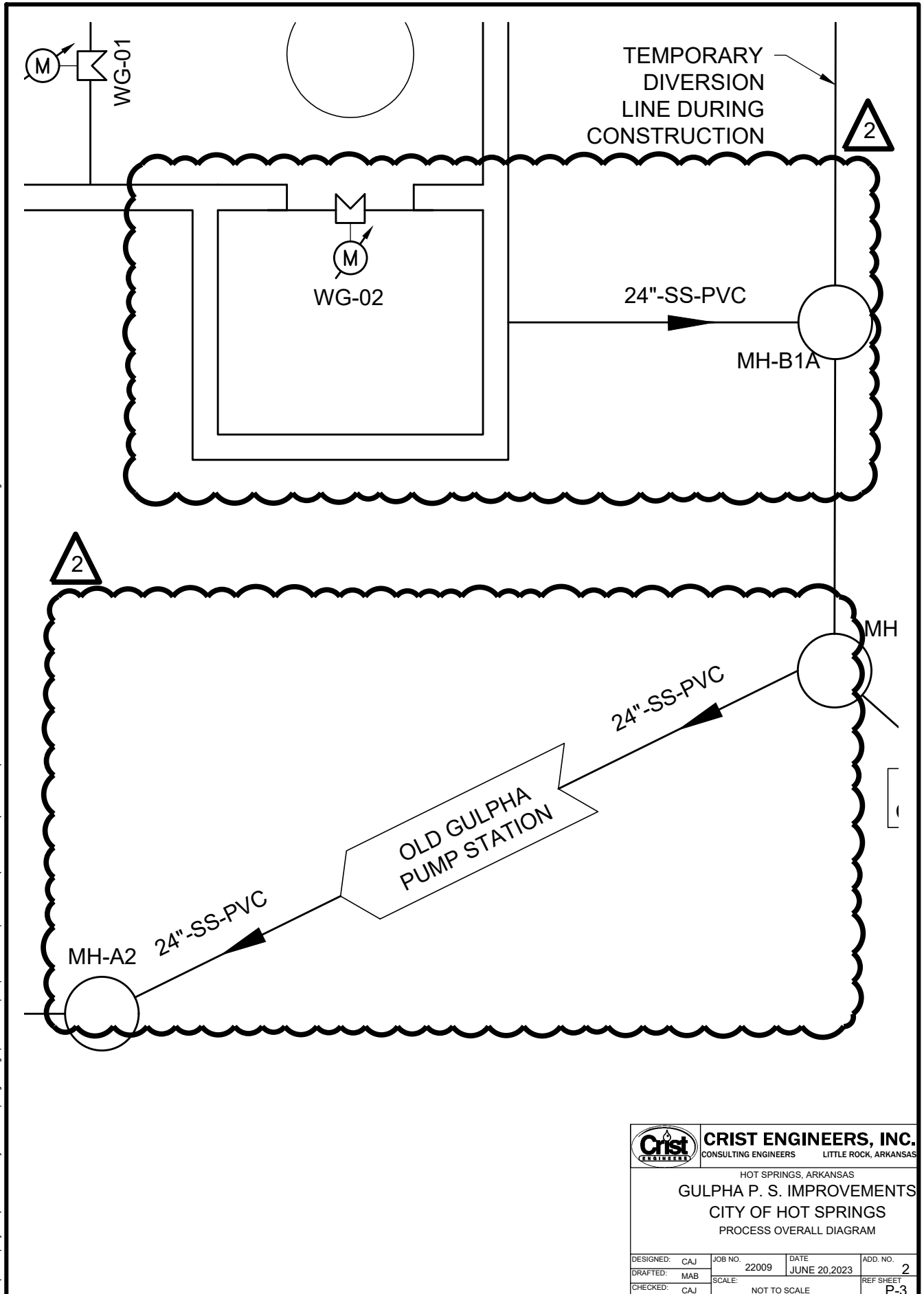
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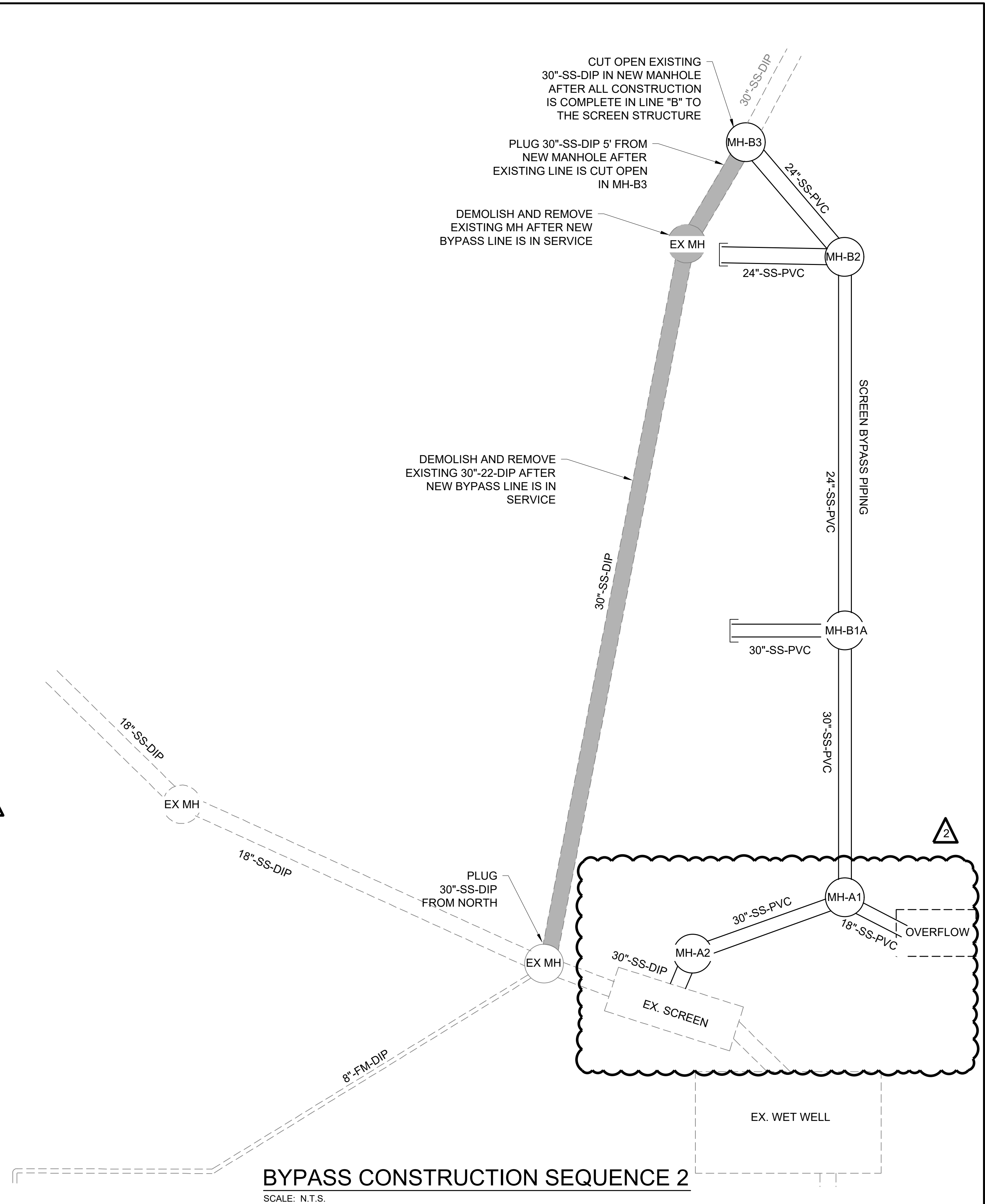
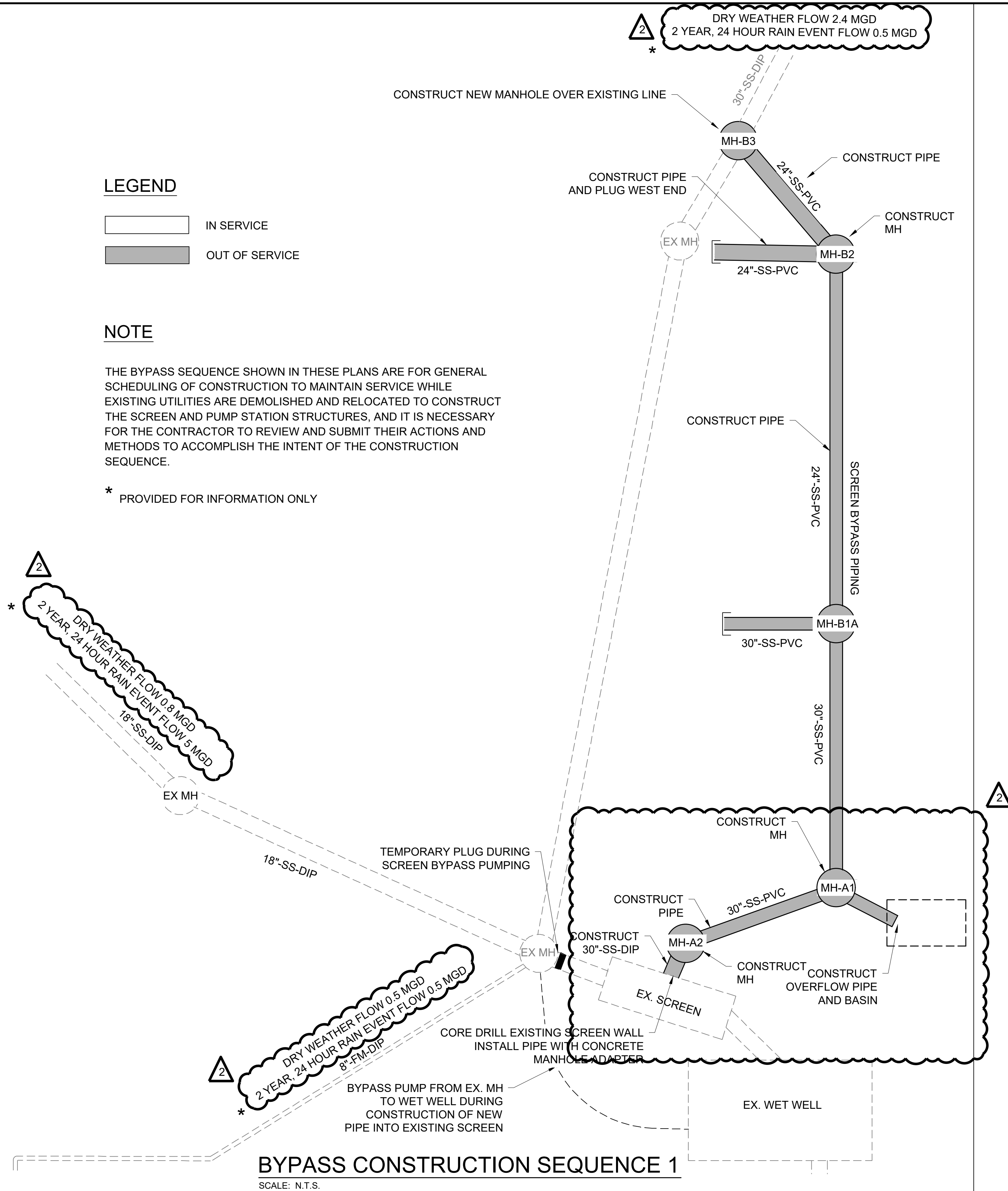
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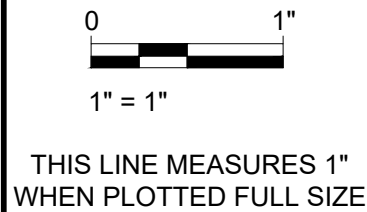
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CITY OF HOT SPRINGS			
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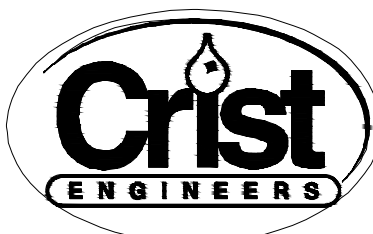




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DATE:	MAY 2023



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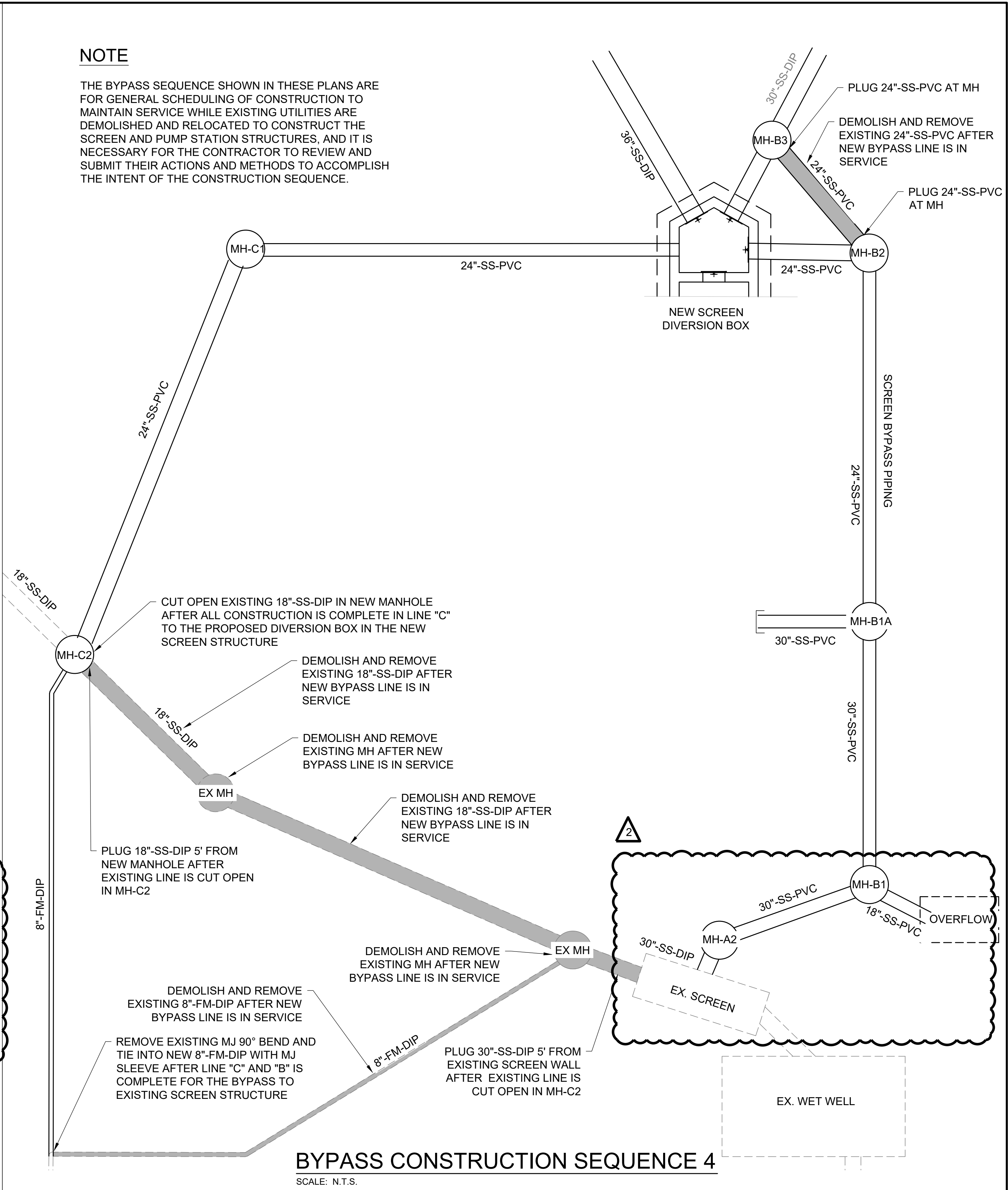
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

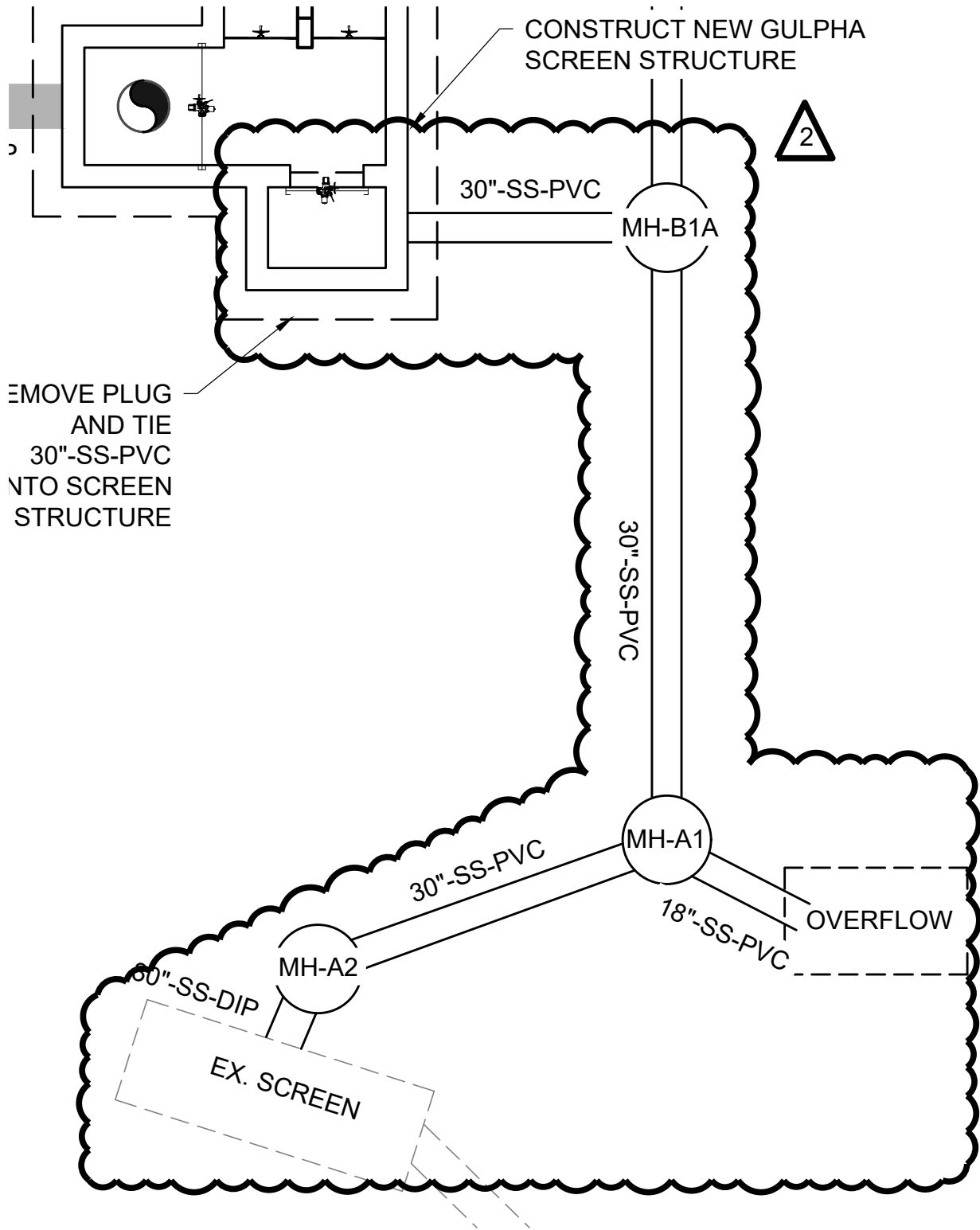
HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
ADDENDUM 2

BYPASS CONSTRUCTION SEQUENCE 1 & 2

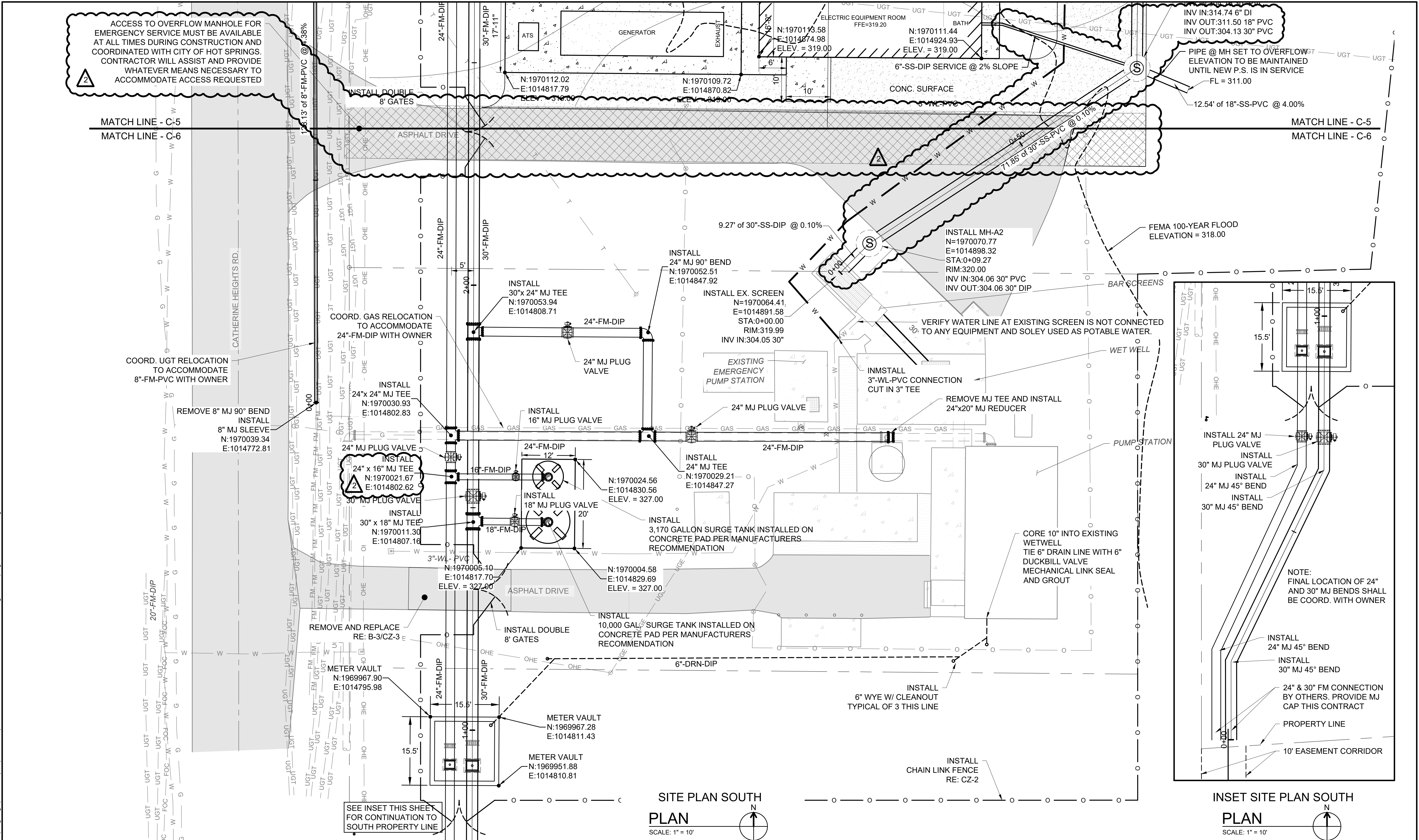
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SHEET NO.
Q-1

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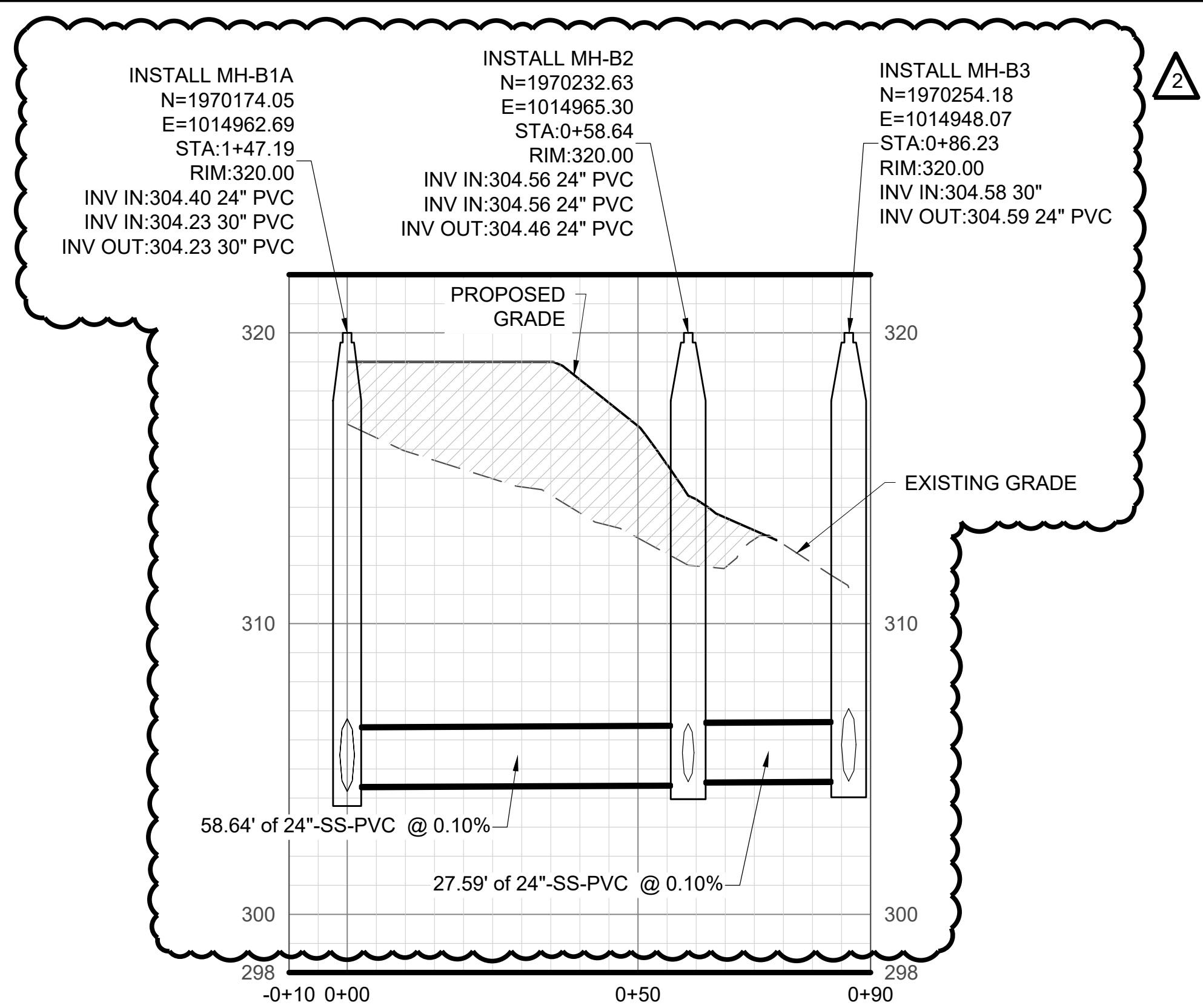
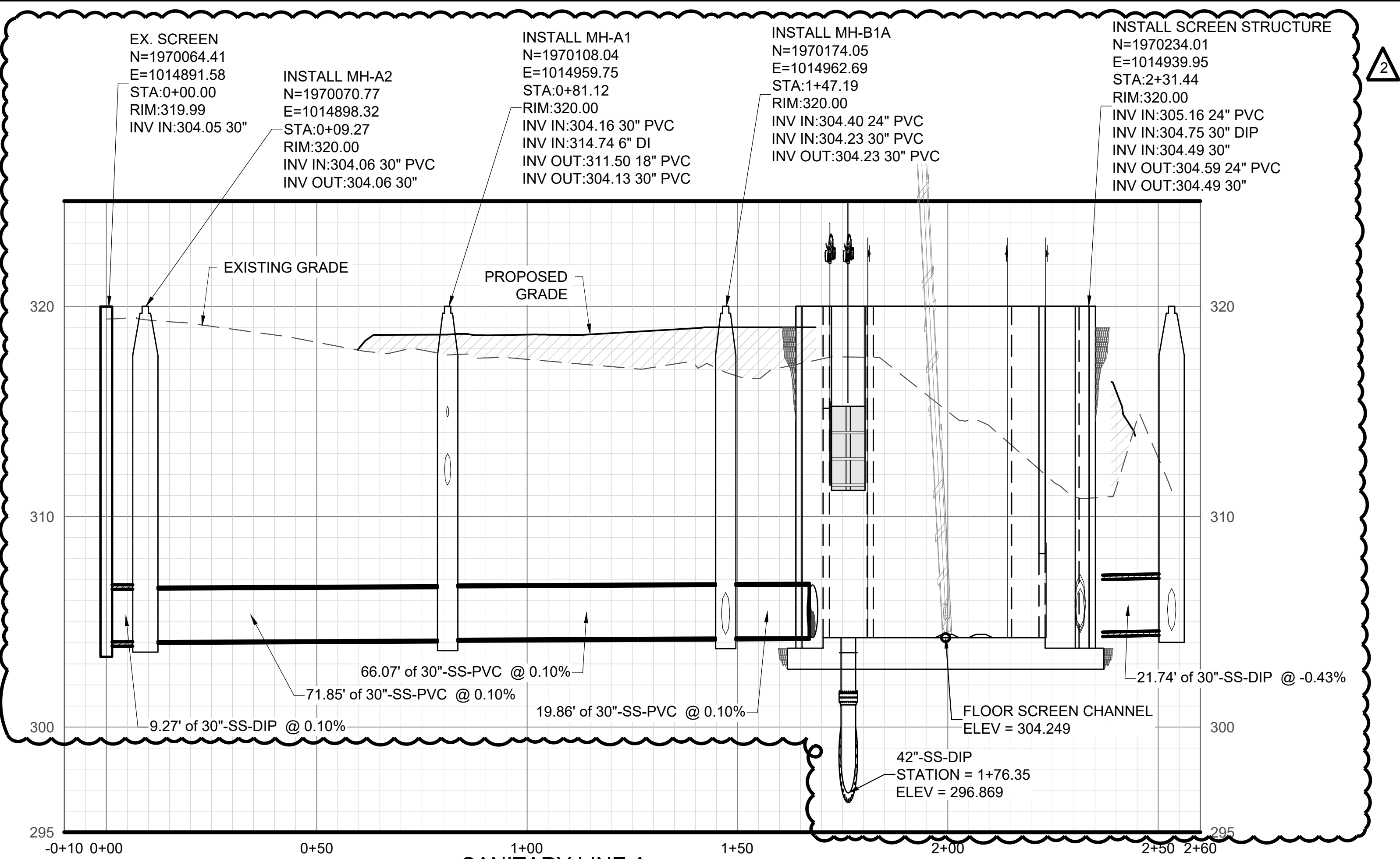


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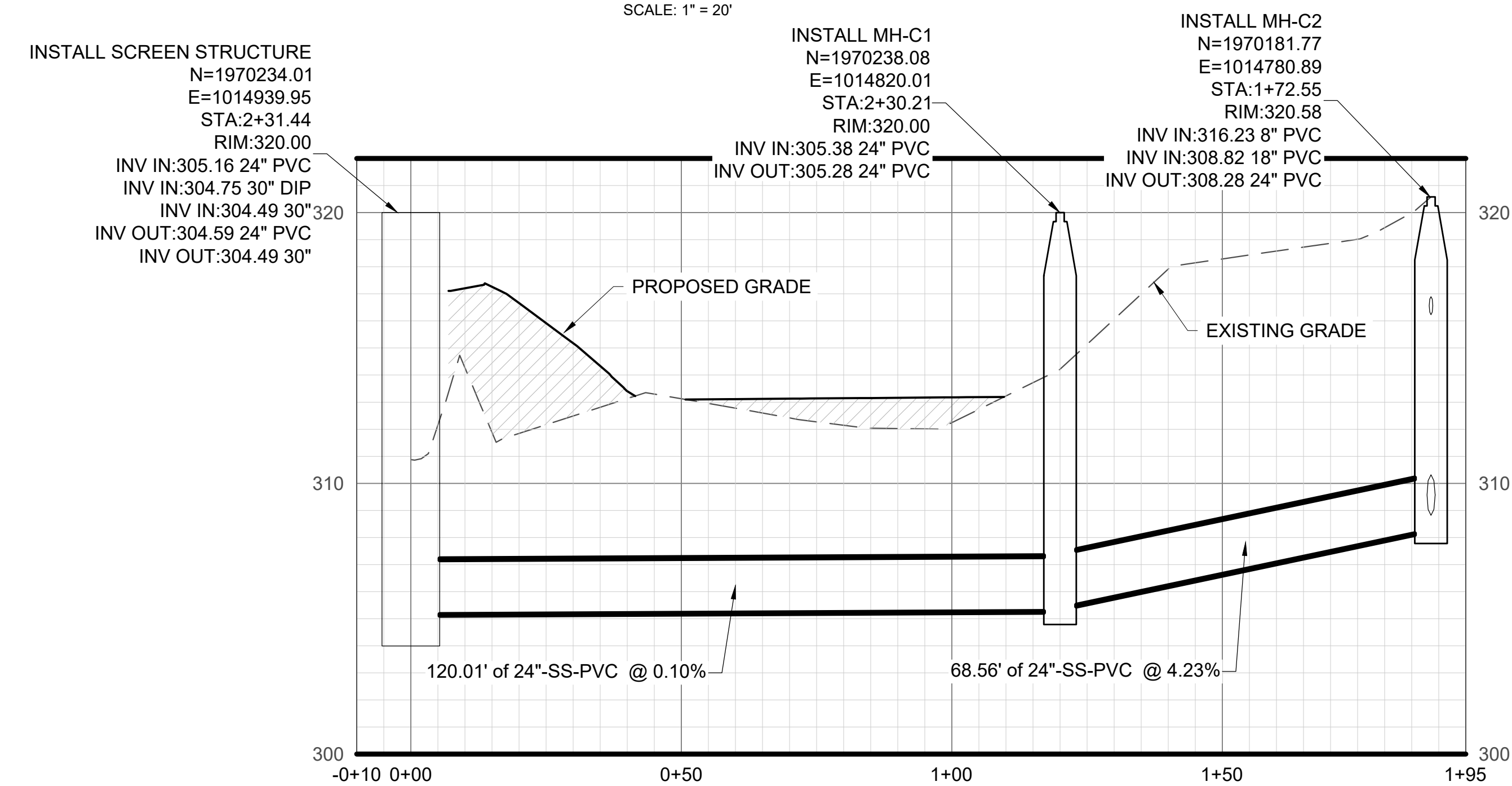


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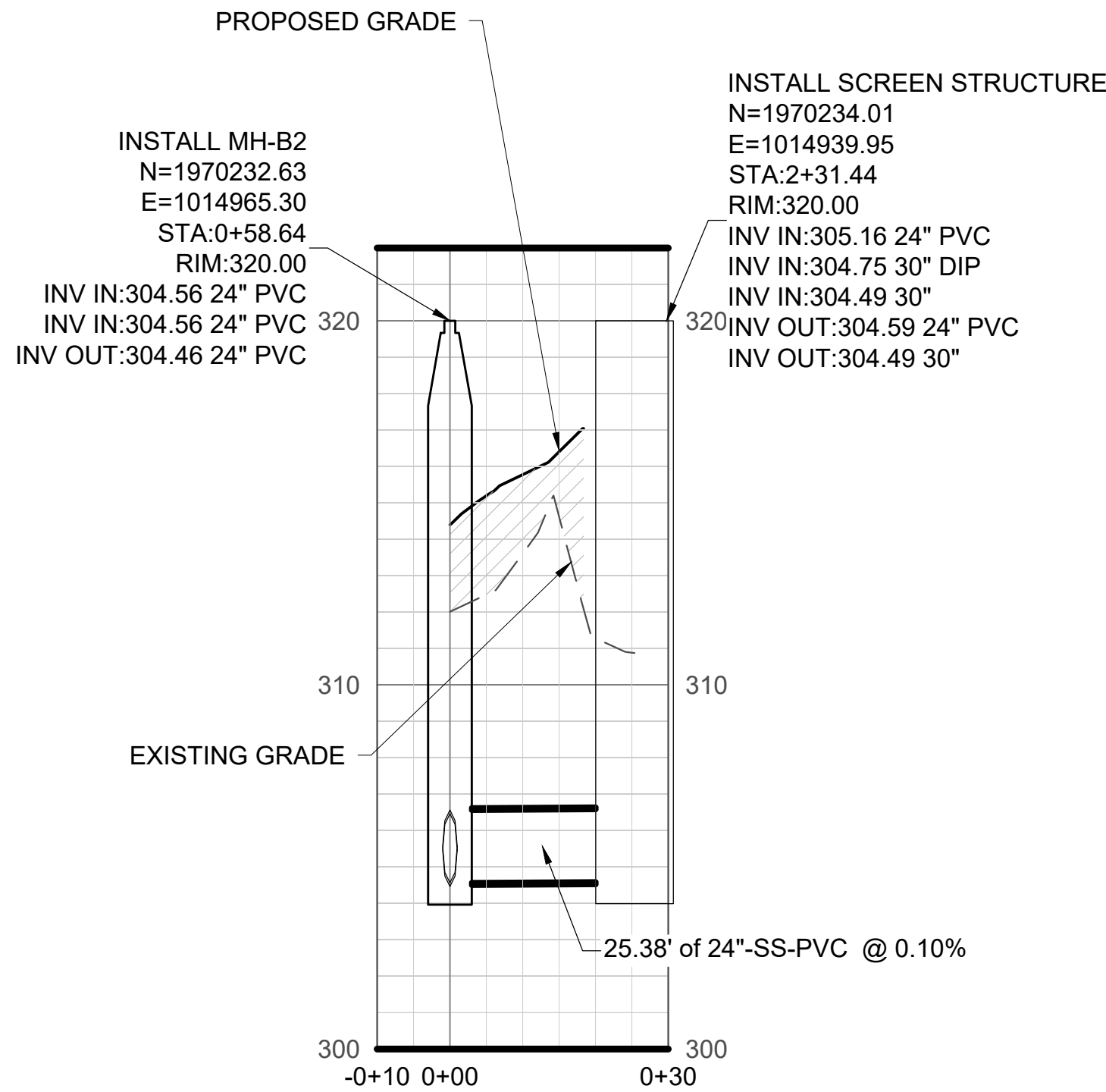
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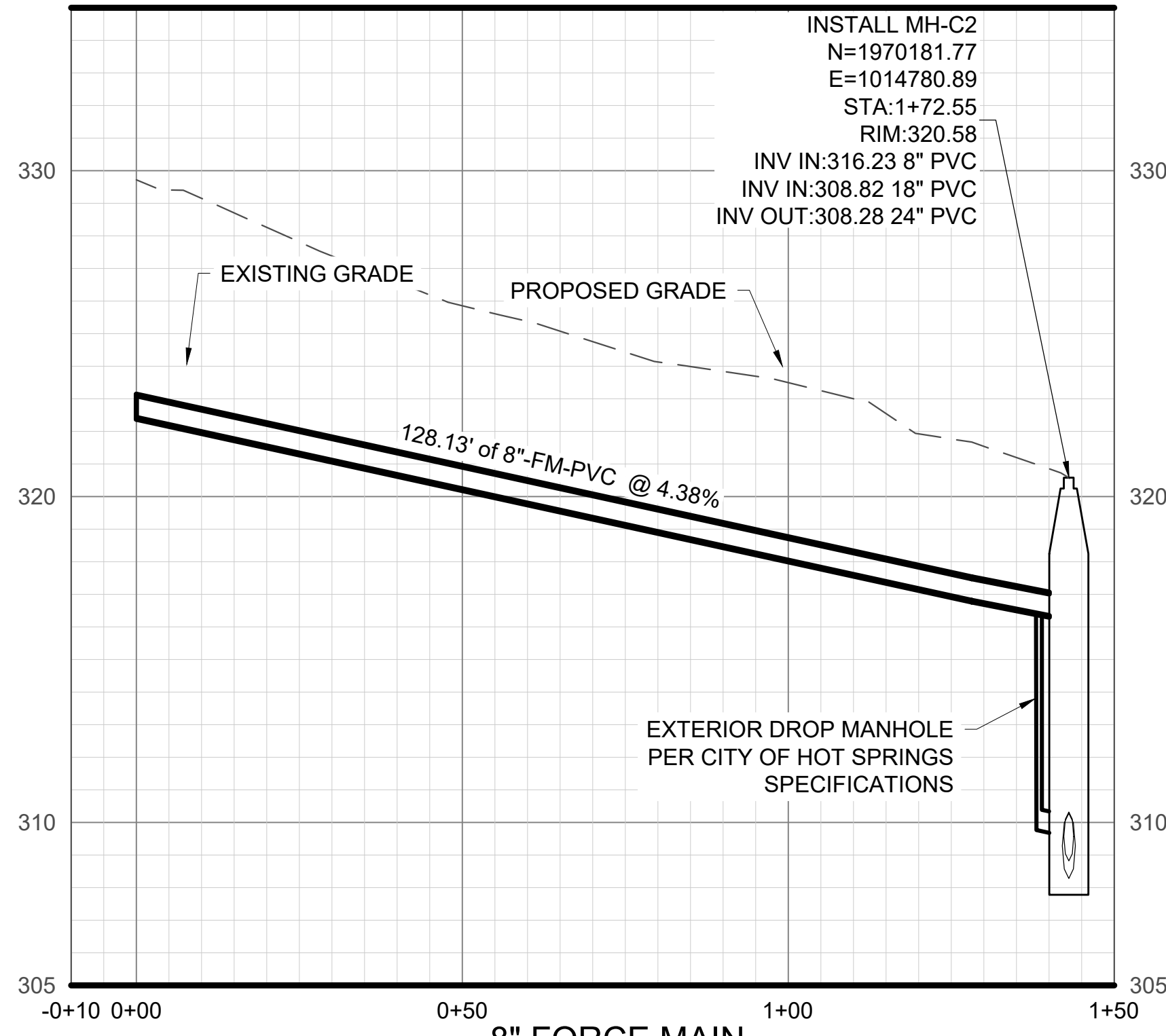
SANITARY LINE B
PROFILE



SANITARY LINE C
PROFILE



SANITARY LINE D
PROFILE



8" FORCE MAIN
PROFILE

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	6/6/23	SBM	OA	REVISED PER ADDENDUM NO. 2

0 1"
1" = 1"
THIS LINE MEASURES 1"
WHEN PLOTTED FULL SIZE

DESIGNED:	CAJ
DRAFTED:	MAB
CHECKED:	CAJ
DATE:	MAY 2023



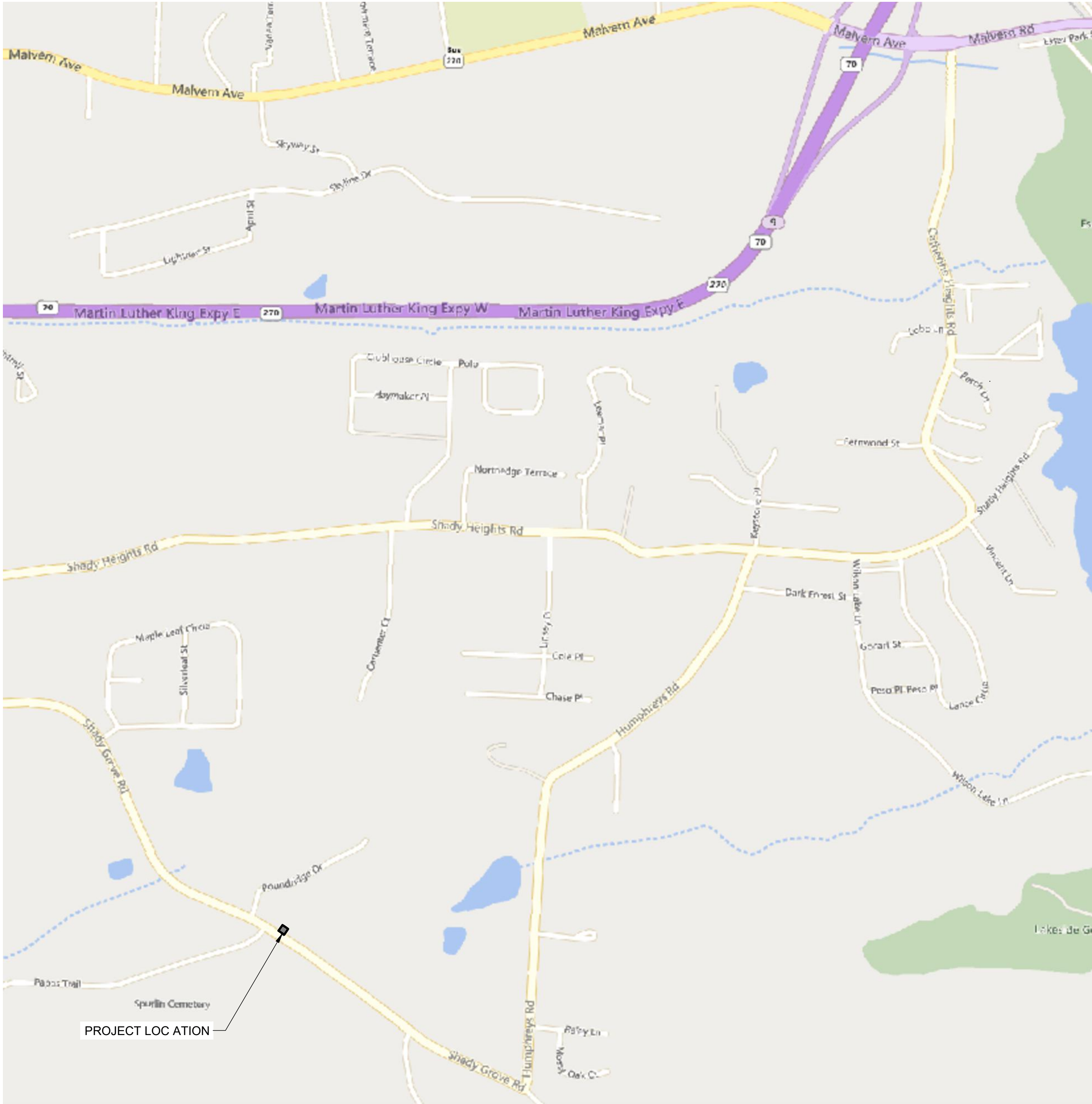
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ADDENDUM 2

SANITARY SEWER PROFILES

JOB NO.
22009
SHEET NO.
C-7



WEIR BOX AND ODOR CONTROL LOCATION PLAN

PLAN

SCALE: 1"=500'



SPECIAL NOTE
THIS MAP IS BEING PROVIDED TO INFORM PROSPECTIVE BIDDERS OF THE LOCATION. THE OWNER DOES NOT CURRENTLY HAVE PERMISSION FOR A RIGHT OF ENTRY. PROSPECTIVE BIDDERS ARE NOT TO ACCESS THE PROPERTY.



WEIR BOX AND ODOR CONTROL LOCATION PLAN

PLAN

SCALE: 1"=200'



1	6/18/2023	MAB	CAJ	REVISED PER ADDENDUM NO. 2	
REV. NO.	DATE	DRWN	CHKD	REMARKS	

0 1" = 1"

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	CAJ
DRAFTED:	MAB
CHECKED:	CAJ
DATE:	MAY 2023



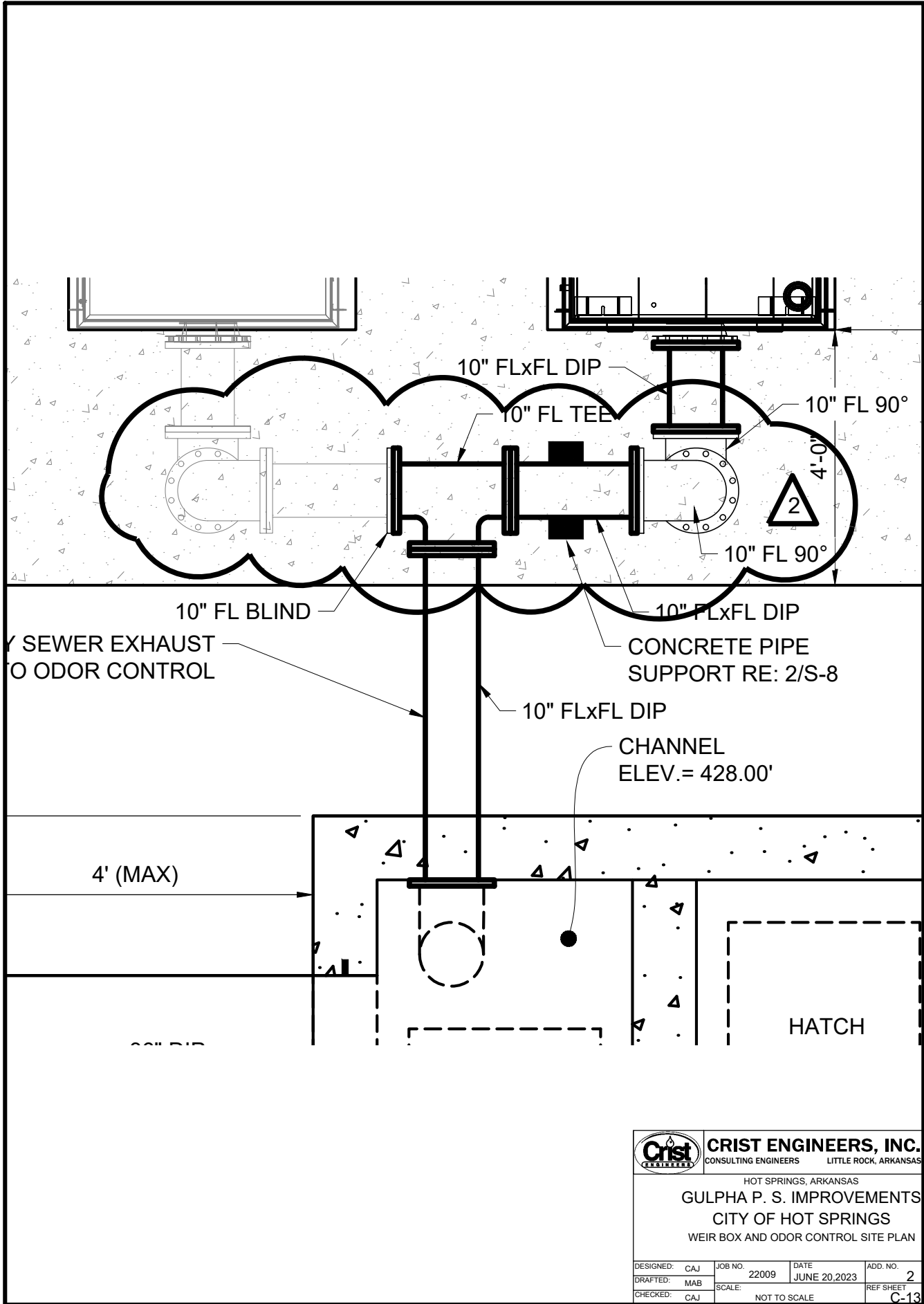
CRIST ENGINEERS, INC.
CONSULTING ENGINEERS

205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
ADDENDUM 2

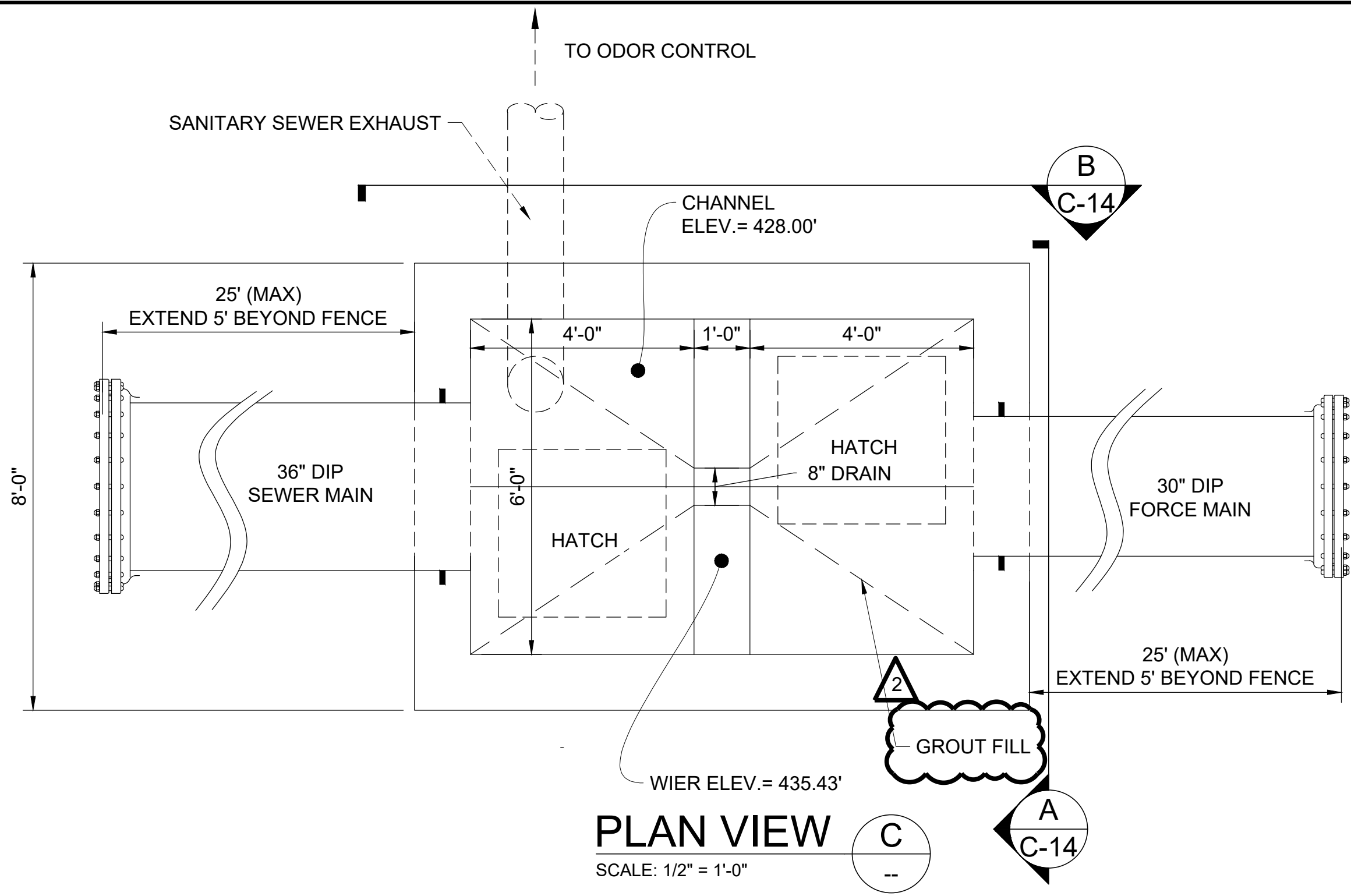
WEIR BOX AND ODOR CONTROL LOCATION PLAN

JOB NO.	22009
SHEET NO.	C-12A

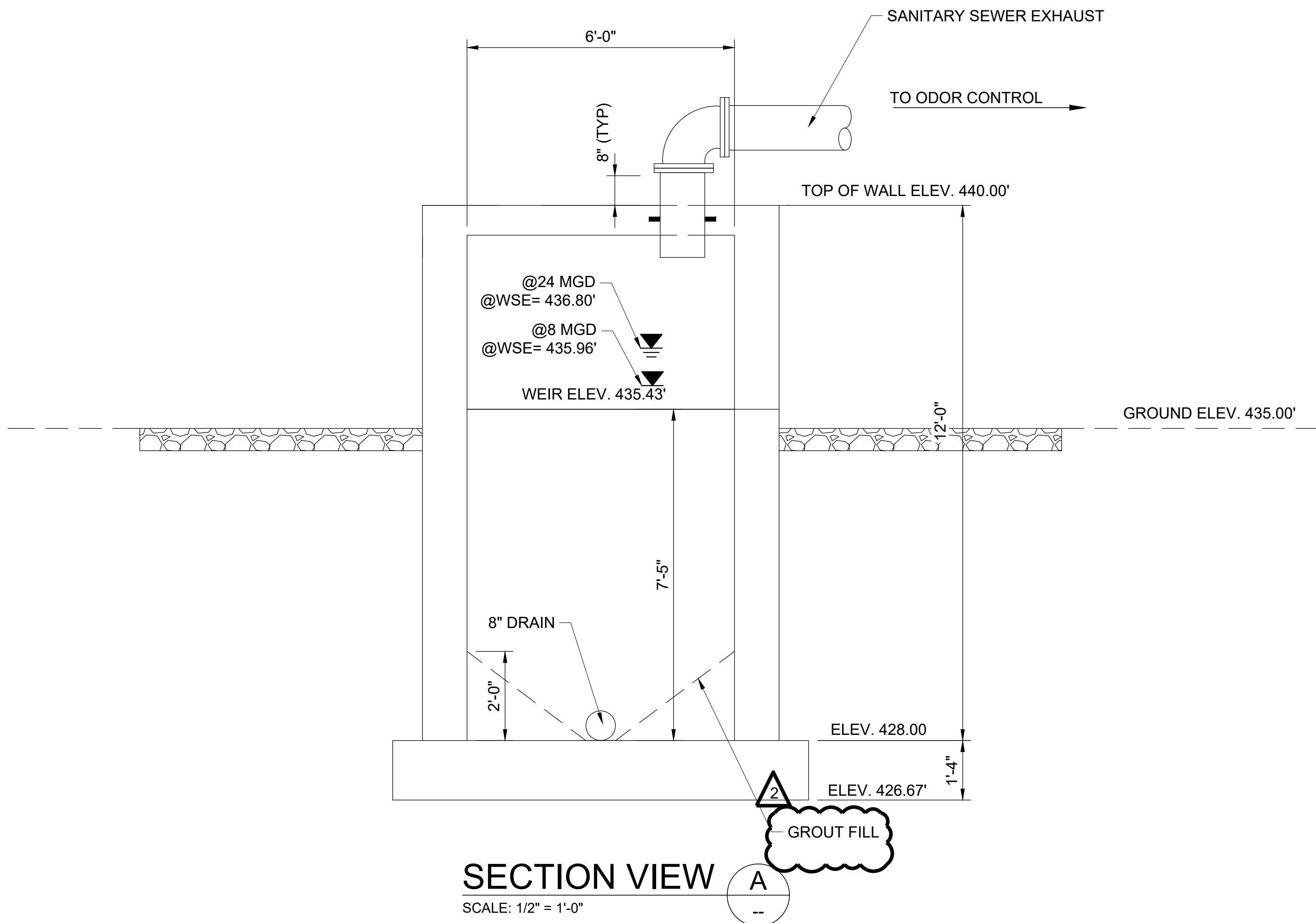


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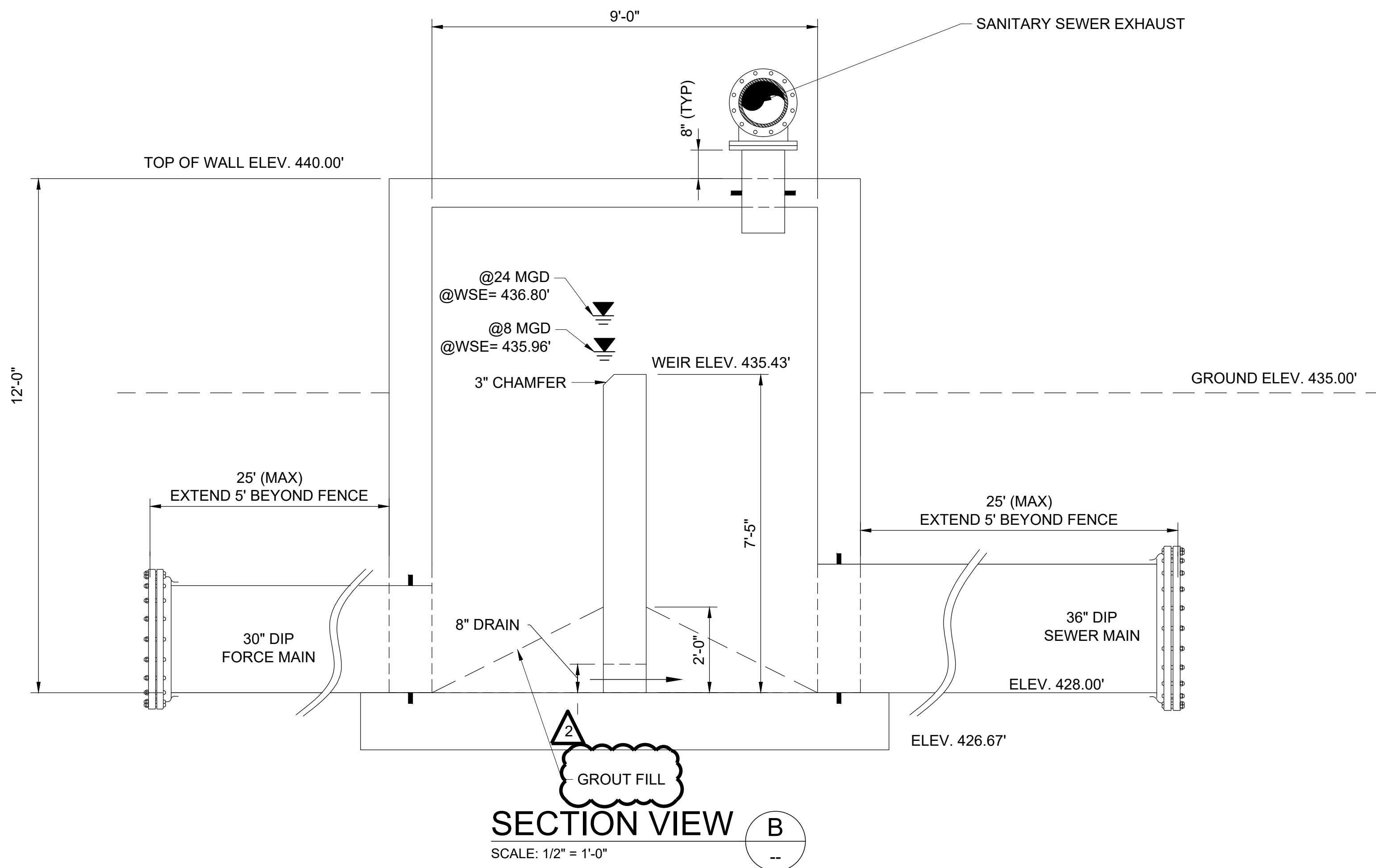
 CRIST ENGINEERS, INC. CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS			
HOT SPRINGS, ARKANSAS GULPHA P. S. IMPROVEMENTS CITY OF HOT SPRINGS WEIR BOX AND ODOR CONTROL SITE PLAN			
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE:	NOT TO SCALE	REF SHEET
CHECKED: CAJ	C-13		



PLAN VIEW
SCALE: 1/2" = 1'-0"



SECTION VIEW A
SCALE: 1/2" = 1'-0"



SECTION VIEW B
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	6/20/2023	MAB	CAJ	REVISED PER ADDENDUM NO. 2

0 1" = 1"
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

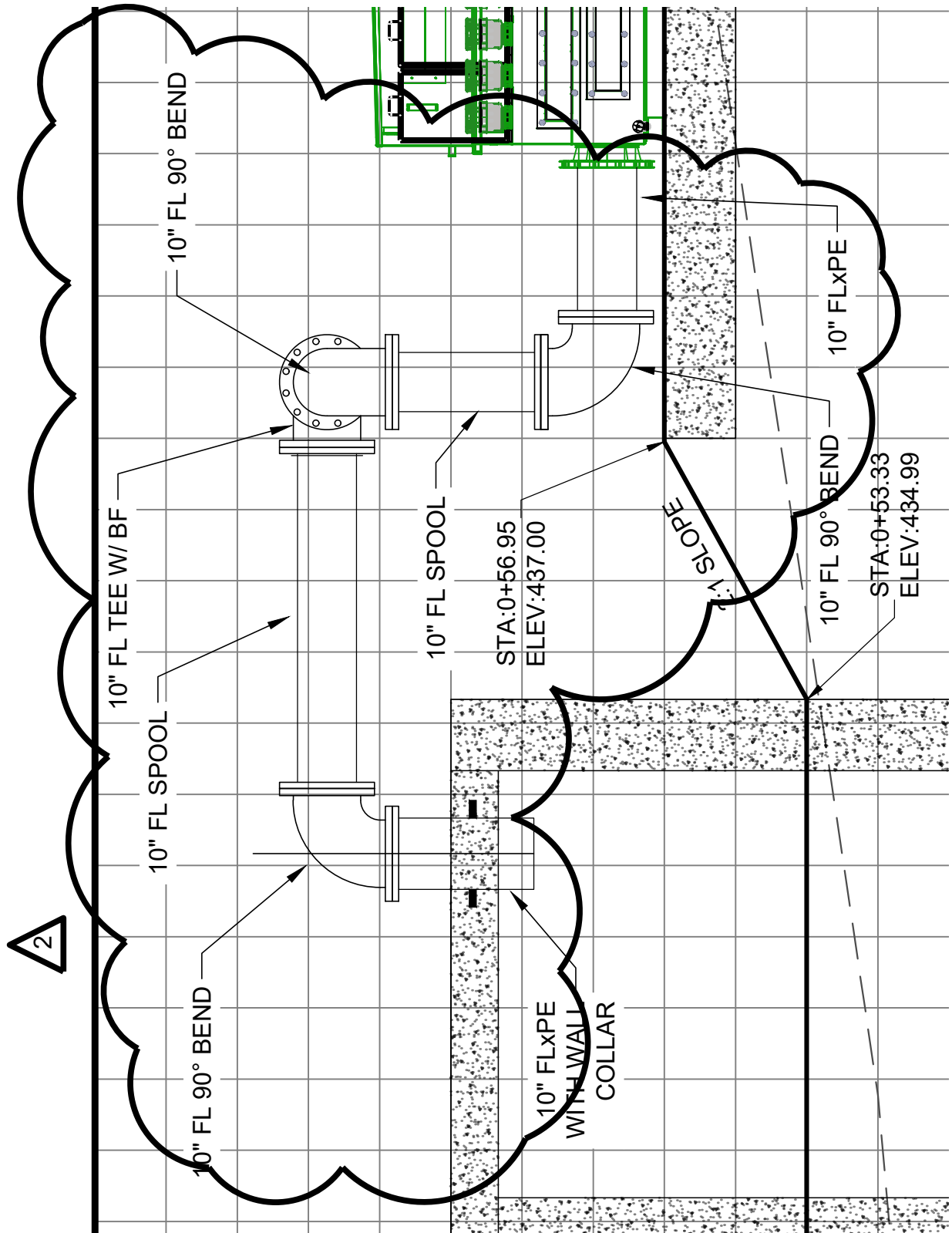
DESIGNED:	CAJ
DRAFTED:	MAB
CHECKED:	CAJ
DATE:	MAY 2023



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CONSULTING ENGINEERS
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HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
ADDENDUM 2
WEIR BOX DETAIL

JOB NO.
22009
SHEET NO.
C-14



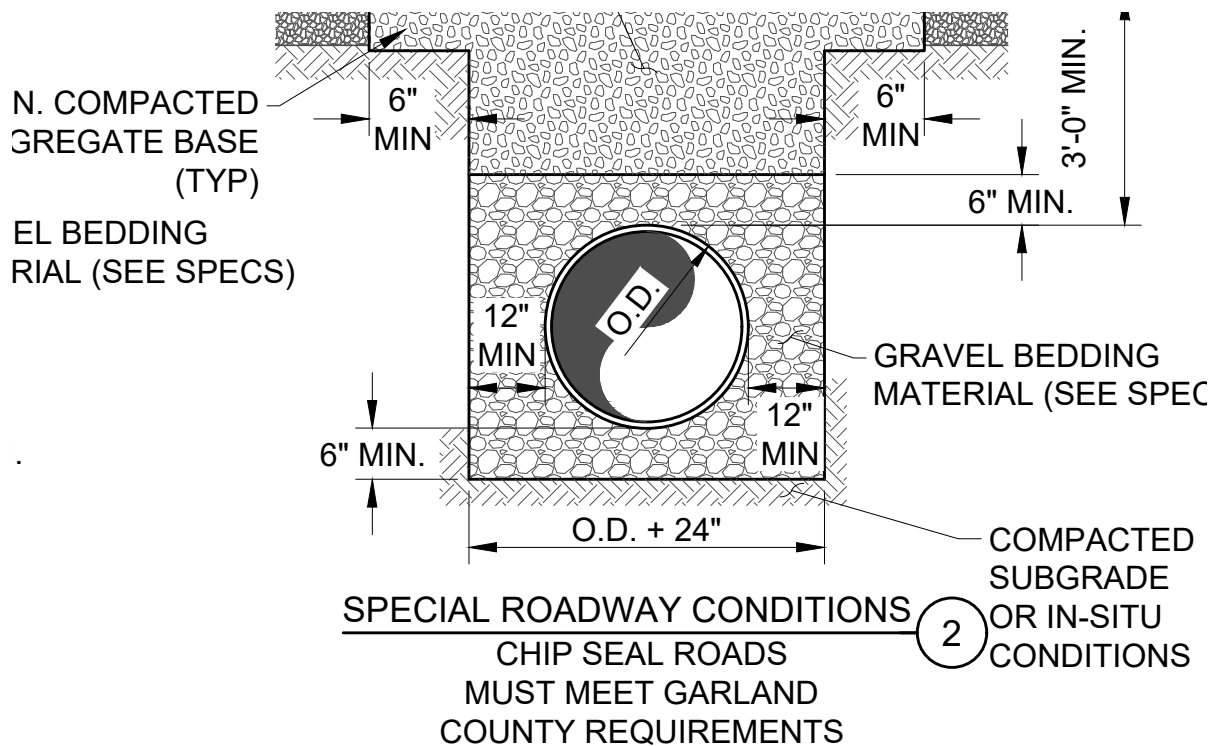
CRIST ENGINEERS, INC.
CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS

HOT SPRINGS, ARKANSAS

GULPHA P. S. IMPROVEMENTS
CITY OF HOT SPRINGS

WEIR BOX AND ODOR CONTROL PROFILE

DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20,2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE		REF SHEET C-15
CHECKED: CAJ			



NOTES:

1. USE ROADWAY CONDITIONS WHEN INSTALLING PIPE IN AREAS WITH TRAFFIC LOADS.
2. SEE BEDDING SPECS.
3. NO ROCKS LARGER THAN 4" DIAMETER IN BACKFILL.
4. CONTRACTOR TO CONSTRUCT TRENCH USING METHODS ALLOWED BY STATE, OR FEDERAL REQUIREMENTS TO MAINTAIN A SAFE WORKING CONDITION.
5. SEE DETAIL D THIS SHEET.
6. WHERE NOT SPECIFIED TYPE 1 BEDDING APPLIES.



PIPE LINE BEDDING

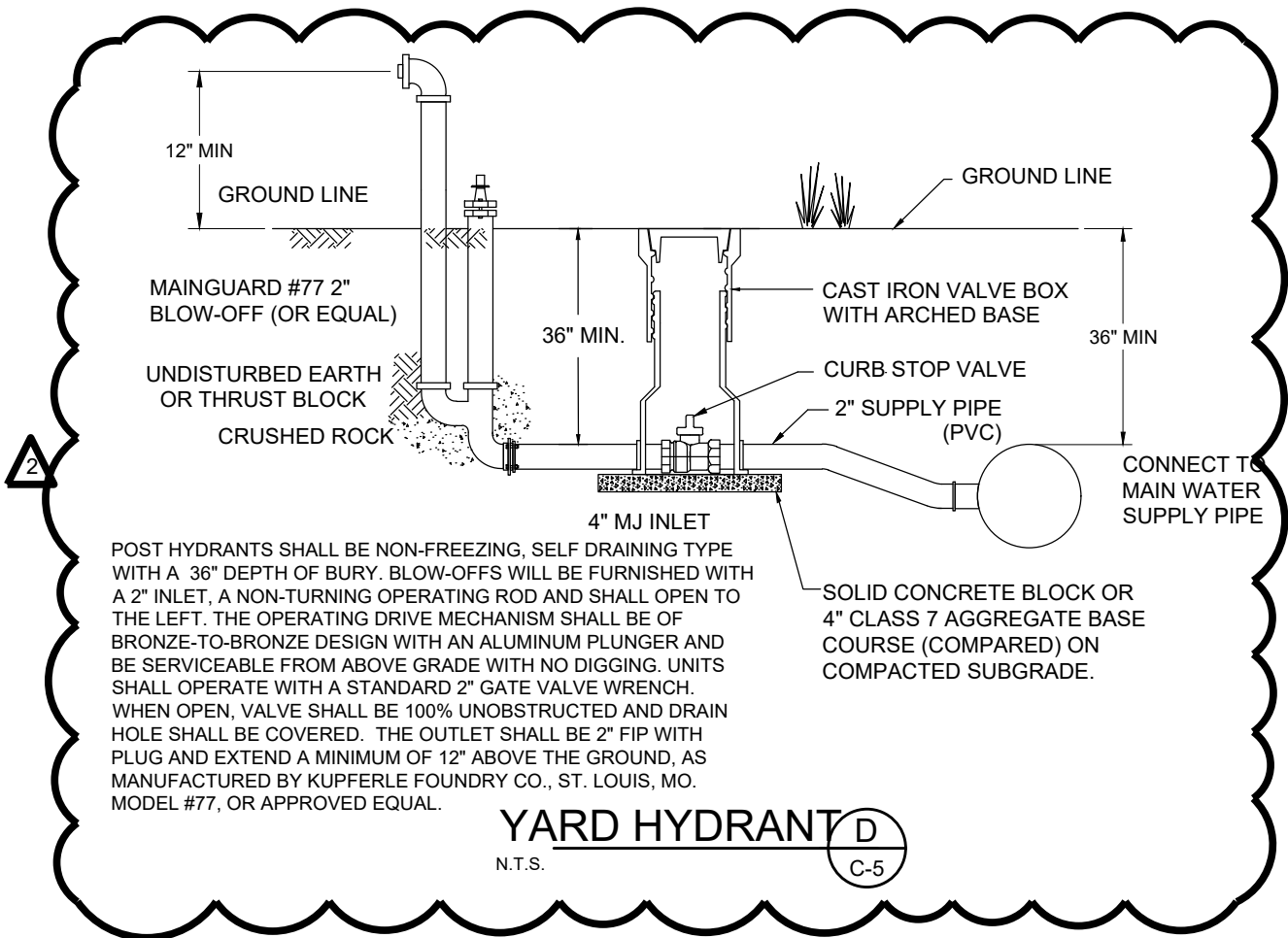
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B

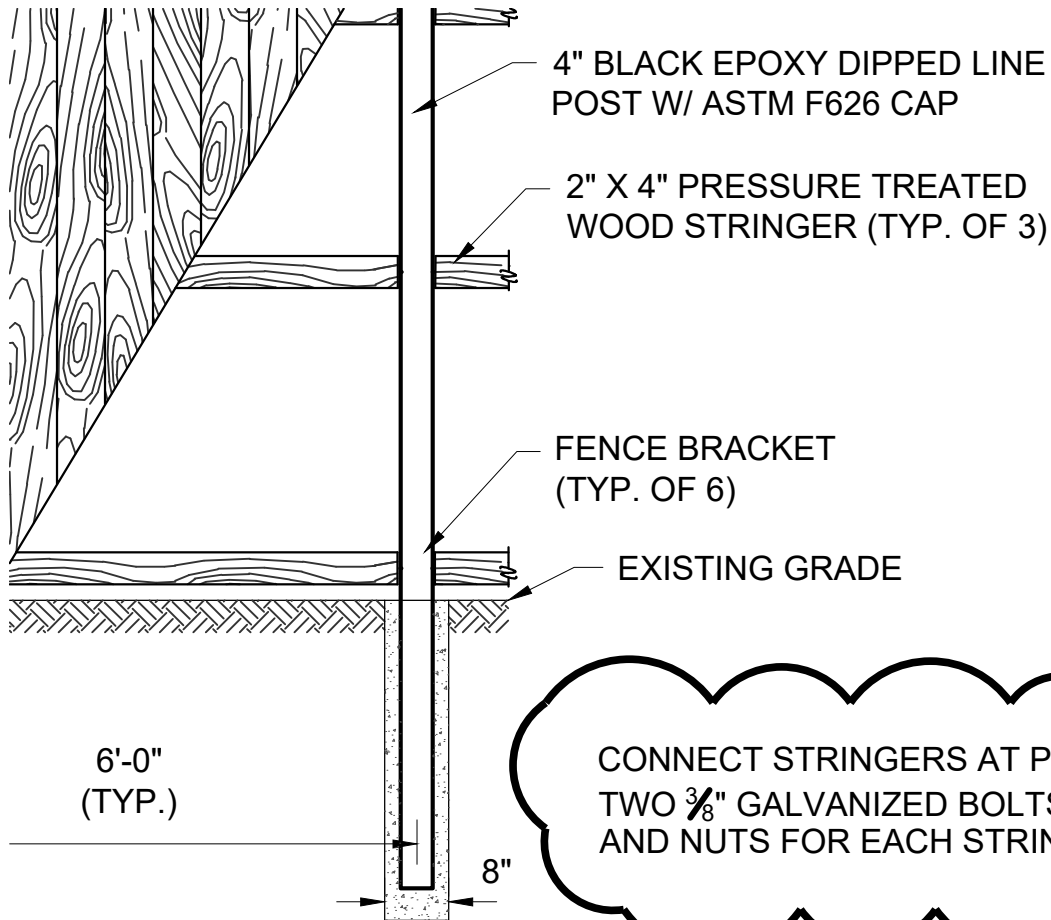
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		CRIST ENGINEERS, INC.	
CONSULTING ENGINEERS		LITTLE ROCK, ARKANSAS	
HOT SPRINGS, ARKANSAS			
GULPHA P. S. IMPROVEMENTS			
CITY OF HOT SPRINGS			
CIVIL STANDARD DETAILS IV			
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET C7-4	
CHECKED: CAJ			

P:\2022 projects\22009 - city of hot springs - gulpha basin pump station improvements\06 - cadd\02 - civil\22009 - CIVIL DETAILS.dwg



 CRIST ENGINEERS, INC. CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS		HOT SPRINGS, ARKANSAS	
		GULPHA P. S. IMPROVEMENTS CITY OF HOT SPRINGS CIVIL STANDARD DETAILS IV	
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET CZ-4	
CHECKED: CAJ			



CONNECT STRINGERS AT POST WITH
TWO $\frac{3}{8}$ " GALVANIZED BOLTS, WASHERS
AND NUTS FOR EACH STRINGER

2

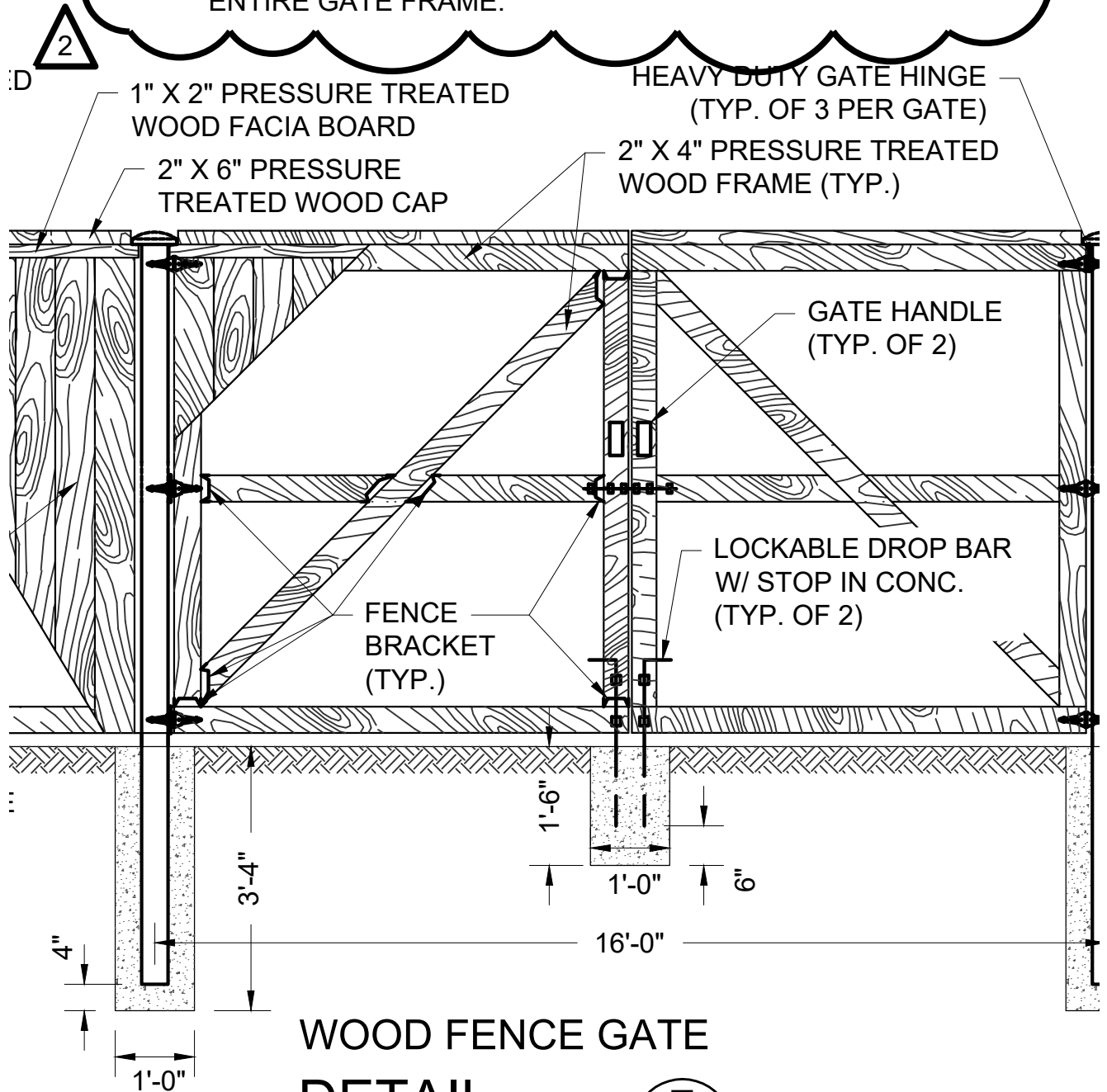
FENCE PANEL
TAIL

D
C-13

P:\2022 projects\22009 - city of hot springs - gulpha basin pump station improvements\06 - cadd\02 - Civil\22009 - CIVIL DETAILS.dwg

 CRIST ENGINEERS, INC. CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS			
HOT SPRINGS, ARKANSAS GULPHA P. S. IMPROVEMENTS CITY OF HOT SPRINGS CIVIL STANDARD DETAILS V			
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET CZ-5	
CHECKED: CAJ			

WOOD GATE FRAME SHALL BE REINFORCED WITH
2"x2"x $\frac{1}{4}$ " ANGLE GALVANIZED STEEL FRAME ANCHORED
BY $\frac{3}{8}$ " GALVANIZED BOLTS, WASHERS AND NUTS, 8" O.C.
ENTIRE GATE FRAME.



WOOD FENCE GATE DETAIL

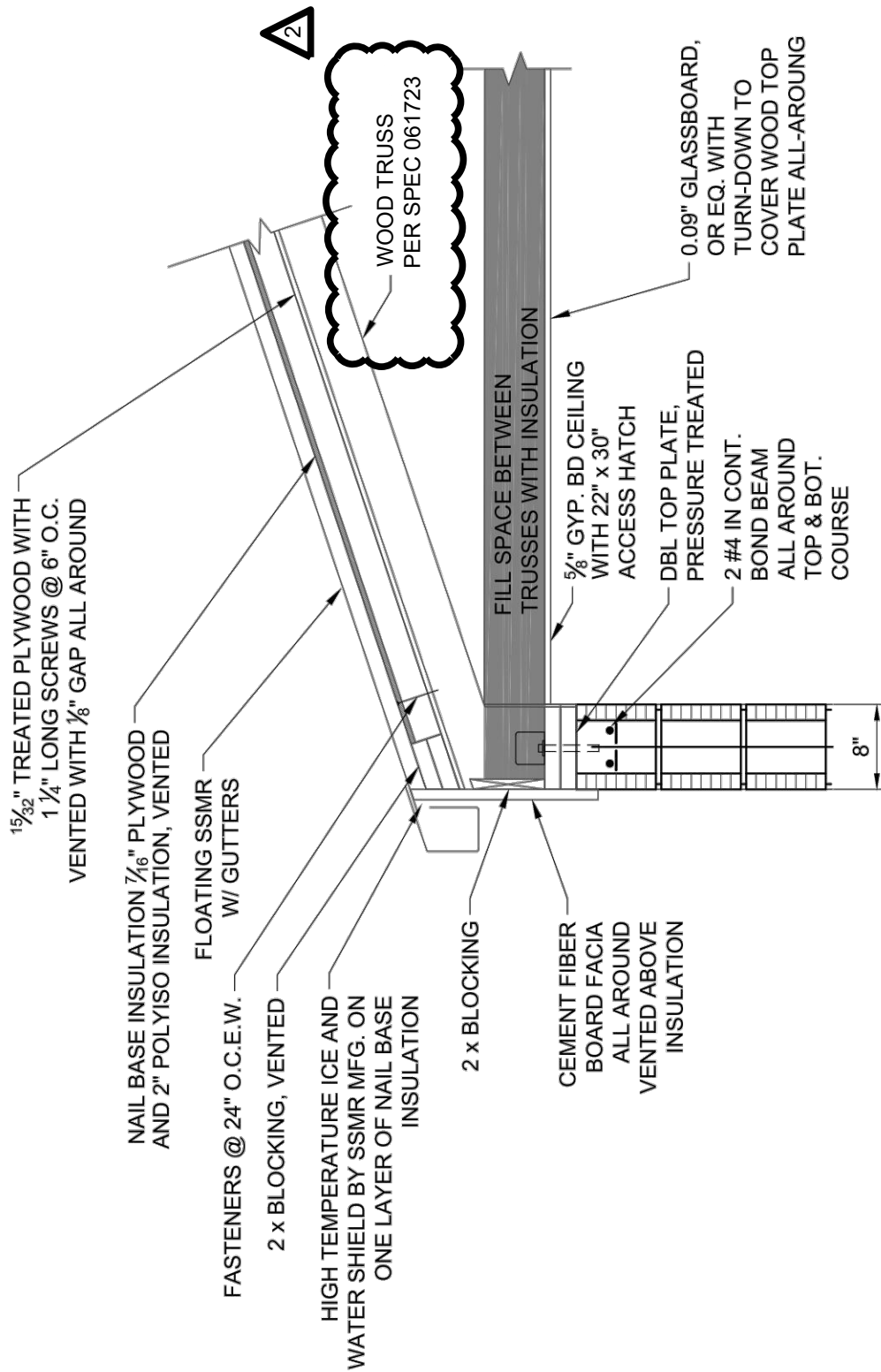
N T S



CRIST ENGINEERS, INC.
CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS

HOT SPRINGS, ARKANSAS
GULPHA P. S. IMPROVEMENTS
CITY OF HOT SPRINGS
CIVIL STANDARD DETAILS V

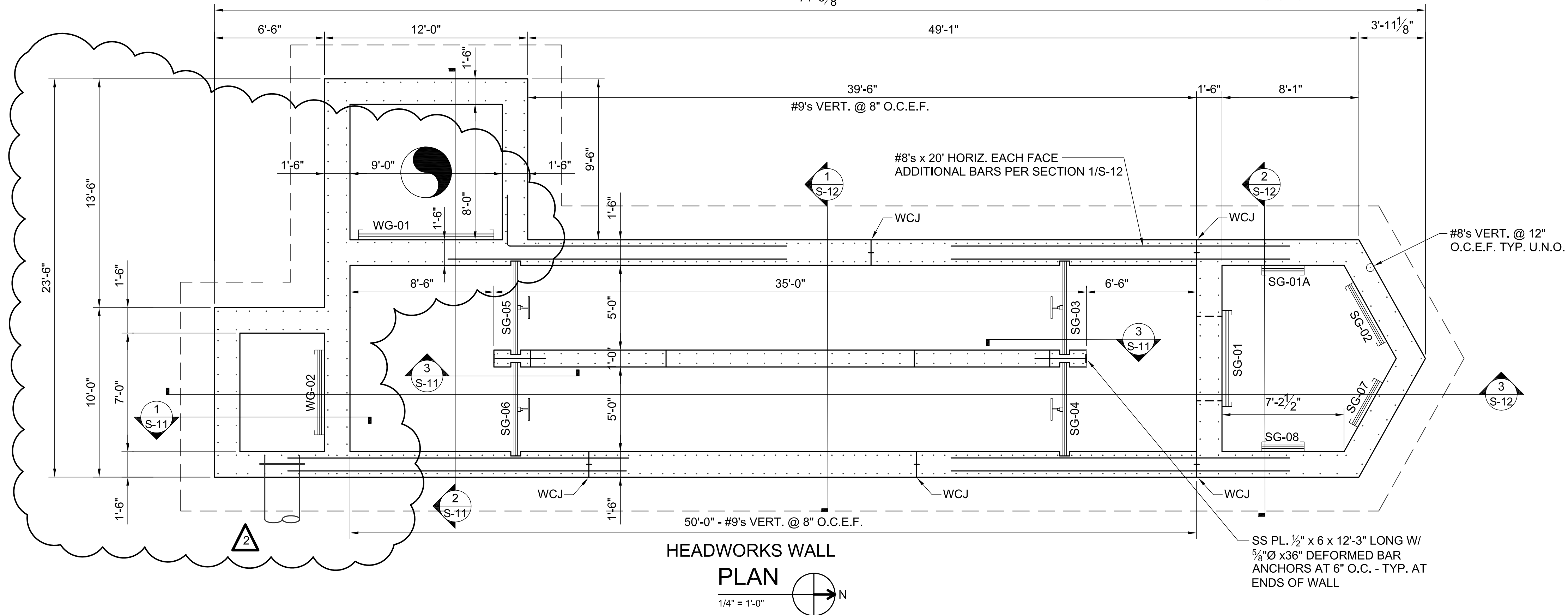
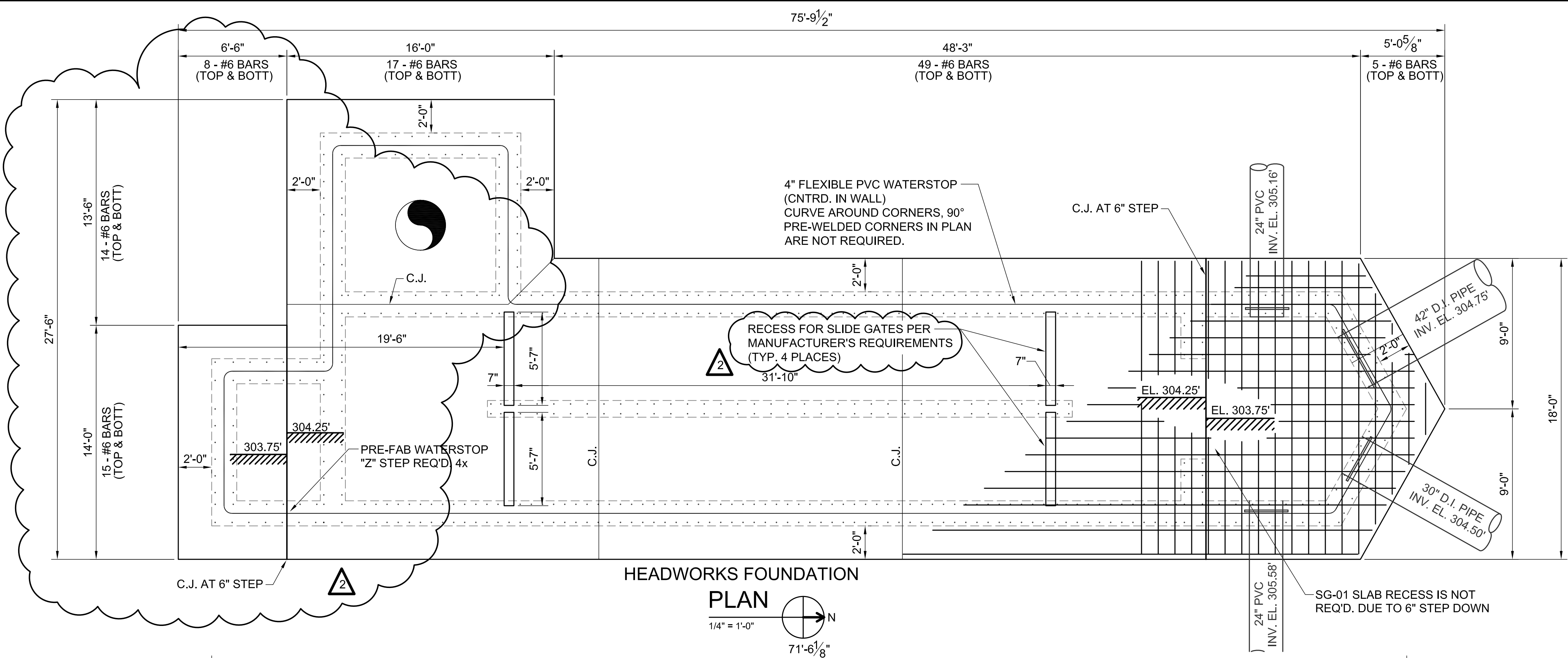
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET CZ-5	
CHECKED: CAJ			



SECTION 2

SCALE: 1" = 1'-0"

		CRIST ENGINEERS, INC.	
CONSULTING ENGINEERS		LITTLE ROCK, ARKANSAS	
HOT SPRINGS, ARKANSAS			
GULPHA BASIN PUMP STATION IMPROVEMENTS			
ELECTRICAL BUILDING STRUCTURAL DETAILS			
DESIGNED: MAR	JOB NO. 22009	DATE JUN. 2023	ADD. NO. 2
DRAFTED: SBM	SCALE:	NOT TO SCALE	REF SHEET S-5
CHECKED: MAR			



1	06/09/23	GAC	MER	ADDENDUM #2	
REV. NO.	DATE	DRWN	CHKD	REMARKS	

0 1"
1" = 1"

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	OA
DRAFTED:	ATV
CHECKED:	CAJ
DATE:	MAY 2023



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CONSULTING ENGINEERS

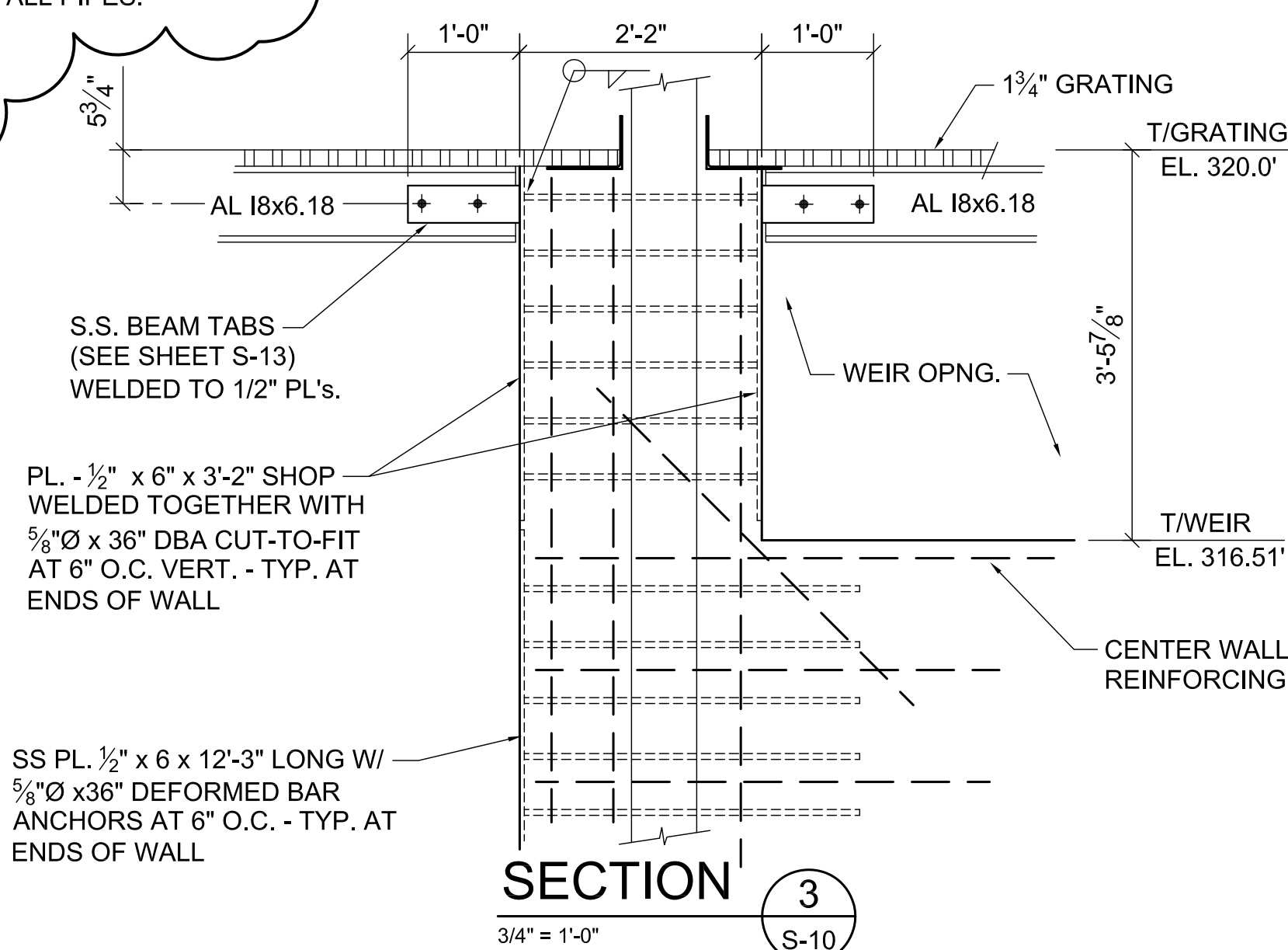
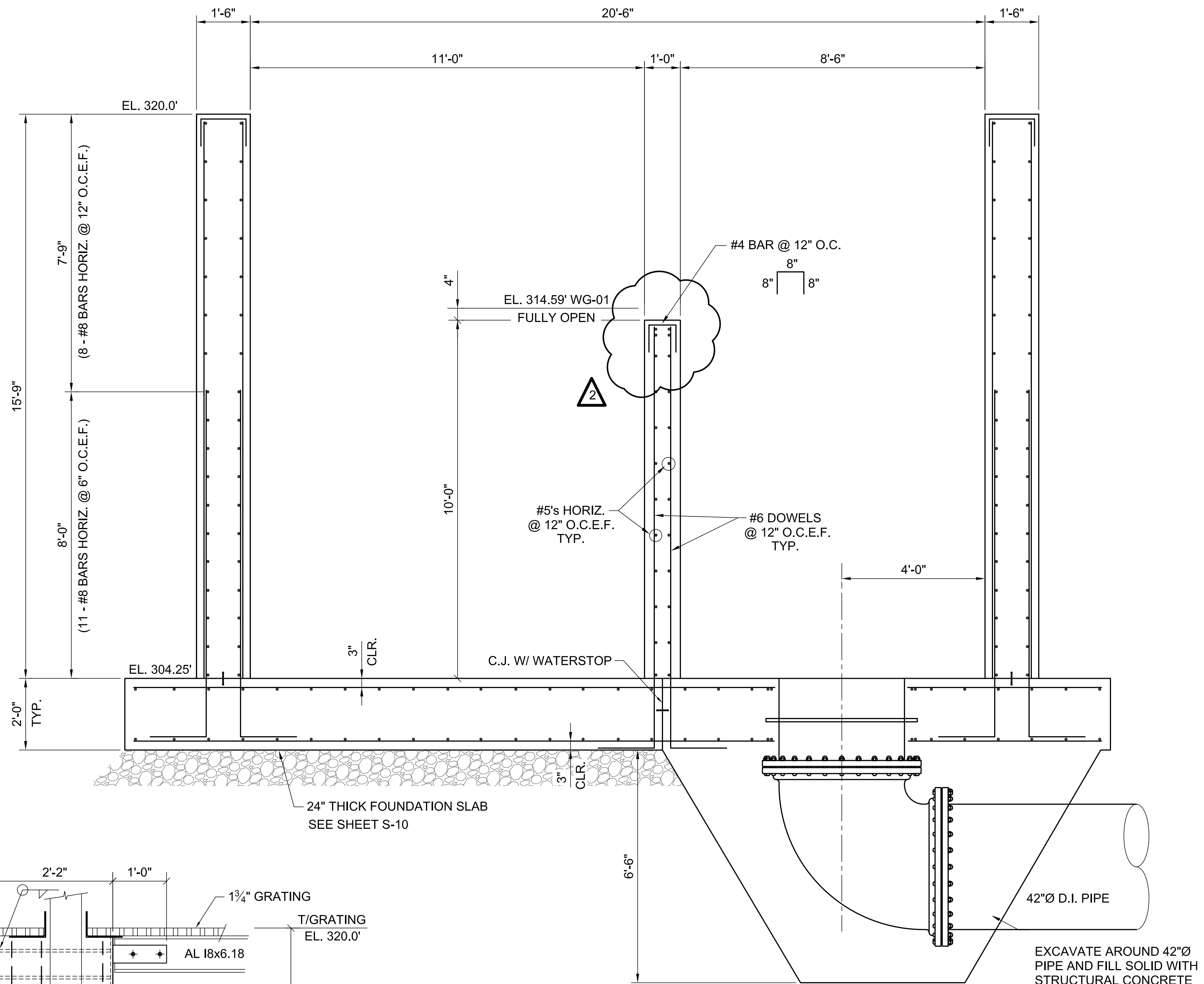
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
TELEPHONE: (501) 664-1552
FAX: (501) 664-8579
WWW.CRISTENGINEERS.COM

HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
BID SET

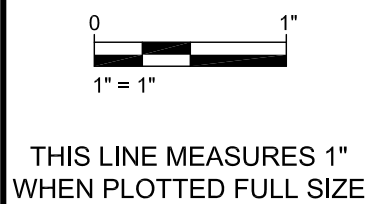
HEADWORKS FOUNDATION AND WALL PLANS

JOB NO.
22009

SHEET NO.
S-10



1	06/09/23	GAC	MER	ADDENDUM #2
REV. NO.	DATE	DRWN	CHKD	REMARKS



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DRAFTED:	ATV
CHECKED:	CAJ
DATE:	MAY 2023



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HOT SPRINGS, ARKANSAS

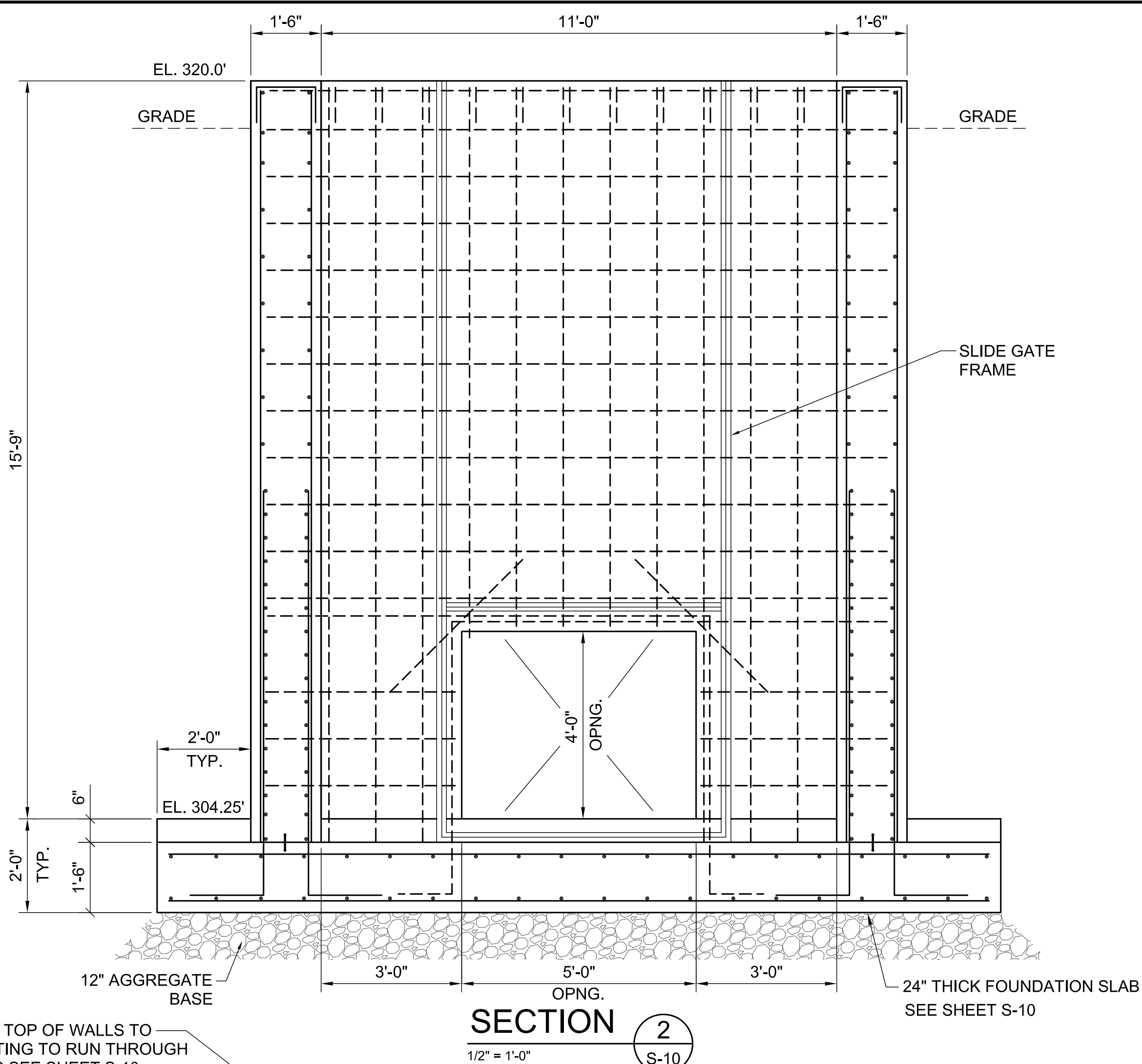
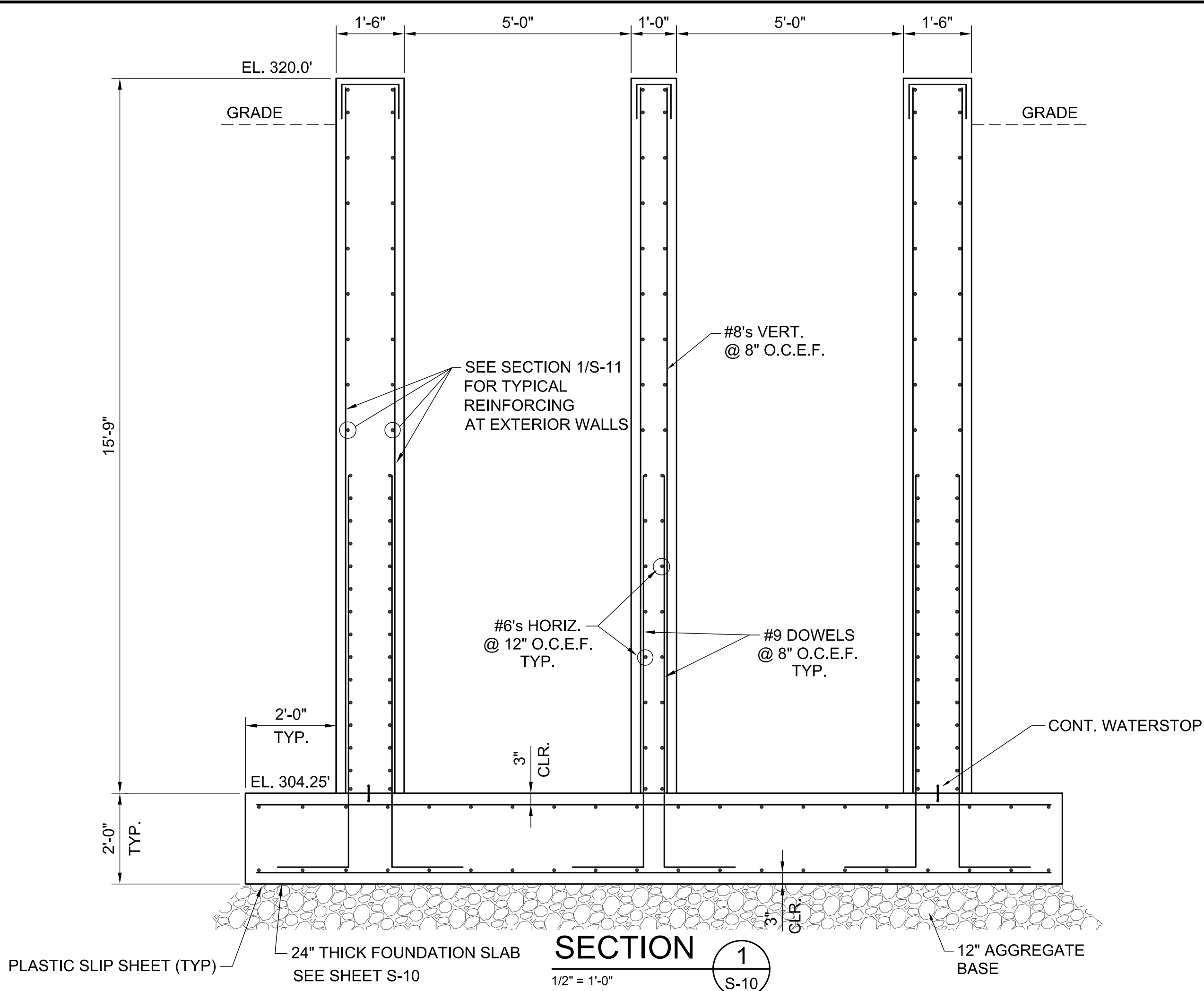
GULPHA BASIN PUMP STATION IMPROVEMENTS

CITY OF HOT SPRINGS

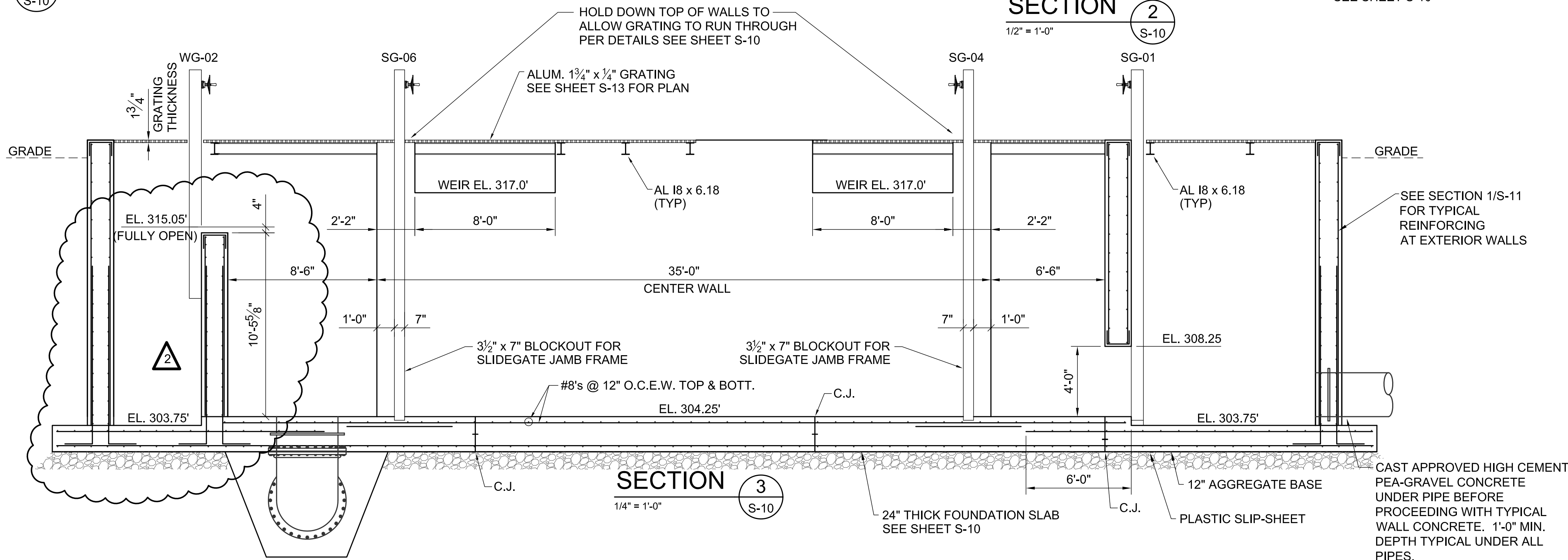
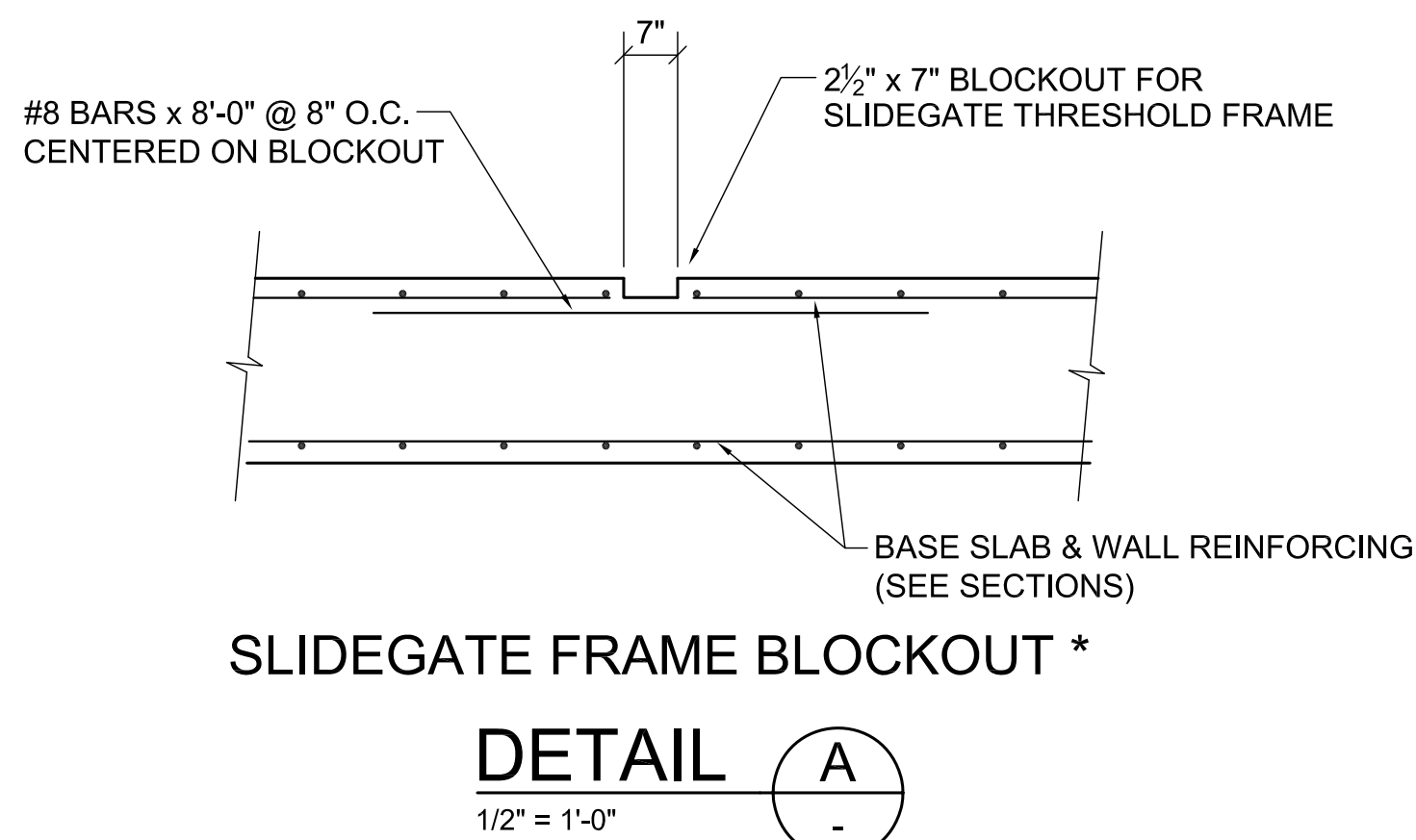
BID SET

HEADWORKS SECTIONS I

JOB NO.	22009
SHEET NO.	S-



* NOTE: COORDINATION WITH SLIDE GATE SUPPLIER SHOP DRAWINGS REQUIRED TO VERIFY BLOCKOUT DIMENSIONS FOR RECESSED FRAMES.



CAST APPROVED HIGH CEMENT PEA-GRAVEL CONCRETE UNDER PIPE BEFORE PROCEEDING WITH TYPICAL WALL CONCRETE. 1'-0" MIN. DEPTH TYPICAL UNDER ALL PIPES.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	06/09/23	GAC	MER	ADDENDUM #2

THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

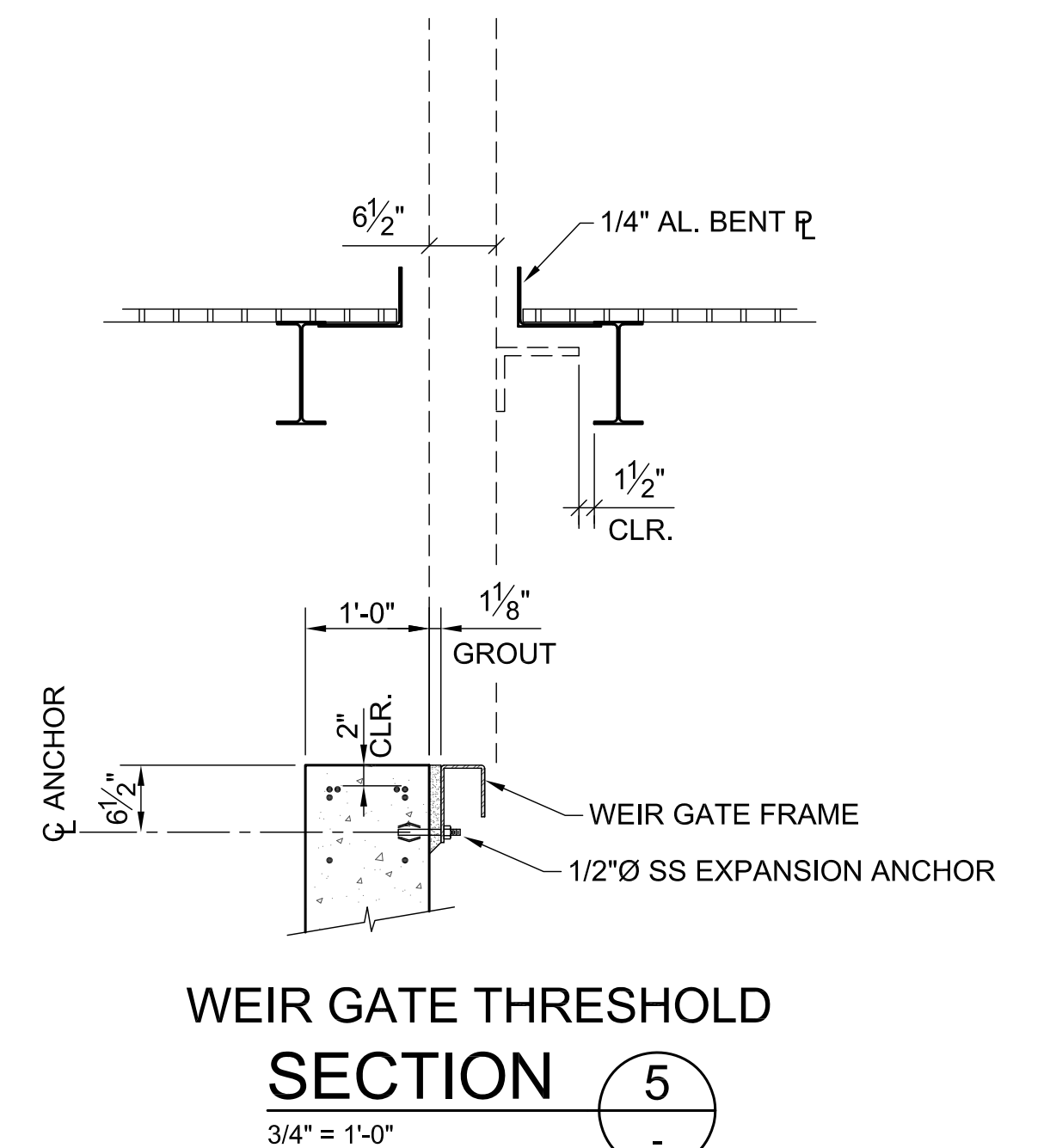
DESIGNED:	OA
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CHECKED:	CAJ
DATE:	MAY 2023



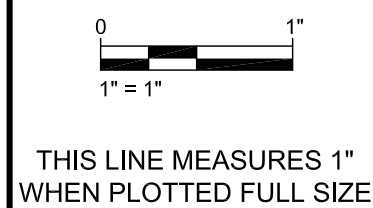
CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
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LITTLE ROCK, ARKANSAS 72205
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FAX: (501) 664-8579
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HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
BID SET
HEADWORKS SECTIONS II

JOB NO.
22009
SHEET NO.
S-12



1	06/09/23	GAC	MER	ADDENDUM #2
REV. NO.	DATE	DRWN	CHKD	REMARKS



DESIGNED:	OA
DRAFTED:	ATV
CHECKED:	CAJ
DATE:	MAY 2023



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HOT SPRINGS, ARKANSAS

GULPHA BASIN PUMP STATION IMPROVEMENTS

CITY OF HOT SPRINGS

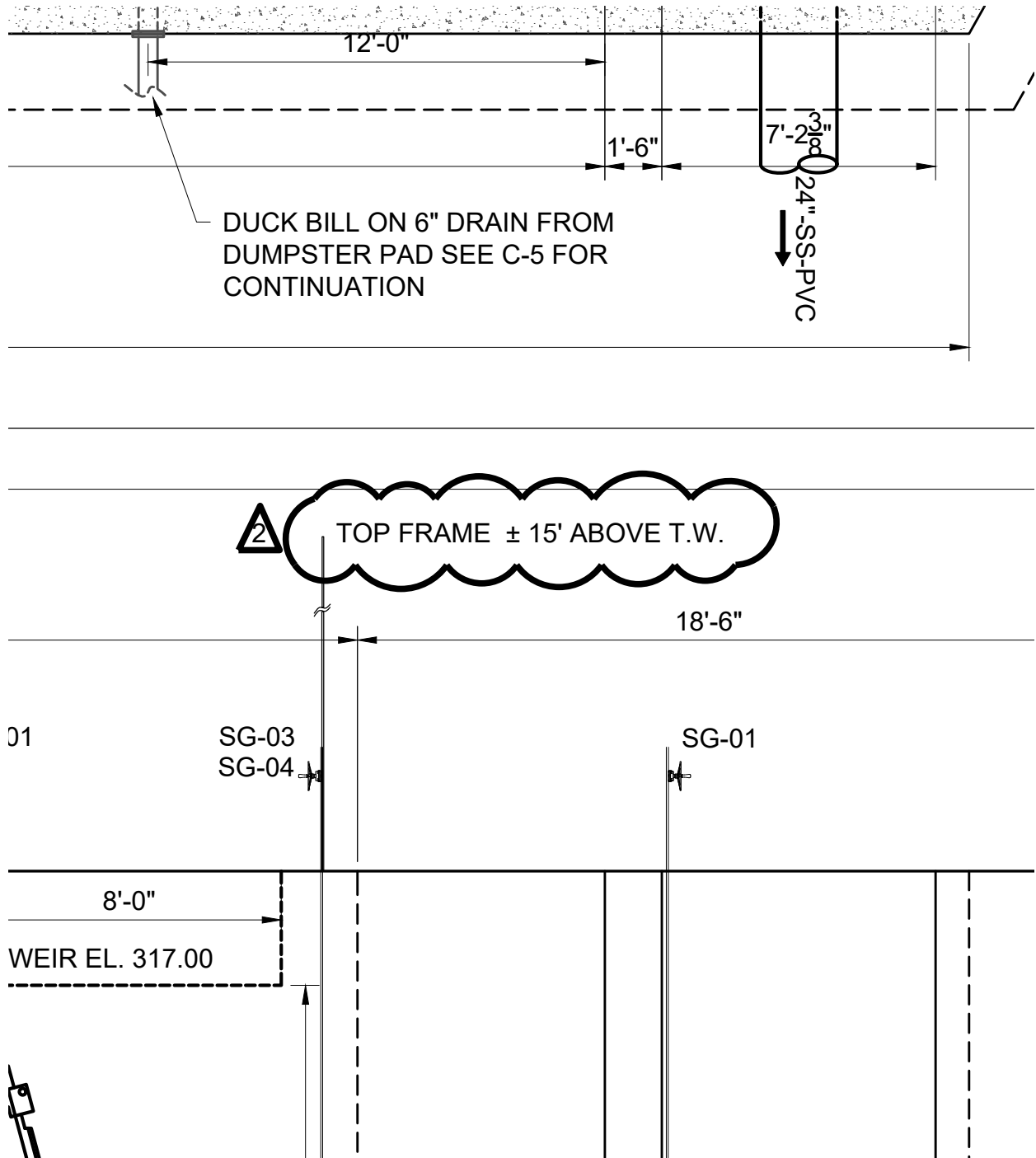
BID SET

HEADWORKS GRATING & FRAMING PLAN

JOB NO.
22009

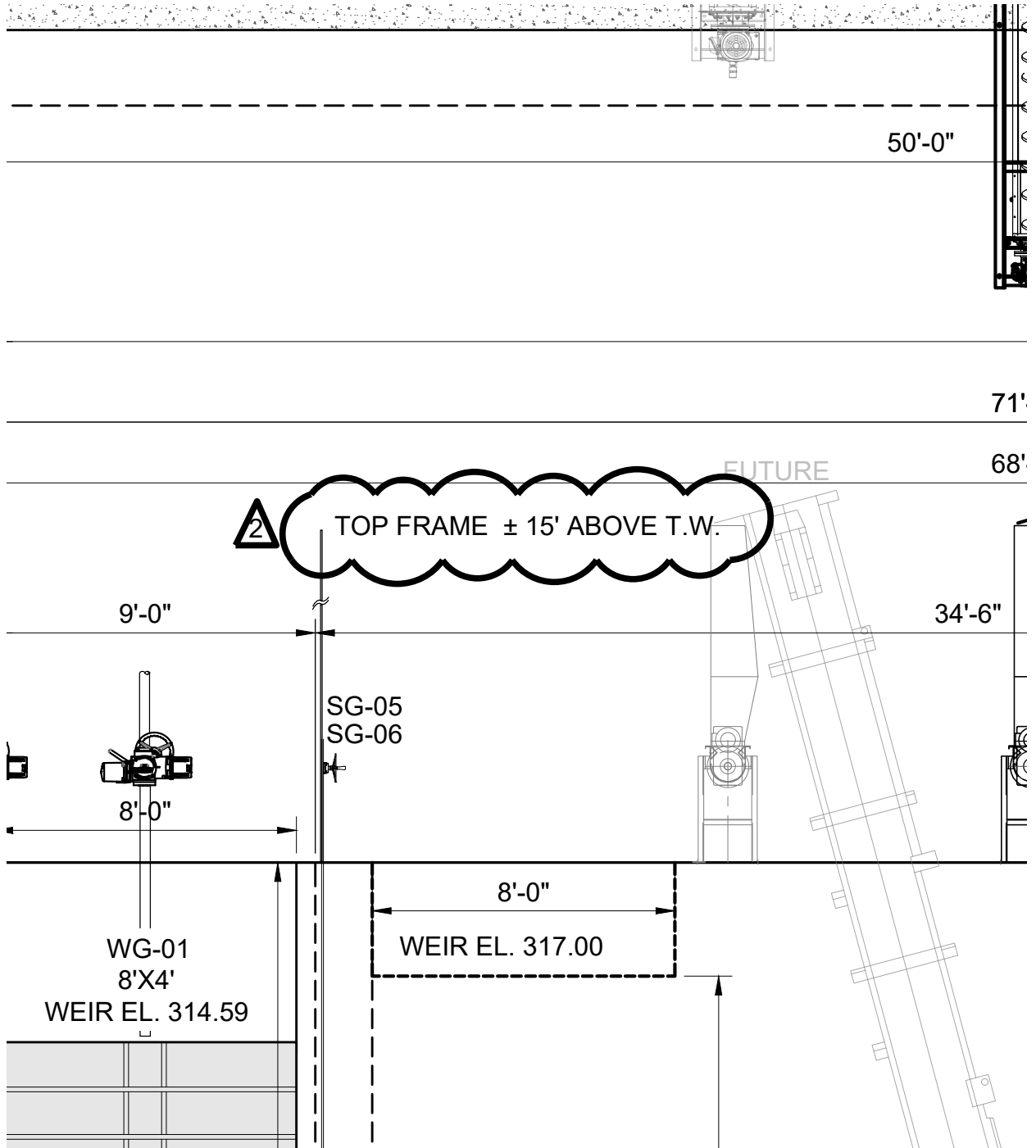
SHEET NO.
S-13

P:\2022 projects\22009 - city of hot springs - gulpha basin pump station improvements\06 - cadd\05 - Mechanical\22009 - SCREEN & DIVERTER PLAN.dwg

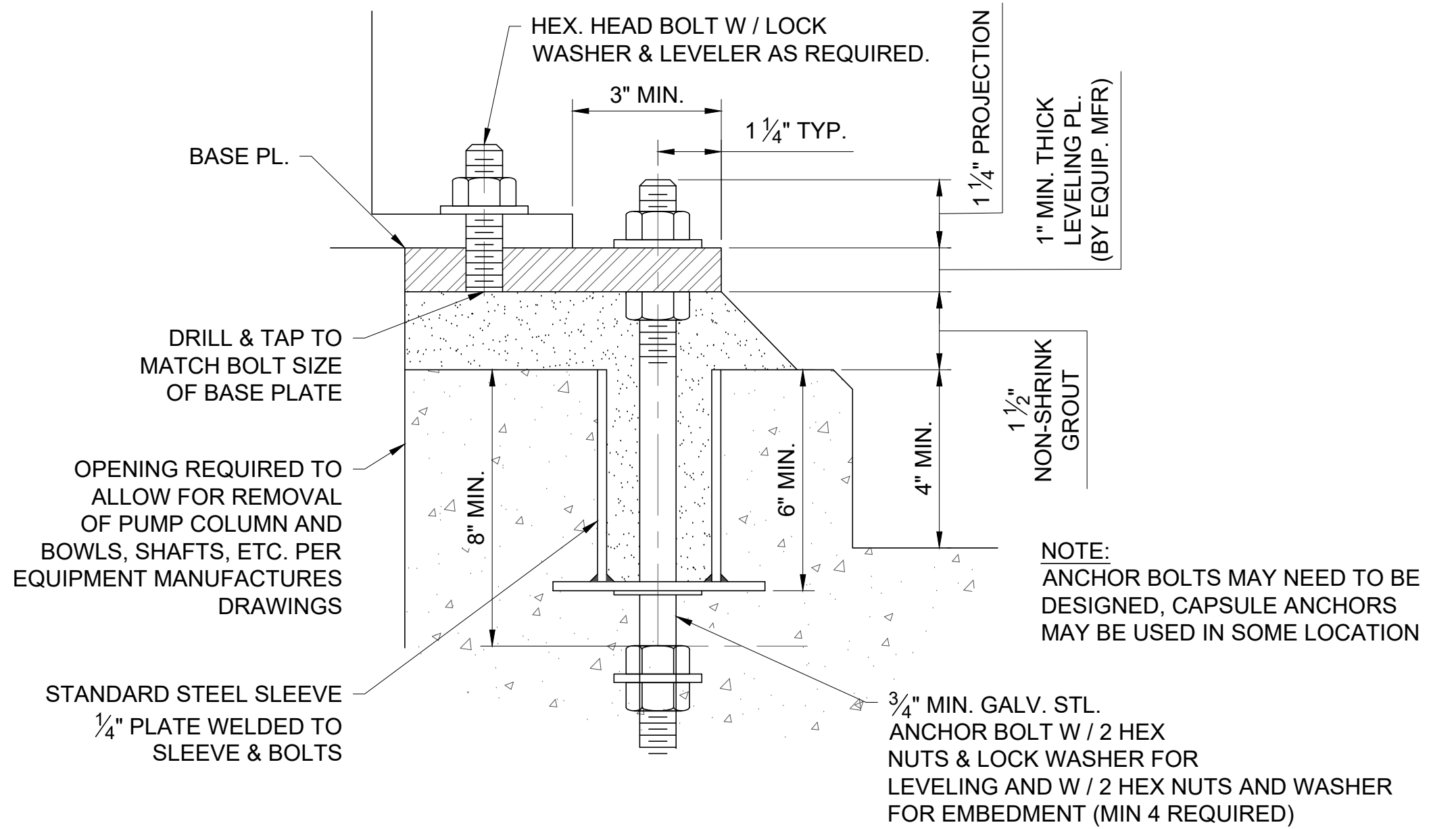
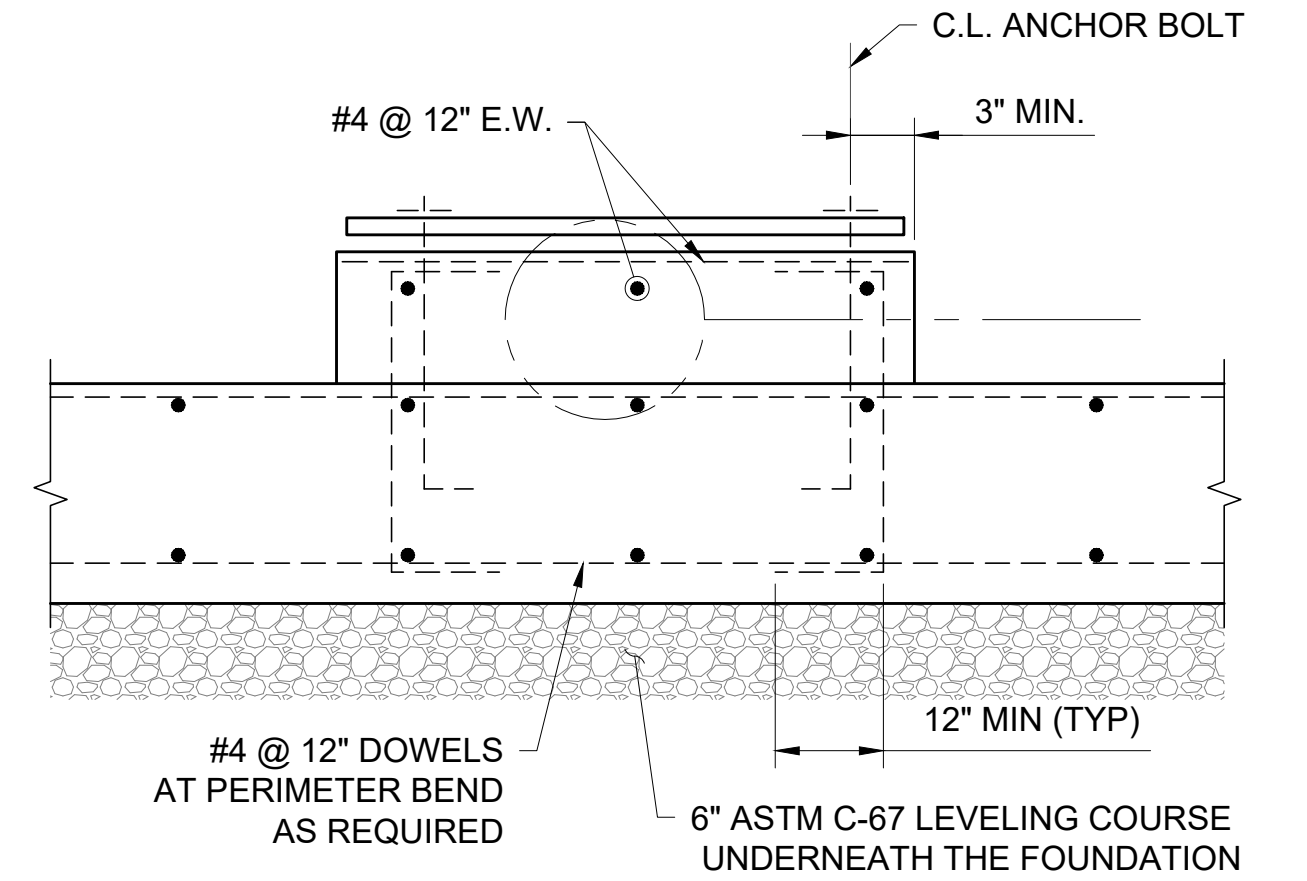
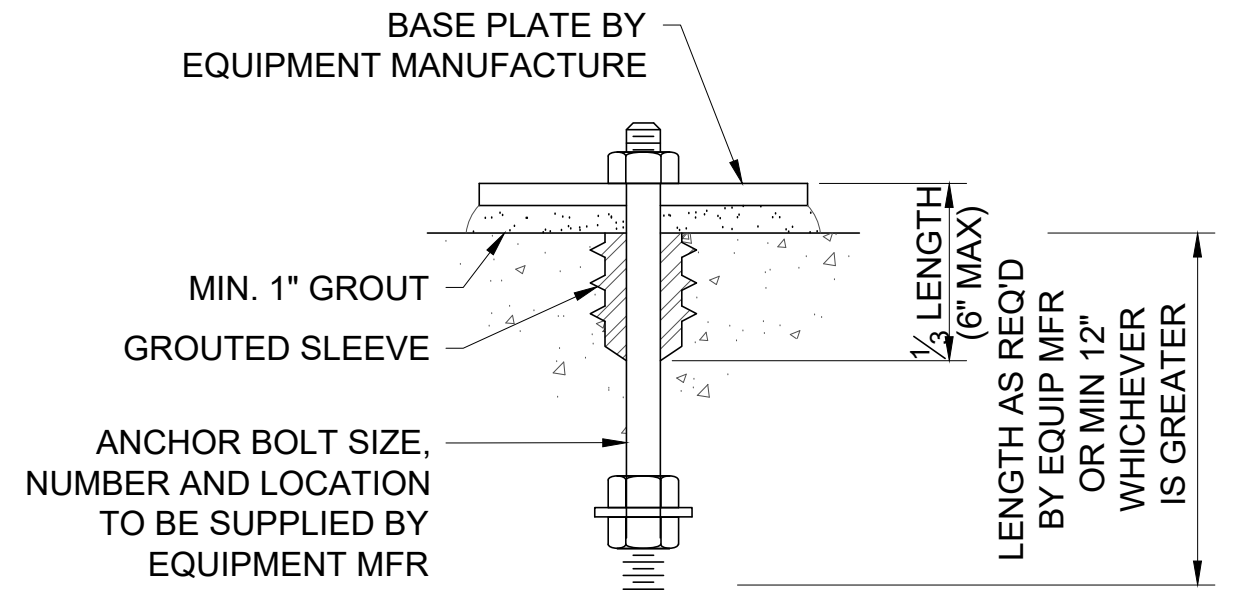
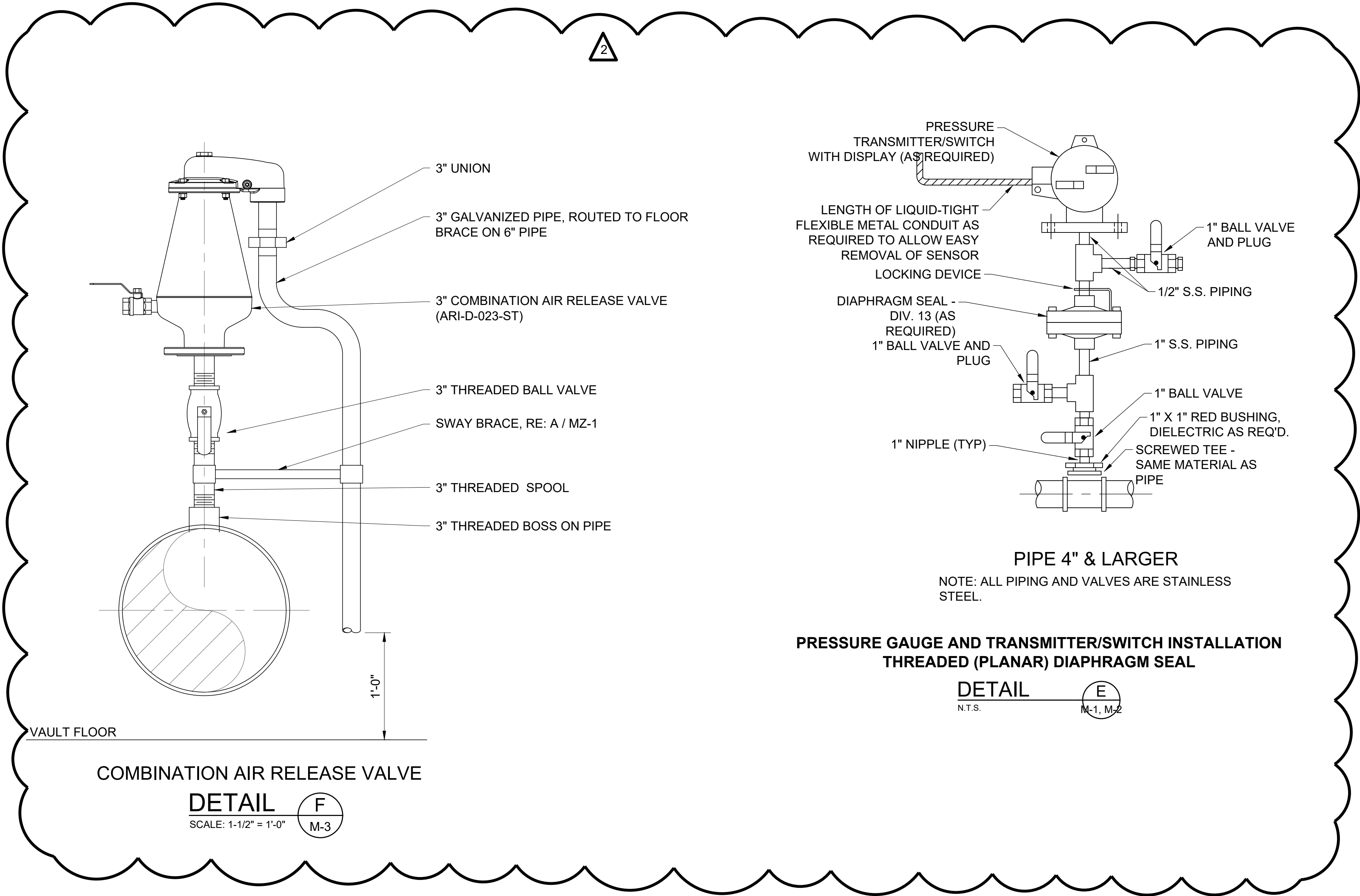


		CRIST ENGINEERS, INC.	
CONSULTING ENGINEERS		LITTLE ROCK, ARKANSAS	
HOT SPRINGS, ARKANSAS			
GULPHA P. S. IMPROVEMENTS			
CITY OF HOT SPRINGS			
HEADWORKS PLAN & SECTION			
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET M-1	
CHECKED: CAJ			

P:\2022 projects\22009 - city of hot springs - gulpha basin pump station improvements\06 - cadd\05 - Mechanical\22009 - SCREEN & DIVERTER PLAN.dwg



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CONSULTING ENGINEERS		LITTLE ROCK, ARKANSAS	
HOT SPRINGS, ARKANSAS			
GULPHA P. S. IMPROVEMENTS			
CITY OF HOT SPRINGS			
HEADWORKS PLAN & SECTION			
DESIGNED: CAJ	JOB NO. 22009	DATE JUNE 20, 2023	ADD. NO. 2
DRAFTED: MAB	SCALE: NOT TO SCALE	REF SHEET M-1	
CHECKED: CAJ			



EQUIPMENT MOUNTING PAD

EQUIPMENT PAD
DETAIL A
N.T.S. M-5

1	6/18/2023	MAB	CAJ	REVISED PER ADDENDUM NO. 2	
REV. NO.	DATE	DRWN	CHKD	REMARKS	

0 1" = 1"
THIS LINE MEASURES 1" WHEN PLOTTED FULL SIZE

DESIGNED:	CAJ
DRAFTED:	MAB
CHECKED:	CAJ
DATE:	MAY 2023

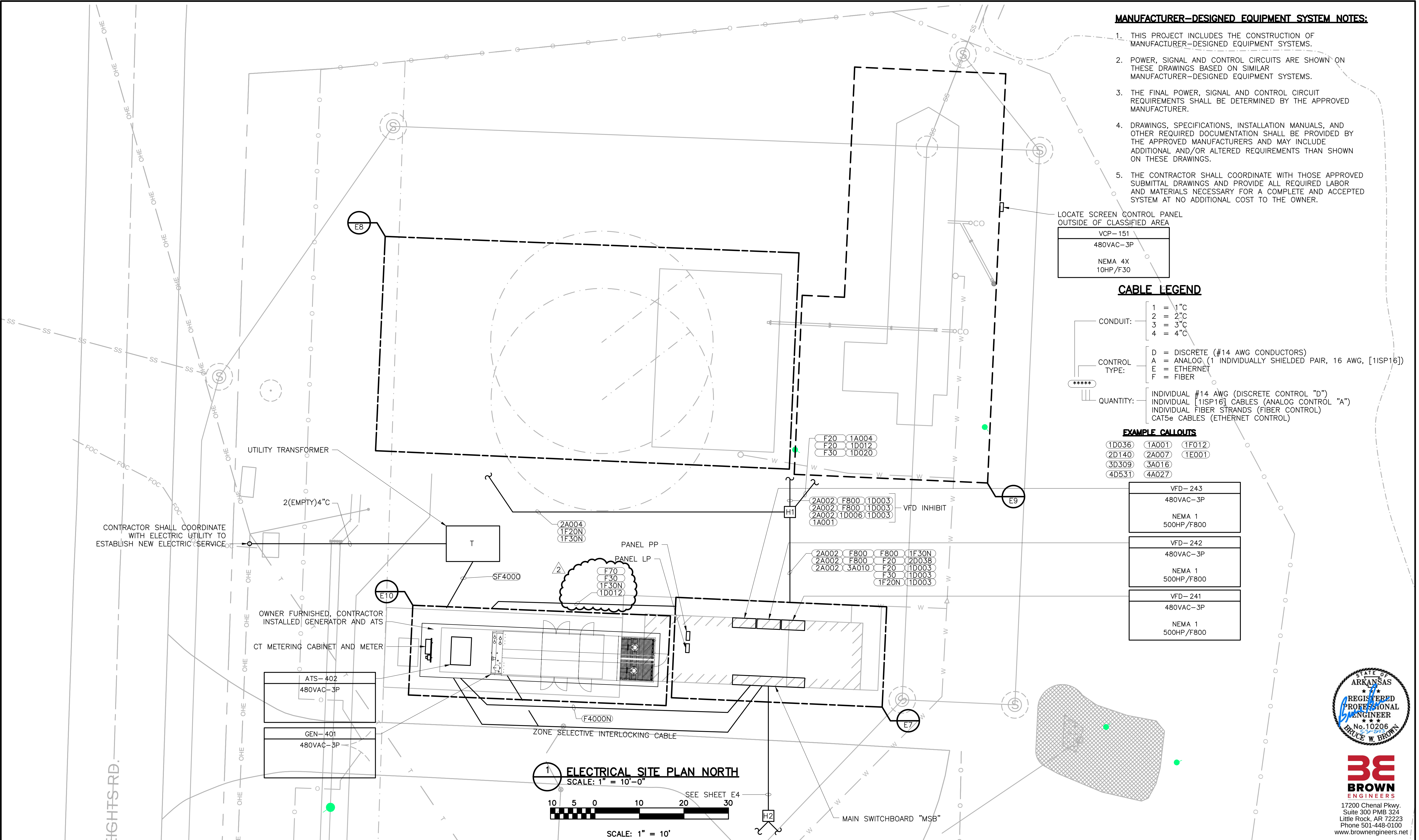


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FAX: (501) 664-8579
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HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
ADDENDUM 2
MECHANICAL STANDARD DETAILS III

JOB NO.	22009
SHEET NO.	MZ-3

P:\PRODUCTION\PROJECTS\CRIST ENGINEERS (CRI)\CRI-032 GULPHA BASIN PS IMPROVEMENTS\DWG\E03_SITE PLAN NORTH.DWG
5/31/2023 5:24 PM
CRIST ENGINEERS, INC. COPYRIGHT



MANUFACTURER-DESIGNED EQUIPMENT SYSTEM NOTES:

1. THIS PROJECT INCLUDES THE CONSTRUCTION OF MANUFACTURER-DESIGNED EQUIPMENT SYSTEMS.
2. POWER, SIGNAL AND CONTROL CIRCUITS ARE SHOWN ON THESE DRAWINGS BASED ON SIMILAR MANUFACTURER-DESIGNED EQUIPMENT SYSTEMS.
3. THE FINAL POWER, SIGNAL AND CONTROL CIRCUIT REQUIREMENTS SHALL BE DETERMINED BY THE APPROVED MANUFACTURER.
4. DRAWINGS, SPECIFICATIONS, INSTALLATION MANUALS, AND OTHER REQUIRED DOCUMENTATION SHALL BE PROVIDED BY THE APPROVED MANUFACTURERS AND MAY INCLUDE ADDITIONAL AND/OR ALTERED REQUIREMENTS THAN SHOWN ON THESE DRAWINGS.
5. THE CONTRACTOR SHALL COORDINATE WITH THOSE APPROVED SUBMITTAL DRAWINGS AND PROVIDE ALL REQUIRED LABOR AND MATERIALS NECESSARY FOR A COMPLETE AND ACCEPTED SYSTEM AT NO ADDITIONAL COST TO THE OWNER.

CABLE LEGEND

- CONDUIT:
- 1 = 1" C
 - 2 = 2" C
 - 3 = 3" C
 - 4 = 4" C
- CONTROL TYPE:
- D = DISCRETE (#14 AWG CONDUCTORS)
 - A = ANALOG (1 INDIVIDUALLY SHIELDED PAIR, 16 AWG, [1ISP16])
 - E = ETHERNET
 - F = FIBER
- QUANTITY:
- INDIVIDUAL #14 AWG (DISCRETE CONTROL "D")
 - INDIVIDUAL [1ISP16] CABLES (ANALOG CONTROL "A")
 - INDIVIDUAL FIBER STRANDS (FIBER CONTROL)
 - CAT5e CABLES (ETHERNET CONTROL)

EXAMPLE CALLOUTS

- | | | |
|-------|-------|-------|
| 1D036 | 1A001 | 1F012 |
| 2D140 | 2A007 | 1E001 |
| 3D309 | 3A016 | |
| 4D531 | 4A027 | |

VFD-243
480VAC-3P
NEMA 1
500HP/F800

VFD-242
480VAC-3P
NEMA 1
500HP/F800

VFD-241
480VAC-3P
NEMA 1
500HP/F800



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	6-20	BB		ADDENDUM 2

DESIGNED: BB
DRAFTED: KK
CHECKED: BB
DATE: MAY, 2023

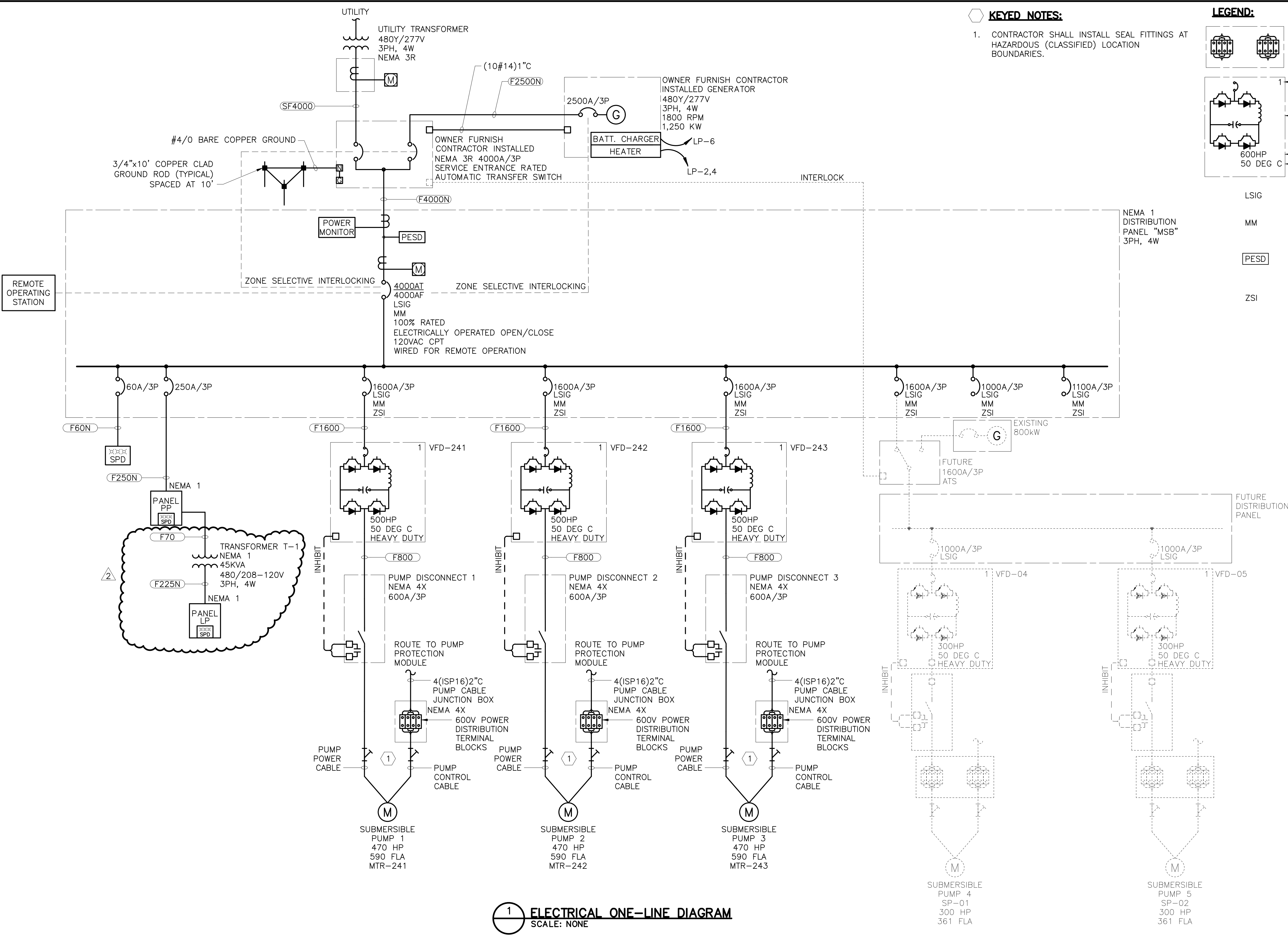
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CRIST ENGINEERS, INC. CONSULTING ENGINEERS
205 EXECUTIVE COURT LITTLE ROCK, ARKANSAS 72205 TELEPHONE: (501) 664-1552 FAX: (501) 664-8579 WWW.CRISTENGINEERS.COM

HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS CITY OF HOT SPRINGS
BID SET ELECTRICAL SITE PLAN NORTH

JOB NO. CRI-032
SHEET NO. E3

P:\PRODUCTION\PROJECTS\CRIST ENGINEERS (CRI)\032 GULPHA BASIN PS IMPROVEMENTS\DWG\E14_ONE-LINE DIAGRAM.DWG
6/20/2023 2:05 PM
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- KEYED NOTES:**
- CONTRACTOR SHALL INSTALL SEAL FITTINGS AT HAZARDOUS (CLASSIFIED) LOCATION BOUNDARIES.
- LEGEND:**
- NEMA RATING
 - LOW HARMONIC ACTIVE FRONT END VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT
 - VFD HORSEPOWER RATING
 - AMBIENT TEMPERATURE RATING
 - LSIG LONG, SHORT, INST. AND GROUND FAULT ADJUSTABLE ELEMENTS
 - MM ENERGY REDUCING MAINTENANCE SWITCHING WITH LOCAL STATUS TO COMPLY WITH NEC 240.87
 - PESD PERMANENT ELECTRICAL SAFETY DEVICE (GRACEPORT SAFESIDE P-S10S21-M3RX OR APPROVED EQUAL)
 - ZSI ZONE SELECTIVE INTERLOCKING

1 ELECTRICAL ONE-LINE DIAGRAM
SCALE: NONE

0 1"
1" = 1"
THIS LINE MEASURES 1"
WHEN PLOTTED FULL SIZE

DESIGNED: BB
DRAFTED: KK
CHECKED: BB
DATE: MAY, 2023



CRIST ENGINEERS, INC.
CONSULTING ENGINEERS
205 EXECUTIVE COURT
LITTLE ROCK, ARKANSAS 72205
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FAX: (501) 664-8579
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HOT SPRINGS, ARKANSAS
GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS
BID SET
ELECTRICAL
ONE-LINE DIAGRAM



BE BROWN ENGINEERS
17200 Chenal Pkwy.
Suite 300 PMB 324
Little Rock, AR 72223
Phone 501-448-0100
www.browngineers.net

JOB NO. CRI-032
SHEET NO. E14

REV. NO.	DATE	DRWN	CHKD	REMARKS
2	6-20	BB		ADDENDUM 2

PANELBOARD SCHEDULE

NEMA 1

PANEL BOARD SCHEDULE											
PANEL	PP	VOLTS	480/277 3PH, 4W	MAIN	250A MCB	INTERRUPT RATING			100,000		
DESCRIPTION	BKR	NO.	A	B	C	A	B	C	NO.	BKR	DESCRIPTION
SURGE PROTECTIVE DEVICE	60A/3P	1	0.000			3.000			2	30A/3P	VCP-151
SURGE PROTECTIVE DEVICE	-	3		0.000			3.000		4	-	VCP-151
SURGE PROTECTIVE DEVICE	-	5			0.000			3.000	6	-	VCP-151
AC-1	45A/3P	7	9.000			0.000			8	50A/3P	SPARE
AC-1	-	9		9.000			0.000		10	-	SPARE
AC-1	-	11			9.000			0.000	12	-	SPARE
SPARE	40A/3P	13	0.000			0.000			14	40A/3P	SPARE
SPARE	-	15		0.000			0.000		16	-	SPARE
SPARE	-	17			0.000			0.000	18	-	SPARE
SPARE	30A/3P	19	0.000			0.000			20	20A/3P	SPARE
SPARE	-	21		0.000			0.000		22	-	SPARE
SPARE	-	23			0.000			0.000	24	-	SPARE
PANEL LP	70A/3P	25	12.000			0.000			26		
PANEL LP	-	27		12.000			0.000		28		
PANEL LP	-	29			12.000			0.000	30		
		31	0.000			0.300			32	20A/3P	FCV-122
		33		0.000			0.300		34	-	FCV-122
		35			0.000			0.300	36	-	FCV-122
		37	0.000			0.300			38	20A/3P	FCV-121
		39		0.000			0.300		40	-	FCV-121
		41			0.000			0.300	42	-	FCV-121
			21.0000	21.0000	21.0000	3.6000	3.6000	3.6000			
			24.6000	24.6000	24.6000	TOTAL CONNECTED KVA					
			73.8000			DESIGN KVA					
			115.3125			DESIGN AMPS	@	480			
			138.703450								

POWER PANEL "MSB"

480 Y / 277 VOLTS, 3 PHASE 4 WIRE

4000 AMP MAIN CIRCUIT BREAKER

100,000 AIC

CKT.	DESCRIPTION	LOAD				OVERCURRENT		
		KVA	AMPS	HP	STARTER	TRIP	POLES	FRAME
1	SURGE PROTECTIVE DEVICE	0.000	0.00			60	3	
2	PANEL PP	50.000	60.14			250	3	
3	SPARE	0.000	0.00			100	3	
4	PUMP 1	490.000	589.40	470	VFD	1600	3	
5	PUMP 2	490.000	589.40	470	VFD	1600	3	
6	PUMP 3	490.000	589.40	470	VFD	1600	3	
7	ATS/PUMP 4 AND 5	600.000	721.71		VFD	1600	3	
8	SPARE	0.000	0.00			1000	3	
9	SPARE	0.000	0.00			1000	3	
10		0.000	0.00					
11		0.000	0.00					
12		0.000	0.00					
13		0.000	0.00					
14		0.000	0.00					
15		0.000	0.00					
16		0.000	0.00					
17		0.000	0.00					
18		0.000	0.00					
19		0.000	0.00					
20		0.000	0.00					
	CONNECTED LOAD	2120.000	KVA					
	DESIGN FACTOR	1.2500						
	DESIGN LOAD	2650.000	KVA					
	DESIGN CURRENT	3187.55	AMPS					

[illegible]

THIS LINE MEASURES 1"
WHEN PLOTTED FULL SIZE

DESIGNED:	BB
DRAFTED:	KK
CHECKED:	BB
DATE:	MAY, 2023



CRIST ENGINEERS, INC.
CONSULTING ENGINEERS

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GULPHA BASIN PUMP STATION IMPROVEMENTS
CITY OF HOT SPRINGS

ELECTRICAL
SCHEDULES I

CRI-032

SHEET NO.

E15



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