

ADDENDUM No. 1

ITB No. 4706

WWTP HEADWORKS IMPROVEMENT PROJECT

Bids Due: January 26, 2022 at 2:00 P.M. (Local Time)

The information contained herein shall take precedence over the original documents and all previous addenda (if any) and is appended thereto. **This Addendum includes 245 pages.**

Bidder is to acknowledge receipt of this Addendum No. 1, including all attachments (if any) in its Bid by so indicating on page ITB-1 of the Invitation to Bid Form. Bids submitted without acknowledgment of receipt of this addendum may be considered nonconforming.

The following forms provided within the ITB document should be included in submitted bids:

- City of Ann Arbor Prevailing Wage Declaration of Compliance
- City of Ann Arbor Living Wage Ordinance Declaration of Compliance
- Vendor Conflict of Interest Disclosure Form
- City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance

Bids that fail to provide these forms listed above upon bid opening may be rejected as non-responsive and may not be considered for award.

I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the Bid document which are outlined below are referenced to a page or Section in which they appear conspicuously. The Bidder is to take note in its review of the documents and include these changes as they may affect work or details in other areas not specifically referenced here.

Section/Page(s)

Change

ITB / TOC

As updated herein:
Updated the Table of Contents page numbers.

Comment:

The intent with this change is to simply replace the inaccurate page counts provided in the ITB Document with the accurate page counts as provided herein.

ITB / BF-1

As updated herein:
Added lined item C-1 and C-2 under the Civil cost section titled, "Permitting Allowance" with an allotted \$20,000 to obtain permits and "All Remaining Civil Work".

ITB / BF-1

As updated herein:
Renamed A-1 to "Brick Repointing", A-2 to "Brick Replacement" and A-3 to

“All Remaining Architectural Work”.

ITB / BF-1

As provided in ITB No. 4706 Bid Document:
Process Cost (P-3) Grit Removal Performance Testing

As updated herein:
Process Cost (P-3) Grit / Screen Performance Testing.

Comment: The intent is to include performance testing for both the Grit System / Screening System Performance by third party testing as finalized with Black-Dog Analytical.

ITB / Appendix-1

As updated herein:
Wage Determination for Heavy Construction Provided.

Comment: The intent is to provide the most up-to-date wage determinations for the project.

Section 02132

As updated herein:
Added Division 2 – Asbestos Removal, Specification Section 02132 included.

Comment: Specification Section 02132 covers the removal of Asbestos-containing materials (ACMs).

Section 02201

As updated herein:
Refer to clouded changes in attached updated specification.

Section 08305

As updated herein:
Added Division 8 – Access Hatches, Specification Section 08305 included.

Comment: Specification Section 08305 covers floor access hatches required for the replacement of three existing sump pumps (south garage, north garage, and lower alcove area).

Section 10441

As updated herein:
Added Division 10 – Signs, Specification Section 10441 included.

Comment: Specification Section 10441 covers building signage.

Section 11413

As updated herein:
Grit washer performance data updated under section 2.5.A.1.
Organics flushing ball valve added under section 2.6.B.8.
Automatic operation of organics flushing valve added in section 2.7.D.2.z
Limit switches installed on grit piping suction valves and interconnects under 2.7.D.2.z.

Comment: Specification Section 11413 updates following manufacturer review.

- Section 15408** As updated herein:
Added Division 15 – Plumbing Fixtures, Specification Section 15408 included.
- Comment:* *Specification Section 15408 covers plumbing fixtures.*
- Section 16483** As updated herein:
Revised 1.10.F. “For each VFD unit without individually serviceable components, provide a spare VFD”.
- Comment:* *Updated per comments from vendor.*
- Section 17200** As updated herein:
Specified the use of RSLogix 5K Version 20.1 software under section 2.1.D
- Comment:* *Specification Section 17200 covers control and information system software requirements.*
- Section 17950** As updated herein:
Added Division 17 – Functional Control Description.
- Comment:* *Specification Section 17950 covers the control functions required for all process and mechanical equipment included in the project.*
- G-01** As provided in ITB No. 4706 Bid Document:
Sheet title for DA-1: “ARCHITECTURAL DEMOLITION PLAN”
- As updated herein:
“HEADWORKS BUILDING DEMOLITION PLANS”
- Comment:* *Purpose of changes is to coordinate with associated sheet specific titles.*
- G-02** As updated herein:
Updated area designation names.
- Comment:* *Purpose of changes is to coordinate with area names used throughout the project documents.*
- DS-3** As updated herein:
Refer to clouded changes in attached updated drawing.
- DA-1** As updated herein:
Augmented notes. Adjusted existing conditions depicted.
- Comment:* *Purpose is to update the extents of demolition.*
- DP-01** As provided in ITB No. 4706 Bid Document:
“FOR ELECTRICAL DEMOLITION, REFER TO SHEET DE-XX”
- As updated herein:
“FOR ELECTRICAL DEMOLITION, REFER TO DE SHEETS.”
- Comment:* *Sheet is not being reissued. Change will be included in the conformed*

construction drawing set.

DE-01

As provided in ITB No. 4706 Bid Document:
Wall removal note references "...DWG. A-11 PHOTO-2..."

As updated herein:
Note updated to say "...DWG. A-11 PHOTO-2 AND DA-1...."

Comment: The intent of this change is to coordinate with Architectural

C-01

As updated herein:
Added note #10 to concrete notes as follows:
"10. CONCRETE FOR SIDEWALKS SHALL BE MDOT GRADE P1 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,500 PSI."

Comment: Sheet C-01 not being reissued. Change will be included in conformed construction set.

C-03

As updated herein:
Added callout to light pole topo feature located approximately 15 feet west of CB-7A as follows:
"RELOCATE EXISTING LIGHT"

Comment: Sheet C-03 not being reissued. Change will be included in conformed construction set.

C-05

As provided in ITB No. 4706 Bid Document:
Foundation and monorail supports were located 5' from the exterior of the Odor Control Building.

Callout for Bollard: BOLLARD (TYP-6)

Spot pavement grade: 740.50

As updated herein:
"Foundation and monorail supports are located 6' from the exterior of the Odor Control Building.

"BOLLARD (TYP-8) SEE STRUCTURAL PLANS FOR DETAILS"

740.70

Added pavement spot grade: 740.60

Comment: Sheet C-05 is reissued to show revised foundation and monorail support locations, bollard locations, and two proposed pavement spot grades.

C-06

As provided in ITB No. 4706 Bid Document:
Callout for Light: "RELOCATE EXISITNG LIGHT SEE ELECTRICAL SHEETS"

As updated herein:
Callout for Light: "RELOCATED LIGHT SEE ELCTRICAL SHEETS"

Added approximately 25' of 6" solid wall HDPE to collect roof drains.

Comment: Sheet C-06 is reissued to coordinate roof drain outlet with revised roof drain plan shown on Sheet P-20 and to clarify site light relocation callout.

S-1 As updated herein:
Refer to clouded changes in attached updated sheet.

S-4B As updated herein:
Refer to clouded changes in attached updated sheet.

S-5 As updated herein:
Refer to clouded changes in attached updated sheet.

S-6 As updated herein:
Refer to clouded changes in attached updated sheet.

S-7 As updated herein:
Refer to clouded changes in attached updated sheet.

S-8 As updated herein:
Refer to clouded changes in attached updated sheet.

S-9 As updated herein:
Refer to clouded changes in attached updated sheet.

S-11 As updated herein:
Refer to clouded changes in attached updated sheet.

S-12 As updated herein:
Refer to clouded changes in attached updated sheet.

S-13 As updated herein:
Refer to clouded changes in attached updated sheet.

S-14 As updated herein:
Refer to clouded changes in attached updated sheet.

S-15 As updated herein:
Refer to clouded changes in attached updated sheet.

S-16 As updated herein:
Refer to clouded changes in attached updated sheet.

A-1 As updated herein:
Add 1 fire extinguisher.

Comment: Fire extinguisher added for Electrical room.

A-2 As updated herein:
Louver Header Detail and Headworks Painting Scope added. Finish and door schedules adjusted.

Comment: A detail was added for clarity. A repainting scope was added to the project. Door frame materials were reviewed and adjusted.

A-5 As updated herein:
A note was changed.

Comment: Note was changed for clarity due to contractor question.

A-6 As updated herein:
HVAC vents added. Duct note added. Dimensions added to brick ledges.

Comment: Mechanical updates implemented. Additional dimensions added for clarity.

A-7 As updated herein:
Detail updated.

Comment: Structural design was updated. Sleeve construction clarified.

A-8 As updated herein:
Detail "H" callout corrected.

Comment: Purpose was to correct a reference.

A-9 As updated herein:
Refer to clouded changes in attached updated sheet.

Comment: Mechanical updates were carried out. Light was moved. Section cut adjusted to provide more clarity.

A-10 As updated herein:
Refer to clouded changes in attached updated sheet. Detail "I" added.

Comment: Numerous revisions were made to structural detailing. Clarity was added.

A-11 As updated herein:
Note modified.

Comment: Floor requires infill after removal of bollards.

P-04 As updated herein:
Screening Manufacturer solenoid valve sizes updated.

Comment: Purpose of changes is to coordinate valve sizes with specifications 11350(A) and 11350(B).

P-10A As updated herein:
Updated sheet notes and leader lines, section and plan call outs, added note on sump pump access hatch specification reference, and added grit washer maintenance platform location.

Comment: Purpose of additions are to coordinate with grit process and structural sheets and provide additional requirements for sump pumps.

- P-11A** As updated herein:
Updated sheet notes and leader lines, added note on sump pump access hatch specification reference, and included replacement of existing PEW piping.
- Comment:* *Purpose of additions are to coordinate with sheet P-02 (PEW system schematic in the Headworks Building) and provide additional requirements for sump pumps.*
- P-12A** As updated herein:
Added drawing layout and notes on PEW piping and washer compactor diverter plates
- Comment:* *Purpose of additions are to coordinate with sheet P-02 (PEW system schematic in the Headworks Building) and specification 11350(A).*
- P-13A** As updated herein:
Updated structural concrete layout, included PEW connections, locations of level sensors, sump pump details in the south garage, included sump pump access requirements and updated associated notes.
- Comment:* *Purpose of additions are to coordinate with the structural drawings, sheet P-02 (PEW system schematic in the Headworks Building), and specification 11133.*
- P-14A** As updated herein:
Updated PEW piping connections and notes, abandoned mud valve and sump pump notes, and level sensor and locations to the south channel.
- Comment:* *Purpose of additions are to coordinate with the electrical drawings, sheet P-02 (PEW system schematic in the Headworks Building), and specification 11133.*
- P-15A** As updated herein:
Updated PEW piping connections and notes and sump pump requirements and notes.
- Comment:* *Purpose of additions are to coordinate with sheet P-02 (PEW system schematic in the Headworks Building), and specification 11133 and 08305.*
- P-10B** As updated herein:
Updated sheet notes and leader lines, section and plan call outs, updated architectural references, included south channel skylight location, and included PEW connections and general route.
- Comment:* *Purpose of additions are to coordinate with process and architectural drawings and sheet P-02 (PEW system schematic in the Headworks Building).*
- P-11B** As updated herein:
Updated PEW route and connection points and included additional sump pump requirements and notes,
- Comment:* *Purpose of additions are to coordinate with sheet P-02 (PEW system*

schematic in the Headworks Building) and specifications 08305 and 11133.

P-12B

As updated herein:

Updated structural top concrete references, included PEW route and connection requirements, updated level sensor location, and included additional notes.

Comment:

Purpose of additions are to coordinate with structural and electrical sheets, sheet P-02 (PEW system schematic in the Headworks Building), and specification 11350(B).

P-13B

As updated herein:

Updated structural top concrete references, included south channel skylight location, included PEW route and connection requirements, updated level sensor location, included sump pump design requirements and notes, and included additional general sheet notes.

Comment:

Purpose of additions are to coordinate with structural, architectural and electrical sheets, sheet P-02 (PEW system schematic in the Headworks Building), and specification 08305 and 11133.

P-14B

As updated herein:

Updated equipment references, structural top concrete references, location of level sensors, note and leader locations, and included PEW route and connection requirements.

Comment:

Purpose of additions are to coordinate with structural and electrical sheets, sheet P-02 (PEW system schematic in the Headworks Building), and specification 08305 and 11133.

P-15B

As updated herein:

Included additional equipment call outs, PEW route and connection details, sump pump and access hatch details, and included additional general notes.

Comment:

Purpose of coordinate with sheet P-02 (PEW system schematic in the Headworks Building), and specifications 08305, 11133, and 11350(B).

P-17

As updated herein:

Added Note "GRIT DISCHARGE PIPE REFER TO P-20 FOR CONTINUATION"

Comment:

Note added for clarification.

P-20

As provided in ITB No. 4706 Bid Document:

Roof and overflow drains are only shown on south end of Odor Control building.

As updated herein:

Locations of roof and overflow drains, RD and OD, respectively, corrected for consistency with Architectural sheets. Note 7 added which states "CAP END OF TRENCH DRAIN ON WEST SIDE OF ELECTRICAL ROOM WALL."

Comment: The intent of this change is to coordinate with Architectural.

E-05 As provided in ITB No. 4706 Bid Document:
E-stops are installed for each grit pump and grit collector.

As updated herein:
E-stops were changed to "Local Control Stations" and associated wiring and conduit was updated.

Comment: The intent of this change is to comply with Specification Section 11413

E-05 As provided in ITB No. 4706 Bid Document:
Grit pumps and grit collectors are powered by plan note "NOTE-B"

As updated herein:
"NOTE-B" wiring and conduit were changed to "NEW 3-#12 + #12 GRD., 3/4"C."

Comment: Grit pumps and grit collectors are constant speed motors and do not require VFD cable.

E-05 As updated herein:
"NOTE-D (OPEN/CLOSE SIGNALS) ..." note and homerun added to plug valves for grit pumps.

Comment: The intent of this change is to coordinate electrical with sheet I-05.

E-06 As provided in ITB No. 4706 Bid Document:
E-stops are installed for each grit washer.

As updated herein:
E-stops were changed to "Local Control Stations" and associated wiring and conduit was updated.

Comment: The intent of this change is to comply with Specification Section 11413

E-06 As provided in ITB No. 4706 Bid Document:
Water Supply Valve and Wash Water Supply Valves are both specified.

As updated herein:
Water Supply Valves removed; Wash Water Supply Valves changed to Wash Water Valves; and designations added.

Comment: The intent of this change is to coordinate electrical with sheets I-7 and I-8.

E-06 As updated herein:
"NOTE-D (OPEN/CLOSE SIGNALS) ..." note; homeruns and designations added to plug valves for grit pumps.

Comment: The intent of this change is to coordinate electrical with sheets I-7 and I-8.

E-06 As provided in ITB No. 4706 Bid Document:
Power to solenoids is installed for each grit washer.

As updated herein:
Solenoids are changes to Motor Operated Valves and wiring and conduit is updated.

Comment: The intent of this change is to coordinate electrical with sheets I-7 and I-8.

E-07 As provided in ITB No. 4706 Bid Document:
E-stops are installed for each grit pump.

As updated herein:
E-stops were changed to "Local Control Stations" and associated wiring and conduit was updated.

Comment: The intent of this change is to comply with Specification Section 11413

E-07 As provided in ITB No. 4706 Bid Document:
Grit pumps are powered by plan note "NOTE-B"

As updated herein:
"NOTE-B" wiring and conduit were changed to "NEW 3-#12 + #12 GRD., 3/4"C."

Comment: Grit pumps are constant speed motors and do not require VFD cable.

E-07 As updated herein:
"NOTE-D (OPEN/CLOSE SIGNALS) ..." note and homerun added to plug valves for grit pumps.

Comment: The intent of this change is to coordinate electrical with sheet I-06.

E-07 As updated herein:
Relocated light pole was added to the southeast of the odor control building.

Comment: The intent of this change is to coordinate electrical with sheet C-06.

E-07 As updated herein:
Removed note below plan title "ALL EQUIPMENT SHALL BE EXPLOSIONPROOF...."

Comment: The intent of this change is to address question 34.

E-08 As updated herein:
Light fixture "OA" added to north side of building.

Comment: The intent of this change is to add light to a potential dark area.

E-09 As provided in ITB No. 4706 Bid Document:
E-stops are installed for each grit pump.

As updated herein:
E-stops were changed to "Local Control Stations" and associated wiring and conduit was updated.

Comment: The intent of this change is to comply with Specification Section 11413

E-09 As updated herein:
Removed note below plan title "ALL EQUIPMENT SHALL BE EXPLOSIONPROOF...."

Comment: The intent of this change is to address question 34.

E-10 As updated herein:
"MANDOOR" changed to "WINDOW" in mounting height note.

Comment: The intent of this change is to coordinate with Architectural.

E-12 As updated herein:
"POLE LIGHT FOUNDATION DETAIL" added to sheet.

Comment: The intent of this change is to coordinate electrical with sheet C-06.

I-03A/B As updated herein:
Asterix added for clarification in regards to note 1 on sheet.

I-04A/B As updated herein:
Asterix added for clarification in regards to note 1 on sheet.

I-05 As provided in ITB No. 4706 Bid Document:
Manual operation of valves on suction side of grit pumps.

As updated herein:
Limit switches added to valves on suction side and "Local Control Stations" with HOA and E-stop added for each grit pump.

Comment: Provisions for remote valve operation and manufacturer requirement

I-06 As provided in ITB No. 4706 Bid Document:
Manual operation of valves on suction side of grit pumps.

As updated herein:
Limit switches added to valves on suction side and "Local Control Stations" with HOA and E-stop added for each grit pump.

Comment: Provisions for remote valve operation and manufacturer requirement

I-07 As provided in ITB No. 4706 Bid Document:
Manual operation of interconnect valves to grit washers and single hole "Local Control Station" for each grit washer.

As updated herein:
Limit switches added to interconnect valves and a seven hole "Local Control Station" for each grit washer.

Comment: Provisions for remote valve operation and manufacturer requirement

I-08 As provided in ITB No. 4706 Bid Document:

Manual operation of interconnect valves to grit washers and single hole “Local Control Station” for each grit washer.

As updated herein:

Limit switches added to interconnect valves and a seven hole “Local Control Station” for each grit washer.

Comment: Provisions for remote valve operation and manufacturer requirement

I-10

As updated herein:

Clarification in regards to note 1 on sheet.

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the ITB. Bidders are directed to take note in their review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: Please provide an Engineers Construction Cost Estimate.

Answer 1: Projected engineers construction cost estimate is approximately \$8.6M.

Question 2: Please provide the non-mandatory Pre-Bid Conference Attendees List.

Answer 2: Attached as Attachment A which includes a copy of the attendees list and Meeting Summary and PowerPoint Presentation presented during the meeting.

Question 3: Specifications 02123 (Asbestos Removal), 1047 (Project Signs), and 17950 (Function Control Descriptions) were not included. Please provide.

Answer 3: Specifications 02123 (Asbestos Removal), 1047 (Project Signs), and 17950 (Functional Control Descriptions) are attached as Attachment B, C, and D.

Question 4: Per the bid document, apply and secure the permit is the contractor responsibility and that can be a various amount of \$. Is there any chance that you can add an allowance into the bid schedule to cover the permit cost?

Answer 4: An allowance has been added to the ITB Bid Form on page BF-1.

Question 5: Under Specification 15950 – HVAC Automatic Temperature Controls: What is the existing Building Management System? This will determine if we can put a bid together on this project.

Answer 5: The HVAC system will be operated with local controls. There is no existing Building management system. Specification 15950 has been modified and will be provided in the conformed specifications.

Question 6: In reference to the new Odor Control Building, Division 4 Masonry, please clarify which bid item on the bid form the costs for this new masonry work is to be included.

Answer 6: Under A-3 All Remaining Architectural Work as updated in Addendum No. 1. See updated ITB form, page BF-2.

Question 7: In reference to the new Odor Control Building, Division 7 Single Ply Roofing, please clarify which bid item on the bid form the costs for this new roofing work is to be included.

Answer 7: Under A-3 All Remaining Architectural Work as updated in Addendum No. 1. See

updated ITB form, page BF-2.

Question 8: In reference to spec section 09900 Painting, please clarify which bid item on the bid form the costs for the complete painting scope is to be included.

Answer 8: Under A-3 All Remaining Architectural Work as updated in Addendum No. 1. See updated ITB form, page BF-2.

Question 9: In reference to the new Odor Control Building, spec section 08520 Aluminum Windows, please clarify which bid item on the bid form the costs for this work is to be included.

Answer 9: Under A-3 All Remaining Architectural Work as updated in Addendum No. 1. See updated ITB form, page BF-2.

Question 10: Refer to plan sheet A-1, three (3) new fire extinguishers are to provided, please clarify which bid item on the bid form the costs for this work is to be included.

Answer 10: Under A-3 All Remaining Architectural Work as updated in Addendum No. 1. See updated ITB form, page BF-2.

Question 11: Refer to plan sheets RS-02, S-8 & S-13. Note 19 on sheet S-8 mentions to completely remove existing buried foundation slab to native soil to a min 3' outside proposed structure. Does this note only apply to the footprint of the new Odor Control Building or does it also apply to the two new vessel foundations where the bottom of new footings are approximately elev. 735.5 (not including 1' MDOT 21AA) which is about 6" above the existing buried foundation slab?

Answer 11: Note 19 on Sheet S-8 is applicable all structures, including the Odor Control Building and the two proposed vessel foundations.

Question 12: Refer to plan sheets P-10A, near the top of the page is a section line indicating section 7 on sheet P-24. There is not a section 7 on sheet P-24, please clarify.

Answer 12: The section call out was intended to reference section 9 on sheet P-24. This reference has been changed to indicate the correct section.

Question 13: Refer to plan sheets P-10A, in the upper right-hand quadrant of the page is a plan note which reads: "SEE PARTIAL PLAN SHEET P-25". There is not a sheet P-25 in the drawing set, please clarify.

Answer 13: This plan sheet reference was intended to reference the partial plan on sheet P-22. This reference has been changed to indicate the correct sheet.

Question 14: Refer to plan sheets P-10A/B, P-11A/B, P18, & P-19. The grit pipe at CL EL 756'-6" on sheets P-18 & P-19 does not fully appear in plan view on sheet P-10A. Please show the complete routing in plan view so that an accurate quantity of pipe and fittings can be included in the bid.

Answer 14: Grit piping route provided on sheet P-10A and P-10B. Also note the grit piping shown on sheet P-11 A and P-11B.

Question 15: Refer to plan sheets P-11A/B and P-17 which indicates (2) grit discharge pipe at the bottom of the page. It is unclear where these lines go. Please clarify.

Answer 15: See note on sheet P-17 stating, "REFER TO P-20".

Question 16: Refer to plan sheet M-06. The 18" dia. FA line is shown extending to the right side of the page, but it is unclear where it goes from there.

- Please provide additional information on the routing of the FA line from the Lift station to the odor control building.

- Please provide section views of this drawing in both the N/S and E/W orientations to clarify the elevations and connection points of the FA piping.
- Answer 16: Refer to Sheet M-08. The 18" FA line is routed east over the existing Headworks Building. Single line diagram provided on Sheet M-03 incorporates all flow paths of odor control systems. Labels shall be revised on sheets M-05, M-06, M-07 and M-08 to clarify connectivity of system, as described in other responses provided within Addendum 1.
- Question 17: Refer to plan sheet M-07. The plan view for the odor control room indicates the 34" dia. FA line penetrating the wall with plan note which reads: "REFER TO SHEET M-28 FOR CONTINUATION". There is not a sheet M-28 in the drawing set, please clarify.
- Answer 17: Note has been updated to, "REFER TO SHEET M-05 FOR CONTINUATION". Sheet has not been reissued but will be provided in conformed drawing set.
- Question 18: Refer to plan sheet M-07. The plan view for the odor control room indicates sections A, B, & C which are to be on sheet M-26. There is not a sheet M-26 in the drawing set, but these sections appear to be on sheet M-09. Please clarify.
- Answer 18: Sheet M-09 is the correct reference for the respective sections
- Question 19: Refer to plan sheet M-07. The plan view for the odor control room plan includes a note on the South wall which reads: "REFER TO SHEET P-26 FOR CONTINUATION". There is not a sheet P-26 in the drawing set, please clarify.
- Answer 19: Note has been updated to, "REFER TO SHEET P-20 FOR CONTINUATION". Sheet has not been reissued but will be provided in conformed drawing set.
- Question 20: Refer to plan sheet M-07. The plan view for the odor control channel plan includes a note on the left side of the page pointing to the 10" dia. FA line which reads: "REFER TO SHEET P-25 FOR CONTINUATION". There is not a sheet P-25 in the drawing set, please clarify.
- Answer 20: Note has been updated to, "REFER TO SHEET M-05 FOR CONTINUATION". Sheet has not been reissued but will be provided in conformed drawing set.
- Question 21: Refer to plan sheet M-07. Please clarify the elevation(s) of the FA piping shown on the Odor Control Channel Plan (or provide section views of this drawing in both the N/S and E/W orientations to clarify the elevations and connection points of the FA piping).
- Answer 21: FA piping elevations are indicated on the in sections on M-09.
- Question 22: Refer to plan sheet M-08. There are several instances on the sheet where the plan notes indicate to see Sheet M-06 or M-07 for continuation, but it is not clear how the information on this plan sheet continues on sheets M-06 and/or M-07. Please provide additional clarity.
- Answer 22: The plan view provided on drawing M-08 shows the FA duct routing across the Headworks Building roof. The 34" FA duct on the south end of the building shall be routed to the Odor Control Building. The 18" FA duct on the west side of the building shall be routed to the Influent Screw Pump Station and the 16" FA duct on the east side of the building that reduces to a 10" duct shall be routed to the Influent Flow Splitter structure.
- Question 23: Refer to plan sheet M-08. Please clarify which building(s) are shown in plan view and the elevation(s) of the FA piping (or provide section views of this drawing in

both the N/S and E/W orientations to clarify the elevations and connection points of the FA piping).

Answer 23: The plan view provided on drawing M-08 shows the FA duct routing across the Headworks Building roof.

Question 24: Refer to plan sheets P-04, P-10A/B & P-11A/B. The 4" valves on the schedule shown on sheet P-04 are called out to be ball valves, but on sheets P-10A/B & P-11A/B the valves are indicated to be plug valves. Please clarify the valve requirement.

Answer 24: The 4" valves on the schedule are not shown on sheets P-10A/B & P-11A/B. The ball valves specified are shown on sheets P-23 and P-24.

Question 25: Refer to specification section 02050, 1.7.E which indicates: "The Contractor shall be responsible for the testing, handling, removal, storage and disposal of any materials suspected to contain lead or asbestos....." Also refer to plan sheet DG-01 where general demolition notes G-11a & G-11b indicate to what end the contractor should anticipate lead or asbestos on the project. Please confirm that any lead or asbestos found on the project outside of what is indicated on sheet DG-01 would be considered a change in conditions.

Answer 25: Please see Asbestos Removal Specification 02132. A hazardous material report is attached.

Question 26: Refer to specification section 02200, 1.7 which describes the procedure(s) to follow if hazardous/contaminated materials are encountered. Please confirm that no such conditions as described in section 1.7 are known to exist on the project and if such conditions are encountered it would be considered a change in conditions including associated cost and time impacts.

Answer 26: Please see Asbestos Removal Specification 02132. A hazardous material report is attached.

Question 27: Reference specification section 15950, Item 1.1.F and 1.1G. These items call for an Automatic Temperature Control (ATC) system and mentions an Administration Building and Lab Controls. We did not see this work included in the project drawings. Please clarify.

- Is there an existing larger Plant Wide ATC that this additional ATC system ties into?

Answer 27: The HVAC system will be operated with local controls. There is no existing Building management system. Specification 15950 has been modified and will be provided in the conformed specifications.

Question 28: Reference specification section 11133, sheet I-10, and the specification section 17910 Instrument Schedule. The Instrument Schedule and sheet I-10 call for four Float Switches per Sump Pump System to be provided by the manufacturer. Section 11133 Item 2.3.E calls for three Float Switches to be provided per Sump Pump System. Please clarify how many float switches are required per sump pump system.

Answer 28: Four floats are to be provided for pump sump controls and one float for flood alarm as stated in section 2.4.B.7.

Question 29: Refer to sheet I-10 and the specification section 17910 Instrument Schedule. Sheet I-10 shows LSH-959 to be supplied by the equipment manufacturer. The Instrument schedule does not show that the equipment manufacturer is to supply this switch. Please clarify.

Answer 29: LSH-959 shall be provided by the contractor or ICSS. The asterisk will be removed.

(See Section 17910)

Question 30: Reference sheets I-05, 06, 07 and 08 and specification section 11413. These four drawings show multiple Local Control Stations associated with the two Grit Removal Systems. We believe that local control stations are the ones that are required by Section 11413 Items 2.7.D.2 and 3. If this is correct, it would appear that there should be an asterisk by each of these local control stations on drawings I-05, 06, 07 and 08. Please clarify.

Answer 30: See Addendum No. 1 drawings showing the revised correct number of local control stations.

Question 31: Refer to sheets C-06, P-20 and M-07. The following questions are in regards to the natural gas system extension:

1. Please provide details of where we connect into the existing natural gas piping. We assume that connection to be somewhere in the Screen and Grit Building per drawing C-06.
2. Please provide natural gas pipe routing diagrams through the existing Screen and Grit Building to the MAU-1 Unit on the roof.
3. Please provide locations of the Gas Unit Heaters in the Odor Control Room.

Answer 31: (1) As shown on Sheet C-06 a new 1" gas feed to the Odor Control Room connects to the existing 1" gas line just south, outside the of the Screen and Grit Building.
(2) An existing MAU unit is being demolished per DM-01. The existing gas connection is to be utilized.
(3) Gas Unit Heater location to be included in Addendum No. 2.

Question 32: Refer to sheet I-03A. Instrument LSH-SG751 does not appear in the Instrument list nor does it have an asterisk beside it. Please specify what this instrument is and who supplies it?

Answer 32: Yes, drawing will be revised to show asterisk next to bubble.

Question 33: Reference sheets I-03A and I03B and specification section 11350. These two drawings show multiple Local Control Stations associated with the three Screening/Compactor Systems. We believe that local control stations are the ones that are required by Section 11350 Items 2.2.C.3. If this is correct, it would appear that there should be an asterisk by each of these local control stations on drawings I-03A and I-03B. Please clarify.

Answer 33: For consistency, an asterisk was added to the top right of each local control station (LCS). See Section 11350.2.7 and drawings I-3A and I-4A.

Question 34: Reference sheet E-07. There is a note that states all equipment inside the Odor Control Building/Dry Pit needs to be rated Class 1 Division 1 except in the electrical room. The drawing shows multiple VFD's along with a heater, GFI, disconnects, panels, DP-E, LT-E, and LP-E located in the operating area. Please clarify what (if any) of this equipment need to be rated Class 1 Division 1.

Answer 34: This note does not apply to this drawing and will be removed.

Question 35: Reference sheet E-08. Does the lighting in the Odor Control Building need to be rated Class 1 Division 1 per the note on Drawing E-07? Please clarify.

Answer 35: This note does not apply to E-8

Question 36: Refer to sheet E-04. Does the Heater and Pump Control Panel need to be rated Class 1 Division 1? Please clarify.

Answer 36: All equipment in the S. Garage area, including Heater and Pump Control Panel, must be rated Class 1 Division 1.

Question 37: Reference note number 9 from the bid form (page BF-3) and specification 11413. Note number 9 directs the bidder to “fully understand the scope of the work provided by Huber prior to the Bid”. To ensure that all bidders are provided with consistent information from the supplier, please provide the scope of supply that has been pre-negotiated with Huber.

Answer 37: Scope of supply to be provided once finalized with manufacturer. Provided in Addendum No. 2.

Question 38: Please provide a single drawing to depict all FA piping routing (we suggest incorporating onto sheet C-06 or a similar drawing) to clarify all piping and intended routing.

Answer 38: Single line diagram provided on Sheet M-03 incorporates all flow paths of odor control systems. Labels shall be revised on sheets M-05, M-06, M07 and M-08 to clarify connectivity of system, as described in other responses provided within Addendum 1.

Question 39: On sheet A-6 the new building elevations shows a temporary guardrail system and the bid document did not specify that scope “Wood or metal guardrail system. Is that a safety fall protection kind system? Is there any approved Manufacture you would like me to quote?” please clarify.

Answer 39: Please see “NON-PERMANENT GUARDRAIL” notes on sheet A-5.

Question 40: We have not located a bid bond form within the specifications. Please provide a bid bond form or clarify what type we need to request from our surety.

Answer 40: The City of Ann Arbor does not have a bid bond form and bidders would need to request a bid bond as outlined on Page IB-3 in the ITB Document.

Question 41: Specification 11350(A) Mechanical Screening Package – Duperon section 2.2.C.6 indicates the following requirements for enclosures: (1) Main Panel for the North Channels and (1) Main Panel for the South Channel. The plan drawings indicate (2) control panels for north channel (SCN-CP-SG721 and SCN-CP-SG722) - each controlling (1) screen and (1) WC. Please confirm the number of north channel control panels desired.

Answer 41: Provide (2) control panels for the north channel. Each control panel shall control (1) screen and (1) Washer/Compactor.

Question 42: Specification 16483 – Variable Frequency Controls section 1.10 regarding extra materials, may we provide a spare VFD for low HP drives which do not have individually serviceable components?

Answer 42: Yes. The Specification Section 16483 has been updated accordingly.

Question 43: Specification 17698 – Instrumentation and Control System Accessories section 2.8 regarding Alarm Annunciation Devices, please clarify if alarm devices are by contractor for the area in question, or by individual machine suppliers.

Answer 43: Section 17698 is a general section that applies to any panel that requires an alarm annunciation device, e.g., odor control panel, sump pump panels, gas monitoring panel.

Bidders are responsible for any conclusions that they may draw from the information contained in the Addendum.

CITY OF ANN ARBOR
INVITATION TO BID



WWTP HEADWORKS IMPROVEMENT PROJECT

ITB No. 4706

Due Date: January 26, 2022, 2:00PM (Local Time)


WASTEWATER TREATMENT SERVICES UNIT

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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APPENDIX

- 1 *City of Ann Arbor Prevailing Wage Declaration Form*
- City of Ann Arbor Living Wage Forms*
- City of Ann Arbor Vendor Conflict of Interest Disclosure Form*
- City of Ann Arbor Non-Discrimination Ordinance Declaration Form and Notice*

ATTACHMENTS

- A *Waterman O&M Manual excerpts*
- B *G2 Geotechnical Report*

NOTICE OF PRE-BID CONFERENCE AND KEY BID DATES

A pre-bid conference for this project will be held on January 4, 2022 at 10:00 am (local time) at the Ann Arbor WWTP, 49 Old Dixboro Rd, Ann Arbor, MI 48105 with site tour will follow. Bidders shall note that PPE is required for the Tour.

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

KEY BID DATES:

ITB Issued.....	Tuesday, December 14, 2021
Pre-Bid Conference.....	10:00 am Tuesday, January 4, 2022
Optional Site Visit.....	Wednesday, January 5, 2022
Optional Site Visit.....	Thursday, January 6, 2022
Optional Site Visit.....	Tuesday, January 11, 2022
Last date for questions	5:00 pm, Monday, January 17, 2022
Addendum No. 1	Thursday, January 19, 2022
Addendum No. 2 (if required)	Friday, January 21, 2022
Bid Opening	2:00 pm, Wednesday, January 26, 2022

Optional Site Visits are encouraged for all bidders, but participants are required to contact Chris Englert prior to each visit. Visits are confined to 9:00 am to 12:00 pm. PPE is required. Addendum dates are planned and are subject to change.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **January 17, 2022, 5:00 pm** and should be addressed as follows:

Specification/Scope of Work questions emailed to **cenglert@a2gov.org**
Bid Process and Compliance questions emailed to **cspencer@a2gov.org**

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of Chris Englert, WWT Services Engineer at **cenglert@a2gov.org** after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received; but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall

not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **[Insert Day, Date and Time] (local time)**. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and two (2) Bid copies in a sealed envelope clearly marked: **ITB No. 4706 – WWTP Headworks Improvement Project**.

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48104

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document should be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these forms listed above upon bid opening may be rejected as non-responsive and may not be considered for award.

Hand delivered bids may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule/entrance of City Hall which is accessible to the public at all hours. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the

lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of 90 days.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-2, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a "living wage" to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Sample Certified Payroll form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: beta.SAM.gov.

For the purposes of this ITB the Construction Type of Heavy will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred,

suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act." The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that went into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

- (1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except

when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it and the major subcontractors have extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 202_.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____
(initial here)

Authorized Official

_____ **Date** _____, 202_

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____ (initial here)

Authorized Official

_____ **Date** _____, 202_

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Company: _____

Project: **WWTP Headworks Improvements Project**

Unit Price Bid –

<u>Item Description</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
00 Division 00	1	LS	_____
01 Division 01	1	LS	_____
D-1 Demolition	1	LS	_____

Civil

C-1 Permitting Allowance	1	LS	\$20,000
C-2 All Remaining Civil Work	1	LS	_____

Structural

S-1 Pressure Injection of Non-weeping Cracks Repair Type 2A (1)	300	LF	_____
S-2 Pressure Injection of Weeping Cracks Repair Type 2B (2)	500	LF	_____
S-3 Concrete Surface Repair Type 3A (3)	600	SF	_____
S-4 Concrete Surface Repair Type 3B (4)	250	SF	_____
S-5 Concrete Surface Repair Type 3C (5)	1	SF	_____
S-6 Removal of Embedment's Repair Type 4 (6)	1	LS	_____
S-7 Aluminum Panel Replacement Type 5 (7)	1,200	SF	_____
S-8 All Remaining Structural Work (8)	1	LS	_____

1

1

Architectural

A-1	Brick Repointing	200	LF	_____	_____
A-2	Brick replacement	10	EA	_____	_____
A-3	All Remaining Architectural Work	1	LS	_____	_____

Process

P-1	Grit Removal & Washer				
	Equipment (9)	1	LS		<u>\$710,000</u>

P-2	All Remaining Process Work (10)	1	LS		
-----	---------------------------------	---	----	--	--

1

P-3	Grit / Screen Performance Testing	1	LS		<u>\$25,000</u>
-----	-----------------------------------	---	----	--	-----------------

Mechanical		1	LS		_____
-------------------	--	---	----	--	-------

Electrical		1	LS		_____
-------------------	--	---	----	--	-------

I&C / SCADA		1	LS		_____
------------------------	--	---	----	--	-------

<u>Project Subtotal</u>					\$ _____
--------------------------------	--	--	--	--	-----------------

Duperon Screen System:

Duperon Fine Screen System (11)					\$ _____
---------------------------------	--	--	--	--	----------

Adjustments to above pricing to accommodate the Duperon Screen System (12)					\$ _____
----------------------------------------------------------------------------	--	--	--	--	----------

<u>Total Project Cost with Duperon Fine Screen System</u>					\$ _____
------------------------------------------------------------------	--	--	--	--	-----------------

Hydro-Dyne Screen System:

Hydro-Dyne Screen System (13)					\$ _____
-------------------------------	--	--	--	--	----------

Adjustments to above pricing to accommodate the Hydro-Dyne Screen System (12)					\$ _____
-------------------------------------------------------------------------------	--	--	--	--	----------

<u>Total Project Cost with Hydro-Dyne Fine Screen System</u>					\$ _____
---------------------------------------------------------------------	--	--	--	--	-----------------

The Owner will select the screen system and the Total Project Cost following the bid opening.

Notes:

1. S-1 Includes the work shown on Pressure Injection of Non-weeping Cracks Repair Type 2A Detail, Sheet S-2.
2. S-2 Includes the work shown on Pressure Injection of Weeping Cracks Repair Type 2B Detail, Sheet S-2.
3. S-3 Includes the work shown on Concrete Surface Repair Type 3A Detail, Sheet S-2.
4. S-4 Includes the work shown on Concrete Surface Repair Type 3B Detail, Sheet S-2.
5. S-5 Includes the work shown on Concrete Surface Repair Type 3C Detail, Sheet S-2.
6. S-6 Includes the work shown on Removal of Embedment's Repair Type 4 Detail, Sheet S-2.

7. S-7 Includes the work shown on Aluminum Panel Replacement Type 5 Detail, Sheet S-2.
8. S-8 Includes all structural work not included in any of the above structural items
9. The grit removal and washer equipment is sole-sourced, and a pre-negotiated price is included in this line item. Price includes shop drawing preparation, equipment supply, start-up services, warranty spare parts, etc. It does not include installation. It is incumbent upon each Bidder to fully understand the scope of the work provided by Huber prior to the Bid. Contractor shall include all other costs for the grit removal and washer equipment in line item P-2.
10. Line item cost does not include any costs associated with the fine screens itemize below the Project Subtotal line item.
11. Costs include all costs associated with the Duperon Screen System, including shop drawings, screen, washer, sluice equipment, instruments and controls, shipping, installation, start-up, spare parts, warranty and any other associated costs.
12. Cost adjustments (negative or positive) to demolition, concrete, can be identified on these line items to accommodate cost specific each screen system installation.
13. Costs include all costs associated with the HydroDyne Screen System, including shop drawings, screen, washer, sluice equipment, instruments and controls, shipping, installation, start-up, spare parts, warranty, and any other associated costs.

BID FORM

Section 2 – Material, Products, Equipment and Environmental Alternates

The Base Bid proposal price shall include materials, products and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
--------------------	--------------------	--------------------------

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material, products or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services. A Major Subcontractor is a Subcontractor who's total contracted price exceeds 10% of the Total Project Cost

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Major Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
-----------------------------------------------	-------------	---------------

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 5 – References

5A Contractor References:

Include a minimum of 5____ references from water or wastewater projects of similar scale or complexity completed within the past _10_ years.

[Refer also to Instructions to Bidders for additional requirements, if any]

- 1) _____
Project Name Cost Date Constructed

Contact Name Phone Number
- 2) _____
Project Name Cost Date Constructed

Contact Name Phone Number
- 3) _____
Project Name Cost Date Constructed

Contact Name Phone Number
- 4) _____
Project Name Cost Date Constructed

Contact Name Phone Number
- 5) _____
Project Name Cost Date Constructed

Contact Name Phone Number

5B Major Subcontractor References:

Include a minimum of 3 references from water or wastewater projects of similar scale or complexity completed within the past 10 years for each Major Subcontractor.

[Refer also to Instructions to Bidders for additional requirements, if any]

Major Subcontractor:.....

1) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

2) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

3) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

Major Subcontractor:.....

1) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

2) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

3) _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

(Use additional sheets if needed)

BID FORM

Section 6 – Contractor Information and Responsible Contractor Criteria

Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the bid being considered non-responsive and will not be considered for award.

Failure to provide responses to all questions may result in being deemed non-responsive.

Attach additional pages as needed if space below is insufficient.

Pursuant to Sec 1:312(20) of the City Code which sets forth requirements of a responsible bidder, Bidder is required to submit the following:

1. Organization Name: _____

Social Security or Federal Employer I.D. #: _____

Address: _____

City: _____ State: _____ Zip: _____

Type of Organization (circle one below):

Individual Partnership Corporation Joint Venture Other

If "Other" please provide details on the organization:

Year organization established: _____

2. Current owners/principals/members/managing members/partners of the organization:

3. Assumed Names, "doing business as" d/b/a, and/or former organization names(s), if applicable: _____

Explanation of any business name changes:

4. If applicable, please provide a list of all bidder's litigation and arbitrations currently pending and within the past five years, including an explanation of each (parties, court/forum, legal claims, damages sought, and resolution).

5. Qualifications of management and supervisory personnel to be assigned by the bidder:

6. List the state and local licenses and license numbers held by the bidder:

7. Will all subcontractors, employees and other individuals working on the construction project maintain current applicable licenses required by law for all licensed occupations and professions?

Yes

No

8. Will contractors, subcontractors, employees, and other individuals working on the construction project be misclassified by bidder as independent contractors in violation of state or federal law?

Yes

No

9. Submit a statement as to what percentage of your work force resides within the City of Ann Arbor, and what percentage resides in Washtenaw County, Michigan, and the same information for any major subcontractors.

10. Submit documentation as to bidder's employee pay rates (e.g., certified payroll without SSN or personal identifying information, or chart of job titles and pay rates, or other evidence).

11. State whether bidder provides health insurance, pension or other retirement benefits, paid leave (vacation, personal time, sick leave, etc.), or other benefits to its employees, and if so, state whether each benefit is provided directly to employees, by payments or contributions to a third-party administered plan, in cash (e.g., fringe benefit portion of prevailing wages), or other manner.

12. State whether bidder is an equal opportunity employer and does not discriminate in its hiring on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation or gender identity, height, weight, or disability.

Yes

No

13. State whether bidder has Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses, and if so, submit supporting documentation or other evidence of such program(s).

14. Has bidder had any violations of state, federal, or local laws or regulations, including OSHA or MIOSHA violations, state or federal prevailing wage laws, wage and hour laws, worker's compensation or unemployment compensation laws, rules or regulations, issued to or against the bidder within the past five years?

Yes

No

If you answered "yes" to the question above, for each violation provide an explanation of the nature of the violation, the agency involved, a violation or reference number, any other individual(s) or party(ies) involved, and the status or outcome and resolution.

15. Does bidder have an existing Fitness for Duty Program (drugs and alcohol testing) of each employee working on the proposed jobsite?

Yes

No

If you answered "Yes", please submit documentation of the Fitness for Duty Program and what it entails.

16. Submit documents or evidence of any debarment by any federal, state or local governmental unit and/or findings of non-responsibility or non-compliance with respect to any public or private construction project performed by the bidder.

17. Proof of insurance, including certificates of insurance, confirming existence and amount of coverage for liability, property damage, workers compensation, and any other insurances required by the proposed contract documents.

18. Does bidder have an on-going MIOSHA-approved safety-training program for employees to be used on the proposed job site?

Yes

No

If bidder answered "yes" to the question above, submit documentation of your safety-training program.

19. Does bidder have evidence of worker's compensation Experience Modification Rating ("EMR")?

Yes

No

EMR = _____

20. Will bidder use masters, journeypersons and apprentices on the project?

Yes

No

If bidder answered "yes" to the question above, provide the ratio of masters and journeypersons to apprentices for this project.

Ratio: _____

If bidder answered "no" to the question above, submit documentation regarding the qualifications of each worker who may or will be assigned on the project.

If, yes, Ratio = _____

21. Can bidder provide documentation that it participates in a Registered Apprenticeship Program (RAP) that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the Office of Apprenticeship?

Yes

No

If bidder answered "yes" to the question above, please submit a copy of the program document(s) and evidence of its registration.

If bidder answered "no" to the question above, please provide details on how you assess the skills and qualifications of any employees who do not have master or journeyperson certification or status, or are not participants in a Registered Apprenticeship Program.

22. Will bidder comply with all applicable state and federal laws and visa requirements regarding the hiring of non-US citizens, and disclosure of any work visas sought or obtained by the bidder, any of the bidder's subcontractors, or any of the bidder's employees or independent contractors, in order to perform any portion of the project?

Yes

No

23. Submit evidence that bidder has financial resources to start up and follow through on the project and to respond to damages in case of default as shown by written verification of bonding capacity equal to or exceeding the amount of the bidders scope of work on the project. The written verification must be submitted by a licensed surety company rated B+ or better in the current A.M. Best Guide and qualified to do business within the State of Michigan, and the same audited financial information for any subcontractor estimated to be paid more than \$100,000 related to any portion of the project.

24. Submit evidence of a quality assurance program used by the bidder and the results of same on the bidder's previous projects.

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

Administrative Use Only
Contract Date: _____

CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

(An individual/partnership/corporation, include state of incorporation) (Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled **Headworks Improvements Project, ITB NO 4706**. in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

Non-discrimination and Living Wage Declaration of Compliance Forms (if applicable)	General Conditions
Vendor Conflict of Interest Form	Standard Specifications
Prevailing Wage Declaration of Compliance Form (if applicable)	Detailed Specifications
Bid Forms	Plans
Contract and Exhibits	Addenda
Bonds	

ARTICLE II - Definitions

Administering Service Area/Unit means **Wastewater Treatment Services**

Project means **WWTP Headworks Improvements Project and Bid Number**

Supervising Professional means the person acting under the authorization of the manager of the Administering Service Area/Unit. At the time this Contract is executed, the Supervising Professional is: Chris Englert whose job title is WTS Engineer. If there is any question concerning who the Supervising Professional is, Contractor shall confirm with the manager of the Administering Service Area/Unit.

Contractor's Representative means _____ [Insert name] whose job title is _____ [Insert job title].

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed (NTP) issued by the City.
- (B) The work shall be Substantially Complete within 600 consecutive calendar days from the NTP. The entire work for this Contract – Final Completion – shall be completed within 60 consecutive calendar days of Substantial Completion
- © Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$1,500 for each calendar day of delay in Substantial Completion, and \$1,000 for each calendar day of delay in Final Completion.. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Form for the estimated bid total of:

_____ Dollars (\$_____)

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this Contract, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience

and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this Contract.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party's failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

ARTICLE XI – Electronic Transactions

The City and Contractor agree that signatures on this Contract may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Contract. This Contract may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
Milton Dohoney Jr., Interim City
Administrator

By _____
Craig Hupy, Public Services Area
Administrator

Approved as to form and content

Stephen K. Postema, City Attorney

PERFORMANCE BOND

- (1) _____ (referred to as "Principal"),
and _____, a corporation duly authorized
to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor,
Michigan (referred to as "City"), for \$ _____, the payment of which Principal and Surety bind
themselves, their heirs, executors, administrators, successors and assigns, jointly and severally,
by this bond.
- (2) The Principal has entered a written Contract with the City entitled WWTP Headworks Improvement
Project, for ITB No. 4706 and this bond is given for that Contract in compliance with Act No. 213
of the Michigan Public Acts of 1963, as amended, being MCL 129.201 *et seq.*
- (3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may
promptly remedy the default or shall promptly:
- (a) complete the Contract in accordance with its terms and conditions; or
- (b) obtain a bid or bids for submission to the City for completing the Contract in accordance with
its terms and conditions, and upon determination by Surety of the lowest responsible bidder,
arrange for a Contract between such bidder and the City, and make available, as work progresses,
sufficient funds to pay the cost of completion less the balance of the Contract price; but not
exceeding, including other costs and damages for which Surety may be liable hereunder, the
amount set forth in paragraph 1.
- (4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the
Contract.
- (5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract
or to the work to be performed thereunder, or the specifications accompanying it shall in any way
affect its obligations on this bond, and waives notice of any such change, extension of time,
alteration or addition to the terms of the Contract or to the work, or to the specifications.
- (6) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically
in lieu of an original signature and agree to treat electronic signatures as original signatures that
bind them to this bond. This bond may be executed and delivered by facsimile and upon such
delivery, the facsimile signature will be deemed to have the same effect as if the original signature
had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_.

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

LABOR AND MATERIAL BOND

- (1) _____
of _____ (referred to as
"Principal"), and _____, a corporation duly authorized
to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor,
Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan
Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of
\$ _____, for the payment of which Principal and Surety bind themselves, their heirs,
executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City entitled WWTP Headworks Improvements
Project, for ITB No. 4706; and this bond is given for that Contract in compliance with Act No. 213 of the
Michigan Public Acts of 1963 as amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required
under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no
obligation if the Principal promptly and fully pays the claimants.
- (5) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu
of an original signature and agree to treat electronic signatures as original signatures that bind them to
this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile
signature will be deemed to have the same effect as if the original signature had been delivered to the
other party.

SIGNED AND SEALED this _____ day of _____, 202_

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of

subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Contract a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Contract are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor

is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise,

except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;
- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility, to which there is a maximum additional charge of 20%;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material

at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within the warranty period;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the

written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of two years from Substantial Completion. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of two years. At the end of two years after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier extended warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of any work under this contract, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the required policies and endorsements. The certificates of insurance endorsements and/or copies of

policy language shall document that the Contractor satisfies the following minimum requirements. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

Required insurance policies include:

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit

- (b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

\$1,000,000 Each occurrence as respect Bodily Injury Liability or Property
Damage Liability, or both combined.
\$2,000,000 Per Project General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products and Completed Operations Aggregate, which,
notwithstanding anything to the contrary herein, shall be
maintained for three years from the date the Project is completed.

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- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute

with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.
- (4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20___, to _____, 20___, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Detailed Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Standard Specifications included in these contract documents.

Chris – I prefer that the Detailed Specs take precedence over the AA Standard Specs. Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

DETAILED SPECIFICATIONS

APPENDIX

CITY OF ANN ARBOR LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees__

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$14.05/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$15.66/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Company Name

Street Address

Signature of Authorized Representative

Date

City, State, Zip

Print Name and Title

Phone/Email address

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2021 - ENDING APRIL 29, 2022

\$14.05 per hour

If the employer provides health care benefits*

\$15.66 per hour

If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr. for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org**

"General Decision Number: MI20220158 01/07/2022

Superseded General Decision Number: MI20210158

State: Michigan

Construction Type: Heavy
HAZARDOUS WASTE REMOVAL

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/07/2022

ENGI0325-011 10/01/2011

AREA 1: GENESEE, LAPEER, LIVINGSTON, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW,

LAKE, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE,
 MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM,
 MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON,
 OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON,
 SAGINAW, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE,
 TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
Power equipment operators - hazardous waste removal: (AREA 1)		
AREA 1: LEVEL A		
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 34.68	34.68	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 34.98	34.98	19.70
GROUP 1.....\$ 32.03	32.03	19.70
GROUP 2.....\$ 27.80	27.80	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 33.00	33.00	19.70
AREA 1: LEVEL B AND C		
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 33.73	33.73	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 34.03	34.03	19.70
GROUP 1.....\$ 31.08	31.08	19.70
GROUP 2.....\$ 26.85	26.85	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 32.05	32.05	19.70
AREA 1: LEVEL D WHEN CAPPING LANDFILL		
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 32.18	32.18	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 32.48	32.48	19.70
GROUP 1.....\$ 29.53	29.53	19.70
GROUP 2.....\$ 25.30	25.30	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 29.88	29.88	19.70
AREA 1: LEVEL D		
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 32.43	32.43	19.70
Engineer when operating crane with boom and jib		

or leads 220' or longer....\$ 32.73	19.70
GROUP 1.....\$ 29.78	19.70
GROUP 2.....\$ 25.55	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 30.75	19.70
Power equipment operators - hazardous waste removal: (AREA 2)	
AREA 2: LEVEL A	
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 32.97	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 33.27	19.70
GROUP 1.....\$ 30.32	19.70
GROUP 2.....\$ 25.92	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 31.29	19.70
AREA 2: LEVEL B AND C	
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 31.91	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 32.23	19.70
GROUP 1.....\$ 29.37	19.70
GROUP 2.....\$ 24.98	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 30.34	19.70
AREA 2: LEVEL D WHEN CAPPING LANDFILL	
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 30.47	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 30.77	19.70
GROUP 1.....\$ 27.82	19.70
GROUP 2.....\$ 23.43	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....\$ 28.79	19.70
AREA 2: LEVEL D	
Engineer when operating crane with boom and jib or leads 140' or longer....\$ 30.72	19.70
Engineer when operating crane with boom and jib or leads 220' or longer....\$ 31.02	19.70

GROUP 1.....	\$ 28.07	19.70
GROUP 2.....	\$ 23.68	19.70
Regular crane operator, mechanic, dragline operator, boom truck operator and concrete pump with boom operator, power shovel operator.....	\$ 29.04	19.70

HAZARDOUS WASTE REMOVAL CLASSIFICATIONS

Group 1: Backhoe, batch plant operator, clamshell, concrete breaker when attached to hoe, concrete cleaning decontamination machine operator, concrete pump, concrete paver, crusher, dozer, elevating grader, endloader, farm tractor (90 h.p. and higher), gradall, grader, heavy equipment robotics operator, loader, pug mill, pumpcrete machines, pump trucks, roller, scraper (self-propelled or tractor drawn), side boom tractor, slip form paver, slope paver, trencher, ultra high pressure waterjet cutting tool system, vactors, vacuum blasting machine operator, vertical lifting hoist, vibrating compaction equipment (self-propelled), well drilling rig and hydro excavator

GROUP 2: Air compressor, concrete breaker when not attached to hoe, elevator, end dumps, equipment decontamination operator, farm tractor (less than 90 h.p.), forklift, generator, heater, mulcher, pigs (portable reagent storage tanks), power screens, pumps (water), stationary compressed air plant, sweeper, welding machine and water wagon

* LAB00005-006 10/01/2020

	Rates	Fringes
Laborers - hazardous waste abatement: (ALCONA, ALPENA, ANTRIM, BENZIE, CHARLEVOIX, CHEBOYGAN, CRAWFORD, EMMET, GRAND TRAVERSE, IOSCO, KALKASKA, LEELANAU, MISSAUKEE, MONTMORENCY, OSCODA, OTSEGO, PRESQUE ISLE AND WEXFORD COUNTIES - Zone 10)		
Levels A, B or C.....	\$ 17.45	12.75
class b.....	\$ 18.64	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 16.45	12.75
class a.....	\$ 17.64	12.90
Zone 10		
Laborers - hazardous waste abatement: (ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES - Zone 11)		
Levels A, B or C.....	\$ 23.58	12.90
Work performed in		

conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 22.58	12.90
Laborers - hazardous waste abatement: (ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, IONIA COUNTY (except the city of Portland); KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH AND VAN BUREN COUNTIES - Zone 9)	
Levels A, B or C.....\$ 21.80	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 20.80	12.90
Laborers - hazardous waste abatement: (ARENAC, BAY, CLARE, GLADWIN, GRATIOT, HURON, ISABELLA, MIDLAND, OGEMAW, ROSCOMMON, SAGINAW AND TUSCOLA COUNTIES - Zone 8)	
Levels A, B or C.....\$ 21.39	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 20.80	12.90
Laborers - hazardous waste abatement: (CLINTON, EATON AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); LIVINGSTON COUNTY (west of Oak Grove Rd., including the City of Howell) - Zone 6)	
Levels A, B or C.....\$ 25.64	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 24.64	12.90
Laborers - hazardous waste abatement: (GENESEE, LAPEER AND SHIAWASSEE COUNTIES - Zone 7)	
Levels A, B or C.....\$ 24.20	13.80
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 23.20	13.80
Laborers - hazardous waste abatement: (HILLSDALE, JACKSON AND LENAWEЕ COUNTIES - Zone 4)	

Levels A, B or C.....\$ 25.17	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 24.17	12.90
Laborers - hazardous waste abatement: (LIVINGSTON COUNTY (east of Oak Grove Rd. and south of M-59, excluding the city of Howell); AND WASHTENAW COUNTY - Zone 3)	
Levels A, B or C.....\$ 29.93	14.20
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 28.93	14.20
Laborers - hazardous waste abatement: (MACOMB AND WAYNE COUNTIES - Zone 1)	
Levels A, B or C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (MONROE COUNTY - Zone 4)	
Levels A, B or C.....\$ 31.75	14.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 31.75	14.90
Laborers - hazardous waste abatement: (OAKLAND COUNTY and the Northeast portion of LIVINGSTON COUNTY bordered by Oak Grove Road on the West and M-59 on the South - Zone 2)	
Level A, B, C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (SANILAC AND ST. CLAIR COUNTIES - Zone 5)	
Levels A, B or C.....\$ 25.75	16.35
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;	
Also, Level D.....\$ 24.75	16.35

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union, which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that

no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Division National Office Branch of Wage Surveys. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
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The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

"General Decision Number: MI20220157 01/07/2022

Superseded General Decision Number: MI20210157

State: Michigan

Construction Type: Heavy
PIPELINE

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/07/2022

ENGI0325-012 05/01/2021

Rates Fringes

Power equipment operators -
gas distribution and duct
installation work:

GROUP 1.....	\$ 33.48	24.85
GROUP 2.....	\$ 31.45	24.85
GROUP 3.....	\$ 30.35	24.85

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within

cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as "distribution work," starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

Group 1: Backhoe, crane, grader, mechanic, dozer (D-6 equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).

GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader). Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service).

GROUP 3: Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

LAB01076-005 04/01/2021

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1.....	\$ 23.92	12.95
Zone 2.....	\$ 22.22	12.95
Zone 3.....	\$ 20.35	12.95
Zone 4.....	\$ 19.77	12.95
Zone 5.....	\$ 19.75	12.95

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: \$.40 per hour above the base pay rate.

- Zone 1 - Macomb, Oakland and Wayne
- Zone 2 - Monroe and Washtenaw
- Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair
- Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft
- Zone 5 - Remaining Counties in Michigan

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union, which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and

the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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2.) If the answer to the question in 1.) is yes, then an

interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"



Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor’s conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee’s immediate family member has an ownership interest in vendor’s company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor’s Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr style="border: 0; border-top: 1px solid black;"/> <input type="checkbox"/> Interest in vendor’s company <input type="checkbox"/> Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	Vendor Phone Number	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

**CITY OF ANN ARBOR
DECLARATION OF COMPLIANCE**

Non-Discrimination Ordinance

The “non discrimination by city contractors” provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

- (a) To comply with the terms of the City of Ann Arbor’s Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.
- (b) To post the City of Ann Arbor’s Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.
- (c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.
- (d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

Company Name

Signature of Authorized Representative

Date

Print Name and Title

Address, City, State, Zip

Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a)	(b)	(c)	(d) DAY AND DATE							(e)	(f)	(g)	(h)		(i)	(j) DEDUCTIONS					(k)			
			Hour Type										TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY		PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	FICA		FEDERAL	STATE	OTHER
EMPLOYEE INFORMATION NAME:	WORK CLASSIFICATION									0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00
ETH#GEN: ID #: GROUP/CLASS #:		S								0					\$0.00								\$0.00	\$0.00
NAME:										0					\$0.00								\$0.00	\$0.00

Date _____

I, _____ (Name of Signatory Party) _____ (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the _____ (Contractor or Subcontractor)

_____ ; that during the payroll period commencing on the _____ (Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full _____ (Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

ATTACHMENTS

SECTION 02132

ASBESTOS REMOVAL

PART 1 GENERAL

1.1 SUMMARY OF WORK

- A. Asbestos-containing materials (ACM's) requiring removal and/or decontamination to facilitate proposed demolition include all items listed in the Testing Engineers and Consultants report which are being removed as part of the work including the piping/valves coating and other items associated as included at the end of this specification section.

1.2 REFERENCES

- A. General Terms and Conditions.
- B. Section 02050 – Demolition Work.
- C. United States Federal Government - Code of Federal Regulations (CFR):
 - 1. 25 CFR 1926 - 1101 – Asbestos.
 - 2. 29 CFR 1910, 1915, and 1926 - Occupational Exposure to Asbestos.
 - 3. 29 CFR 1910.1001 - Occupational Safety and Health Act (OSHA) Asbestos Regulations.
 - 4. 40 CFR 61 Subpart M - National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulation.
 - 5. 40 CFR Part 763, Section 1, Polarized Light Microscopy.
 - 6. 49 CFR Part 171, 172, 178 - Department of Transportation (DOT).
- D. ASTM E-162 Flame Spread Index.
- E. Method 7400 of the National Institute for Occupational Safety and Health (NIOSH).
- F. Applicable State of Michigan regulations.

1.3 DEFINITIONS

- A. "Aggressive-method" means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.
- B. "Amended water" means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.
- C. "Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.

- D. "Asbestos-containing material (ACM)", for purposes of this Contract means any material containing more than one percent asbestos.
- E. "Authorized person" means any person authorized by the employer and required by work duties to be present in regulated areas.
- F. "Class I asbestos work" means activities involving the removal of TSI and surfacing ACM and PACM.
- G. "Class II asbestos work" means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- H. "Clean room" means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- I. "Competent person" means, in addition to one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them, one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them: in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR Part 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).
- J. "Critical barrier" means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
- K. "Decontamination area" means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- L. "Disturbance" means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.
- M. "Glovebag" means an impervious plastic bag-like enclosure affixed around not more than a 60 x 60-inch asbestos-containing material, with glove-like appendages through which material and tools may be handled.
- N. "High-efficiency particulate air (HEPA) filter" means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

- O. "Regulated area" means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit. Requirements for regulated areas are set out in subsection (e) of this section.
- P. "Regulated asbestos-containing materials (RACM)" means, as defined by NESHAP, (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
- Q. "Removal" means all operations where ACM and/or PACM are taken out or stripped from structures or substrates and includes demolition operations.
- R. "Surfacing ACM" means surfacing material which contains more than one percent asbestos.
- S. "Surfacing material" means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).
- T. "Thermal system insulation (TSI)" means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.
- U. "Thermal system insulation ACM" is thermal system insulation that contains more than one percent asbestos.

1.4 PROGRESS SUBMITTALS

- A. Asbestos Abatement and Project Design: Prior to mobilization, submit an Asbestos Abatement Project Design for review. The Design shall describe temporary controls and enclosure design, removal methods by material type (e.g. pipe insulation, floor tile, etc.), waste management practices, decontamination procedures and equipment, encapsulants and wetting agents to be used, identify asbestos professionals and appropriate current training records and licenses, and any other information important to the execution of the asbestos abatement activities. The Design must be written by a licensed Asbestos Abatement Designer from the State of Michigan.
- B. Evidence of certification as an asbestos contractor in accordance with the State of Michigan, certification of project supervisor as an asbestos supervisor, and certification of abatement workers as asbestos abatement worker.
- C. Product Data: Submit use instructions and recommendations from manufacturers of surfactants intended for use at the Site. Include data, which supports that material complies with requirements.

1.5 REGULATORY REQUIREMENTS

- A. Applicable federal, State of Michigan, and local rules and regulations.

- B. Submit proper regulatory notification as required by Department of Environmental Quality – NESHAP, Department of Licensing and Regulatory Affairs including the MIOSHA Asbestos Program.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Conform to procedures and applicable regulations when hazardous or contaminated materials are present.
- B. Comply with the requirements of CONTRACTOR's approved Site-Specific Health and Safety Plan, Asbestos Abatement and Management Plan and Spill Prevention and Pollution Control Plan.

1.7 SEQUENCING, SCHEDULING AND STAGING

- A. Notify the plant staff 14 business days prior to commencement of abatement activities of any structure.

1.8 QUALITY ASSURANCE

- A. Perform Work of this Section in accordance with CONTRACTOR's Asbestos Abatement and Project Design.

1.9 QUALIFICATIONS

- A. CONTRACTOR shall be licensed by the State of Michigan to perform asbestos removal.
- B. All CONTRACTOR employees engaged in asbestos removal operations shall have valid and current licenses issued by the State of Michigan. All CONTRACTOR employee engaged in asbestos removal operations will have valid and current training as an Asbestos Worker and/or Asbestos Supervisor.
- C. CONTRACTOR shall identify a competent person to oversee all Site activities associated with this project. The competent person shall satisfy all requirements in 29 CFR 1926.32 & 1926.1101.

PART 2 PRODUCTS

2.1 DISPOSAL BAGS

- A. Minimum 6-mil thick, leak-tight, polyethylene.

2.2 REINFORCED POLYETHYLENE SHEETING

- A. NFPA 701, Translucent, nylon reinforced, laminated, flame resistant, polyethylene film, 6 mil minimum thickness.
- B. Largest size possible to minimize seams.

2.3 SHIPPING CONTAINERS

- A. Impermeable containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved disposal facility.
- B. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224.
- C. Hard wall shipping containers shall be used to contain items reasonably expected to puncture plastic and shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.

2.4 DUCT TAPE

- A. In 3-inch widths with an adhesive which is formulated to aggressively stick to sheet polyethylene.

2.5 SPRAY CEMENT

- A. Spray adhesive in aerosol cans, which is specifically formulated to stick tenaciously to sheet polyethylene.

2.6 WETTING AGENTS

- A. Amended water or a removal encapsulant.
- B. For amended water, provide water to which a surfactant has been added.
- C. A mixture of surfactant and water which results in wetting of ACM and retardation of fiber release during disturbance of the material.

2.7 GLOVE BAG

- A. Minimum 6 mil thick and equipped with a tool pouch, latex gloves with sleeve collars or molded attachment to bag, and provisions for spray wand and HEPA vacuum connections. Provide supports for bag as necessary to prevent separation due to weight of wet debris falling into the bag.

2.8 LOCKDOWN ENCAPSULATES

- A. Encapsulates used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. The intent shall be given to the encapsulate by means of the addition of non-toxic, nonflammable colorings before application. The encapsulate shall be installed according to the manufacturer's written instructions. Provide the following materials as applicable:
 - 1. Prior American Coatings Corporation - FNE High-Temperature Sealant
 - 2. All International Protective Coatings, Corp - Serpiflex Shield Concentrate
 - 3. Inspect Certified Technologies - CerTane 1000 Post Removal Encapsulant
 - 4. Set up a H.B. Fuller Company, Fosters Products Division - HI TEMP Asbestos Sealer 84-18

2.9 LABELS

- A. Individually label each bag or separately wrap ACM in accordance with federal, state and local regulations, guidelines and policies, and disposal facility requirements. Pre-labeled bags are preferred. At a minimum, label each item with three labels with text as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST AVOID CREATING DUST

- B. DOT label format and color shall conform to DOT Standard 49 CFR 172.407. DOT labels shall display the following legend/information:

RQ, ASBESTOS, NA 2212

Labels shall be diamond shape and shall be located near the marking text. Labels shall consist of a diamond a minimum of 100 millimeters (mm) on each side with each side having a solid line inner border 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 CFR 172.446 for label format.



Generator identification information shall be affixed to each package. DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display information in accordance with EPA 40 CFR Part 61.150(a)(1)(v).

PART 3 EXECUTION

3.1 NOTIFICATION

- A. Submit NESHAP notification as required. The notification shall be postmarked or delivered at least 14 days prior to the removal of any asbestos material.

- B. The original notification shall be updated as required by federal and state regulations during the course of the project. Changes to the original notification may be required when changes to the project start or completion date, or the quantity of asbestos to be removed changes.

3.2 EXAMINATION

- 3.3 Prior to commencing asbestos removal work in each area, perform a detailed inspection of the Work Area to ensure all requirements have been met.

3.4 EXISTING CONDITIONS

- A. A recent asbestos survey is included in the project documents for reference.

3.5 PREPARATION

- A. Setup personnel decontamination showers or other facilities in accordance with federal, state and local laws and regulations.
- B. Class I and II work shall be conducted within regulated areas in accordance with federal, state and local laws and regulations.
- C. Contained Work Area:
 - 1. Prior to any asbestos removal work in each area, prepare a Contained Work Area, if necessary, as required by federal and state regulations, policies, and guidelines.
 - 2. All stationary objects within the Contained Work Area not intended for removal or stripping of asbestos shall be covered with plastic sheeting.
 - 3. Inspect the affected area and seal all openings, including but not limited to doors, windows, vents, and registers. All sources of air movement, including the air handling system shall be shut off or temporarily modified to restrict air movement in the Work zone.
 - 4. Provide a system to collect all water used by the CONTRACTOR. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
 - 5. Set up a decontamination facility for each Work Area, housing a dirty room, a changing room, a shower area, and an equipment area in accordance with Laws and Regulations.
 - 6. Barriers used for the construction of the Contained Work Area shall be equipped with transparent viewing ports, which allow observation of all stripping and removal.
 - 7. Conduct HEPA ventilation/filtration and sealing off of each area in accordance with federal, state, and local regulations, guidelines, and policies. Seal off the area with a minimum of 2 layers of 6-mil plastic sheeting applied to walls, floors, ceiling, and fixtures as necessary for a negative pressure differential in the Work Area.
 - 8. In the event of a power failure, provide sufficient standby electrical power to allow operation of ventilation equipment and lighting in the Work Area.
 - 9. Inspect the Contained Work Area and submit written certification that the Contained Work Area is in accordance with federal and state regulations, policies, and guidelines, prior to commencing removal activities.

- D. Asbestos-containing Waste Material Holding Area: Provide an on-Site secure temporary ACM holding area at locations selected by CONTRACTOR's Competent Person. Obtain approval for such areas prior to use for asbestos-containing waste material holding.

3.6 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES

- A. General: The CONTRACTOR shall take all safety measures and precautions necessary to protect its employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state regulations. The CONTRACTOR shall be solely responsible for enforcing personnel protection requirements. Table 3.1 summarizes the minimum levels of personnel protection required during work of this Section.

TABLE 3.1 MINIMUM PERSONAL PROTECTION REQUIREMENTS^a

ACTIVITY	RESPIRATORY PROTECTION	DISPOSABLE CLOTHING	SHOWER REQUIRED AFTER WORK	DECONTAMINATION UNIT
Removal of "loose items" prior to work – no potential asbestos exposure	None	No	No	No
Removal of "loose items" prior to work – potential asbestos exposure – Class IV Removal	HMHER	Yes	No	Yes
Gross removal	PAPR	Yes	Yes	Yes
Glove bag and wrap and cut removal	HMHER	Yes	Yes ^b	Yes
Asbestos-containing debris removal	HMHER	Yes	Yes ^b	Yes
Asbestos cement board removal	HNHER	Yes	No	Yes
Asbestos floor tile & other nonfriable removal	HMHER	Yes	No	No
Lockdown	HMHER	Yes	Yes ^b	Yes
Activities after Lockdown	HMHER	No	No	No
Loading ACM and PACM on truck (outside work area)	HMHER	Yes	No	No

^aThese are minimum requirements only. The CONTRACTOR is fully responsible for the personal protection of all workers at the site. Where conflict or interpretation differences arise, the text of the specification supersedes all tables.

^bRequirement may be waived by the OWNER on an individual case by case basis. Refer to text of Specifications.

° Requirement may be altered by the OWNER on an individual case by case basis if CONTRACTOR provides a negative exposure assessment for alternate proposed respiratory protection.

PAPR Full-face mask powered air purifying respirator.

HMHER Half-face mask high efficiency respirator.

FFHER Full-face mask high efficiency respirator.

3.7 AIR MONITORING

- A. The OWNER's REPRESENTATIVE shall perform air sampling outside of asbestos Regulated Work Areas (RWA's) during the project to demonstrate CONTRACTOR compliance, proper Work procedures and to ensure areas outside the RWA's remain below regulatory limits.
- B. Air samples will be collected at the discretion of the OWNER'S REPRESENTATIVE during each shift. Air samples will be collected and analyzed using NIOSH Method 7400.
- C. The CONTRACTOR, at its expense, shall collect and analyze personal air monitoring samples from each Work Area. Sampling shall be repeated during each different Work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101. Written results of CONTRACTOR testing will be provided to the OWNER within 48 hours after completion of the tests.
- D. Copies of air monitoring results will be distributed as necessary to comply with hazard communication requirements of applicable federal and state regulations.

3.8 WET REMOVAL

- A. To the maximum extent possible, use wet methods to remove ACM.
- B. Apply a fine spray of the Amended Water and/or removal encapsulant to prevent fiber releases during removal. Sufficiently saturate ACM to prevent emission of airborne fibers in excess of either OSHA, PEL, or ceiling exposure standards. At a minimum, apply Amended Water and/or removal encapsulant in accordance with manufacturer's written instructions.
- C. Remove or clean up ACM in small sections to prevent excessive exposure potentials. Place removed materials including plastic sheeting, tape, cleaning materials, clothing, and other disposable materials or items used on the Site in minimum 6-mil thick plastic bags, sealed and labeled for disposal.
- D. Accomplish wetting by a fine spray (mist) of Amended Water or removal encapsulant. Saturate the material sufficiently to wet the substrate without causing excess dripping. Allow sufficient time for water or removal encapsulant to penetrate material thoroughly. If Amended Water is used, spray the material repeatedly during the Work process to maintain a continuously wet condition. If a removal encapsulant is used, apply it in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation which has been painted and/or jacket in order to allow penetration of Amended Water or removal encapsulant or, where necessary, carefully strip away the covering while simultaneously spraying Amended Water or removal encapsulant on the installation in order to prevent fiber release.

- E. Continuously mist Work Areas with Amended Water and/or removal encapsulant whenever necessary to prevent fiber release.
- F. Remove saturated ACM in small sections from all areas. Do not permit ACM to dry out. As it is removed, pack the material simultaneously, while still wet, into disposal bags. Twist, bend over, and seal the neck of each bag with minimum 3 wraps of duct tape. Place the bag into another bag.

3.9 GLOVE BAG REMOVAL

- A. Establish a Regulated Work Area (RWA) via asbestos barrier tape, signage and/or construction barriers of 6 mm poly.
- B. Pre-clean any gross contamination, from the immediate Work Areas using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
- C. Use proper tools for removal of ACM and jacketing on piping, including tools necessary for cleanup after removal, all small enough to fit inside the tool pouch.
- D. Install the glove bag around ACM to be removed. Be sure that tools, cleaning, and sealing materials are in the bag prior to installation. Check seals on bags prior to starting removal and recheck as work progresses. Spray material with Amended Water, allow water to soak in then respray. Cut insulation cover with a knife and remove insulation material from pipes.
- E. After insulation is removed, wipe down pipe to remove remaining fibers and thoroughly wash the inside of the bag, pipe or equipment surfaces, and tools. Without removing the wand from the bag, change the spray bottle to an encapsulant material, then respray the inside of bag, pipe or equipment, and ends of exposed insulation material. Evacuate the bag with HEPA vacuum; remove tools from bag; remove bag from pipe, folding inward the sides of the bag, then twist and tape the open end, the wand opening, and the vacuum opening.
- F. Twist, bend over, and seal the open end of each removed glove bag with minimum 3 wraps of duct tape. Place the bag into another bag and twist, bend over, and seal the neck of each bag with minimum 3 wraps of duct tape.
- G. Label each disposal bag with 3 text labels.

3.10 VACUUM REMOVAL

- A. Establish a Regulated Work Area (RWA) via asbestos barrier tape, signage and/or construction barriers of 6 mil poly.
- B. Conduct vacuum removal of ACM with vacuum units that are equipped with HEPA type filters.
- C. Vacuum cleaners used for collection of dust and other loose bulk material:
 - 1. Commercial or industrial vacuum cleaners equipped with HEPA filters capable of removing dust to 0.3 microns diameter at a demonstrated efficiency of 99.97 percent.

2. Minimum Static Lift: 185 inches of water.
3. Minimum Air Flow: 160 cu ft per minute.
4. Minimum Capacity: 4 cu ft.
5. Capable of vacuuming liquids.
6. Suitable for installation on a free-rolling platform.

D. The use of brooms and shovels to clean up friable ACM is prohibited.

3.11 DRY BULK REMOVAL

- A. Bulk removal must be reviewed by OWNER pre-approved by OWNER. It may only be used where wet methods would present a safety hazard.
- B. Dry removal methods may include one more of the following:
 1. HEPA filtration system.
 2. Glovebag system.
 3. Triple wrap of material to be removed in sections.

3.12 ASBESTOS HANDLING AND MANAGEMENT

- A. Manage wastes generated consistent with the procedures set forth in Section 02120 - Waste Management. All roll-off boxes used to receive ACM must be lined, labeled, and lockable in accordance with applicable regulations.
- B. Handle, package, and label asbestos wastes in accordance with 40 CFR 61.150 and CCR, title 13, section 66263.23, and Article 2.9 of this Section.
- C. Asbestos materials shall be kept wet during packaging and shall be placed in leak tight containers or wrapping.
- D. Asbestos shall be carefully lowered to the ground or lower floor without dropping, throwing, sliding, or otherwise damaging or disturbing the material.
- E. Asbestos that's removed from locations more than 50 feet above ground level and not removed as units or in sections shall be transported to the ground via leak-tight chutes or containers.
- F. Keep hazardous and non-hazardous asbestos wastes segregated from one another.

3.13 CLEANUP AND CLEARANCE OF WORK AREAS

- A. Clearance Procedure: Clearance of the Work Area shall be conducted in accordance with the three-step procedure described below.

Step 1.	Preliminary Cleanup	Visual inspection
Step 2.	Lockdown	-----
Step 3.	Final Clearance	Visual Inspection

1. Preliminary Cleanup
 - a. Remove any visible accumulation of asbestos material and debris. Wet clean all surfaces and objects in the Work area and any other contaminated area. Remove asbestos waste in impermeable containers from the Work Area.
 - b. After cleaning the Work Area, wait 24 hours to allow for the settling of dust and again wet clean or clean with HEPA vacuum equipment all surfaces in the Work Area. (Waiting time of 24 hours may be waived by the Professional) After completion of the second cleaning operation, perform a complete visual inspection of the work area to ensure that it is free of visible contamination.
 - c. Upon request from the CONTRACTOR, OWNER'S REPRESENTATIVE will perform a visual inspection. If OWNER'S REPRESENTATIVE finds visible accumulations of dust in the Work Area, the CONTRACTOR shall repeat the wet cleaning as heretofore specified at the CONTRACTOR's expense.

2. Lockdown
 - a. After successful completion of the initial visual inspection, all surfaces and building components from which ACM and PACM were removed (ceilings, walls, piping, and floors) shall receive lockdown encapsulate.
 - b. When the encapsulate is dry, all exposed surfaces shall be wet cleaned and/or HEPA vacuumed. After cleaning, wait a minimum of 16 hours to allow for settling of dust and then wet clean and/or HEPA vacuum again.

3. Final Clearance
 - a. Upon request from the CONTRACTOR, a final visual inspection will be performed by OWNER'S REPRESENTATIVE for the purpose of observing whether the condition of cleaned areas is free of dust, dirt, and debris. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified at the CONTRACTOR's expense.
 - b. OWNER'S REPRESENTATIVE will collect air clearance samples if the abatement was conducted using a negative pressure enclosure or in other RWA's at their discretion. The area will be released if the clearance samples are below acceptable clearance levels (State of Michigan clearance criteria of .05 fibers per cubic centimeter of air). If levels are above acceptable clearance levels, the CONTRACTOR must repeat Steps 2 and 3 at the CONTRACTOR's expense.

3.14 FIELD QUALITY CONTROL

- A. Visual Inspection in a Contained Work Area:
 1. Prior to removal of any ACM and PACM, the CONTRACTOR shall notify OWNER and request a pre-removal inspection. Posting of warning signs, Work Area isolation, installation of decontamination system and all other preparatory steps shall have been taken prior to notification. The CONTRACTOR shall not begin asbestos removal until the OWNER reviews the Work Area preparations.
 2. Upon completion of ACM removal work in each area, visually inspect each Work Area and confirm asbestos-free conditions prior to conducting confirmatory air testing.

3. This inspection will not occur earlier than 24 hours after activities within the area have ceased.
4. Maintain the Contained Work Area in place until OWNER provides approval for their removal.

END OF SECTION

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
Bulk Sample Collection Sheet

ACM Sample #	FS#	FS Description	Homogeneous Area Description	HA#	F/NF	S/TSI/M	Sample Location	Asbestos Result
CI0168/WW118- 001	1	Electrical Room	Concrete	1	NF	S	Center	None Detected
CI0168/WW118- 002	3	Main Screen Room	Cinderblock	2	NF	M	Southeast Corner	None Detected
CI0168/WW118- 003	3	Main Screen Room	Cinderblock Mortar	3	NF	M	Southeast Corner	None Detected
CI0168/WW118- 004	2	South Screen Room	Foam Pipe Insulation	4	F	TSI	Center, South Wall	None Detected
CI0168/WW118- 005	3	Main Screen Room	Mud Fitting on Foam Pipe Insulation	5	F	TSI	Northwest Corner	None Detected
CI0168/WW118- 006	5	Compactor Room	Fiberglass Pipe Insulation	6	F	TSI	Center, South Wall	None Detected
CI0168/WW118- 007	2	South Screen Room	Door Caulk - New Gray	7	NF	M	On Door	None Detected
CI0168/WW118- 008	2	South Screen Room	Door Caulk Remnants - Green	8	NF	M	On Door	None Detected
CI0168/WW118- 009	2	South Screen Room	Window Caulk - Brown	9	NF	M	On Center Window	4% Chrysotile Point Count - 2.00%
CI0168/WW118- 010	2	South Screen Room	Window Glaze - Gray	10	NF	M	On Center Window	<1% Chrysotile Point Count - 0.05%
CI0168/WW118- 011	2	South Screen Room	Slate Window Sill - Black	11	NF	M	On Center Window	None Detected
CI0168/WW118- 012	3	Main Screen Room	Door Caulk - Old Gray	12	NF	M	On Northwest Door	None Detected
CI0168/WW118- 013	3	Main Screen Room	Brick	13	NF	M	Center, South Wall	None Detected
CI0168/WW118- 014	3	Main Screen Room	Brick Mortar	14	NF	M	Center, South Wall	None Detected
CI0168/WW118- 015	3	Main Screen Room	Wall Joint Caulk - Gray	15	NF	M	Center, South Wall	None Detected
CI0168/WW118- 016	2	South Screen Room	Ceramic Block	16	NF	M	Southeast Corner	None Detected
CI0168/WW118- 017	2	South Screen Room	Ceramic Block Mortar	17	NF	M	Southeast Corner	None Detected
CI0168/WW118- 018	6	Building Exterior	Exterior Brick	18	NF	M	East Elevation	None Detected
CI0168/WW118- 019	6	Building Exterior	Exterior Brick Mortar	19	NF	M	East Elevation	None Detected
CI0168/WW118- 020	6	Building Exterior	Window Caulk - Old Gray	22	NF	M	South Elevation	6%
CI0168/WW118- 021	6	Building Exterior	Louvre Caulk - Old Gray	24	NF	M	West Elevation	4% Chrysotile Point Count - 2.75%
CI0168/WW118- 022	6	Building Exterior	Door Caulk - New Gray	20	NF	M	South Door - Compactor	None Detected
CI0168/WW118- 023	6	Building Exterior	Wall Joint Caulk - Gray	21	NF	M	Center, East Wall	<1% Chrysotile Point Count - 0.25%
CI0168/WW118- 024	6	Building Exterior	Door Caulk - Old Gray	25	NF	M	Northwest Door	None Detected
CI0168/WW118- 025	4	Grit Effluent Room	Mud Fitting on Foam Pipe Insulation	5	F	TSI	Roof Drain	None Detected
CI0168/WW118- 026	5	Compactor Room	Mud Fitting on Foam Pipe Insulation	5	F	TSI	Floor Drain	None Detected
CI0168/WW118- 027	3	Main Screen Room	Foam Pipe Insulation	4	F	TSI	Near Steps	None Detected
CI0168/WW118- 028	5	Compactor Room	Foam Pipe Insulation	4	F	TSI	Center	None Detected
CI0168/WW118- 029	6	Building Exterior	Window Glaze - Gray	23	NF	M	South Elevation	<1% Chrysotile Point Count - 0.25%

Sample Collector(s): Jeffrey J. Benya
Sample Collection Date(s): 5/1/18

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Functional Space

FS#	FS Description	Homogeneous Area Description	HA#	Amount	Units	Asbestos
1	Electrical Room	Concrete	1	288	sq.ft.	Negative
1	Electrical Room	Cinderblock	2	700	sq.ft.	Negative
1	Electrical Room	Cinderblock Mortar	3	700	sq.ft.	Negative
1	Electrical Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
1	Electrical Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
2	South Screen Room	Concrete	1	2,400	sq.ft.	Negative
2	South Screen Room	Cinderblock	2	600	sq.ft.	Negative
2	South Screen Room	Cinderblock Mortar	3	600	sq.ft.	Negative
2	South Screen Room	Foam Pipe Insulation	4	50	ln.ft.	Negative
2	South Screen Room	Mud Fitting on Foam Pipe Insulation	5	2	ln.ft.	Negative
2	South Screen Room	Fiberglass Pipe Insulation	6	50	ln.ft.	Negative
2	South Screen Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
2	South Screen Room	Door Caulk Remnants - Green	8	20	ln.ft.	Negative
2	South Screen Room	Window Caulk - Brown	9	240	ln.ft.	Positive
2	South Screen Room	Window Glaze - Gray	10	240	ln.ft.	Negative
2	South Screen Room	Slate Window Sill - Black	11	40	sq.ft.	Negative
2	South Screen Room	Ceramic Block	16	800	sq.ft.	Negative
2	South Screen Room	Ceramic Block Mortar	17	800	sq.ft.	Negative
2	South Screen Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
3	Main Screen Room	Concrete	1	1,600	sq.ft.	Negative
3	Main Screen Room	Cinderblock	2	1,600	sq.ft.	Negative
3	Main Screen Room	Cinderblock Mortar	3	1,600	sq.ft.	Negative
3	Main Screen Room	Foam Pipe Insulation	4	100	ln.ft.	Negative
3	Main Screen Room	Mud Fitting on Foam Pipe Insulation	5	5	ln.ft.	Negative
3	Main Screen Room	Fiberglass Pipe Insulation	6	50	ln.ft.	Negative
3	Main Screen Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
3	Main Screen Room	Door Caulk - Old Gray	12	40	ln.ft.	Negative
3	Main Screen Room	Brick	13	200	sq.ft.	Negative
3	Main Screen Room	Brick Mortar	14	200	sq.ft.	Negative
3	Main Screen Room	Wall Joint Caulk - Gray	15	100	ln.ft.	Negative

*Trace amounts of material was witnessed in wall cracks but could not be sampled

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Functional Space

FS#	FS Description	Homogeneous Area Description	HA#	Amount	Units	Asbestos
3	Main Screen Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
4	Grit Effluent Room	Concrete	1	2,100	sq.ft.	Negative
4	Grit Effluent Room	Cinderblock	2	1,500	sq.ft.	Negative
4	Grit Effluent Room	Cinderblock Mortar	3	1,500	sq.ft.	Negative
4	Grit Effluent Room	Foam Pipe Insulation	4	30	ln.ft.	Negative
4	Grit Effluent Room	Mud Fitting on Foam Pipe Insulation	5	2	ln.ft.	Negative
4	Grit Effluent Room	Door Caulk - New Gray	7	80	ln.ft.	Negative
4	Grit Effluent Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
5	Compactor Room	Concrete	1	2,800	sq.ft.	Negative
5	Compactor Room	Cinderblock	2	1,800	sq.ft.	Negative
5	Compactor Room	Cinderblock Mortar	3	1,800	sq.ft.	Negative
5	Compactor Room	Foam Pipe Insulation	4	100	ln.ft.	Negative
5	Compactor Room	Mud Fitting on Foam Pipe Insulation	5	5	ln.ft.	Negative
5	Compactor Room	Fiberglass Pipe Insulation	6	100	ln.ft.	Negative
5	Compactor Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
5	Compactor Room	Window Caulk - Brown	9	100	ln.ft.	Positive
5	Compactor Room	Window Glaze - Gray	10	100	ln.ft.	Negative
5	Compactor Room	Slate Window Sill - Black	11	5	sq.ft.	Negative
5	Compactor Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
6	Building Exterior	Exterior Brick	18	12,000	sq.ft.	Negative
6	Building Exterior	Exterior Brick Mortar	19	12,000	sq.ft.	Negative
6	Building Exterior	Door Caulk - New Gray	20	240	ln.ft.	Negative
6	Building Exterior	Wall Joint Caulk - Gray	21	500	ln.ft.	Negative
6	Building Exterior	Window Caulk - Old Gray	22	350	ln.ft.	Negative
6	Building Exterior	Window Glaze - Gray	23	350	ln.ft.	Negative
6	Building Exterior	Louvre Caulk - Old Gray	24	200	ln.ft.	Positive
6	Building Exterior	Door Caulk - Old Gray	25	80	ln.ft.	Negative

*Trace amounts of material was witnessed in wall cracks but could not be sampled

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Homogeneous Area

FS#	FS Description	Homogeneous Area Description	HA#	Amount	Units	Asbestos
1	Electrical Room	Concrete	1	288	sq.ft.	Negative
2	South Screen Room	Concrete	1	2,400	sq.ft.	Negative
3	Main Screen Room	Concrete	1	1,600	sq.ft.	Negative
4	Grit Effluent Room	Concrete	1	2,100	sq.ft.	Negative
5	Compactor Room	Concrete	1	2,800	sq.ft.	Negative
1	Electrical Room	Cinderblock	2	700	sq.ft.	Negative
2	South Screen Room	Cinderblock	2	600	sq.ft.	Negative
3	Main Screen Room	Cinderblock	2	1,600	sq.ft.	Negative
4	Grit Effluent Room	Cinderblock	2	1,500	sq.ft.	Negative
5	Compactor Room	Cinderblock	2	1,800	sq.ft.	Negative
1	Electrical Room	Cinderblock Mortar	3	700	sq.ft.	Negative
2	South Screen Room	Cinderblock Mortar	3	600	sq.ft.	Negative
3	Main Screen Room	Cinderblock Mortar	3	1,600	sq.ft.	Negative
4	Grit Effluent Room	Cinderblock Mortar	3	1,500	sq.ft.	Negative
5	Compactor Room	Cinderblock Mortar	3	1,800	sq.ft.	Negative
2	South Screen Room	Foam Pipe Insulation	4	50	ln.ft.	Negative
3	Main Screen Room	Foam Pipe Insulation	4	100	ln.ft.	Negative
4	Grit Effluent Room	Foam Pipe Insulation	4	30	ln.ft.	Negative
5	Compactor Room	Foam Pipe Insulation	4	100	ln.ft.	Negative
2	South Screen Room	Mud Fitting on Foam Pipe Insulation	5	2	ln.ft.	Negative
3	Main Screen Room	Mud Fitting on Foam Pipe Insulation	5	5	ln.ft.	Negative
4	Grit Effluent Room	Mud Fitting on Foam Pipe Insulation	5	2	ln.ft.	Negative
5	Compactor Room	Mud Fitting on Foam Pipe Insulation	5	5	ln.ft.	Negative
2	South Screen Room	Fiberglass Pipe Insulation	6	50	ln.ft.	Negative
3	Main Screen Room	Fiberglass Pipe Insulation	6	50	ln.ft.	Negative
5	Compactor Room	Fiberglass Pipe Insulation	6	100	ln.ft.	Negative
1	Electrical Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
2	South Screen Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
3	Main Screen Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
4	Grit Effluent Room	Door Caulk - New Gray	7	80	ln.ft.	Negative

***Trace amounts of material was witnessed in wall cracks but could not be sampled**

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Homogeneous Area

FS#	FS Description	Homogeneous Area Description	HA#	Amount	Units	Asbestos
5	Compactor Room	Door Caulk - New Gray	7	40	ln.ft.	Negative
2	South Screen Room	Door Caulk Remnants - Green	8	20	ln.ft.	Negative
2	South Screen Room	Window Caulk - Brown	9	240	ln.ft.	Positive
5	Compactor Room	Window Caulk - Brown	9	100	ln.ft.	Positive
2	South Screen Room	Window Glaze - Gray	10	240	ln.ft.	Negative
5	Compactor Room	Window Glaze - Gray	10	100	ln.ft.	Negative
2	South Screen Room	Slate Window Sill - Black	11	40	sq.ft.	Negative
5	Compactor Room	Slate Window Sill - Black	11	5	sq.ft.	Negative
3	Main Screen Room	Door Caulk - Old Gray	12	40	ln.ft.	Negative
3	Main Screen Room	Brick	13	200	sq.ft.	Negative
3	Main Screen Room	Brick Mortar	14	200	sq.ft.	Negative
3	Main Screen Room	Wall Joint Caulk - Gray	15	100	ln.ft.	Negative
2	South Screen Room	Ceramic Block	16	800	sq.ft.	Negative
2	South Screen Room	Ceramic Block Mortar	17	800	sq.ft.	Negative
6	Building Exterior	Exterior Brick	18	12,000	sq.ft.	Negative
6	Building Exterior	Exterior Brick Mortar	19	12,000	sq.ft.	Negative
6	Building Exterior	Door Caulk - New Gray	20	240	ln.ft.	Negative
6	Building Exterior	Wall Joint Caulk - Gray	21	500	ln.ft.	Negative
6	Building Exterior	Window Caulk - Old Gray	22	350	ln.ft.	Negative
6	Building Exterior	Window Glaze - Gray	23	350	ln.ft.	Negative
6	Building Exterior	Louvre Caulk - Old Gray	24	200	ln.ft.	Positive
6	Building Exterior	Door Caulk - Old Gray	25	80	ln.ft.	Negative
1	Electrical Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
2	South Screen Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
3	Main Screen Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
4	Grit Effluent Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed
5	Compactor Room	Vermiculite (inside CMU Walls)	26	?	sq.ft.	Assumed

*Trace amounts of material was witnessed in wall cracks but could not be sampled

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
Homogeneous Area List

Homogeneous Area Description	HA#	Asbestos
Concrete	1	Negative
Cinderblock	2	Negative
Cinderblock Mortar	3	Negative
Foam Pipe Insulation	4	Negative
Mud Fitting on Foam Pipe Insulation	5	Negative
Fiberglass Pipe Insulation	6	Negative
Door Caulk - New Gray	7	Negative
Door Caulk Remnants - Green	8	Negative
Window Caulk - Brown	9	Positive
Window Glaze - Gray	10	Negative
Slate Window Sill - Black	11	Negative
Door Caulk - Old Gray	12	Negative
Brick	13	Negative
Brick Mortar	14	Negative
Wall Joint Caulk - Gray	15	Negative
Ceramic Block	16	Negative
Ceramic Block Mortar	17	Negative
Exterior Brick	18	Negative
Exterior Brick Mortar	19	Negative
Door Caulk - New Gray	20	Negative
Wall Joint Caulk - Gray	21	Negative
Window Caulk - Old Gray	22	Negative
Window Glaze - Gray	23	Negative
Louvre Caulk - Old Gray	24	Positive
Door Caulk - Old Gray	25	Negative
Vermiculite (inside CMU Walls)	26	Assumed

***Trace amounts of material was witnessed in wall cracks but could not be sampled**

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
Functional Space List

FS#	FS Description
1	Electrical Room
2	South Screen Room
3	Main Screen Room
4	Grit Effluent Room
5	Compactor Room
6	Building Exterior

City of Ann Arbor
 Waste Water Treatment Plant
 Screen Grit Building
 Paint Sample Sheet

Pb Sample #	FS#	FS Description	Homogeneous Area Description	Color	Pb Sample Location	Pb Results (% by weight)
CI0168/WW118-L-001	5	Compactor Room	Concrete	White	Center	<0.010
CI0168/WW118-L-002	3	Main Screen Room	Brick	White	Center, South Wall	<0.010
CI0168/WW118-L-003	3	Main Screen Room	Cinderblock	White	Northwest Corner	<0.010
CI0168/WW118-L-004	3	Main Screen Room	Concrete	Gray	Northeast Corner	<0.010
CI0168/WW118-L-005	3	Main Screen Room	Metal Door Frame	Green	On Northwest Door	<0.010
CI0168/WW118-L-006	3	Main Screen Room	Stair Stringer	White	West Steps	<0.010
CI0168/WW118-L-007	3	Main Screen Room	Stair Rail	Yellow	West Steps	<0.010

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Material

FS#	FS Description	Homogeneous Area Description	Color	Pb Results (% by weight)
3	Main Screen Room	Concrete	Gray	<0.010
5	Compactor Room	Concrete	White	<0.010
1	Electrical Room	Concrete	White	<0.010
2	South Screen Room	Concrete	White	<0.010
3	Main Screen Room	Concrete	White	<0.010
4	Grit Effluent Room	Concrete	White	<0.010
3	Main Screen Room	Cinderblock	White	<0.010
1	Electrical Room	Cinderblock	White	<0.010
2	South Screen Room	Cinderblock	White	<0.010
4	Grit Effluent Room	Cinderblock	White	<0.010
5	Compactor Room	Cinderblock	White	<0.010
3	Main Screen Room	Brick	White	<0.010
1	Electrical Room	Metal Door	Gray	Not Sampled
2	South Screen Room	Metal Door	Gray	Not Sampled
4	Grit Effluent Room	Metal Door	Gray	Not Sampled
5	Compactor Room	Metal Door	Gray	Not Sampled
5	Compactor Room	Metal Door	Green	Not Sampled
3	Main Screen Room	Metal Door	Green	Not Sampled
1	Electrical Room	Metal Door Frame	Gray	Not Sampled
2	South Screen Room	Metal Door Frame	Gray	Not Sampled
4	Grit Effluent Room	Metal Door Frame	Gray	Not Sampled
5	Compactor Room	Metal Door Frame	Gray	Not Sampled
3	Main Screen Room	Metal Door Frame	Green	<0.010
5	Compactor Room	Metal Door Frame	Green	<0.010
3	Main Screen Room	Stair Rail	Yellow	<0.010
3	Main Screen Room	Stair Stringer	White	<0.010

City of Ann Arbor
Waste Water Treatment Plant
Screen Grit Building
List by Material

FS#	FS Description	RBM #	RBM Description	RBM Amount
3	Main Screen Room	3	Thermostats	1
1	Electrical Room	4	Fire Extinguishers	1
2	South Screen Room	4	Fire Extinguishers	1
3	Main Screen Room	4	Fire Extinguishers	3
4	Grit Effluent Room	4	Fire Extinguishers	1
1	Electrical Room	7	Emergency Lights	1
2	South Screen Room	7	Emergency Lights	1
3	Main Screen Room	7	Emergency Lights	2
1	Electrical Room	11	Switch Gear	50
2	South Screen Room	11	Switch Gear	5
3	Main Screen Room	11	Switch Gear	6
5	Compactor Room	11	Switch Gear	5
1	Electrical Room	12	HID Bulbs	2
2	South Screen Room	12	HID Bulbs	8
3	Main Screen Room	12	HID Bulbs	15
4	Grit Effluent Room	12	HID Bulbs	8
5	Compactor Room	12	HID Bulbs	6
1	Electrical Room	13	Transformers	2
2	South Screen Room	14	Exit Signs	1
3	Main Screen Room	14	Exit Signs	4
5	Compactor Room	14	Exit Signs	1

SECTION 02201

MONITORING VIBRATIONS

A. Description



This work shall consist of furnishing all the necessary labor, materials, and equipment to monitor vibrations at the Headworks Building during construction of the Odor Control Building, including associated piping and services, and to assure that vibrations are within the tolerances set forth in this Section. Construction activities include, but are not limited to, the installation of sheeting and the demolition of existing portions of the Headworks Building structure. The existing structures adjacent to the proposed construction, which are designated to remain, shall not be damaged throughout the project. The contractor is referred to AASHTO Designation: R 8-96 "Standard Recommended Practice for Evaluation of Transportation-Related Earthborne Vibrations" for guidance in addition to this Section.

B. Vibration Monitoring

The Contractor shall retain the services of a vibration consulting firm with personnel to conduct the following vibration monitoring requirements:

1. Submitting of monitoring plans and daily reports, overseeing installation of the vibration monitoring equipment and interpretation of vibration monitoring data shall be performed by personnel with the following qualifications:
 - A. Must be a Professional Engineer currently registered in the State of Michigan.
 - B. Must have a minimum of five years' experience in the vibration consulting field.
 - C. Must have successfully completed at least five projects that involved monitoring vibrations and evaluating effects of vibrations on structures.
2. Installation and monitoring of the vibration monitoring equipment, and collection of the vibration monitoring data shall be performed by personnel with the following qualifications.
 - A. Must have at least three years of experience in the operation of the proposed monitoring equipment and interpretation of data produced by such equipment.
 - B. Must have installed, operated, monitored, and interpreted vibration monitoring equipment and data on at least five projects that involved monitoring vibrations and evaluating the effects on structures.

The qualifications shall be submitted to the Engineer for review and approval at least one week prior to the start of monitoring.

C. Survey/Structure Monitoring Points

Engage a Land Surveyor or Professional Engineer currently licensed in the State of Michigan to survey adjacent existing buildings, structures, and site improvements, establishing exact elevations at fixed points to act as Structure Monitoring Points (SMP). Clearly identify SMPs and record existing elevations before any vibration producing construction operations commence.

1. During construction and dewatering, regularly resurvey SMPs, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in the adjacent structures.

D. Construction

The Contractor's vibration consultant shall develop a detailed vibration and SMP monitoring program, install all the necessary vibration monitoring equipment, monitor vibrations and SMPs during vibration-inducing operations, and interpret vibration monitoring data throughout construction. The vibration consultant's monitoring program shall be submitted to the Engineer for approval one week prior to the start of construction. The following items must be met:

1. The consultant's monitoring plan shall be developed in accordance with AASHTO R 8-96. The instrumentation locations, monitoring procedures, and a description of the monitoring devices and/or the manufacturer's brochures shall be included in the submitted plan. The monitoring plan should also include the locations and numbering system for the proposed SMPs defined above. The Plan should include a minimum of two (2) vibration monitoring locations and ten (10) SMPs.
2. The record peak particle velocity (PPV) at the ground surface along a direct line to the nearest adjacent structures should not exceed 0.50 inch/sec. Any records in excess of this particle velocity shall require immediate cessation of the construction activities that are responsible for the excess ground vibration.
3. All SMPs should be surveyed and recorded on a weekly basis during vibration activities. Settlement shall not exceed 0.5 inch over the course of the project. Green conditions are maintained when settlement is less than 0.25 inch and weekly recordings should continue. Yellow conditions are considered when recorded settlements are greater than 0.25 inch but less than 0.5 inch. Under Yellow conditions, the Contractor shall notify the Engineer and survey frequency at all SMPs should be increased to daily and field data reported to the Engineer within 24 hours of recordings. When SMP data exceeds 0.5 inch, all construction activities shall cease, and the Contractor shall submit a contingency plan for structure stabilization for Engineer Approval.
4. Should records of peak particle velocity or settlement of SMPs exceed the limits set forth above, construction activities shall cease and:
 - A. The Engineer shall be notified immediately.
 - B. A Corrective Action Plan (CAP) shall be submitted:
 1. The CAP shall be developed by the Contractor and shall identify any necessary changes in equipment or procedures associated with demolition of existing structures, installation of sheeting, material handling, storage, placement and compaction of embankment fills or backfills or any other construction activities producing excessive levels of ground vibration.
 2. Changes shall reduce construction vibrations to meet the limits set forth in this Section.

3. The Contractor shall not be granted additional expenses or additional time for shut down associated with preparation of the CAP, including time required for review and approval of the CAP by the Engineer.
 4. The Contractor shall not be granted additional expenses associated with changes to means and methods as identified in the approved CAP, including changing equipment, materials, or means of demolition, installation, or construction. The Contractor cannot resume operations until the CAP is approved and the Contractor is instructed to do so by the Engineer.
5. Provide daily reports to the Engineer within 24 hours when vibration-inducing operations are taking place. The following shall be included:
- A. The source of the vibration readings.
 - B. A plot of the ten highest readings (occurrences) on a graph of Particle Velocity (in/sec) vs. Frequency (Hz). Include the U.S. Bureau of Mines (USBM) RI 8507 curve on the same graph.
 - C. Instances, dates, and times when recordings exceeded the threshold limits.
 - D. On a weekly basis, provide a summary report of the vibration data recorded with commentary regarding the activities, recorded data, along with comparison to the allowable vibration limits defined above.
 - E. On a weekly basis, provide a summary report of the SMP data collected with commentary regarding recorded events versus allowable limits. Plot an ongoing graph with settlement versus time graphically showing the settlement progression for all SMP locations.
 - F. At the end of the vibration inducing portion of the project, produce a Log PPV vs. Log Distance Plot based upon all the data collected and estimate the distance from the vibration source where PPV exceeds 0.5 in/sec.

The Contractor shall protect all vibration monitoring equipment and SMPs for the duration of the project. The Contractor shall have complete responsibility for the monitoring and control of vibrations, prevention of consequent settlement and/or damage to the existing structures adjacent to the project site and for repair of any damage whatsoever resulting from operations. Repairs due to damage shall be at the Contractor's expense.

END OF SECTION

SECTION 08305

ACCESS HATCHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Floor access hatches for sump pumps.

1.2 RELATED SECTIONS

- A. Section 03300 - Concrete Work: Openings in concrete.

1.3 DESIGN REQUIREMENTS

- A. Fabricate structure access hatches at grade for H-20 wheel loading.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate exact position of all access units.
- C. Product Data: Provide sizes, types, finishes, scheduled locations, and details of adjoining work.
- D. Manufacturer's Installation Instructions: Indicate installation requirements, rough-in dimensions and required hardware for complete installation.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.
- B. Record actual locations of all access hatch units.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with manufacturer's requirements.
- B. Maintain one copy of each document on site.

1.7 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on approved shop drawings.

1.8 COORDINATION

- A. Coordinate work under provisions of Section 01039.

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- B. These hatches will be incorporated into the pre-cast concrete top slabs, and thus coordination of the work is required with structural concrete work, discussed in Specification Section 03300 – Concrete and included in the Contract Drawings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Bilco
- B. Halliday
- C. Substitutions: Under provisions of Section 01300.

2.2 ACCESS UNITS - FLOORS AND EXTERIOR

- A. Interior and exterior: Single and double leaf hatches with 1-1/2 inch drain coupling for concrete opening sizes as shown on the Drawings:
 - 1. Model "J-AL" and "J-DAL" as manufactured by Bilco.
 - 2. Model "H1R" and "H2R" as manufactured by Halliday.
- B. All hatches shall be supplied with fall protection grating.
 - 1. Grating shall be fiberglass, rated for a 300 PSF live load
 - 2. Grating shall be attached to the hatch and hinged.
 - 3. Pump hatches shall be provided with two (2) fall protection gratings; so that one can be left in the down position while the other grating is in the up position.
- C. All hatches shall be equipped with exposed padlock clips and slam locks with removable key wrenches.
- D. Weatherproof Locks
 - 1. Each access hatch shall be provided with a Master/American A6571 weatherproof padlock.
 - 2. Padlocks shall be keyed to Owners WWTP key system.

2.3 FABRICATION

- A. Fabricate floor hatch frames of 1/4 inch aluminum. Non-drainage type units shall have built-in neoprene perimeter cushion with strap anchors bolted to the exterior. Drainage coupling type units shall have channel flange with built-in continuous perimeter anchor flange.
- B. Fabricate floor hatch door leaf of 1/4 inch aluminum diamond plate.
- C. Reinforce hatches as specified under Design Requirements.
- D. Weld, fill, and grind joints to assure flush and square unit.
- E. Hardware for Floor Access Hatches:
 - 1. All hardware including all parts of the latching and lifting mechanisms shall be stainless steel.

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2. Hinge: 90 degree, heavy duty stainless steel with stainless steel pins, lock open device, counter balanced or compression spring assisted operation.
3. Lock:
 - a. Interior hatches - snap lock with removable handles.
 - b. Exterior hatches - Padlock hasp installed in frame recess protected by a hinged door. Provide two, tamper-proof, security type stainless steel threaded bolts thru hinged door to fasten door in place when hatch is not in use.
4. Automatic hold open arm with vinyl grip release handle.

2.4 FINISHES

- A. Floor/Basin Access Hatch Base Metal: Aluminum shall be mill finish.
- B. Aluminum Surfaces shall be backcoated with an Owner approved epoxy/sealer (Tnemec Series N69, Carboline Rustbond penetrating sealer; or Sherwin-Williams Macropoxy 646 or Amerlock sealer) prior to installation in the concrete top slab to provide separation of dissimilar materials.
- C. Finish: Exterior hatches – Factory mill finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings for hatch and frame are correctly sized and located.

3.2 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in opening. Secure rigidly in place.
- C. Turn all keys, removable key wrenches and padlock keys over to the Owner.

END OF SECTION

Spectacular

SECTION 10441

SIGNS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Metal, raised letter, Room Identification signs.
- B. Metal, painted safety signage.
- C. Miscellaneous mounting hardware and anchors.

1.2 RELATED SECTIONS

- A. Section 15400 Common Results for Plumbing: Industrial water "Unsafe Water" signage.

1.3 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01300.
- B. Submit shop drawings listing sign styles, lettering and locations, and overall dimensions of each sign.
- C. Submit full size drawing of plaque indicating actual text size, spacing, and width.
- D. Submit samples under provisions of Section 01300.
- E. Submit two samples illustrating full size sample sign, of type, style and color specified including method of attachment.
- F. Submit manufacturer's installation instructions under provisions of Section 01300.
- G. Include installation template and hardware.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01600.
- B. Store and protect products under provisions of Section 01600.
- C. Package signs, labeled in name groups.
- D. Store adhesive tape at ambient room temperatures.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesive tape mounted signs when ambient temperature is below 70 degrees F (21 degrees C). Maintain this minimum during and after installation of signs for adhesive to cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Room Identification Signs:
 - 1. Geisler Marking Incorporated - Raised Letter Aluminum
 - 2. Nelson Harkins: Product - TS-350
 - 3. Face Color: Black
- B. Safety Signage:
 - 1. Stonehouse
 - 2. Seton Name Plate Company
 - 3. Brady, USA, Inc.
 - 4. Face Color: As noted in schedule.
- C. Substitutions: Under provisions of Section 01600.

2.2 LETTERING

- A. Room Identification Signs:
 - 1. Size and Style: Minimum 5/8 inch, maximum 2 inch high upper case Helvetica, 1/32 inch raised, with Grade II Braille, conforming to Specification #800, National Library Service, Library of Congress.
 - 2. Color: Aluminum satin anodized.
- B. Safety Signage:
 - 1. Per MIOSHA requirements.
 - 2. Colors: As noted in schedule.
- C. Safety Sign Types:
 - TYPE A: Signal word DANGER shall be all capital gothic white letters on red oval within a black rectangle, with message in black letters Gothic letters on white; maximum 12 characters per line.
 - TYPE B: Signal word CAUTION shall be all capital gothic yellow letters on black rectangle with the message in black on yellow background; maximum 12 characters per line.
 - TYPE C: Signs shall have white gothic letters on red background; maximum 12 characters per line.
 - TYPE D: Signs shall have white gothic letters on green background; maximum 12 characters per line.

2.3 ACCESSORIES

- A. Room Identification Signs: tape adhesive, double sided tape, permanent adhesive.
- B. Safety Signage: Non-corrosive, stainless steel, theft-proof mounting screws and anchors for required for substrate.

2.4 FABRICATION

- A. Room Identification Signs: Aluminum, with raised letters; no border; background size as required to accommodate letters.
- B. Safety Signage: .063 inch aluminum with painted or vinyl overlay background, blunt corners, and lettering; size 10 x 14 inch; fire extinguisher signage size may be 4 x 18 or 9 x 12 inch, oriented vertically or horizontally.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Provide signage for each of the rooms or areas identified in the Signage Schedule.
- B. Provide safety signage as indicated in the Signage Schedule.
- C. Verify that surfaces are ready to receive work.
- D. Beginning of installation means installer accepts existing surfaces.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and current State of Michigan Barrier Free requirements.
- B. Install signs after surfaces are finished, in locations adjacent to the doors (or adjacent to accessories for safety signage), at the required heights to meet current State of Michigan Barrier Free, and applicable NFPA, MIOSHA requirements.
- C. Use fasteners appropriate for the substrate.
- D. Locate sign on wall surface, level.
- E. Clean and polish.

3.3 SIGNAGE SCHEDULE

<u>TEXT</u>	<u>NO. REQ'D.</u>	<u>TYPE</u>
<u>SAFETY SIGNAGE:</u>		

FIRE EXTINGUISHER	4	C
NON-POTABLE WATER – DO NOT DRINK	8	B
<u>ROOM IDENTIFICATION SIGNS:</u>		
DRY PIT	1	
ODOR CONTROL	1	
ELECTRICAL ROOM	1	

END OF SECTION

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SECTION 11413

GRIT REMOVAL SYSTEM & WASHER

PART 1 GENERAL

1.1 SUMMARY OF WORK

- A. Furnish all labor, materials, tools, equipment, and supervision required to complete Grit Removal System (including Grit Collector and Grit Washer equipment) installation, as indicated on the drawings and specified herein, and all other work incidental thereto, except as otherwise noted.
- B. Contractor shall furnish, install, and place into satisfactory operating condition two (2) Grit Collectors for collecting and condensing grit particles and two (2) Grit Washer units for removing, washing, and conveying grit particles before discharging the material into a dumpster and as shown on the drawings and described in this specification section.
- C. It is the intent of these specifications that all equipment called for under this section shall be supplied by a single supplier.

1.2 ITEMS SPECIFIED ELSEWHERE

- A. Section 01300 – Submittals including Shop Drawings
- B. Section 01730 – Operation and Maintenance Manuals.
- C. Section 05500 – Metal Fabrications.
- D. Section 11112 – Horizontal Recessed Impeller Pumps
- E. Section 11414 – Grit Removal Performance Testing
- F. Section 15000 – Equipment, General.
- G. Section 15060 - Pipe & Pipe Fittings.
- H. Section 15170 - Motors

1.3 SYSTEM DESCRIPTION

- A. The grit collector shall include the following components:
 - 1. Lamella trays and support frame within existing North and South Grit Chambers
 - 2. Lower horizontal shafted grit auger with trough liner, drive motor and gearbox assembly
 - 3. Controls and appurtenances. Control panel shall include necessary starters and breakers for equipment for each grit removal system.

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- B. The grit washer shall include the following components:
1. Grit washer tank installed within Dumpster Room
 2. Central inlet vortex chamber
 3. Coanda tulip for directing inflowing grit slurry in radial direction to a circumferential overflow weir
 4. Conical stratification tank with cover
 5. Stirring device with gear motor
 6. Fluidized grit bed at the bottom of the stratification tank for intensive grit washing and separation of particles dependent on their specific gravity difference
 7. Grit conveying and dewatering auger
 8. Controls and appurtenances

1.4 SUBMITTALS

- A. Shop drawings: Include the following:
1. Provide a copy of this specification section, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check-marks (✓) shall denote full compliance with a paragraph as a whole. Deviations shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the CONTRACTOR with the specifications. Include a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
 2. A copy of the Contract Document control diagrams and process and instrumentation diagrams relating to the submitted equipment, with addendum updates that apply to the equipment in this Section, marked to show specific changes necessary for the equipment proposed in the submittal. If no changes are required, the drawing or drawings shall be marked "no changes required". Failure to include copies of the relevant drawings with the submittal shall be cause for rejection of the entire submittal with no further review.
 3. Detailed mechanical and electrical drawings showing the equipment dimensions, locations of connections, weights of associated equipment and wiring diagrams. Mechanical drawing shall provide exploded view detail of pump components.
 4. Make, model, weight, and horsepower of each equipment assembly.
 5. Manufacturer's data, descriptive literature, bulletins, and catalogs indicating the general description, specifications, and limitations for collective system and individual components.
 6. Bill of Materials for equipment showing materials of construction and part numbers.
 7. Motor nameplate data, as defined by NEMA MG 1, motor manufacturer, and including any motor modifications.
 8. Factory finish system.
- B. Informational Submittals:
1. Operation and Maintenance (O&M) Manuals
 2. Warranty Certificate.
 3. Bearing L-10 life calculations.
 4. Installation Inspection Report

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5. Certification of satisfactory field testing of each unit as specified.
6. Field and Performance testing procedures and reports on results

1.5 REFERENCES

- A. Manufacturer shall provide equipment adhering to all references listed below including all related sections within the publications listed. Contractor shall follow all applicable publication sections when installing and erecting equipment as listed below and specified by manufacturer.
 1. American Society for Testing and Materials (ASTM) Publications:
 - a. Section A322: Carbon and Alloy Steel Bar Specifications.
 - b. Section A507-10: Standard Specification for Drawing Alloy Steel, Sheet and Strip, Hot-Rolled and Cold Rolled
 2. Anti-Friction Bearing Manufacturers Association (AFBMA) Publications:
 - a. Standard 9-90 Load Ratings and Fatigue Life for Ball Bearings.
 - b. Standard 11-90 Load Ratings and Fatigue Life for Roller Bearings.
 3. American Institute of Steel Construction (AISC) Publications
 4. American Welding Society (AWS) Publications
 - a. D1.1 Structural Welding Code
 5. American Structures Painting Council (ASPC) Publications

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Each grit collector shall include lamella settling trays and lower horizontal shafted grit auger, and be model HUBER Lamella Grit Trap Grit Wolf® Size 7 manufactured by HUBER Technology, Inc. The substitution policy does not apply to this item.
- B. Each grit washer shall include a coanda tulip for directing inflowing grit slurry in radial direction to a circumferential overflow weir, conical stratification tank with cover, stirring device with gear motor, fluidized grit bed at the bottom, grit conveying and dewatering auger and be model HUBER Coanda Grit Washer, RoSF4 2 manufactured by HUBER Technology, Inc. The substitution policy does not apply to this item.

2.2 GENERAL MATERIALS

- A. Material requirements listed are applicable for the Grit Collector and Grit Washer unless otherwise specified.
- B. All stainless-steel components and structures shall be submersed in a chemical bath of nitric acid and hydrofluoric acid (pickling bath) to remove any residues that may be present on the material as a result of forming, manufacture, or handling. After removal from the pickling bath, the equipment must be washed with a high-pressure wash of cold water to remove any remaining surface debris and promote the formation of an oxidized passive layer which is critical to the long life of the stainless steel. No stainless steel components may be fabricated or assembled in a factory where carbon steel products are also fabricated, in order to prevent

contamination by rust. Glass bead or sand blast or chemically treatment processes not based on nitric acid / hydrofluoric acid for stainless steel shall not be allowed.

- C. All welding in the factory shall use shielded arc, inert gas, MIG or TIG method. Filler wire shall be added to all welds to provide for a cross section equal to or greater than the parent metal. Butt welds shall fully penetrate to the interior surface and gas shielding to interior and exterior of the joint shall be provided.
- D. Equipment manufacturer shall furnish all anchor bolts of ample size and strength required to securely anchor each item of equipment. Anchor bolts shall be wedge or epoxy type and set by the Contractor. Bolts, nuts, and washers shall be selected from AISI 316L stainless steel such that they are anti-seizing. Equipment shall be placed on foundations, leveled, shimmed, bolted down, and grouted with non-shrinking grout.
- E. Electric motors, gear reducers, and other self-contained or enclosed components shall have an acrylic enamel finish.
- F. Manufacturer shall provide the following spare parts within package system; one perforated diaphragm (membrane), one complete solenoid valve assembly, and one set of all special tools, if required.

2.3 GRIT COLLECTOR PERFORMANCE DATA

- A. Manufacturer shall provide unit adhering to the following performance criteria.
 - 1. Grit Collector

Number of Units	2 – North & South Grit Collectors
Peak Design Flow per Unit	30.0 MGD
Average Flow per Unit	18.5 MGD
Grit Removal Efficiency @ Peak Flow	90% ≥ 212 micron
Grit Removal Efficiency @ Average Flow	95% ≥ 125 micron
Total Lamella Surface Area per Unit	1442 ft ²
Loading Rate @ Peak Flow	14.46 GPM/ft ²
Outlet Weir Headloss @ Peak Flow (North)	6 inches
Outlet Weir Headloss @ Peak Flow (South)	6 inches

2.4 GRIT COLLECTOR MATERIALS & DETAILS

- A. The entire unit shall be manufacturer from AISI 304L stainless steel unless otherwise noted.
- B. Grit Collector:
 - 1. Grit particles shall flow into the grit collector and through the lamella tray inserts, trays where grit shall settle out by gravity through the lamellas and drop down to the bottom of the concrete grit tank. Flow shall continue through the system and over the outlet channel weir.
 - 2. Grit collected at the bottom shall be removed axially by a time-controlled shafted horizontal grit auger conveyor and sent to a collection chamber. A grit slurry pump as specified in Section 11112 shall pump the grit slurry mixture out from the collection chamber by non-continuous operation and into a Grit Washer unit for grit treatment.
 - 3. Side baffles shall be included in 304SS construction with lifting points, 0.12” (3mm) thickness, and shall be mounted directly to the front of the lamella tray package frame,

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as shown on the drawings. Baffles shall have sturdy neoprene gasket bolted to the downstream face of the baffle along the vertical edge of baffle to be installed near the lamella plate. Gasket shall be wide enough to seal the space between the side baffles and lamella plates, approximately 2". Baffles will be fabricated and installed by the Contractor per the details on the Drawings.

4. Front baffle shall be included in 304SS construction with lifting points, 0.12" (3mm) thickness, and shall be mounted directly to the concrete channel floor by anchor bolts.

C. Lamella Tray

1. Lamella tray inserts shall be made from polypropylene material and shall be constructed within a 304L stainless steel lamella tray support frame. The spacing between each lamella plate shall be 3.14-inches (80mm) and shall have a thickness of 1/4 inches (6 mm). Lamella packages shall be double tray version that shall be supported to a 304L stainless steel structural frame and attached to the concrete channel walls by supporting steel angles. Each double lamella tray package shall have a minimum width of 9.75-feet, height of 6.48-feet and depth of 3.6-feet. The overall width of channel required shall not exceed 11-feet.
2. Lamella trays shall be sloped 55 degrees for enhancing grit capture efficiency and shall be a removable design from the channel. Trays that are non-modular to facilitate ease of removal for maintenance are not acceptable.
3. Support frame and lamella trays shall be assembled on site by Contractor before installation into concrete chamber.

D. Grit Auger

1. The horizontal grit auger shall have a minimum diameter of 12.75" (324mm) with a minimum shaft diameter of 4.5" (114mm). The auger flights shall be a minimum of 1/4" (6mm) thick.
2. The horizontal grit auger shall be supported by the drive at one end and along their length by sectional bearing liner that shall have a thickness of 0.315" (8mm) and shall be constructed of high-density polyethylene (HDPE) material. Grease lubricated bearings are not acceptable. A trough constructed of 316 stainless steel shall be provided with the auger. Trough shall be designed to restrain auger liners from movement and allow for replacement of the liner with the use of removable restraining brackets.
3. The drive ends of the horizontal auger shaft tube shall be machined and shrink-fitted with solid stainless-steel stubs. The horizontal grit auger shall be a two-section design to facilitate ease of installation and maintenance as required.
4. Wall pipe shall be provided for drive end of auger to pass through the wall and allow for connection to drive motor and gearbox assembly located in the dry well. Lantern shall be provided to connect wall pipe to gearbox assembly and house auger gland seal assembly. Cover plate constructed of 304SS shall be provided to seal wall penetration.
5. The grit auger shall transport grit to the collection chamber before pumping by timer control.
6. The horizontal grit auger motor power shall be a minimum of 2.0 HP. The auger shall be driven by a shaft mounted gearbox and motor. The gearbox shall have a minimum service factor of 1.0 equivalent to an AGMA Class I rating.
7. The horizontal grit auger drive shall be equipped with a 3-phase, 60 Hertz, 230/460 volt, Class 1, Division 1, continuous-duty motor with leads to a conduit box for

outdoor operation. The motor and gearbox shall be mounted to a stainless-steel plate and fastened to the concrete channel walls.

8. Chain drives, belt drives, hydraulic drives for the transport auger will not be acceptable for this project.
9. Manufacturer will provide alignment and installation instructions for the Contractor to follow closing to confirm the auger is aligned within the channel.

2.5 GRIT WASHER PERFORMANCE DATA

A. Manufacturer shall provide unit adhering to the following performance criteria.

1. Grit Washer

Number of Units	2
Grit Processing Capacity per Unit	1.5 ton/hr
Maximum Pumped Flow Rate	300 GPM
Removal Efficiency @ Design Flow	95% ≥ 106 micron
Maximum Volatile Content @ Design Flow	5%
Maximum Water Content @ Design Flow	10%
Minimum Weir Length	19.6 feet
Headloss @ Design Flow	9.84 inches
Approximate Empty Weight	2470 lbs
Approximate Loaded Weight	15880 lbs
Wash Water Consumption	22 GPM
Wash Water Minimum Pressure	29 psi
Tank Water Surface Area	30.5 ft ²
Weir Overflow Rate including wash water	0.031 ft ² /sec




2.6 GRIT WASHER MATERIALS & DETAILS

A. Two Grit Washer units shall be installed within the Dumpster Room as shown on the Drawings.

B. Grit Washer Tank

1. Water containing grit from a grit chamber shall be introduced through a 6 inch inlet into the vortex chamber, creating a rotating flow pattern, and through the Coanda tulip into the grit washer tank. The maximum allowable influent velocity into the grit washer tank shall be less than 0.5 ft/s. The grit slurry mixture shall be fed directly to the grit washing unit without the need for additional screening via a drum screen, designs requiring a screen to meet the performance requirements shall not be allowed. Designs incorporating a tangential side inlet entry shall not be acceptable.
2. The inlet connection of the grit washer unit shall be rotatable 360 degrees for site adjustment. Designs that incorporate a fixed inlet connection or that rotate less than 360 degrees shall not be allowed.
3. The water flow is directed by the Coanda from an axial flow to a radial flow towards the overflow weir that is provided at the circumference of the grit washer tank. This change of the flow direction leads to effective sedimentation of the grit towards the bottom of the grit washer tank. The grit washer tank shall have a minimum of 0.10” wall thickness.
4. The classified water shall pass over the overflow weir with a length of 19.6-feet and discharge out of a single 8-inch clean water outlet.

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5. Effective stratification of particles, depending on their specific density, but not depending on their particle size and weight, shall be achieved within the conical portion of the grit washer tank.
6. A 4-inch connection with an automatically operated one quarter-turn ball valve shall be provided for removal of organic material out of the conical section of the tank. The ball valve shall be directly flanged to the conical tank without any adapter or connection pieces to avoid clogging issues. The ball valve shall have a PVC body and ball to prevent binding when in contact with abrasive materials. Metallic ball valves which can bind in highly abrasive applications shall not be acceptable.
7. A 110VAC, single phase, electrically operated actuator shall be provided to provide automatic control of the ball valve. The actuator shall only be acceptable for the grit washer unit. The actuator shall be suitable for operation in a Class 1, Division 1 hazardous location. The stirrer shall move organic matter toward this connection. Organics outlet pipe shall be connected to the overflow outlet piping and shall discharge flow downstream of the grit removal system.
8.  A 3-inch automatically operated one quarter-turn ball valve shall be provided for flushing the organics line with non-potable water after the cycling of each organics discharge. Ball valve shall be full port, 316 SST construction with 150# flanges and PTFE seats and seals. The electric valve actuator shall be as specified in section 2.6.B.7.
9. A 110VAC, single phase, pressure probe by VEGA shall be mounted in the bottom of the grit settling area to monitor the grit level within the tank and to control the operation of the grit stirrer and grit removal auger. The pressure probe shall be suitable for installation in a Class 1, Division 1 hazardous location.

C. Fluidized Grit Bed

1. A fluidized grit bed shall be maintained in the bottom portion of the grit washer tank. Within this fluidized bed, the grit is intensively washed and organic material is effectively removed from mineral particles.
2. The grit washer shall be designed for a water supply of 22gpm with a minimum pressure of 29psi with a single 1-inch connection point for connecting to the treatment plants final effluent water supply.
3. Wash water shall be introduced into the bottom of the grit washer and dispersed through a perforated diaphragm to generate the fluidized bed in the bottom portion of the grit washer. This wash water shall also effectively flush the organic components out of the fluidized bed towards the overflow weir.
4. Wash water through the perforated plate diaphragm shall be distributed uniformly in order to reduce grit sedimentation on the bottom of the grit tank. The perforated plate neoprene diaphragm shall have a 2mm thickness.
5. The wash water manifold will be provided with a variable area flow meter with a transparent PVC casing to allow visual inspection of the internal float for manual flow rate confirmation. The variable area flow meter shall be factory installed and attached to the grit washer unit before shipment.
6. Wash water control shall be provided via a 1-inch 110V, 60Hz, Class 1, Division 1 solenoid valve.

D. Grit Screw

1. Washed grit shall be removed through a central tube at the bottom of the grit washer. The stirrer shall move washed grit to the central tube. The grit to be removed shall drop into an inclined auger. This auger shall dewater and convey the grit above the

level of the overflow weir. The washed and dewatered grit is discharged at the upper end of the auger.

2. Its inlet hopper shall be flange-connected to the grit discharge tube. The auger shall have a discharge height of 96" (2443 mm) above the floor. Its inlet hopper shall be provided with a 3" diameter (DN 80) drain connection that is provided with a ball valve. The drain connection shall also be provided with a 3/4" flush connection with ball valve.
3. The screw conveyor trough shall be made of minimum 10/64 inch (4 mm) thick stainless steel and shall have a minimum trough diameter of 13.8-inches.
4. The screw shall be shafted and shall be made of stainless steel. A shaft-less screw is not acceptable. The lower end of the screw shaft shall be supported by a chilled cast-iron stub bearing with a maintenance-free ceramic sleeve. Wear strips are not acceptable.
5. The grit screw design shall have intelligent screw flights preventing clogging issues within the grit screw.
6. A screw drive shall be provided at the upper end of the auger. The motor shall be continuous duty rated and shall be selected to match the duty of the particular grit conveying screw. The drive unit shall be directly coupled to the grit conveying screw drive shaft.

E. Grit Stirrer

1. The center stirrer shaft diameter shall be 60 mm and shall have a thickness of 5 mm. The stirrer arms shall be 30 mm in diameter and constructed of 304L stainless steel. The stirrer shall consist of a minimum of 2 arm sections. The stirrer design shall promote better discharge of organics, grit bed fluidization, and ability to discharge larger stones.

F. Motors

1. Grit Screw

Maximum Motor Speed	1800 rpm
Service Factor	1.15
Rating	480 VAC, 3ph, 60 Hz
Location Rating	Class 1, Division 1
Maximum Power Screw Drive Motor	1.5 HP

- a. Torque must be sufficient to start and operate grit washer without exceeding nameplate ratings for current and power.

2. Grit Stirrer

Maximum Motor Speed	1800 rpm
Service Factor	1.15
Rating	480 VAC, 3ph, 60 Hz
Location Rating	Class 1, Division 1
Maximum Power Stirrer Drive Motor	0.75 HP

- a. Torque must be sufficient to start and operate grit washer without exceeding nameplate ratings for current and power.

2.7 CONTROLS

- A. All controls necessary for the fully automatic operation of the grit system shall be provided, including a total of two (2) NEMA 4X main control panels with each individual panel

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controlling one (1) GritWolf grit removal system, one (1) RoSF4 grit washer, and two (2) grit slurry pumps, as described here in. A NEMA 7 local control station per each individual machine shall be provided.

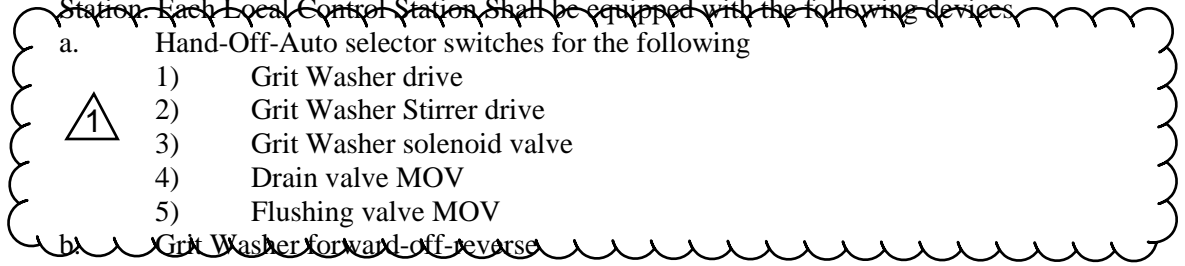
1. The North grit removal system panel shall control two (2) grit slurry pumps (Grit Pump No.1 and No. 2) in a duty/standby configuration.
 2. The South grit removal system, panel shall control two (2) grit slurry pumps (Grit Pump No. 3 and No. 4) in a duty/standby configuration.
- B. The electrical control system shall provide for automatic control of the grit washer via a signal from the feed pump control panel. The grit removal system screws shall be operated by timer.
- C. Each control panel shall be suitable for outdoor, wall-mounting. Enclosure shall be NEMA 4X stainless steel with continuous hinge and lockable door latch, and shall include the following:
1. Door-interlocked and fused disconnect
 2. 600 VAC terminal block
 3. Uninterruptible Power Supply
 4. NEMA motor starters and Circuit Breaker Branch Circuit Protection for all electrical motors
 5. Control power transformer with 120 VAC transient voltage surge compressor (TVSC) and fused primary and secondary
 6. Programmable logic controller (PLC), Allen Bradley Micrologix 1400
 7. Operator Interface Terminal (OIT), Allen Bradley 10" PanelView Plus 7
 8. Pilot lights for
 - a. Control power on (white)
 - b. Horizontal grit screw running (green)
 - c. Grit Screw running (green)
 - d. Grit Stirrer (green)
 - e. Organic Valve open (green)
 - f. Grit Screw fault (red)
 - g. Grit Stirrer fault (red)
 - h. Organic valve fault (red)
 - i. Grit pump running (green)
 - j. Grit pump fault (red)
 9. E-stop push button (red)
 10. Reset push button (black)
 11. Door mounted elapsed time meters for the following:
 - a. Horizontal grit screw drive
 - b. Grit Washer Screw drive
 - c. Grit Washer Stirrer drive
 12. Remote dry contact inputs for the following:
 - a. Machine start
 - b. One spare input
 13. Remote dry contact outputs for the following:
 - a. Horizontal grit screw running
 - b. Grit washer running
 - c. Grit Pump running
 - d. Faults
 - e. E-stops

- f. Two spare outputs
- 14. Flashing alarm light and alarm horn with silencer-reset button
- 15. Plastic Nameplates
- 16. Seal water solenoid valves for each pump shall be wired directly to the motor controls such that the solenoid energizes (opens) when the pump is started and deenergizes (closes) when the pump stops.

D. LOCAL CONTROL STATIONS


- 1. Control Power On-Delay: Each time the control panel power supply is cycled, the PLC will allow all solid-state devices to become fully energized before enabling the control power circuit.

- 2. Each grit washer shall be provided with a NEMA 7, Cast Aluminum Local Control Station. Each Local Control Station shall be equipped with the following devices.




- a. Hand-Off-Auto selector switches for the following
 - 1) Grit Washer drive
 - 2) Grit Washer Stirrer drive
 - 3) Grit Washer solenoid valve
 - 4) Drain valve MOV
 - 5) Flushing valve MOV
- b. Grit Washer forward-off-reverse
 - 1) Grit Washer drive
- c. E-stop pushbutton (red)
- d. The stirrer, grit screw, organics valve, and wash water selector switches must all be in the auto position for the grit washer to function in the auto mode.
- e. If the stirrer, grit screw, or organics valve are faulted, the stirrer, grit screw, organics valve, and wash water will not function in the auto mode.
- f. When the stirrer hand-off-auto selector is in the hand position, the stirrer will run continuously.
- g. When the stirrer hand-off-auto selector is in the auto position, the stirrer will operate per the auto sequence detailed below.
- h. When the grit screw selector is in the hand position, the grit screw will cycle on and off with the grit screw for-off-rev selector.
- i. When the grit screw selector is in the hand position and the forward direction is selected, the grit screw will cycle continuously in the forward direction.
- j. When the grit screw selector is in the hand position and the forward direction is selected, the grit screw will cycle continuously in the forward direction.
- k. When the grit screw selector is in the hand position and the forward direction is selected, the grit screw will cycle continuously in the forward direction.
- l. When the grit screw selector is in the hand position and the reverse direction is selected, the grit screw will cycle continuously in the reverse direction. This switch will spring return from rev to off.
- m. When the grit screw selector is in the auto position, the grit screw will operate per the auto sequence detailed below.
- n. When the organics valve selector is in the open position, the organics valve will open and remain open.
- o. When the organics valve selector is in the close position, the organics valve will close and remain closed.
- p. When the organics valve selector is in the auto position, the organics valve will operate per the auto sequence detailed below.

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- q.  Once the organics valve closes, the motor operated valve for the non-potable water flushing connection will open for a set time (initially set for 2-minutes) Once the open time has expired the valve shall close.
- r. ~~When the wash water selector is in the hand position, the wash water will run continuously.~~
- s. When the wash water selector is in the auto position, the wash water will operate per the auto sequence detailed below.
- t. The grit washer will start an automatic cycle based on (2) conditions: (1) once the feeding equipment is running. (2) once a call to run has been received from the SCADA system.
- u. The feeding equipment contact or the call to run signal from SCADA must be maintained for the time set in the grit cycle on-delay timer before the grit system will start an automatic cycle.
- 1) The wash water will start to run once the automatic feeding cycle starts.
 - 2) When the automatic feeding cycle starts, the stirrer will start to run once the stirrer on-delay timer reaches its setpoint.
 - 3) The pressure sensor will be activated once the automatic feeding cycle starts, and stay active through the entire feeding cycle.
 - 4) The grit screw will start to run once the grit level, as measured by the pressure sensor, rises and stays above the grit density start setpoint for the time set in the start level debounce timer. Once the grit screw is called to run, the grit screw will cycle on and off, on time first, per the settings of the grit screw repeat cycle timers. The on off cycles of the grit screw will continue after the grit density falls below the grit density stop setpoint for the time set in the low level debounce timer.
 - 5) When the automatic feeding cycle starts, the organics valve will close if not already closed and the organics valve open-delay timer will begin timing. Once the valve open-delay timer reaches its setpoint, the organics valve will open. The organics valve will remain open for the time set in the organics valve open duration timer. Once the open duration timer has reached its set point, the organics valve will close. This cycle may be repeated as required during the feeding cycle.
 - 6) The organics valve will never be open while the grit screw is operating. If the grit screw is called to run while the organics valve is opened, the organics valve will close immediately.
- v. Once the grit feeding has stopped the system will go into a shutdown cycle. During the shutdown cycle the remote start signal will no longer be received.
- 1) During the shutdown cycle the stirrer will continue to run after the organics valve completes its final cycle for the time set in the stirrer off-delay timer.
 - 2) During the shutdown cycle the wash water will remain on until the stirrer motor shuts off.
 - 3) Once the system enters into the shutdown mode the pressure sensor will only remain active for the time set on the pressure sensor off delay timer. Once this time has expired the sensor will be deactivated.
 - 4) During the shutdown cycle the grit screw will continue to operate per the feeding cycle sequence of operation as long as the pressure sensor is active.

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- 5) Once the grit screw begins its cycle the pressure switch will remain active until its cycle is complete.
 - 6) During the shutdown cycle the organics valve will open once the pressure sensor becomes de-activated. The organics valve will remain open for a time set on the organics valve open duration timer. Once the open time has expired the valve shall close.
 - 7) Once the organics valve closes, the motor operated valve for the non-potable water flushing connection will open for a set time (initially set for 2-minutes) Once the open time has expired the valve shall close.
- w. An operator may change from normal to continuous feed mode as required from the OIT. During a continuous feed mode, the wash water and stirrer will both cycle per the continuous feed mode, the wash water and stirrer will both cycle per the continuous feed mode repeat cycle on and off timers. The pressure sensor, grit screw, and organics valve will run as noted in the grit system automatic feeding cycle. Once the feed signal from the pump or SCADA has been removed, the system will operate as described in the grit system automatic shut down cycle.
- x. The South grit removal system, panel shall control two (2) grit slurry pumps (Grit Pump No. 3 and No. 4) in a duty/standby configuration. An operator can manually reconfigure the grit pump suction and discharge piping with the manually operated valves. From the OIU, an operator may select either grit pump no.3 or no.4 to operate with grit collector No. 2.
- y. During normal operation grit collector no. 1 and its corresponding grit pump(s) shall be configured to route flows to grit washer no.1 (i.e., north grit removal system) and grit collector no. 2 shall be configured to operate with grit washer no.2. An operator can manually reconfigure the grit slurry piping from each grit collector to route slurry flows to either grit washer unit, with the manually operated valves. From the OIU, an operator may select either grit washer no.1 or no.2 to operate with either grit collector.
- z.  Limit switches installed on the grit piping suction valves and interconnect valves (that allow the ability for grit slurry from a given grit tank to be directed to the opposite grit washer unit) shall be monitored by the control panels. Interlocks within the control panel shall inhibit grit slurry from being pumped to a grit washer that is off-line, due to current valve(s) position. Notifications shall also be provided to inform operator of the condition and that system valve configuration should be reviewed or grit washer brought on-line.
- aa. Manual operation of the grit system shall allow grit slurry pumping to alternate between grit collector and grit washer units as required. In the event one of the two grit washers is out of service, an operator can manually reconfigure the grit slurry piping from each grit collector to route slurry flows from both grit collectors to a single grit washer unit, with the manually operated valves. From the OIU, an operator may select either grit washer no.1 or no.2 to operate with both grit collectors. In this mode, the grit washer would initiate the washing cycle until the grit pump run signal is removed. A delay shall occur before the grit pump associated with the alternate grit collector is started. The grit collector, grit pump, stirrer, grit screw, organics valve, and wash water will stop immediately, and the control power on light will be de-energized if any of the e-stop pushbuttons are pressed. Once the

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- pushbuttons are reset, the system reset pushbutton must be pressed before the equipment will cycle.
- bb. If power to the panel is interrupted, the equipment may cycle after a 5 second power up delay once the power is restored, without pressing the system reset pushbutton.
3. Each Grit Collector shall be provided with a NEMA 7, Cast Aluminum Local Control Station. Each Local Control Station Shall be equipped with the following devices
- a. Hand-Off-Auto selector switches for the following
 - 1) Horizontal Grit Auger drive
 - b. Grit Washer forward-off-reverse
 - c. Grit Auger drive E-stop pushbutton (red)
 - d. When the grit collector selector is in the hand position, the grit collector will run continuously.
 - e. When the grit collector selector is in the auto position, the grit collector will cycle off and on, off time first, per the grit collector repeat cycle timer.
 - f. The grit collector will start operating per the off and on cycle timer, once the feed pump running signal has been received.
4. Each grit pump shall be connected to the local control panel and shall be equipped with the following modes of operation:
- a. When the grit pump selector is in the hand position, the grit pump will run continuously.
 - b. When the grit pump selector is in the auto position, the grit pump will start running for the time set in the grit pump on time before collector timer, before the grit collector has been called to run. The grit pump will continue to run after the grit collector shuts down for the time set on the grit pump off delay timer.
5. Faults:
- a. When the grit collector motor overload is tripped, the grit collector will stop immediately and the grit collector fault light will energize.
 - b. When the grit collector current monitor senses high current, the grit collector will stop immediately and the grit collector fault light will energize.
 - c. When the grit pump motor overload is tripped, the grit pump will stop immediately and the grit pump fault light will energize.
 - d. When the stirrer motor overload is tripped the stirrer and grit auger will stop immediately, the organics valve will close, and the stirrer fault light will be energized.
 - e. If high current is measured, the stirrer and grit auger will stop immediately, the organics valve will close, and the stirrer fault light will be energized.
 - f. When the grit auger motor overload is tripped the stirrer and grit auger will stop immediately, the organics valve will close, and the grit auger fault light will be energized.
 - g. If high current is measured, the stirrer and grit auger will stop immediately, the organics valve will close, and the grit auger fault light will be energized.
 - h. If the organics valve is called to close and does not reach the closed position within the time set in the organics valve fault timer, the stirrer and grit auger will stop immediately and the organics valve fault light will be energized.
 - i. If the organics valve is called to open and does not reach the open position within the time set in the organics valve fault timer, the stirrer and grit auger will stop immediately and the organics valve fault light will be energized.
 - j. All of the above faults can be reset by pressing the system reset pushbutton.

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PART 3 EXECUTION

3.1 INSTALLATION

- A. Contractor shall install complete equipment in accordance with Manufacturer's instructions and as indicated and specified. Support frame and lamella trays shall be assembled on site by Contractor before installation into concrete channel.
- B. After installation touch-up paint shall be applied to all scratched, abraded, and damaged shop painted surfaces. Coating type and color shall match shop painting. Contractor shall not perform field welding of stainless steel.

3.2 PERFORMANCE TESTING

- A. **Refer to** Section 11414 – Grit Removal Performance Testing for details.

3.3 WARRANTY

- A. The manufacturer will warrant against any defects in material or workmanship to the grit removal system. This warranty will commence upon delivery of the products and will expire two years following Substantial Completion. In addition, the manufacturer shall provide a ten (10) year warranty on the horizontal grit auger liner for the grit collectors.
- B. The manufacturer shall provide a service contract for the first ten (10) years after installation of the GritWolf(s), including:
 - 1. Semi-annual trips per year, including one to two days on site
 - 2. All required maintenance parts over the ten-year period
 - 3. **Services shall include inspection of each GritWolf auger liner and replacement as needed over the service contract or at the end of the ten (10) year period.**
- C. The site shall be a reference site for future HUBER Technology customers. For each customer sent on site, a \$500 voucher will be provided to the City of Ann Arbor WWTP and can be used for GritWolf spare parts or additional service trips/days by HUBER certified service technician.

3.4 MANUFACTURER'S FIELD SERVICE

- A. **Start-up and Operator Training:** Manufacturer's Service Engineer for the equipment specified herein shall be present at the jobsite for two (2) trips and eight (8) man-days, travel time excluded, for installation assistance, functional testing, certificate of the installation, and Operator training. Service Engineer must have a minimum of five (5) years of experience on the type and size of equipment specified. Manufacturer's Service Engineer shall inspect location of anchor bolts; check setting, leveling, alignment, field erection. Manufacturer's Service Engineer shall calibrate and start-up the equipment.

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SECTION 15408

PLUMBING FIXTURES

PART 1 – GENERAL

1.1 SUMMARY

A. Related Documents:

1. Drawings and general provisions of the Subcontract apply to this Section.
2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:

1. Concrete reinforcement and accessories.
2. Water closets
3. Urinals
4. Lavatories
5. Sinks
6. Service sinks
7. Bathtubs
8. Showers
9. Drinking fountains
10. Electric water coolers
11. Wash fountains
12. Eyewash fountains
13. Emergency showers

C. Related Sections:

1. Section 07900 – Joint Fillers, Sealants and Caulking for sealing fixtures to walls and floors.
2. Section 15401 – Hangers and Supports for Plumbing Piping and Equipment
3. Section 15405 – Domestic Water Piping Specialties
4. Section 15406 – Sanitary Waste Piping Specialties

1.2 REFERENCES

A. General:

1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
3. Refer to Section 15400 – Common Results for Plumbing for codes and standards, and other general requirements.

B. American National Standards Institute (ANSI)

1. ANSI A112.6.1 - Supports for Off-the-Floor Plumbing Fixtures for Public Use

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2. ANSI A112.18.1 - Finished and Rough Brass Plumbing Fixture Fittings
3. ANSI A112.19.1 - Enameled Cast Iron Plumbing Fixtures
4. ANSI A112.19.2 - Vitreous China Plumbing Fixtures
5. ANSI A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use)
6. ANSI A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures
7. ANSI A112.19.5 - Trim for Water-Closet Bowls, Tanks, and Urinals
8. NSI Z124.1 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Bathtub Units
9. ANSI Z124.2 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Shower Receptor and Shower Stall Units
10. ANSI Z358.1 - Emergency Eye Wash and Shower Equipment

- C. Air-Conditioning and Refrigeration Institute ARI 1010 Drinking Fountains and Self-Contained Mechanically Refrigerated Drinking Water Coolers

1.3 SUBMITTALS

- A. Submit under provisions of Section 15400 – Common Results for Plumbing – Review of Materials, and Section 01300 – Submittals.
- B. Submit Product Data for fixtures, including sizes, utility sizes, trim, and finishes.
 1. Operation and Maintenance Data:
 - a. Submit operation and maintenance data under Section 01730 – Operation and Maintenance Data.
 - b. Include fixture trim exploded view and replacement parts lists.

1.4 QUALITY ASSURANCE

- A. Fixtures: By same manufacturer throughout for each product specified.
- B. Trim: By same manufacturer throughout for each product specified.

PART 2 – PRODUCTS

2.1 WATER EFFICIENT PRODUCTS

- A. Where available, the contractor must purchase WaterSenseSM labeled products and other water efficient products and choose irrigation contractors who are certified through a WaterSenseSM labeled program.

2.2 ACCEPTABLE MANUFACTURERS - FIXTURES

- A. American Standard.
- B. Kohler.
- C. Toto.

2.3 ACCEPTABLE MANUFACTURERS - FIXTURE TRIM

- A. American Standard.
- B. Kohler.
- C. Toto.

2.4 SERVICE SINK ((SS))

- A. Bowl: 36 x 24 x 10-inch high white, molded stone, floor mounted, with 1-inch wide shoulders, stainless-steel strainer; Refer to Fixture Schedule of Contract Documents for basis of design or equal.
- B. Trim: ANSI A112.18.1; exposed-wall-type supply with lever handles, spout wall brace, vacuum breaker, hose-end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges; 5 feet of 1/2-inch diameter plain-end reinforced rubber hose, hose clamp, mop hanger; Re-fer to Fixture Schedule of Contract Documents for basis of design or equal.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Review architectural woodwork Shop Drawings. Confirm location and size of fixtures and openings before rough-in and installation.
- B. Verify that adjacent construction is ready to receive rough-in work of this Section.

3.2 INSTALLATION

- A. Install each fixture with a trap that is easily removable for servicing and cleaning.
- B. Provide chrome-plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb
- D. Install and secure fixtures in place with bolts.
- E. Seal fixtures to wall and floor surfaces with sealant as specified in Division 07 Section "Joint Sealants", color to match fixture.
- F. Install fixtures to the following mounting heights above finished floor:

3.3 ADJUSTING AND CLEANING

- A. Adjust stops or valves for intended water-flow rate to fixtures without splashing, noise, or overflow.

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- B. At completion, clean plumbing fixtures and equipment.
- C. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

3.4 3.04 FIXTURE ROUGH-IN SCHEDULE

- A. Rough-in fixture piping connections in accordance with following table of minimum sizes for particular fixtures.

EDIT TO SUIT PROJECT REQUIREMENTS. EXPAND TO INCLUDE OTHER FIXTURES. USE TO AVOID INDICATING THE SIZE OF ALL RUNOUT PIPING ON DRAWINGS.

	Hot Water	Cold Water	Waste	Vent
Service Sink	1/2-inch	1/2-inch	2 inch	1-1/2 inch

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SECTION 16483

VARIABLE FREQUENCY CONTROLLERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Six (6) pulse variable frequency controllers.

1.2 RELATED SECTIONS

- A. Section 03300 – Concrete Work: Concrete Pads and Foundations.
- B. Section 16010 – General Electrical Instrument, and Control Requirements.
- C. Section 16050 – Basic Electrical Materials and Methods.
- D. Section 16170 – Grounding and Bonding.
- E. Section 16195 – Electrical Identification.
- F. Section 16960 – Electrical Testing and Equipment.
- G. Section 16970 – Calibration and Start-up of Systems.
- H. Section 16980 – Demonstration and Training.

1.3 REFERENCES

- A. NFPA 70 - National Electrical Code.
- B. NEMA ICS 3.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Include front and side views of enclosures with overall dimensions and weights shown; conduit entrance and exit locations and requirements; and nameplate legends.
- C. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, schematic diagram, component list and enclosure details.
- D. Test Reports: Indicate field test and inspection procedures and test results.

- E. Manufacturer's Test Reports: The manufacturer shall provide three (3) certified copies of factory test reports.
- F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- G. Manufacturer's Field Reports: Indicate start-up inspection findings.

1.5 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Operation Date: Include instructions for starting and operating controllers and describe operating limits that may result in hazardous or unsafe conditions.
- C. Maintenance Data: Include routine preventive maintenance schedule.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum ten (10) years documented experience, and with service facilities within 100 miles of project.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Section 01600.
- B. Accept controllers on site in original packing. Inspect for damage.
- C. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- D. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to components, enclosure, and finish.

1.9 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.10 EXTRA MATERIALS

- A. Furnish under provisions of Section 01700.

- B. Furnish one (1) set of replaceable contacts for each type of relay installed in variable frequency controllers furnished under this Contract.
- C. Furnish one (1) control switch assembly of each type installed in variable frequency controllers furnished under this Contract.
- D. Furnish two (2) of each air filter element installed.
- E. Furnish one (1) of each size cooling fan installed.
- F. For each VFD unit without individually serviceable components, provide a spare VFD.
- G. For additional spare parts requirements, see Section 16010 and Section 16477.



PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Allen-Bradley
- B. Square D/Schneider Electric
- C. ABB
- D. Eaton Cutler-Hammer
- E. No Substitutions.

2.2 VARIABLE FREQUENCY CONTROLLERS (VFD) DESCRIPTION

- A. General
 - 1. The VFD shall be solid state, with a Pulse Width Modulated (PWM) output. The VFD shall utilize sensor-less vector AC to AC converter utilizing the latest Insulated Gate Bipolar Transistor (IGBT) technology. The VFD shall also provide an optional mode for V/Hz operation.
 - 2. The variable frequency drive (VFD) motor controller shall convert 460 Volt, three-phase, 60 Hertz utility power to adjustable voltage (0 - 460V) and frequency (0 - 60 Hz) three-phase, AC power for stepless motor speed control with a capability of 10:1 speed range. All general options and modifications shall mount within the adjustable frequency controller enclosure.
 - 3. The VFD shall be rated 460V as shown on the Drawings. The VFD shall provide a microprocessor-based adjustment of three phase motors. The variable frequency and voltage output shall provide constant volts per hertz excitation for the motor up to 60 hertz. The controllers shall be rated as shown on the Drawings. As a minimum the full load output current of the drive shall be equal to the equivalent motor horsepower as listed by National Electric Code Table 430.150.
 - 4. The VFDs shall be capable of operating any NEMA B squirrel cage induction motor, regardless of manufacturer, with a load rating within the capacity of the VFD's.

5. The VFD shall have a “Hand-Off-Auto” selector switch mounted on the door and connected to allow control from the keypad and local or remote mounted pushbutton switches, when in the “Hand” position and control from remote contacts, when in the “Auto” position.
 6. The VFDs shall utilize a Voltage Source Pulse Width Modulated (PWM) technique for producing adjustable frequency speed control.
 7. The VFD shall include output short circuit protection for line-to-line and line-to-ground faults.
 8. The harmonics introduced by the variable frequency controllers at the point of common coupling (PCC) shall meet the requirements of IEEE 519-2014 for General Systems. For purposes of this Specification the PCC shall be the utility feeder to the facility. Short circuit amperes at this point and total demand load are noted on the system one line drawing.
 9. The harmonic distortion shall meet the distortion levels shown in Table 10.3 of IEEE 519-2014 for I_{SC}/I_L . Use the following source data in order to perform the calculations:
 - a. Voltage: 480, 3 phase, 4 wire
 - b. kVA: 750
 - c. Impedance: 5.75%
 - d. Total maximum demand load: 550 amps.
- B. Specific Design Requirements for Six Pulse Type VFD Units (for units less than 100 Hp).
1. VFD shall be sinusoidal input type. VFD control shall include transient voltage suppression to allow reliable operation on a typical industrial power distribution system.
 2. VFD shall be of the six (6) pulse rectifier and pulse width modulated (PWM) design, and shall provide microprocessor based, software programmable protection and operation of a three-phase motor.
 3. The VFD shall be wall mounted in a NEMA Type 12 enclosure when not mounted in within another enclosure.
 4. Provide an input circuit breaker, interlocked with the enclosure door, with through-the-door handle to provide positive disconnect of incoming AC power. The circuit breaker shall be rated for 42,000 AIC minimum.
 5. Provide an integrally mounted or separately enclosed input line reactor, sized for the VFD load and designed to limit harmonics on the power distribution circuit.
- C. HARMONIC MITIGATION
1. The VFD shall limit harmonic distortion reflected onto the utility system to a voltage and current level as defined by IEEE 519 for general systems applications, by utilizing the standard 5% DC link choke with input surge protection or a 3% line reactor.
 2. The VFD shall employ a technology that will limit Harmonic levels to less than 38% at the input terminal of the VFD. If line reactors are used, they shall not exceed 5% to avoid excessive voltage drop.
 3. Documentation must be submitted verifying Harmonic levels at or below 38% at the terminals of the VFD prior to approval.
 4. Drives supplied as part of the equipment shall also meet and be required to verify Harmonic levels of less than 38% at the input terminals.

2.3 DESIGN OF VFD UNIT

- A. Employ microprocessor based inverter logic, isolated from power circuit.
- B. Employ switching power supply operating off DC link.
- C. Design for ability to operate controller with motor disconnected from output.
- D. Design to attempt five (5) automatic restarts, following fault conditions, before lock-out.
- E. Speed droop shall reduce the speed of the drive on transient overload.
- F. Critical speed avoidance circuit.
- G. A door mounted keypad with operational and diagnostic messages display unit (2-line, 24-character min., LCD display).
- H. "Self-Test" software program to verify proper keypad operation.
- I. Minimum efficiency of 96 percent at full load and speed and 80% at 50% speed and load.
- J. Displacement power factor between 1.0 and 0.95 lagging, over entire range of operating speed and load.
- K. Output voltage regulator to maintain correct output v/hz ratio despite incoming voltage variations.
- L. Password security to protect drive parameters from unauthorized personnel.
- M. All program settings shall be stored in non-volatile memory to prevent loss during power outages.
- N. AC input line current limiting fuses rated 100,000 AIC or circuit breaker rated 65,000 AIC for fault current protection of AC and DC converter section. If fuses are used, fuses must be fast acting and current limiting.
- O. The controller shall be designed and constructed to operate within the following service conditions:
 - 1. Elevation: 0 to 3300 feet.
 - 2. Ambient Temperature Range: 0°C to 40°C.
 - 3. Atmosphere: Non-Condensing relative humidity 0 to 95%.
 - 4. AC Line Voltage Variation: -5% to +10%.
 - 5. AC Line Frequency Variation: ± 3 Hertz.
 - 6. AC power: 480V, 3 phase, 60 hz power supply.

2.4 PRODUCT FEATURES

- A. Display: Provide integral display to indicate output voltage, output frequency in hertz, output current, speed demand in percentage, control mode: (manual/automatic), total three-phase kW, time, date, drive temperature, elapsed time meter, motor RPM.

- B. Status indicators for protective functions: Separate indicators for overcurrent, over voltage, under voltage, over frequency, phase loss, over temperature, ground fault, etc.
- C. Volts Per Hertz Adjustment: plus or minus ten percent.
- D. Current Limit Adjustment: 60 to 110 percent of rated.
- E. Acceleration Rate Adjustment: 0.5 to 3000 seconds.
- F. Deceleration Rate Adjustment: 1 to 30 seconds.
- G. Provide “Start” and “Stop” pushbuttons, “Local – Remote” selector switch, and manual speed control on the VFD control panel.
- H. Input signals: 4-20 MADC and start/stop signal (120 VAC) from PLC.
- I. Safety Interlocks: Provide terminals for remote contacts to inhibit starting under both manual and auto mode.
- J. Input line fuses or breaker for circuit protection.
- K. Real Time Clock: Controller shall include a real time clock function for a day and time stamp of fault occurrence, start time stamp, stop time stamp, and operating hours.
- L. Fault History: Controller shall record and time-stamp faults.
- M. An “Emergency Stop” circuit shall utilize dynamic braking.
- N. Motor control circuit shall incorporate control, protective relay, and alarm circuits as required to coordinate with the ancillary, protective, and alarm devices supplied by the pump or motor manufacturer.
- O. Input signals to VFD:
 - 1. (6) Discrete Digital Inputs
 - 2. (2) 4 to 20mA Analog Inputs
- P. Output signals from VFD:
 - 1. Analog output signal 4-20 MADC proportional to output frequency.
 - 2. Run relay with two isolated sets of form C contacts.
 - 3. Dry contacts (2 amps at 120 VAC) to indicate VFD ready, running, and fail on a remote panel. Running contacts shall indicate that the motor is running, whether powered from the VFD or the bypass contactor. Fail contacts shall indicate VFD trouble or motor shutdown due to protective circuits.
- Q. Laminated plastic nameplate engraved with the drive’s designation, as indicated on the Drawings.
- R. Each controller shall have a reduced size, approved, “as-built,” schematic wiring diagram, in ladder diagram format, inside each unit, indicating all internal components and wiring terminal strip connections, all 480 V. power wiring, all 120 V. control and power wiring, all

instrument wiring, and all external components and wiring (shown dotted). Wiring diagrams shall have a plasticized coating to protect them from dirt, heat, and normal wear and tear.

- S. VFD shall include digital communications.
 - 1. The VFD shall communicate over the Ethernet/IP protocol.
 - 2. The VFD shall include an RJ-45 port for communication.

2.5 FABRICATION

- A. The VFD systems shall be fabricated by the same VFD manufacturer, to assure a properly coordinated system.
- B. All VFD components shall be factory mounted and wired. Free-standing enclosures shall be suitable for mounting on a concrete housekeeping pad.
- C. Enclosures shall be not less than 16-gauge steel with surface thoroughly cleaned and phosphatized prior to painting. They shall be primed with a corrosion-resisting coating. Cabinet finish paint to be ANSI 61 Gray.
- D. Overall dimensions of fabricated VFD shall fit within the available space indicated on the Drawings.

PART 3 EXECUTION

3.1 FACTORY TESTING

- A. Factory testing shall be performed per the manufacturer's standard testing procedure.
- B. The manufacturer shall provide three (3) certified copies of factory test reports.

3.2 WARRANTY

- A. Manufacturer shall provide a three (3) year warranty beginning from the date of start-up and acceptance of the equipment. The warranty shall cover all parts, labor, and travel time.

3.3 EXAMINATION

- A. Verify conditions.
- B. Verify that surface is suitable for controller installation.
- C. Do not install controller until building environment can be maintained within the service conditions required by the manufacturer.

3.4 INSTALLATION

- A. Install controller where indicated, in accordance with manufacturer's written instructions and NEMA ICS 3.1.
- B. Tighten accessible connections and mechanical fasteners after placing controller.

- C. Install fuses.
- D. Select and install overload heater elements in motor controllers to match installed motor characteristics.
- E. Provide labels and engraved plastic nameplates under the provisions of Section 16195.
- F. Provide neatly typed label inside each controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.
- G. Arc flash and shock hazard warning labels shall be provided on the door of each vertical section and shall be marked as specified in Section 16195.
- H. Install the motor leads in grounded metal conduit or provide shielded cable motor leads with the shield grounded.

3.5 FIELD QUALITY CONTROL

- A. Provide the services of a qualified factory-trained manufacturer's representative to assist the Contractor in installation and start-up of the equipment specified under this Section. The manufacturer's representative shall provide technical direction and assistance to the Contractor in general assembly of the equipment, connections and adjustments, and testing of the assembly and components contained herein.
- B. The following minimum work shall be performed by the Contractor under the technical direction of the manufacturer's service representative.
 - 1. Inspection and final adjustments.
 - 2. Operational and functional checks of VFDs and spare parts.
 - 3. Record and provide the harmonic line distortion, including the total harmonic distortion and total demand distortion for all drives.
- C. Inspect completed installation for physical damage, proper alignment, anchorage, and grounding.
- D. The Contractor shall provide three (3) copies of the manufacturer's field start-up report.

3.6 MANUFACTURER'S FIELD SERVICES

- A. Prepare and start systems under provisions of Sections 01400 and 16970.

3.7 ADJUSTING

- A. Adjust drive parameters to assure proper operation of system. Obtain performance requirements from installer of driven loads.

3.8 CLEANING

- A. Touch up scratched or marred surfaces to match original finish.

3.9 DEMONSTRATION

- A. Provide systems demonstration under provisions of Section 16980.
- B. Demonstrate operation of controllers in automatic and manual modes.

3.10 TRAINING

- A. The Contractor shall provide a training session for up to three (3) Owner's Representatives for one (1) normal working days at a job site location determined by the Owner.
- B. The training session shall be conducted by a manufacturer's qualified representative.
- C. The training program shall consist of instructions on the proper maintenance and operation of the equipment.

END OF SECTION

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SECTION 17200

CONTROL AND INFORMATION SYSTEM SOFTWARE REQUIREMENTS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall furnish, test, install, and place in satisfactory operation all control and information system software with all required programming and software appurtenances as herein specified and as shown on the Drawings.


1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 17000 – Control and Information System Scope and General Requirements
- B. Section 17920 – Control System Input/Output Schedule
- C. Section 17950 – Functional Control Descriptions

PART 2 - PRODUCTS

2.1 SOFTWARE REQUIREMENTS

- A. The Owner's existing SCADA (Human-Machine Interface or HMI) software, including but not limited to all relevant displays, alarm summary pages, data collection, and historical trending/reporting, shall be modified to include all work performed under this Contract.
- B. The Owner's existing control system shall be modified to include the inputs and outputs specified in the Input/Output Schedule and in other Sections of this Division.
- C. The Owner existing HMI software is Rockwell's Factory Talk View SE Version 12, and Plant PAX version 3.0.

- D.  RSLogix 5000 Version 20.1 shall be used for PLC programming and configuration of all PLCs.

2.2 OVERALL SYSTEM CONFIGURATION

- A. All HMI software configuration performed under this Contract shall be coordinated with the Owner and shall match in all possible respects the "look and feel" of the Owner's existing system. Major HMI software scope of work shall include but shall not be limited to the following:
 - 1. Create new graphic displays showing the new facilities and functions described herein complete with all associated equipment and instrumentation.
 - 2. Modify the existing plant overview display(s) for the SCADA system to include the new facilities and equipment and create links to the new screens.

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3. Modify existing alarm summary pages to incorporate new monitoring data into the alarm displays.
 4. Modify existing reports to include the additional monitoring points specified under this Contract.
 5. Create new real-time and historical trends and coordinate with the Owner appropriate grouping of the trend charts.
 6. Update the system status display to include new hardware provided under this Contract.
- B. Ladder logic resident in existing PLCs shall be configured to perform the functions described as specified herein and in Specification Section 17950. Specifically, the existing PLCs shall be programmed to accept the inputs specified in the Input/Output Schedule and to make this data readily available to the plant network and shall be programmed to execute the logic necessary to implement all control functions associated with the scope of work specified under this Contract.
- C. All discrete and analog data acquisition, preprocessing, storage and process control functions shall be performed at the PLC level. The HMI software shall not be used for this purpose.

PART 3 -- EXECUTION

3.1 OVERALL SYSTEM CONFIGURATION

- A. The Owner's existing HMI software, including but not limited to all relevant displays, alarm summary pages, data collection, and historical trending/reporting, shall be modified to include all work performed under this Contract. The existing software is Rockwell PlantPax version 3.0.
- B. The Owner's existing control system shall be modified to include the inputs and outputs specified in the Input/Output Schedule and in other Sections of this Division.

3.2 SOFTWARE COMMUNICATIONS

- A. All HMI software configuration performed under this Contract shall be coordinated with the Owner and shall match in all possible respects the "look and feel," in the opinion of the Engineer, of the existing SCADA System. Specified features and functions of this Contract that do not already exist, even if only for "look and feel," shall be provided. Details on how to best implement these features and functions shall be discussed with Owner and Engineer.
- B. Major HMI software scope of work shall include, but shall not be limited to, the following:
1. Create new graphic displays showing the new facilities and functions described herein complete with all associated equipment and instrumentation.
 2. Modify the existing plant overview display(s) for the SCADA system to include the new facilities and equipment and create links to the new screens.
 3. Modify existing alarm summary pages to incorporate new monitoring data into the alarm displays.
 4. Modify existing reports to include the additional monitoring points specified under this Contract.

5. Create new real-time and historical trends and coordinate with the Owner appropriate grouping of the trend charts.
 6. Update the system status display to include new hardware provided under this Contract.
- C. Ladder logic resident in existing PLCs shall be modified to perform the functions described as specified herein and in Section 17950 – Functional Control Descriptions. Specifically, the existing PLCs shall be programmed to accept the I/O specified in Section 17910 – Control System - Input/Output Schedule and to make this data readily available on the plant network and shall be programmed to execute the logic necessary to implement all control functions associated with the scope of work specified under this Contract.
- D. All discrete and analog data acquisition, preprocessing, storage and process control functions shall be performed at the PLC level. The HMI software shall not be used for this purpose.

END OF SECTION

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SECTION 17950

FUNCTIONAL CONTROL DESCRIPTION

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall furnish, test, install and place in satisfactory operation all equipment as herein specified and as shown on the drawings. The contractor shall be responsible for furnishing complete functioning systems as described herein.
- B. Together with the control system input/output schedule, the equipment specifications (including functional descriptions for local equipment control panels), and the drawings, the functional control descriptions describe the required operation, monitoring, and control of the facilities included in this contract.
- C. The functional descriptions contain requirements for furnishing and installing labor and materials that may not appear elsewhere in the contract documents.
- D. All equipment and services required in equipment local control panels provided to implement the monitoring and control functions described herein or in the process input/output schedules shall be provided by the Contractor through individual equipment suppliers.
- E. Unless specifically stated otherwise, all interconnected wiring between all instruments, panels, controls, and other devices listed in the functional descriptions as required to provide all functions specified herein shall be furnished by the electrical subcontractor under Division 26. The electrical subcontractor shall provide all cable and conduit required to carry all signals listed in the process input/output schedules. Special cables that are required for interconnection between sensors or probes and transmitters or signal conditioners shall be furnished with the instrumentation devices by the equipment supplier.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 17910 – Instrument Schedule
- B. Section 17920 – Control System Input/Output Schedule

PART 2 FUNCTIONAL CONTROL DESCRIPTIONS, GENERAL

2.1 DEFINITIONS

- A. RUNNING status signals shall be from auxiliary contacts provided with the motor control equipment (i.e., starter, VFD, SCR. Etc.).
- B. AUTO status signals shall be defined as HAND-OFF-AUTO switch in the AUTO position or process control system in AUTO (versus MANUAL).

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- C. FAIL status signals shall be defined as motor overload and/or any other shut down mode such as overtorque, overtemperature, low oil pressure, high vibration, etc.
- D. READY status signal shall be defined as all conditions, including equipment control power, satisfied to permit remote control of the equipment.

2.2 CONVENTIONS

- A. Operator workstation graphic display symbols and indicator lights on all MCC's, control panels, starter enclosures, etc. shall conform to the following color convention:
 - 1. Running/On/Open: Green
 - 2. Stopped/Off/Closed: Red
 - 3. Fail/Alarm: Amber
 - 4. Auto/Ready: Blue

2.3 PROCESS CONTROL

- A. Where setpoints, operating limits, and other control settings are provided by the functional descriptions, these settings shall be initial settings only and shall be used for assistance in the initial startup of the plant. All such settings shall be fully adjustable and, based on actual operating conditions, the instrumentation subcontractor shall make all necessary adjustments to provide smooth, stable operation at no additional cost to the Owner.
- B. Provision shall be made in PLC logic to suppress nuisance alarms and control actions by the following means:
 - 1. For alarms and control actions derived from analog input signals, use operator adjustable time delays and deadbands.
 - 2. For alarms and control actions derived from discrete input signals, use operator adjustable time delays.
 - 3. Initial settings for time delays shall be 10 seconds (range 0-120 seconds). Initial settings for deadbands shall be 5% of span (range 0-100%).
 - 4. Equipment that is started or stopped manually by the operator shall start or stop immediately, with no time delay.
- C. All setpoint control shall be by PID control algorithms. Where only proportional control is specified, tuning constants shall be used to reduce the Integral and Derivative functions to zero. All setpoints, sequence times, sequence orders, dead bands, PID tuning parameters, PLC delay timers, variable speed operating range limits, and similar control constants shall be accessible and alterable from the operator workstations.
- D. Unless otherwise specified, all equipment shall automatically restart after a power failure utilizing adjustable start delay timers in PLC control logic. Unless otherwise specified, all PLC control strategies shall be based upon automatic restart after a power failure and shall return to a normal control mode upon restoration of power.
- E. The PLC shall be capable of receiving initial run-time values for existing and proposed equipment. Initial run-time shall not automatically be assumed to be zero.

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- F. A control discrepancy alarm shall be generated through the PLC for any drive, motor, etc. for which a command has been issued, but for which the PLC is not receiving a confirming status signal (e.g., start command with no run feedback). The failure shall be logged.
- G. An instrument failure alarm shall be generated for any instrument which is generating a signal that is less than 4 mA or greater than 20 mA.
- H. Unless otherwise specified in an individual control description, an instrument failure or control discrepancy alarm shall cause the control strategy to maintain last values and to generate an alarm. Manual initiation of the automatic control strategy shall be required.
- I. A control program that controls multiple pieces of equipment shall not be prevented from running because not all of the equipment is in AUTO. If equipment within an equipment chain is required to be running for program operation and it is running in HAND or MANUAL, then the program shall run and control the other equipment that is in AUTO.
- J. All PLC wait states (internal time delays, etc.) after an operator action shall be displayed on the operator workstation.

PART 3 FUNCTIONAL CONTROL DESCRIPTIONS

3.1 SCREENING SYSTEM CONTROL DESCRIPTION

- A. Process Overview
 - 1. Monitoring for the screen system shall reside in PLC-SG. One screen control panel shall be provided for each screen and washer compactor. Panels shall include manufacturer provided PLC. The PLCs shall be networked via Ethernet to the PLC-SG as shown on the contract drawings.
 - 2. Screen influent and effluent slide gates are existing and operated manually by the operator locally or from SCADA.
 - 3. The screenings area is a Class I Div. 2 environment. All field instruments in the screenings area shall be rated for a Class I Div. 2 environment.
 - 4. Screens influent chamber high level is monitored by an ultrasonic level transmitter and alarmed at the SCADA.
 - 5. Each screen/compactor is controlled automatically by its control panels (SCN-CP-SG721), (SCN-CP-SG722), and (SCN-CP-SG723). If selected, a system enable signal is transmitted from PLC-SG, as appropriate, to enable the screen for operation. Once enabled, the screen's local controls via its own PLC will control the screen.
- B. Control Equipment
 - 1. Each screen/compactor shall be provided with the following under Section 11350:
 - a. Trough wash water solenoid valves (SV-SG751), and (SV-SG754) respectively.
 - b. Washer compactor organics catch pan flushing solenoid valves (SV-SG861), (SV-SG863), and (SV-SG865) respectively.
- C. Control Operations
 - 1. General Screen Control Operation

- a. Each screen and washer/compactor shall be controlled locally by the manufacturer supplied control panel (SCN-CP-SG721), (SCN-CP-SG722), and (SCN-CP-SG723) as specified in Section 11350 Mechanical Screening Package.
 - b. Automatic controls of the screens and washer compactor shall reside in manufacturer supplied PLCs.
 - c. Screens shall be capable of local operation from the switches and panel OIT or remote from SCADA.
 - d. The instrumentation and controls system subcontractor (ICSS) shall coordinate I/O with screen manufacturer, such that all alarm, status, and control signals used in the manufacturer supplied control panels are also made available for monitoring by the plant SCADA system.
 - e. Plant SCADA screen graphics shall be developed that closely resemble the manufacturer supplied touch screen interface screens.
 - f. All solenoid wash water valves dedicated to the screen and the washer compactors are powered and controlled from the screen control panel.
2. Control Description
- a. The screen channels slide gates are existing and manually set by plant operators from SCADA by opening and closing the slide gates to establish a flow path. Once the flow path is established for a screen, that screening equipment can be operated.
 - b. Each screen and washer compactor pair shall be controlled by its local control panel (SCN-CP-SG721), (SCN-CP-SG722), and (SCN-CP-SG723) as specified in section 11350. Equipment control, status and alarms monitoring shall be at the SCADA as shown on drawings.
 - c. Screen and washer compactors shall be controlled in the manual or automatic mode as described below:
 - 1) When the H-O-A selector switch (LCS-SCN-*) located near the equipment is in the HAND position, the corresponding screen shall run continuously.
 - 2) When the H-O-A selector switch (LCS-SCN-*) located near the equipment is in the OFF position, the corresponding screen shall not operate.
 - 3) When the H-O-A selector switch (LCS-SCN-*) located near the equipment is in the AUTO position, the corresponding screen can be controlled from the respective screen control panel OIT as described in Section 11350.
 - 4) When the H-O-A selector switch (LCS-SCN-*) is in the AUTO position and the AUTO/MANUAL selector switch at the SCADA is in the MANUAL position the operator can select the mode of operation Timer, Combined or Level. The operator shall be able to adjust the timer and cycle timer from SCADA.
 - 5) When the H-O-A selector switch (LCS-SCN-*) is in the AUTO position and the AUTO/MANUAL selector switch at the SCADA is in the AUTO position the automatic starting/stopping of the screens shall be based on the equipment control panel settings be as described in Section 11350.
 - 6) Similar controls for the washer compactor shall be provided.

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3.2 GRIT REMOVAL SYSTEM

A. Process Overview

1. Grit collectors (GC-SG812 and GC-SG822), grit pumps (P-SG851, P-SG852, PSG853 and P-SG854), and grit washers (GW-SG871 and GW-SG881) shall be provided under Division 11. Each grit train consists of a grit collector, two grit pumps, and a grit washer.
2. Grit collectors and grit washers shall be provided with manufacturer-supplied Grit Removal System Control Panels (GR-CP-SG812 and GR-CP-SG822) under Division 11. Each panel shall include a manufacturer provided PLC.
3. Remote monitoring of the grit removal system at the SCADA shall be through existing PLC-SG.
4. Grit Collector influent slide gates are existing and manually operated through SCADA.
5. The grit collector effluent shall flow over a weir to the common grit effluent channel.

B. Control Equipment

1. Each grit washer shall be provided with the following under Section 11413:
 - a. Grit washer wash water solenoid valve (SV-SG871), and (SV-SG881) respectively.
 - b. Grit washer organics return line ball valve (MOV-SG875), and (MOV-SG885) respectively. And grit washer organics return flushing valve (MOV-SG876) and (MOV-SG886).
 - c. Grit level sensing pressure probes (LIT-SG871), and (LIT-SG881) respectively.

C. Control Operations

1. Each grit removal system shall be enabled for operation from the SCADA through PLC-SG. Equipment control, status and alarms shall be through the SCADA.
2. Normal operation of the grit removal system is in auto mode.
3. Each grit collector shall be controlled by a single control panel as specified in Section 11413.
4. Grit Collector Operation:
 - a. When the H-O-A selector switch is in the HAND position the corresponding grit system shall be manually operated by the operator from the control panel or the local control stations.
 - b. When the H-O-A selector switch is in the OFF position the corresponding grit system shall not operate.
 - c. When the H-O-A switch on the respective control panel is in the AUTO position, the automatic starting/stopping of the grit auger and respective grit pump(s) shall operate based on the equipment control panel settings be as specified in Section 11413.
5. Grit Washer Operation:
 - a. Each grit washer shall be controlled by a single Control Panel as specified in Section 11413.
 - 1) When the H-O-A selector switch is in the HAND position the corresponding grit washer shall be manually operated by the operator from the control panel or the local control stations.
 - 2) When the H-O-A selector switch is in the OFF position the corresponding grit washer shall not operate.

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- 3) When the H-O-A switch on the respective control panel is in the AUTO position, the automatic starting/stopping of the grit stirrer motor, fluidizing water valve energizing, open/closing of organics flushing valve shall be as specified in Section 11413.
- b. In Automatic mode, the operator can enable or disable each grit train (i.e., grit collector, grit pump and grit washer) from SCADA through PLC-SG. When enabled, the grit removal system shall operate based on the equipment control panel settings as described in Section 11413.

3.3 ODOR CONTROL SYSTEM

A. Process Overview

1. The odor control system consists of two trains, each train consists of a grease filter/mist eliminator, odor control fan, and a carbon vessel.
2. Each odor control fan, shall be provided with a manufacturer-supplied control panel (VFD-F-SG915), and (VFD-F-SG925) respectively provided with the system.

B. Control Operation

1. The odor control fans shall operate via local ON/OFF control with ON/OFF selector switches for each dedicated Fan Control Panel. The specific fans operating, and the operating speeds will be set locally at the Fan Control Panel, and able to be monitored remotely from SCADA.
2. The odor control system components including alarm conditions from integral instruments and controls will be operated from the local Fan Control Panels VFD-F-SG915 and VFD-F-SG925. All operating status and alarm conditions shall be reported to SCADA as shown on drawings.

END OF SECTION

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Hammerl, Paige

From: Hammerl, Paige
Sent: Friday, January 7, 2022 1:54 PM
To: jmoore@duboiscooper.com; kelly@swcdllc.com; Dave Connors (dconnors@waterworkssystem.com); gmontowski@pullman-services.com; bfreeman@seglc.com; zluc@seglc.com; Tony Jenkins; midwestpower@hotmail.com; chrisr@fmgcutting.com; jeff@fmgcutting.com; msl@kokosing.biz; ggarcia@canaancompanies.com; bruce-smith@spenceborthers.com; msambochi@duboiscooper.com; ehine@commercecontrols.com; jokowale@huronvalleyelectric.com; Rick Alvarez
Cc: Sullivan, Tim; MSullyU@gmail.com; Englert, Chris; Keith Sanders (ksanders@a2gov.org); Smith, Adam; 'Kenzie, Earl'; kyle.bentley@petersonandmatz.com; Vander Meulen, Ross; Bennett, Andrew
Subject: AA Headworks - Pre-Bid Meeting Follow-up
Attachments: 20220104_PreBid_ProjectPresentation.pdf; AAHeadworks_PreBidMeeting_SignIn.pdf

Tracking:

Recipient

Delivery

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Rick Alvarez

Sullivan, Tim

Delivered: 1/7/2022 1:54 PM

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Englert, Chris

Keith Sanders (ksanders@a2gov.org)

Smith, Adam

'Kenzie, Earl'

kyle.bentley@petersonandmatz.com

Vander Meulen, Ross

Bennett, Andrew

Good Afternoon,

This email is intended as a follow-up to the Pre-Bid Meeting for the Ann Arbor Headworks Improvement Project ITB No. 4706. Attached are pdf's of the sign-in sheet of attendees present at the meeting as well as the PowerPoint presentation presented during the meeting.

Below is a summary of key points and questions presented at the meeting:

1. Key Dates
 - a. January 5 - 6 & 11, 2022 – Accompanied Site Visits (PPE is required)
 - b. January 17, 2022 @ 5PM – Bidder Questions Due
 - c. **January 26, 2022 by 2:00 PM– Bids Due to City**
2. Key Bid Form Requirements
 - a. Bid Form (Section 1) must include a project cost (“Project Subtotal”) for all work not associated with screening, then a “Total Project Cost” will be included for both screening manufacturers which will include all costs associated with each screening manufacturer (process/equipment, structural, electrical, etc.).
 - b. ALL substitutions must be identified on the Bid Form (Section 2) in order to be considered during Construction.
3. Addendum Questions
 - a. Submit RFP Questions to Chris Englert, cenglert@a2gov.org
 - b. Submit Purchasing Questions to Colin Spencer, cspencer@a2gov.org
4. Questions Asked During Meeting
 - a. What is the projected Engineer’s Estimate of Probable Construction Cost to be used for Bid Bonds?
 - i. The project is estimated at ~\$8.6M
 - b. What is the expected Notice to Proceed date?
 - i. The NTP date is anticipated for mid-May 2022.

Please review the attached pdf of PowerPoint for an in depth summary of all items discussed during the meeting with additional important information regarding Bidding.

Thank you for attending the meeting and we look forward to reviewing your bids.

Thank you,

Paige E. Hammerl, E.I.T.

Graduate Engineer II
Hubbell, Roth & Clark, Inc.
535 Griswold Street
Buhl Building, Suite 1650
Detroit, MI 48226-3698
Phone: [\(313\) 965-3330](tel:3139653330)
Direct: [\(313\) 463-4249](tel:3134634249)
Cell: (313) 530-4272
E-mail: phammerl@hrcengr.com

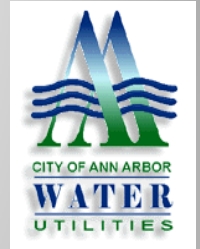


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Ann Arbor ITB No. 4706
WWTP Headworks Improvement Project

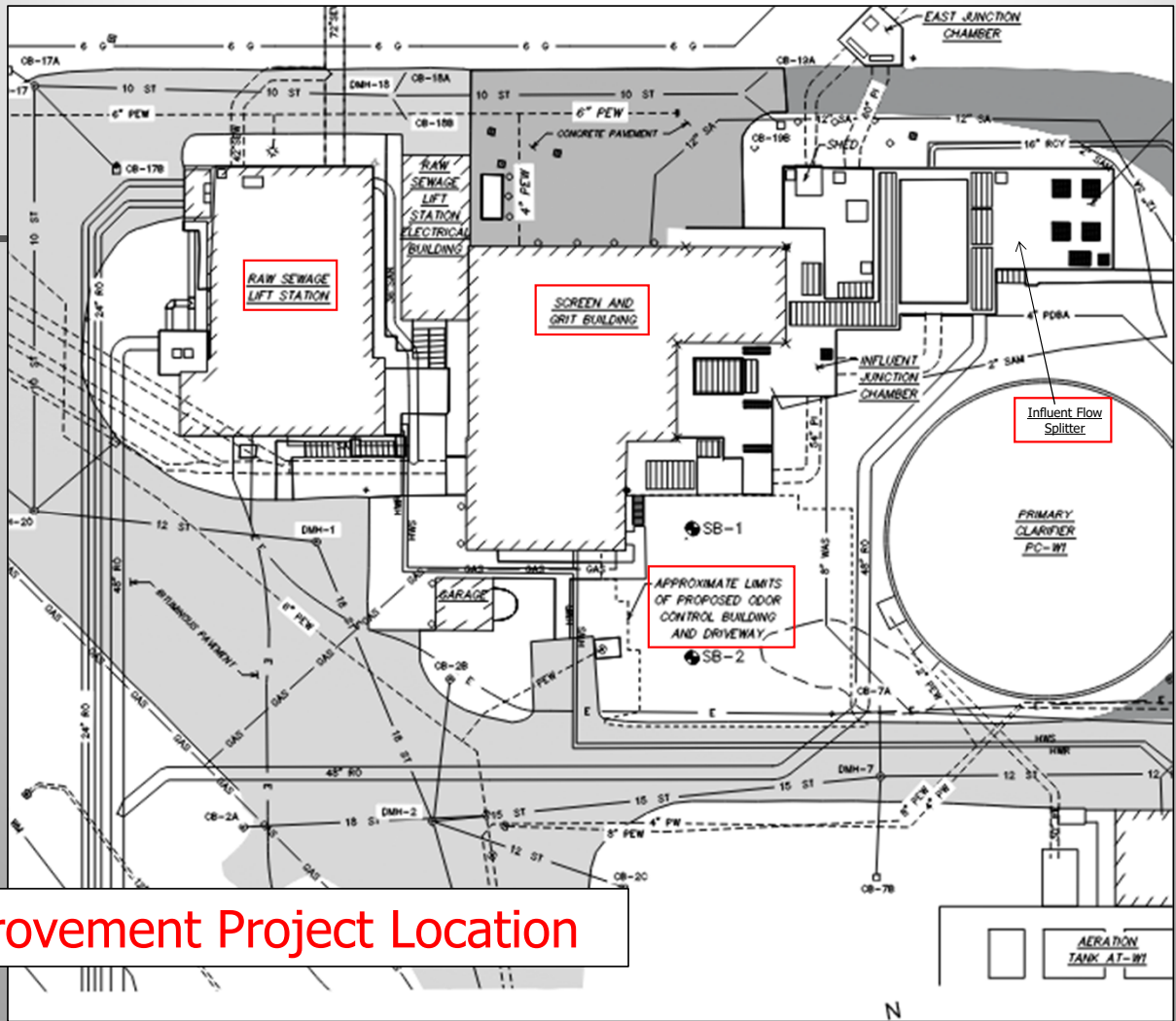
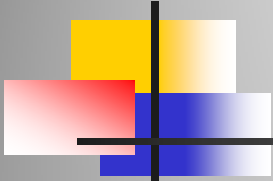




WWTP Headworks Improvement Project

Introductions

- Earl Kenzie - Wastewater Treatment Services Unit (WWTSU) Manager
- Chris Englert – WWTSU Engineer
- Keith Sanders – WWTSU Assistant Manager
- Paige Hammerl & Tim Sullivan – Hubbell, Roth & Clark Engineering Primary POC / Project Management
- Andrew Bennett – Hazen & Sawyer Design Consultant



Headworks Improvement Project Location



General Project Scope

- Remove and replace existing screening equipment (both and washing equipment all channels)
- Remove and replace grit equipment with new Grit Wolf grit removal system and Coanda washing equipment.
- Structural channel rehabilitation and modifications to accommodate equipment.
- Install new odor control system for entire Headworks facility and perform modifications to existing grating.
- Build new grit pump and odor control building.
- Replace existing MCC, build new electrical room, and replace electrical as required.



WWTP Headworks Improvement Project

Bid Schedule – ITB No. 4706

- January 5 - 6 & 11, 2022 – Accompanied Site Visits
 - Site Visits Between 9AM – 12PM only (PPE is required)
- January 17, 2022 @ 5PM – Bidder Questions Due
- January 19, 2022– Bid Addenda No. 1 Issued
- January 21, 2022– Bid Addenda No. 2 Issued (if required)



WWTP Headworks Improvement Project

Bid Schedule – ITB No. 4706

- **January 26, 2022 by 2:00 PM– Bids Due to City**
- Mailing Address: City of Ann Arbor
Procurement Unit
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48104
- Hand delivered proposals may be dropped in the Purchasing drop box located in the Ann Street (north) vestibule of City Hall which is accessible 24/7

NO BIDS WILL BE ACCEPTED AFTER 2:00 PM



WWTP Headworks Improvement Project

Bid Form Discussion

- ALL SUBSTITUTIONS/ALTERNATIVES MUST BE IDENTIFIED IN THE BID FORM (SECTION 2) OR WILL NOT BE CONSIDERED DURING CONSTRUCTION
- Screening Manufacturers:
 - Duperon and Hydro-Dyne to only be considered.
 - Full project cost to be provided (“Project Subtotal”) with costs associated with each manufacturer (structural, electrical, process/equipment, etc.) to be included for each manufacturer.
 - **Total project costs must be provided for BOTH manufactures.**



WWTP Headworks Improvement Project

Ann Arbor Contract Requirements

- Sample Contract included in RFP
- Prevailing Wage Project – Heavy Constr. – included in Add No. 1
- Ann Arbor Non-Discrimination Ordinance
- Living Wage Ordinance Declaration and Compliance
- Vendor Conflict of Interest Disclosure Form
- ***Proposals that fail to provide the required forms listed above upon bid opening may be deemed non-responsive and may not be considered for award.***



WWTP Headworks Improvement Project

Contract Requirements

- Contract Time – 600 consecutive calendar days
- Liquidated Damages –
 - \$1500 per day delay of Substantial Completion
 - \$1000 per day delay of Final Completion
- Bid Recommendation – February 2022
- Expected Notice To Proceed – May 2022



WWTP Headworks Improvement Project

Submit RFP Questions to:

- Chris Englert, Cenglert@a2gov.org

Submit Purchasing Questions to:

- Colin Spencer, Cspencer@a2gov.org



WWTP Headworks Improvement Project

Questions?

(Note – Questions will be noted but must also be submitted formally to be included in Addendum)

WWTP HEADWORKS IMPROVEMENT PROJECT

Pre-Bid Meeting - ITB 4706

January 4, 2022 - 10:00 am

Sign In Sheet

Name	Company	Phone / Email
Joseph Moore	PuBois - Cooper Assoc	313-920-7061 / jmoore@clubcooper.com
Kelly Dalbo	Smith's Waterproofing LLC	248.464.3263 / Kelly@swcdllc.com
Dave Connors	Waterworks/Hydro Pym	(989)860 9816 / dconnors@water...com
Greg Montowski	Pullman	2488770464 / gmontowski@pullman-services.com
Ben Freeman	Superior Electric Great Lakes	517 763 3280 B.Freeman@segk.com
Zachere Luc	Superior Electric Great Lakes	586 785 0608 ZLUC@segk.com
Brian Burt	Kokosing Industrial	740-225-0479
Tony Jenkins	Kokosing Industrial	419-706-7844
MATT SHAEFFER	MIDWEST POWER SYSTEMS	248 -770-5124 midwestpower@hotmail.com
CHRIS REICHTHOLD	FML CONCRETE CUTTING	810-560-5068 / CHRISR@FMLCUTTING.CO

WWTP HEADWORKS IMPROVEMENT PROJECT

Pre-Bid Meeting - ITB 4706

January 4, 2022 - 10:00 am

Sign In Sheet

Name	Company	Phone / Email
Jeff Datchin	Fm G Concrete cutting	810-227-3650 Jeff@Fmgcutting.com
Mark Littleton	Kokosing Industrial	msl@kokosing.biz
GABRIEL GARCIA	CANAAN COMPANIES INC	419-304-9617 / ggarcia@CANAAncOMPANIES.COM
Bruce Smith	Spence Brothers	248-767-7764 / bruce.smith@spencebrothers.com
KEITH SANDERS	A2 WWTP	734-794-6450 / ksanders@a2gov.org

WWTP HEADWORKS IMPROVEMENT PROJECT

Pre-Bid Meeting - ITB 4706

January 4, 2022 - 10:00 am

Sign In Sheet

Name	Company	Phone / Email
Matt Sambuchi	De Bois Cooper	msambuchi@dbcooper.com
Eric Hine	Commerce Controls	ehine@commercecontrols.com
TIM SULLIVAN	HRC 248	567 9451 msullivan@gmtr.com
Paige Hammerl	HRC	313-830-4272 / phammerl@hrcengr.com
Joe Kowal	HVE	734 263-6399 / JoKowal@HuronValleyElectric.com
Rick ALVARADO	KENNEDY	248-513-2033 RALVARADO@KENNEDYIND.COM
Ross Vander Meulen	Hazen & Sawyer	616-510-0275 / rvandermeulen@hazensawyer.com
ANDREW BENNETT	HAZEN AND SAWYER	248 459 6427 / abennett@hazensawyer.com

LIST OF DRAWINGS

GENERAL

SHEET NO.	DESCRIPTION
COVER	TITLE PAGE
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G-02	AREA DESIGNATIONS, NEMA RATINGS AND MATERIALS

DEMOLITION

SHEET NO.	DESCRIPTION
DG-01	GENERAL DEMOLITION NOTES
DS-01	RAW SEWAGE LIFT STATION DEMOLITION PLAN AND PHOTOS
DS-02	NORTH SCREENING & GRIT DEMOLITION PLAN & SECTIONS
DS-03	NORTH SCREENING & GRIT DEMOLITION PLAN & SECTIONS
DS-04	SOUTH SCREENING & GRIT DEMOLITION PLAN & SECTIONS
DS-05	SOUTH SCREENING & GRIT DEMOLITION PLAN & SECTIONS
DS-06	SCREENING & GRIT DEMOLITION SECTIONS
DS-07	INVENTORY GRIT DEMOLITION PLAN
DA-01	HEADWORKS BUILDING DEMOLITION PLANS
DP-01	NORTH SCREENING CHANNEL DEMOLITION PLAN
DP-02	SOUTH SCREENING CHANNEL DEMOLITION PLAN
DP-03	SCREENING CHANNELS DEMOLITION SECTIONS
DP-04	HEADWORKS EXISTING SUMP PUMP DEMOLITION
DP-05	NORTH GRIT CHAMBER DEMOLITION PLAN
DP-06	SOUTH GRIT CHAMBER DEMOLITION PLAN
DP-07	GRIT CHAMBER DEMOLITION SECTIONS
DM-01	HVAC DEMOLITION PLAN
DE-01	NORTH HEADWORKS BUILDING SCREENING AND GRIT EQUIPMENT ELECTRICAL DEMOLITION PLAN
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CIVIL

SHEET NO.	DESCRIPTION
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C-03	EXISTING SITE UTILITIES
C-04	PROPOSED SITE GRADING
C-05	PROPOSED DETAILED SITE GRADING
C-06	PROPOSED SITE UTILITIES
C-07	SESC PLAN

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RS-2	REFERENCE PLAN
RS-3	REFERENCE PLAN
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S-2	REPAIR DETAILS
S-3	REPAIR PHOTOS
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S-4B	SCREENS PLANS, SECTIONS & DETAILS (HYDRO-DYNE)
S-5	NORTH GRIT PLANS & SECTIONS
S-6	NORTH GRIT SECTIONS & DETAILS
S-7	SOUTH GRIT PLANS & SECTIONS
S-8	ODOR CONTROL BUILDING BRACED EXCAVATION PLAN
S-9	ODOR CONTROL BUILDING PLANS
S-10	ODOR CONTROL BUILDING SECTIONS
S-11	ODOR CONTROL BUILDING ROOF PLAN, SECTIONS & DETAILS
S-12	ODOR CONTROL BUILDING SECTIONS, DETAILS & ELEVATIONS
S-13	VESSEL FOUNDATION & PLATFORM PLAN & SECTIONS
S-14	OVERHEAD HOIST DETAILS
S-15	OVERHEAD HOIST DETAILS
S-16	PROJECT NOTES
S-17	MASONRY SPECIFICATION
S-18	CONCRETE SPECIFICATION - 1
S-19	CONCRETE SPECIFICATION - 2
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A-02	ARCHITECTURAL SCHEDULES AND DETAILS
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A-04	ODOR CONTROL BUILDING MAIN FLOOR PLAN
A-05	ODOR CONTROL BUILDING ROOF PLAN
A-06	ODOR CONTROL BUILDING ELEVATIONS
A-07	ODOR CONTROL BUILDING SECTIONS
A-08	ODOR CONTROL SECTIONS AND DETAILS
A-09	HEADWORKS MODIFICATIONS PLAN AND ELEVATIONS
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A-11	HEADWORKS MODIFICATIONS REFERENCE PHOTOS

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P-03	EXISTING AND PROPOSED HYDRAULIC GRADE LINE
P-04	PUMP, VALVE, AND PIPE SCHEDULES
P-05	GATE SCHEDULES
P-06	PROCESS MISCELLANEOUS DETAILS - I
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P-08	PROCESS MISCELLANEOUS DETAILS - III
P-09	PROCESS MISCELLANEOUS DETAILS - IV
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P-12A	NORTH SCREENING AREA PARTIAL PLANS (DUPERON)
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P-11B	PLAN @ ELEV. 743.0 (HYDRO-DYNE)
P-12B	NORTH SCREENING AREA PARTIAL PLANS (HYDRO-DYNE)
P-13B	SOUTH SCREENING AREA PARTIAL PLANS (HYDRO-DYNE)
P-14B	NORTH AND SOUTH CHANNEL SECTIONS (HYDRO-DYNE)
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E-04A	SOUTH HEADWORKS BUILDING DUPERON POWER PLAN
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E-05	NORTH HEADWORKS BUILDING GRIT WOLF & PUMP POWER PLAN
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I-09	ODOR CONTROL SYSTEM
I-10	ODOR CONTROL SYSTEM GAS MONITORING
I-11	STANDARD DETAILS



ISSUED FOR	DATE	REV.	DESCRIPTION
FOR ADDENDUM NO. 1	11-19-2022		
ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

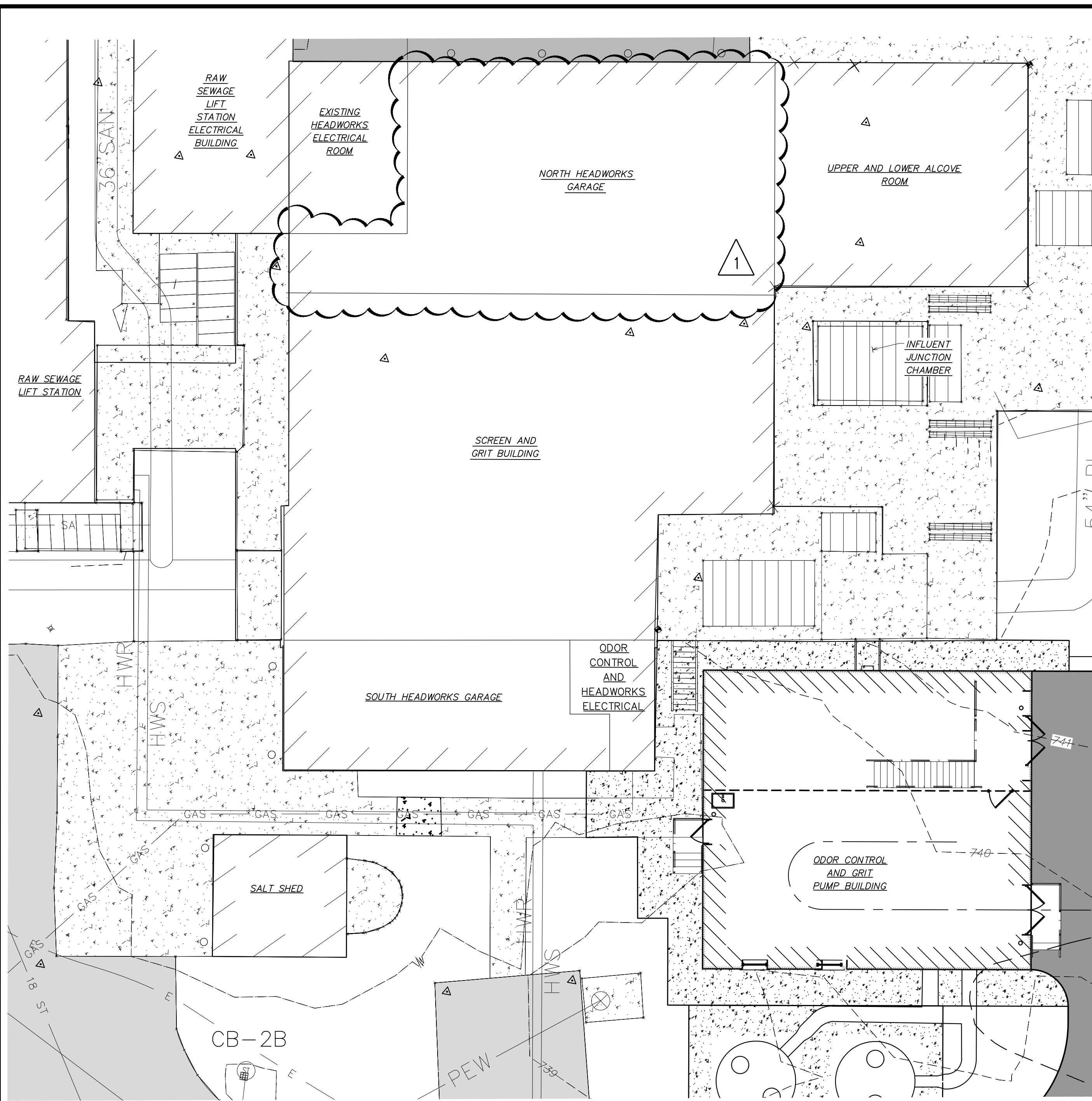
CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
ANN ARBOR MI 48106-6647
www.a2gov.org



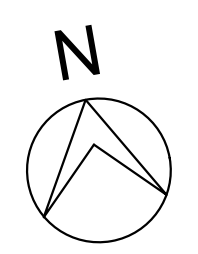
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
SHEET INDEX

SCALE: N.T.S.
DRAWING No.: 001

SHEET No. **G-01**




ATMOSPHERIC AND NEMA DESIGNATIONS
SCALE: 1" = 10'



BUILDING	ROOM / FLOOR	DESCRIPTION	ATMOSPHERIC DESIGNATION	MATERIALS (1)	PAINT SYSTEM (2)	NFPA CLASSIFICATION	NEMA RATING	CONDUIT (3)
GENERAL AREAS:								
		OUTSIDE	MODERATELY CORROSIVE	GALVANIZED	N/A	UNCLASSIFIED	NEMA 4X	PVC CTD RGS
		TANKS (INSIDE)	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 1	NEMA 7	PVC CTD RGS
		TANKS (DECK)	MODERATELY CORROSIVE	GALVANIZED	N/A	UNCLASSIFIED	NEMA 4X	PVC CTD RGS
		OUTSIDE NEAR ACCESS (4)	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 3	NEMA 4X	PVC CTD RGS
		ELECTRICAL ROOMS	NEUTRAL	CARBON STEEL		UNCLASSIFIED	NEMA 12	RGS
		ROOFS		SEE ARCH.			NEMA 4X	RGS
		HEADWORKS						
		SCREEN AND GRIT ROOM	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 1	NEMA 7	PVC CTD RGS
		NORTH HEADWORKS GARAGE	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 1	NEMA 7	PVC CTD RGS
		SOUTH HEADWORKS GARAGE	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 1	NEMA 7	PVC CTD RGS
		ELECTRICAL ROOM	NEUTRAL	CARBON STEEL		UNCLASSIFIED	NEMA 12	RGS
		ALCOVE, LOWER ALCOVE & NORTH GRIT DRY PIT	HIGHLY CORROSIVE	316(L) SS	N/A	CLASS 1 / DIV. 1	NEMA 7	PVC CTD RGS
		ODOR CONTROL AND GRIT PUMP BUILDING						
		GRIT PUMP ROOM	MODERATELY CORROSIVE	GALVANIZED	N/A	UNCLASSIFIED	NEMA 4X	RGS
		ODOR CONTROL ROOM	MODERATELY CORROSIVE	GALVANIZED	N/A	UNCLASSIFIED	NEMA 4X	RGS


NOTE * :
COORDINATE DIMENSIONS WITH MANUFACTURER'S APPROVED SHOP DRAWINGS.

- NOTES:**
- 1 MINIMUM STANDARDS THAT APPLY TO SUPPORTS, HARDWARE, UNISTRUT, ETC. DOES NOT APPLY TO PIPE OR EQUIPMENT. WHERE MORE STRINGENT STANDARDS ARE IDENTIFIED ELSEWHERE, THOSE STANDARDS APPLY
 - 2 SEE 09900
 - 3 CONDUIT:
RGS - RIGID GALVANIZED STEEL
PVC CTD RGS - PVC COATED RIGID STEEL
EMT - ELECTRICAL METAL TUBING
 - 4 WITHIN 10 FT OF OPEN TANK, PROCESS VENT, ACCESS HATCH OR TANK OPENING. (e.g. ELECTRICAL PANELS OR DISCONNECTS AND ALL SUPPORTS AND HARDWARE WITHIN 10 FT OF AN ACCESS HATCH SHALL BE 316SS.)



Know what's below.
Call before you dig.

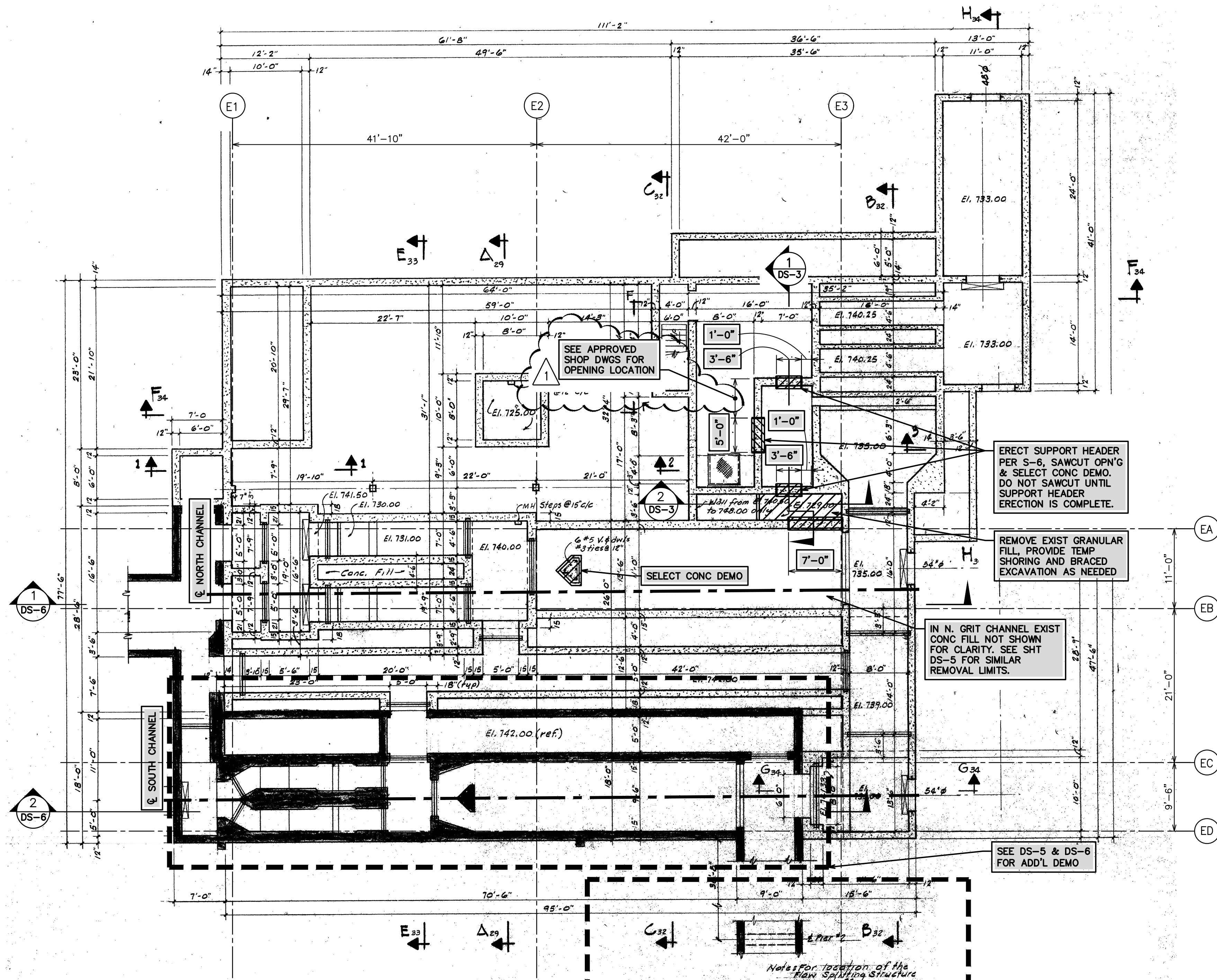
ISSUED FOR ADDENDUM NO. 1	1-19-2022	12-13-2021	11-22-2021	10-29-2021	10-01-2021
ISSUED FOR BIDS SET	90% DESIGN SUBMITTAL	70% DESIGN SUBMITTAL	50% DESIGN SUBMITTAL	DATE	CHECKED
CITY OF ANN ARBOR PUBLIC SERVICES	301 EAST HURON STREET	ANN ARBOR MI 48106-8647	www.aagov.org	DESCRIPTION	REV.



PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ATMOSPHERIC AND NEMA DESIGNATIONS

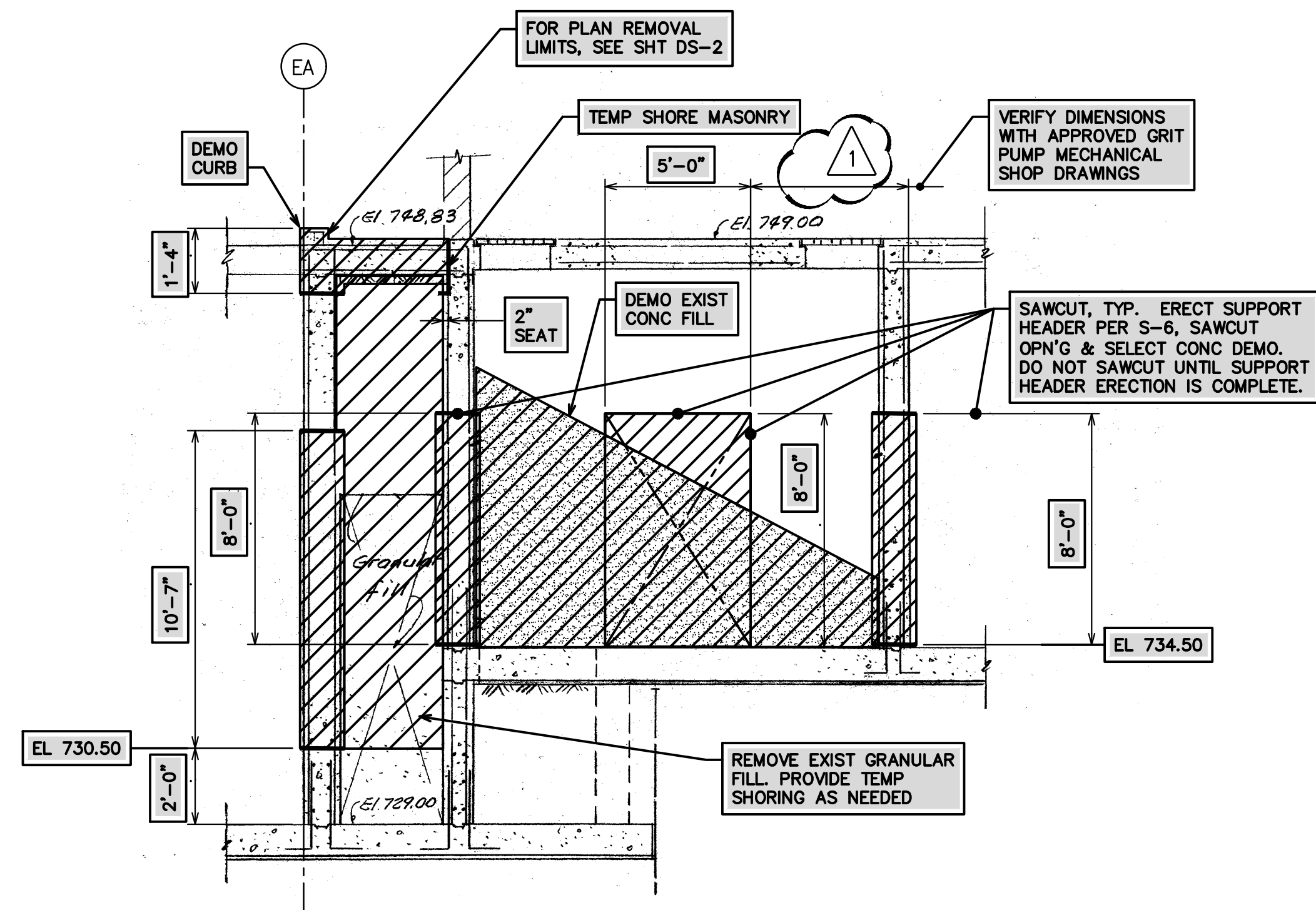
SCALE 1" = 10'	DRAWING No. 002
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SHEET No.
G-02

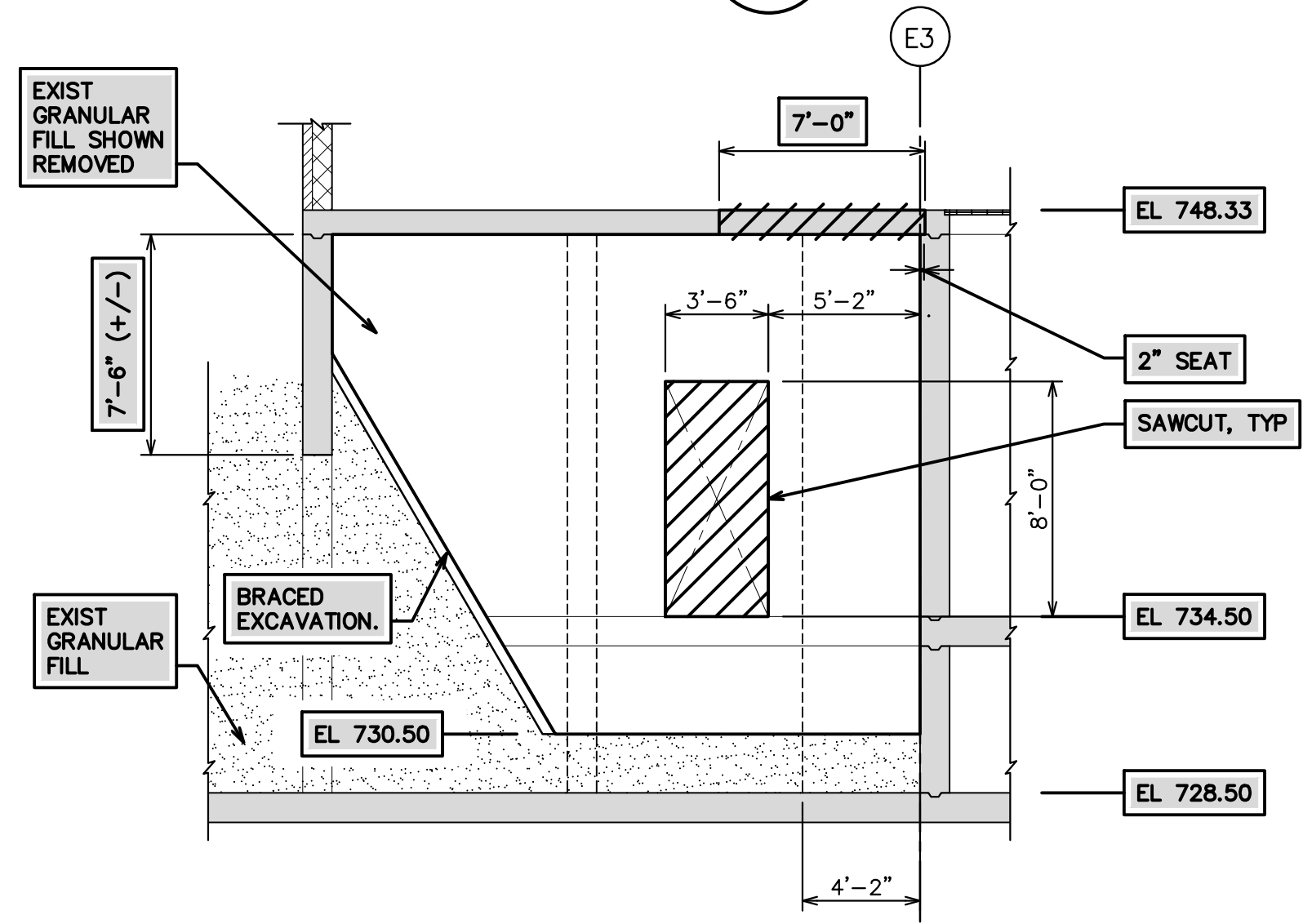


SECTIONAL PLAN
SCALE: 1/8" = 1'-0"

NOTE:
INFLUENT SPLITTER BUILDING AND LIFT STATION
ELECTRICAL BUILDING NOT SHOWN FOR CLARITY

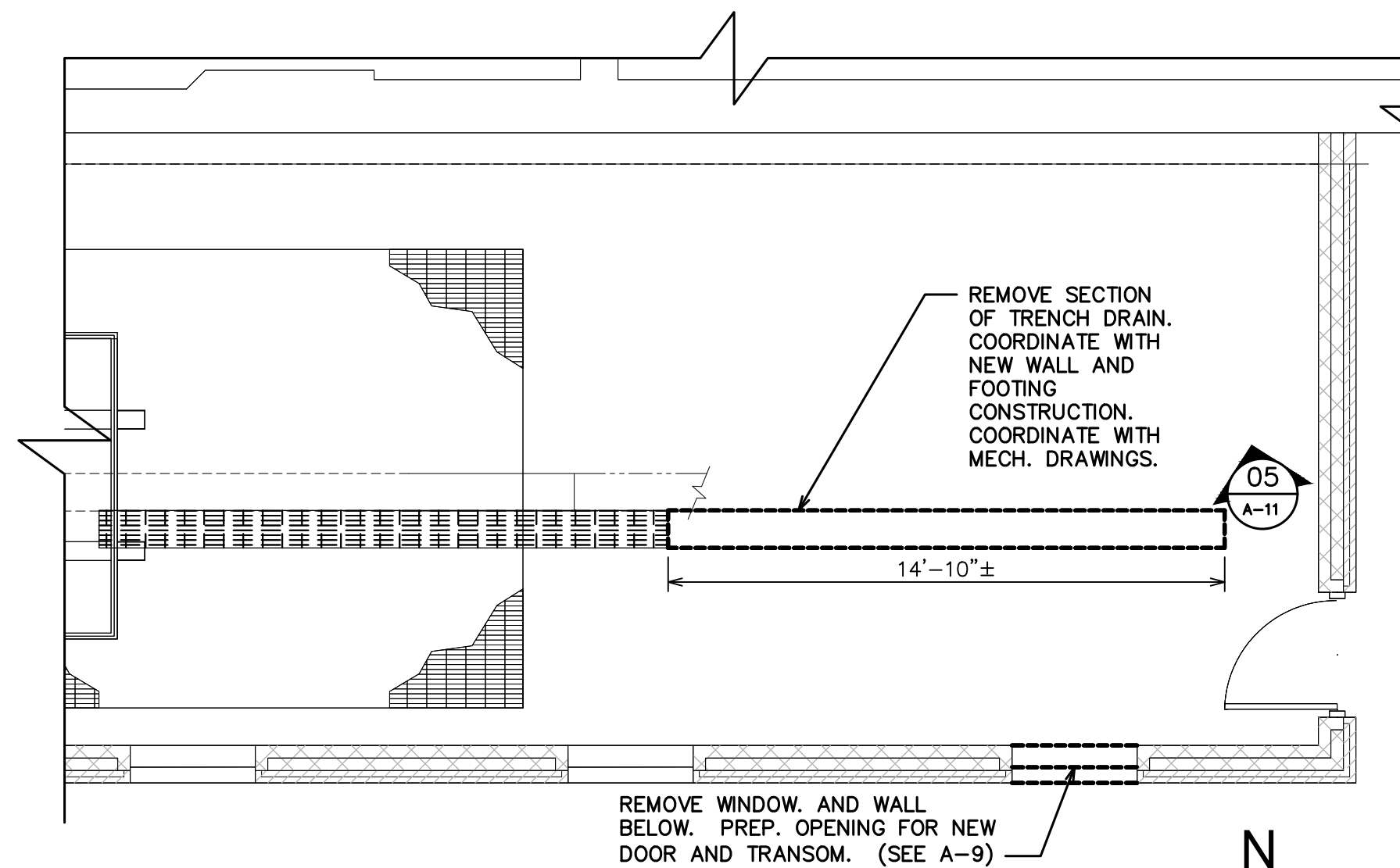


SECTION 1
DS-2/DS-3

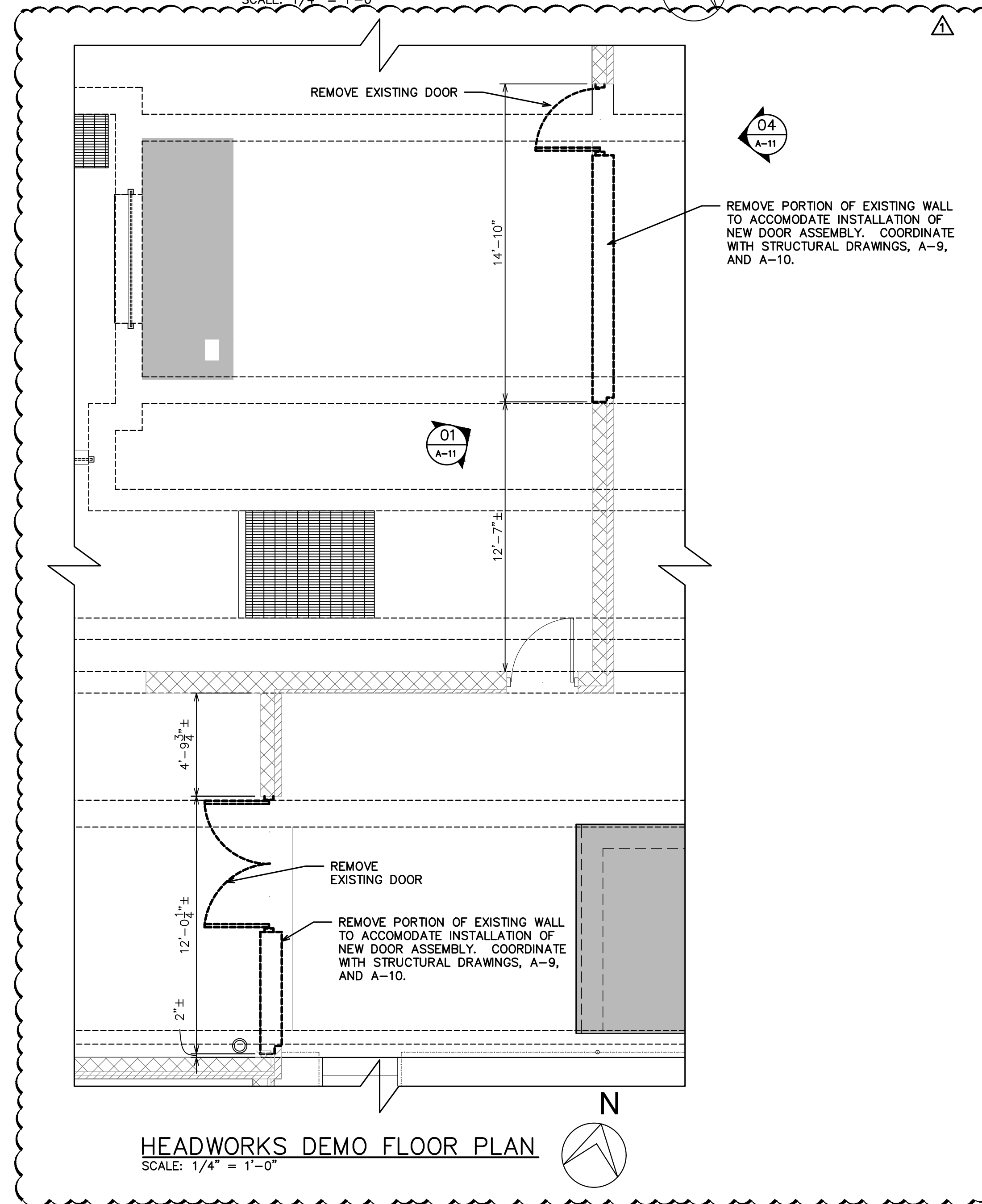


SECTION 2
DS-2/DS-3

811 Know what's below. Call before you dig.	
SDH	CHECKED
PMH	DRAWN
ISSUED FOR ADDENDUM NO. 1	DATE
ISSUED FOR BIDS SET	1-19-2022
90% DESIGN SUBMITTAL	12-13-2021
70% DESIGN SUBMITTAL	11-22-2021
50% DESIGN SUBMITTAL	10-29-2021
REV.	REV.
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR	
HEADWORKS IMPROVEMENTS PROJECT	
NORTH SCREENING & GRIT	
DEMOLITION PLAN AND SECTIONS	
SCALE	N.T.S.
DRAWING No.	109
SHEET No.	DS-3

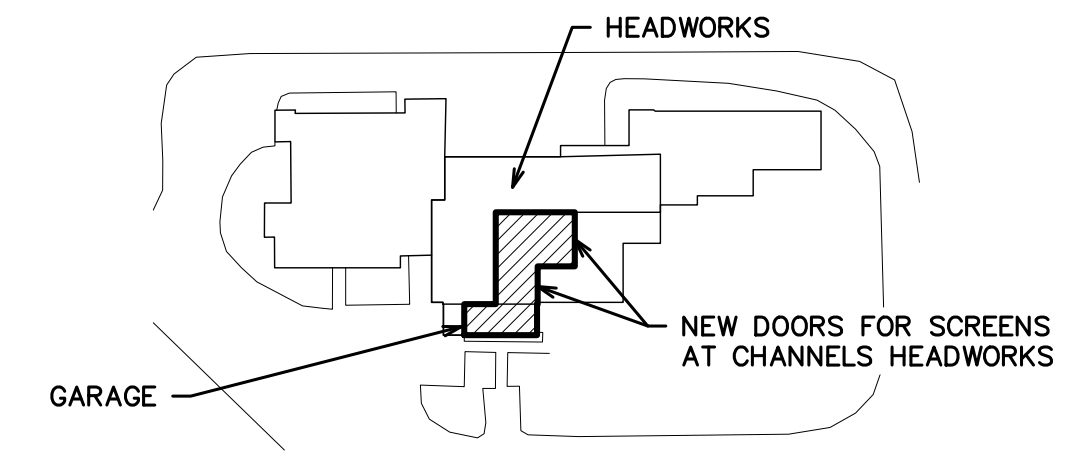


GARAGE DEMO FLOOR PLAN
SCALE: 1/4" = 1'-0"



HEADWORKS DEMO FLOOR PLAN
SCALE: 1/4" = 1'-0"

NOTE:
THESE DRAWINGS ARE BASED ON FIELD MEASUREMENTS AND INDICATE THE GENERAL ARRANGEMENT OF THE EXISTING FACILITY. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION SHOWN ON THIS DRAWING. PARTIES USING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO DEMOLITION AND CONSTRUCTION ACTIVITIES.



KEY PLAN
SCALE: N.T.S.

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ISSUED FOR	ADDENDUM NO.	DATE	DESCRIPTION	REV.
ISSUED FOR BIDS SET	1	1-19-2022		
90% DESIGN SUBMITTAL		12-13-2021		
70% DESIGN SUBMITTAL		11-22-2021		
50% DESIGN SUBMITTAL		10-29-2021		
		10-01-2021		

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING DEMOLITION PLANS

SCALE: AS SHOWN
DRAWING No.: 120

SHEET No. **DA-1**

120

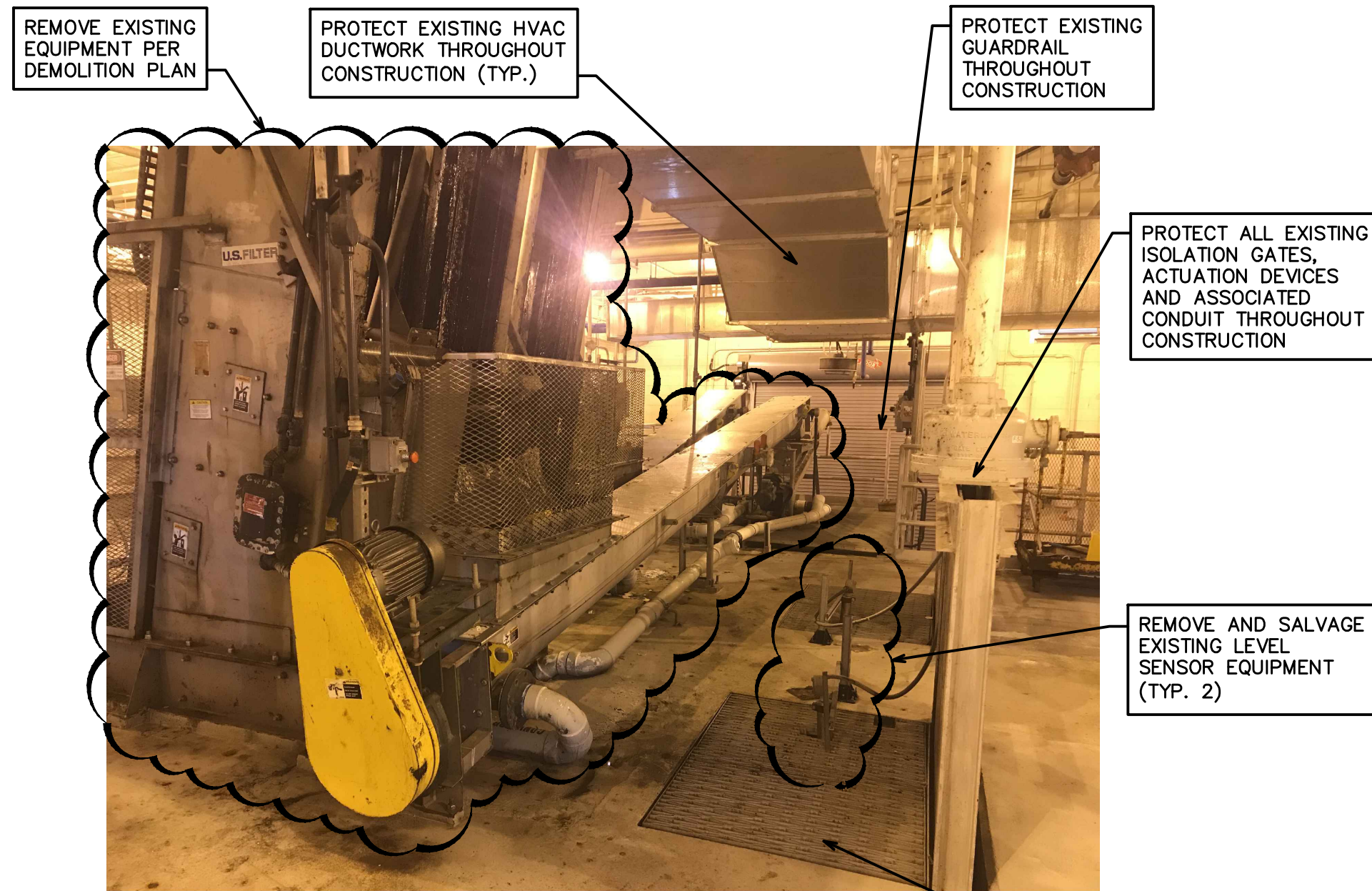


PHOTO 1 - NORTH CHANNEL SCREENS REAR

PROTECT ALL EXISTING ISOLATION GATES, ACTUATION DEVICES, AND ASSOCIATED CONDUIT THROUGHOUT CONSTRUCTION.

PROTECT EXISTING HVAC DUCTWORK THROUGHOUT CONSTRUCTION (TYP.)

PROTECT EXISTING GUARDRAIL THROUGHOUT CONSTRUCTION

PROTECT ALL EXISTING ISOLATION GATES, ACTUATION DEVICES AND ASSOCIATED CONDUIT THROUGHOUT CONSTRUCTION

REMOVE AND SALVAGE EXISTING LEVEL SENSOR EQUIPMENT (TYP. 2)

REMOVE AND REINSTALL EXISTING GRATING (TYP.)



PHOTO 2 - NORTH CHANNEL SCREENS FRONT

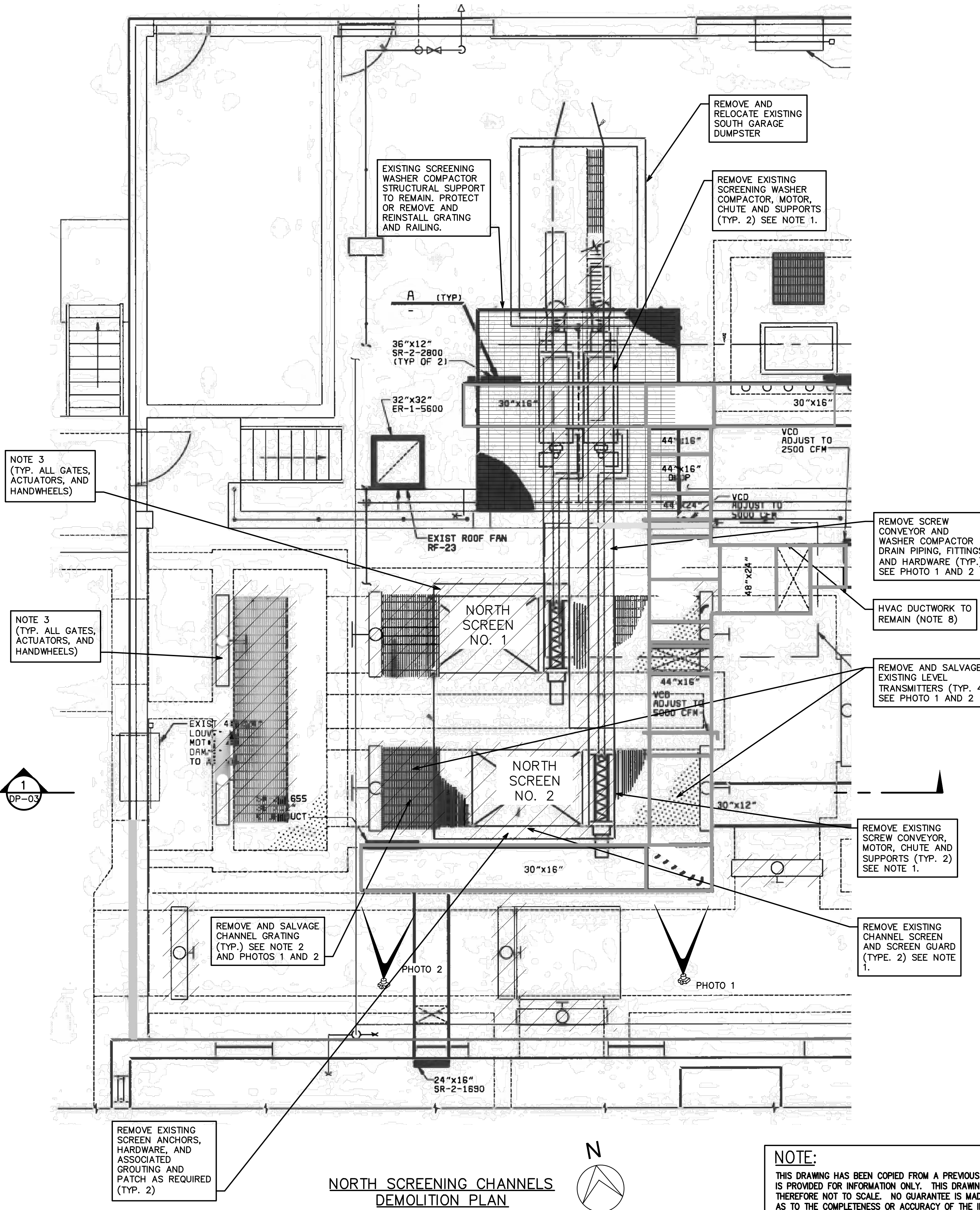
REMOVE AND SALVAGE EXISTING GRATING (TYP.)

REMOVE AND SALVAGE EXISTING LEVEL CONTROL DEVICES (TYP. 2)

REMOVE EXISTING MECHANICAL SCREENS, SCREEN GUARDS, AND ASSOCIATED ELECTRICAL EQUIPMENT AND CONDUIT TO SOURCE (TYP.)

GENERAL NOTES:

1. REMOVE EXISTING EQUIPMENT AS INDICATED AND LEGALLY DISPOSE OFF-SITE AS OUTLINED IN SPECIFICATION 02050 - DEMOLITION WORK AND DG-01.
2. SALVAGED ITEMS SHALL BE CLEANED, STORED, AND PROTECTED AT A LOCATION APPROVED BY THE ENGINEER. SALVAGE ITEMS IN ACCORDANCE WITH SPECIFICATION 02050 - DEMOLITION WORK.
3. PROTECT ALL EXISTING ISOLATION GATES AND ASSOCIATED APPURTENANCES THROUGHOUT THE ENTIRETY OF CONSTRUCTION.
4. FOR ELECTRICAL DEMOLITION, REFER TO SHEET DE SHEETS.
5. FOR STRUCTURAL DEMOLITION, REFER TO SHEET DS-02 THRU DS-04.
6. REMOVE, CLEAN, STORE, AND PROTECT ROOF HATCHES TO BE REINSTALLED EQUIPMENT AT A LOCATION APPROVED BY THE ENGINEER, REINSTALL ROOF HATCHES IN ACCORDANCE WITH SPECIFICATION 02050 - DEMOLITION WORK. SEE SHEET A-XX REGARDING ROOF HATCH DETAILS.
7. CONFIRM ALL EXISTING UTILITIES, CONDUIT PIPING, EQUIPMENT LOCATIONS, ETC. PRIOR TO CONSTRUCTION.
8. ALL DUCTWORK WITHIN THE HEADWORKS BUILDING TO BE PROTECTED AND TO REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. SEE SPECIFICATION 02050 - DEMOLITION WORK
9. REMOVE ALL INCIDENTAL CONDUIT, PIPING, VALVES, ETC. ASSOCIATED WITH MECHANICAL SCREENS AND SEAL ANY WALL OR FLOOR PENETRATIONS.



NORTH SCREENING CHANNELS DEMOLITION PLAN

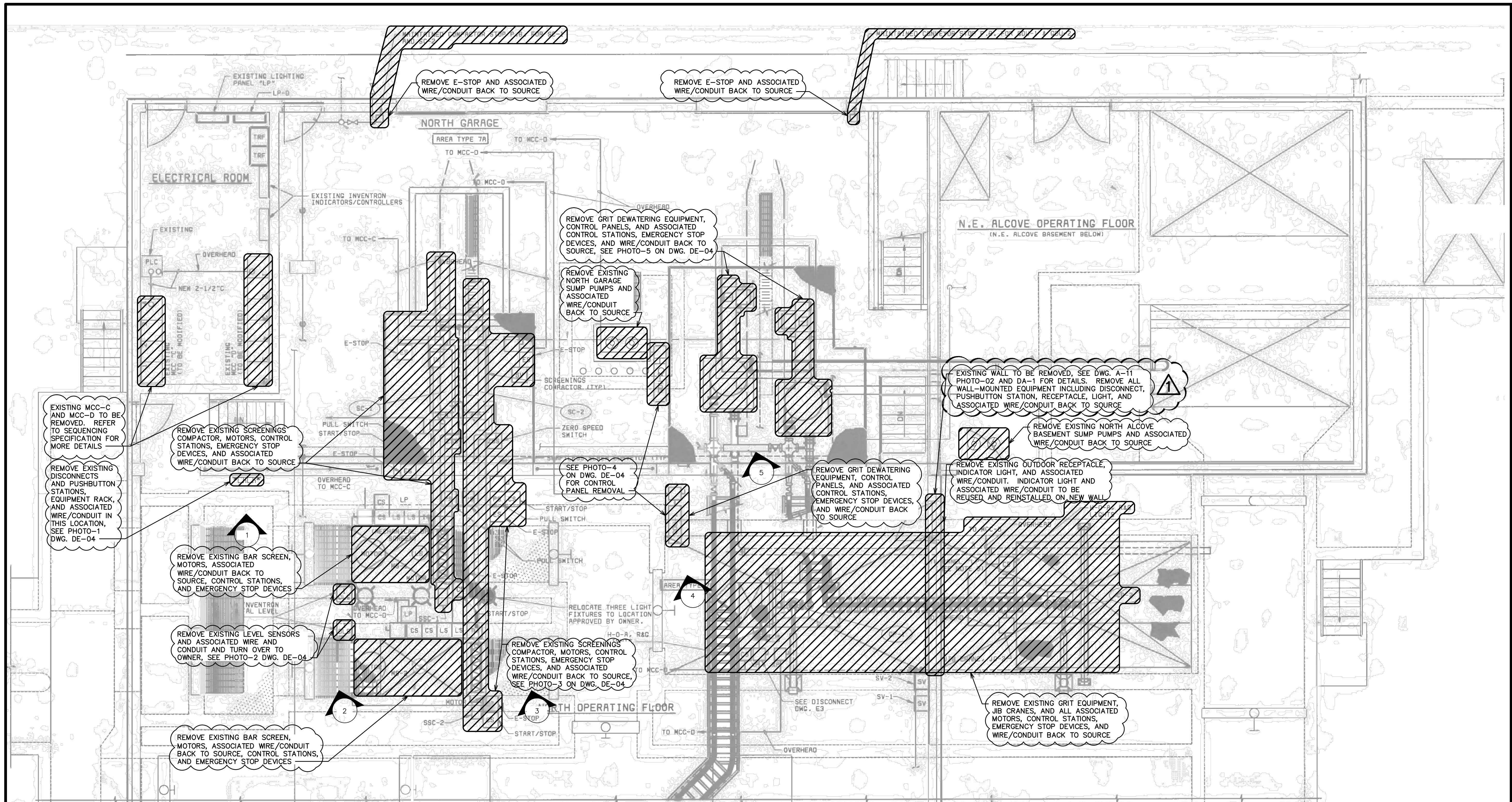
NOTE:
THIS DRAWING HAS BEEN COPIED FROM A PREVIOUS CONSTRUCTION PROJECT AND IS PROVIDED FOR INFORMATION ONLY. THIS DRAWING HAS BEEN REDUCED AND IS THEREFORE NOT TO SCALE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.

ISSUED FOR ADDENDUM NO. 1	1-19-2022	ISSUED FOR BIDS SET	12-13-2021	90% DESIGN SUBMITTAL	11-22-2021	70% DESIGN SUBMITTAL	10-29-2021	50% DESIGN SUBMITTAL	10-01-2021
REV.	DATE	DESCRIPTION	DRAWN	CHECKED					

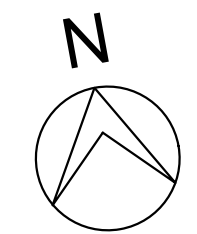
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ANN ARBOR: 734.794.4110
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HEADWORKS IMPROVEMENTS PROJECT
NORTH SCREENING CHANNEL DEMOLITION PLAN

SCALE: N.T.S.
DRAWING NO.: 130
SHEET NO.: DP-01



NORTH HEADWORKS BUILDING
SCREENING AND GRIT EQUIPMENT
ELECTRICAL DEMOLITION PLAN



DENOTES GENERAL LOCATION OF PHOTO, SEE SHEET DE-04

NOTICE:
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811
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
NORTH HEADWORKS BUILDING
SCREENING AND GRIT EQUIPMENT
ELECTRICAL DEMOLITION PLAN

ISSUED FOR	DATE	REV.	DESCRIPTION
1-19-2022			
ISSUED FOR BIDS SET	12-15-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

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SCALE: NO SCALE
DRAWING No.: 160
SHEET No.: DE-01

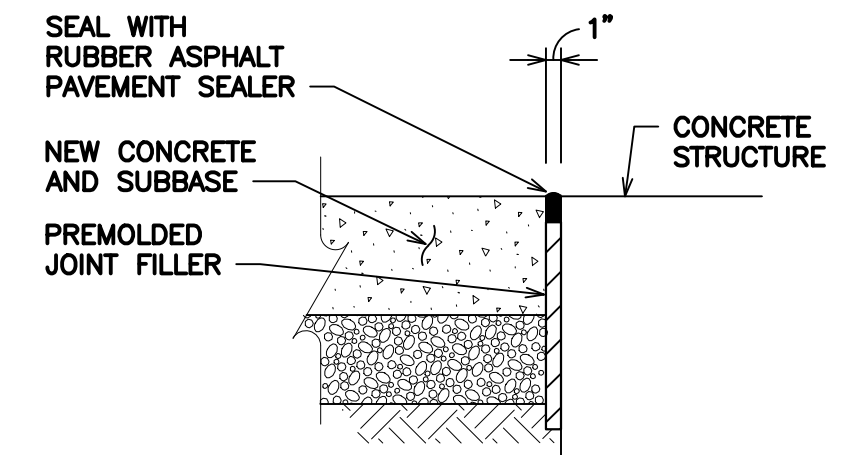
UTILITY & CIVIL LEGEND

RO	EXISTING RO PIPE
ST	EXISTING STORM SEWER
SAN	EXISTING SANITARY SEWER
SEW	EXISTING SEW PIPE
WM	EXISTING WATER MAIN
PEW	EXISTING PEW PIPE
G	EXISTING GAS MAIN
E	EXISTING ELECTRICAL UNDERGROUND
P	EXISTING ELECTRICAL PRIMARY
S	EXISTING ELECTRICAL SECONDARY
O/H	EXISTING OVERHEAD LINE
X	EXISTING FENCE
HWS/HWR	EXISTING HWS/HWR
WAS	EXISTING WAS
	EXISTING BUILDING
	EXISTING ASPHALT PAVEMENT
	EXISTING CONCRETE AREA
	EXISTING GRATING AREA
	EXISTING STORM MANHOLE
	EXISTING STORM CATCH BASINS
	EXISTING DRAIN CLEAN OUT
	EXISTING STORM OUTLET
	EXISTING SANITARY MANHOLE
	EXISTING WATER MAIN HYDRANT
	EXISTING WATER MAIN GATE VALVE & WELL
	EXISTING ELECTRICAL MANHOLE
	EXISTING ELECTRICAL LIGHT POLE
	EXISTING GAS VALVE
	EXISTING SFE HYDRANT
	TRAVERSE LINE & TRAVERSE POINT
	BENCH MARK SYMBOL
	PARKING BOLLARD

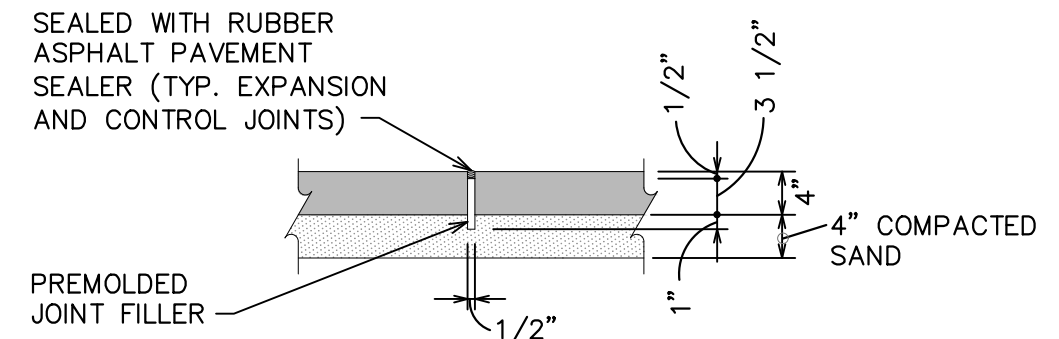
CONCRETE PAVEMENT AND SIDEWALK REPLACEMENT CONSTRUCTION NOTES:

1. WORK SHALL BE IN ACCORDANCE WITH THE MDOT 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
2. CONTRACTOR SHALL PROVIDE ALL STAKING TO ALLOW INSTALLATION OF PAVEMENT AND SIDEWALKS AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
3. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO CONFIRM ALL PAVEMENT GRADES PRIOR TO PLACEMENT OF NEW CONCRETE.
4. PROVIDE AND COORDINATE WITH OWNER ALL NECESSARY TRAFFIC CONTROL DEVICES AND SEQUENCING TO RE-ROUTE TRAFFIC AROUND WORK AREAS.
5. CONTRACTOR SHALL SUBMIT A PAVEMENT AND SIDEWALK SEQUENCING PLAN FOR THE OWNER'S APPROVAL.
6. ACCESS THROUGHOUT THE PLANT MUST BE MAINTAINED AT ALL TIMES.
7. CONTRACTOR SHALL PROVIDE MAINTENANCE AGGREGATE FILL MDOT 21AA, 12" MINIMUM DEPTH IN ALL REMOVED PAVEMENT AREAS UNTIL NEW PAVEMENT IS PLACED TO MAINTAIN VEHICULAR ACCESS TO ALL AREAS OF THE PLANT FOR THE OWNER.
8. LIQUID CURING COMPOUND FOR CURING OF EXTERIOR PAVING, SIDEWALKS AND SLABS SHALL CONFORM TO AASHTO-M148, EXCEPT MOISTURE RETENTION SHALL BE 93% INSTEAD OF 90%. WHITE PIGMENTED TYPE SHALL BE USED FOR AREAS EXPOSED TO THE SUN AND CLEAR TO TRANSLUCENT TYPE SHALL BE USED IN ALL OTHER LOCATIONS. COMPOUND SHALL BE APPLIED IN A UNIFORM, CONTINUOUS FILM, WITH PRESSURE SPRAYER EQUIPMENT, AT THE RATE OF NO LESS THAN ONE GALLON FOR 200 SQUARE FEET OF SURFACE, APPLIED IN TWO COATS. THE SECOND APPLICATION SHALL FOLLOW THE FIRST WITHIN 30 MINUTES.
9. PROVIDE SIDEWALK JOINTS AS SHOWN ON THE PLANS AND SPECIFICATIONS. JOINT TYPES AND LOCATIONS SHALL BE CONFIRMED WITH THE ENGINEER PRIOR TO PLACING.

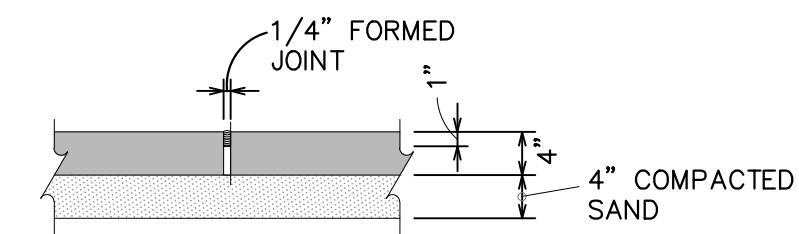
10. CONCRETE FOR SIDEWALKS SHALL BE MDOT GRADE P1 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,500 PSI.



ISOLATION JOINT AT STRUCTURE
NO SCALE



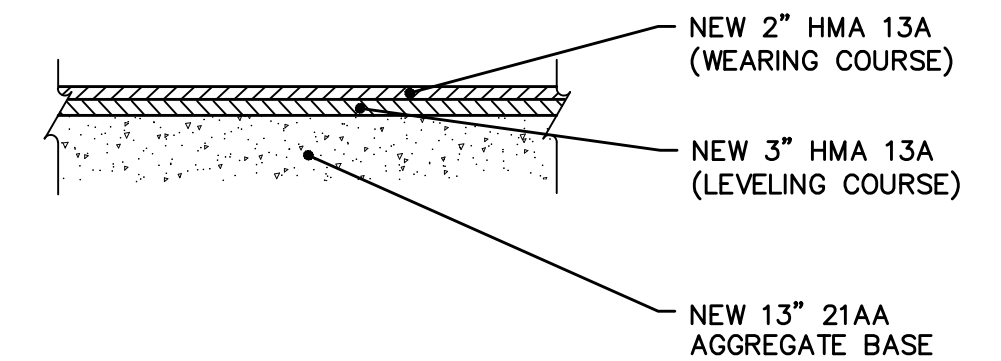
SIDEWALK EXPANSION JOINT DETAIL - E
NO SCALE



SIDEWALK CONTROL JOINT DETAIL - C
NO SCALE

SIDEWALK NOTES:

1. PROVIDE 4" MIN. MDOT CLASS 2 SAND BEDDING.
2. PROVIDE EXPANSION JOINTS MAX. 50' O.C. AND PROVIDE EXPANSION JOINTS BETWEEN SIDEWALK AND FACE OF STRUCTURES AND BETWEEN SIDEWALK AND ROADWAY BACK OF CURB.
3. PROVIDE CONTROL JOINTS MAX. 6' O.C.
4. SIDEWALK AND DRIVEWAY APPROACHES SHALL ADHERE TO MDOT STANDARD DETAIL R-29-1.



PROPOSED BITUMINOUS PAVEMENT CROSS SECTION
NO SCALE

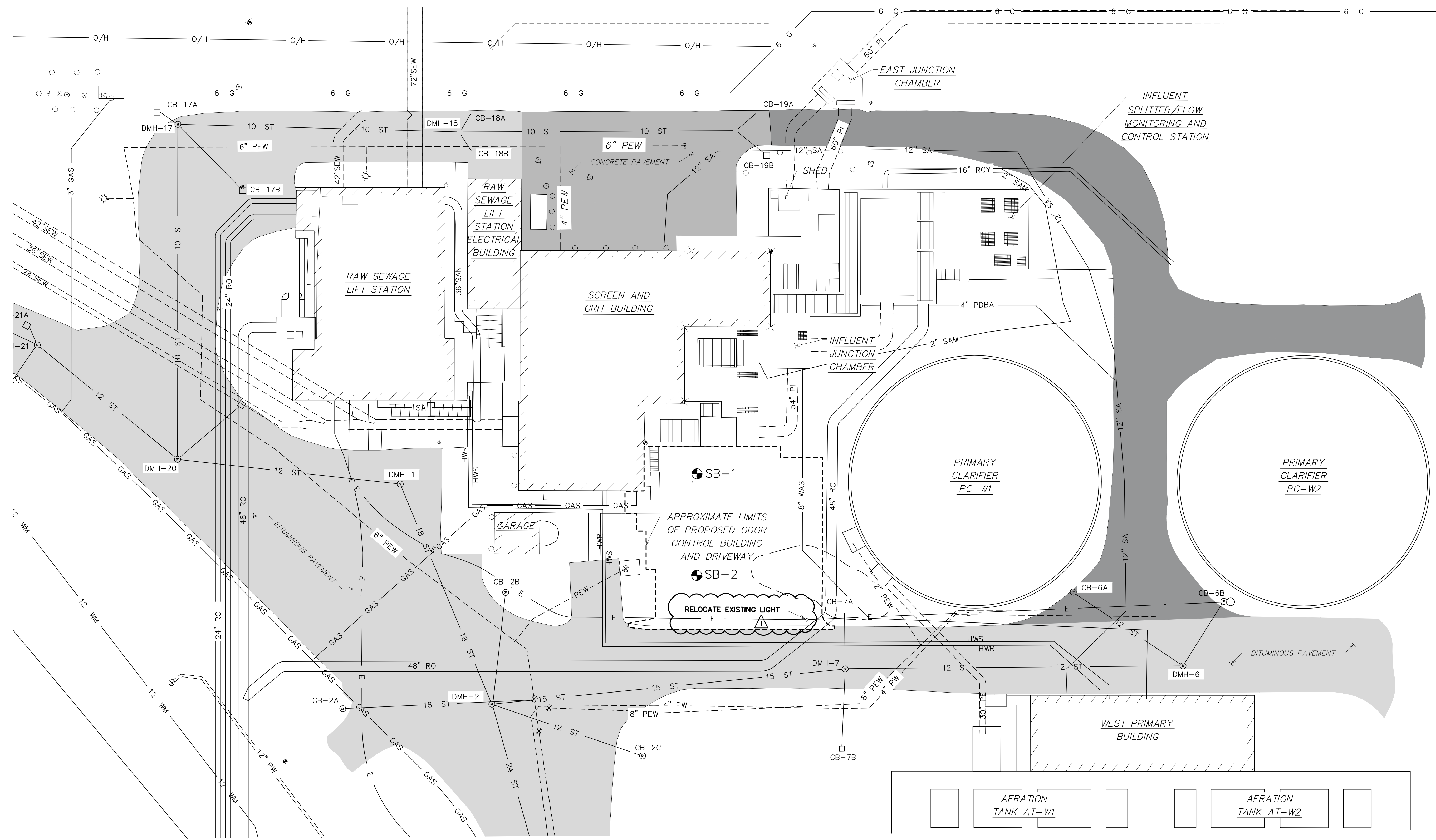


ISSUED FOR ADDENDUM NO. 1	1-19-2022	12-13-2021	11-22-2021	10-29-2021	10-01-2021	DATE	DRAWN	CHECKED
ISSUED FOR BIDS SET								
90% DESIGN SUBMITTAL								
70% DESIGN SUBMITTAL								
50% DESIGN SUBMITTAL								
DESCRIPTION								
REV.								

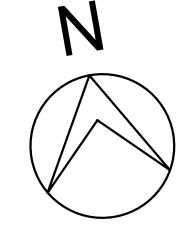
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ANN ARBOR, MI 48106-0647
www.a3gov.org

PROJECT MANAGEMENT - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
CIVIL LEGEND, NOTES AND DETAILS

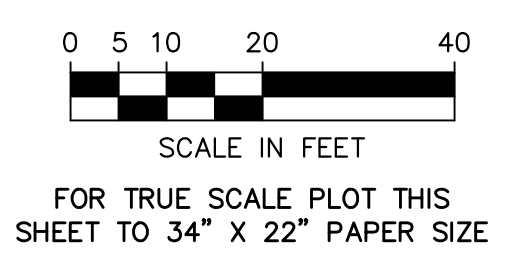
SCALE: N.T.S.
DRAWING No.: 200



EXISTING UTILITY PLAN
SCALE: 1" = 20'



NOTICE:
ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.



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Know what's below. Call before you dig.

ISSUED FOR ADDENDUM NO. 1
1-19-2022

ISSUED FOR BIDS SET
12-13-2021

90% DESIGN SUBMITTAL
11-22-2021

70% DESIGN SUBMITTAL
10-29-2021

50% DESIGN SUBMITTAL
10-01-2021

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
EXISTING UTILITIES PLAN

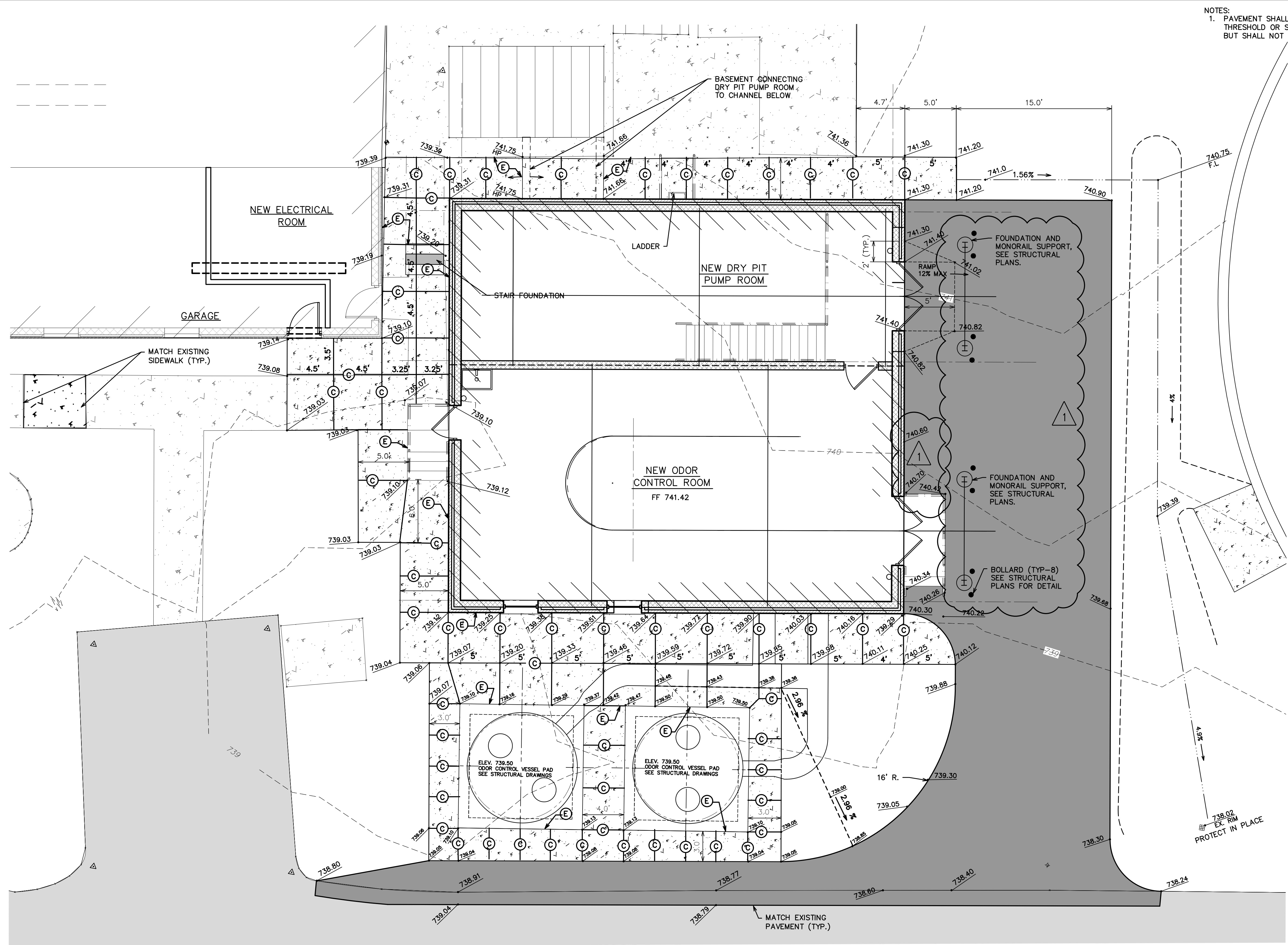
SCALE
1" = 20'

DRAWING No.
204

SHEET No.
C-03

REV. DATE DESCRIPTION

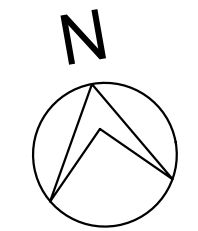
REV.	DATE	DESCRIPTION



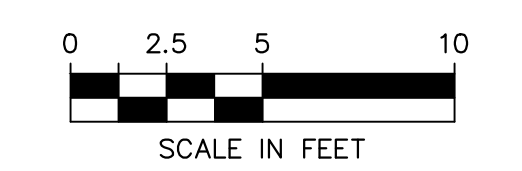
NOTES:
 1. PAVEMENT SHALL MEET SLAB AT DOOR THRESHOLD OR SLIGHTLY LOWER (1/4" MAX.) BUT SHALL NOT BE HIGHER THAN DOORWAY.

JOINT LEGEND
 (C) CONTROL JOINT
 (E) EXPANSION JOINT


PROPOSED DETAILED SITE GRADING
 SCALE: 1" = 5'

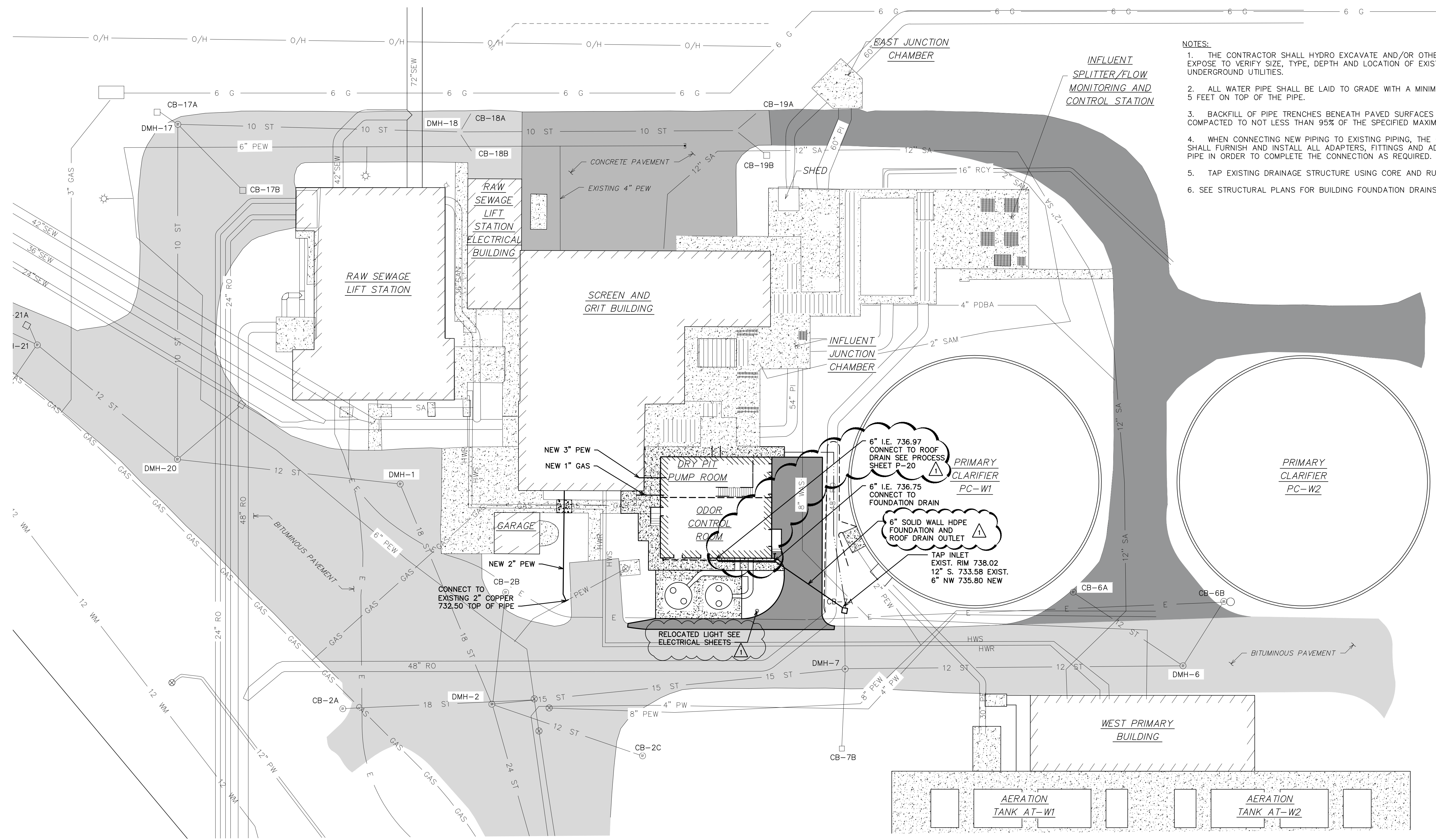


NOTICE:
 ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.



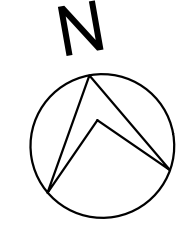
FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

	
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT PROPOSED DETAILED SITE GRADING	SHEET No. C-05
SCALE 1" = 5' DRAWING No. 208	ISSUED FOR ADDENDUM NO. 1 1-19-2022 ISSUED FOR BIDS SET 12-13-2021 90% DESIGN SUBMITTAL 11-22-2021 70% DESIGN SUBMITTAL 10-29-2021 50% DESIGN SUBMITTAL 10-01-2021 DATE DRAWN CHECKED
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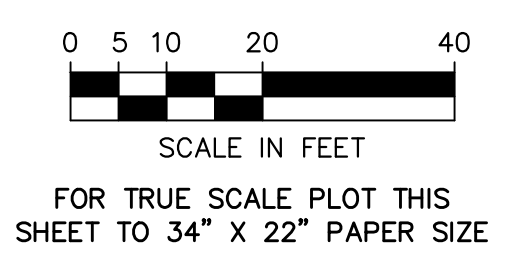



- NOTES:
1. THE CONTRACTOR SHALL HYDRO EXCAVATE AND/OR OTHERWISE EXPOSE TO VERIFY SIZE, TYPE, DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES.
 2. ALL WATER PIPE SHALL BE LAID TO GRADE WITH A MINIMUM COVER OF 5 FEET ON TOP OF THE PIPE.
 3. BACKFILL OF PIPE TRENCHES BENEATH PAVED SURFACES IS TO BE COMPACTED TO NOT LESS THAN 95% OF THE SPECIFIED MAXIMUM DENSITY.
 4. WHEN CONNECTING NEW PIPING TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE IN ORDER TO COMPLETE THE CONNECTION AS REQUIRED.
 5. TAP EXISTING DRAINAGE STRUCTURE USING CORE AND RUBBER BOOT.
 6. SEE STRUCTURAL PLANS FOR BUILDING FOUNDATION DRAINS.

PROPOSED UTILITY PLAN
SCALE: 1" = 20'



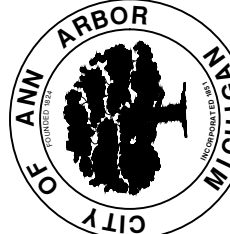
NOTICE:
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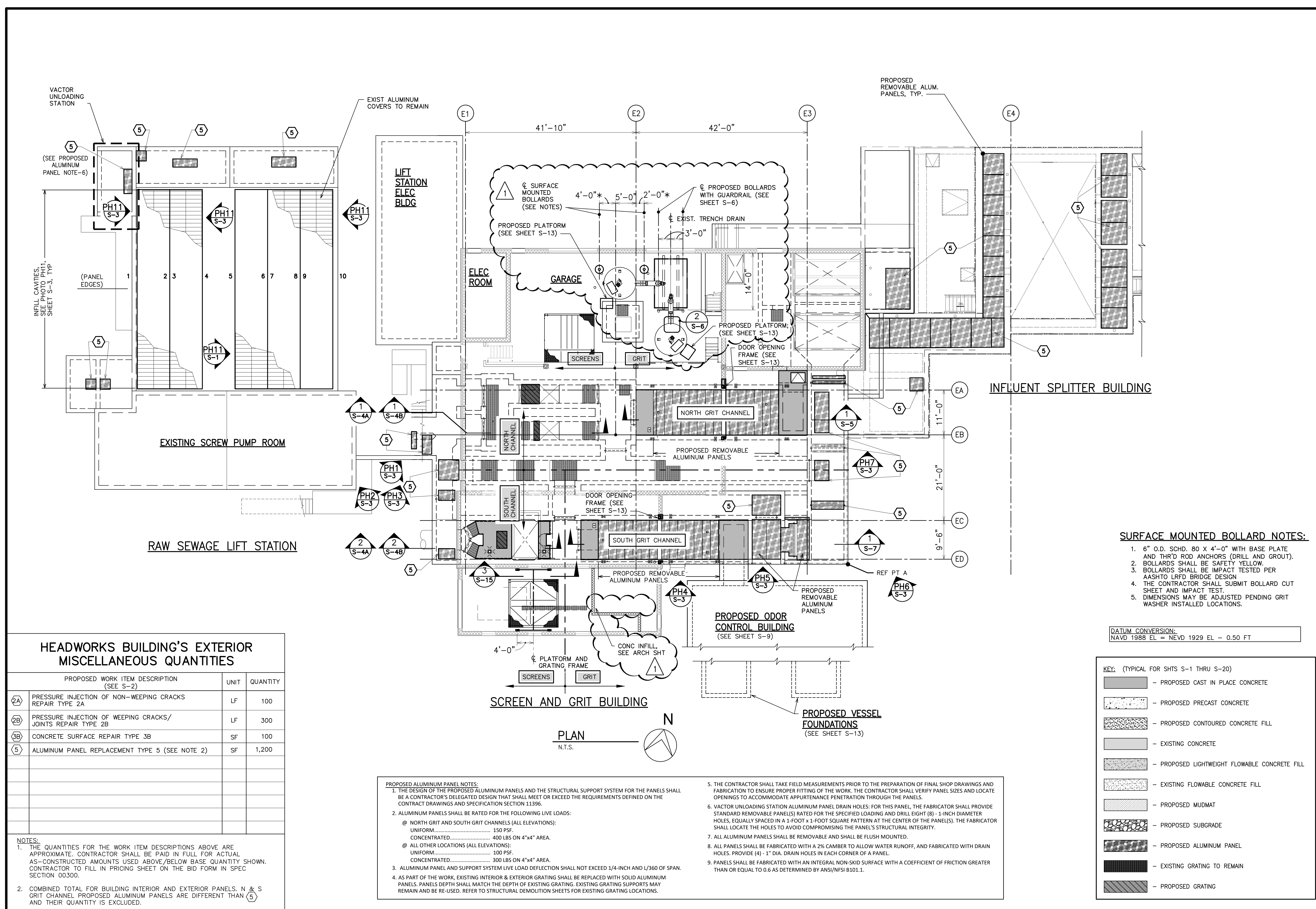
ISSUED FOR	ADDENDUM NO.	DATE	DESCRIPTION	REV.
ISSUED FOR BIDS SET	1	11-19-2022		
90% DESIGN SUBMITTAL		12-13-2021		
70% DESIGN SUBMITTAL		11-22-2021		
50% DESIGN SUBMITTAL		10-29-2021		
		10-01-2021		



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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
PROPOSED UTILITIES PLAN

SCALE 1" = 20'	DRAWING No. 210
SHEET No. C-06	



SURFACE MOUNTED BOLLARD NOTES:

- 6" O.D. SCHD. 80 X 4'-0" WITH BASE PLATE AND THR'D ROD ANCHORS (DRILL AND GROUT).
- BOLLARDS SHALL BE SAFETY YELLOW.
- BOLLARDS SHALL BE IMPACT TESTED PER AASHTO LRFD BRIDGE DESIGN.
- THE CONTRACTOR SHALL SUBMIT BOLLARD CUT SHEET AND IMPACT TEST.
- DIMENSIONS MAY BE ADJUSTED PENDING GRIT WASHER INSTALLED LOCATIONS.

DATUM CONVERSION:
NAVD 1988 EL = NEVD 1929 EL - 0.50 FT

KEY: (TYPICAL FOR SHTS S-1 THRU S-20)

[Pattern]	PROPOSED CAST IN PLACE CONCRETE
[Pattern]	PROPOSED PRECAST CONCRETE
[Pattern]	PROPOSED CONTOURED CONCRETE FILL
[Pattern]	EXISTING CONCRETE
[Pattern]	PROPOSED LIGHTWEIGHT FLOWABLE CONCRETE FILL
[Pattern]	EXISTING FLOWABLE CONCRETE FILL
[Pattern]	PROPOSED MUDMAT
[Pattern]	PROPOSED SUBGRADE
[Pattern]	PROPOSED ALUMINUM PANEL
[Pattern]	EXISTING GRATING TO REMAIN
[Pattern]	PROPOSED GRATING

HEADWORKS BUILDING'S EXTERIOR MISCELLANEOUS QUANTITIES

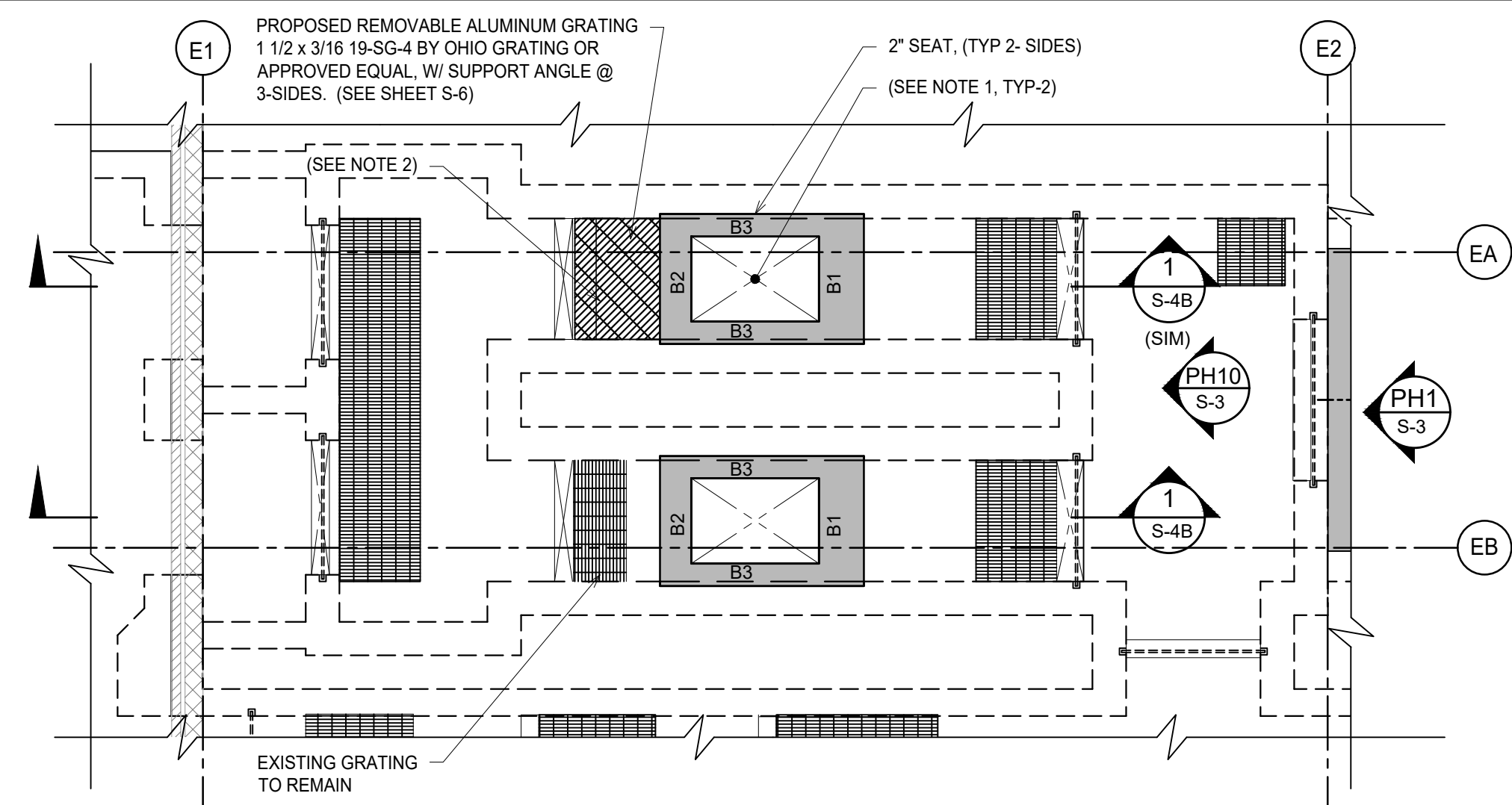
PROPOSED WORK ITEM DESCRIPTION (SEE S-2)	UNIT	QUANTITY
2A PRESSURE INJECTION OF NON-WEeping CRACKS REPAIR TYPE 2A	LF	100
2B PRESSURE INJECTION OF WEeping CRACKS/ JOINTS REPAIR TYPE 2B	LF	300
3B CONCRETE SURFACE REPAIR TYPE 3B	SF	100
5 ALUMINUM PANEL REPLACEMENT TYPE 5 (SEE NOTE 2)	SF	1,200

NOTES:

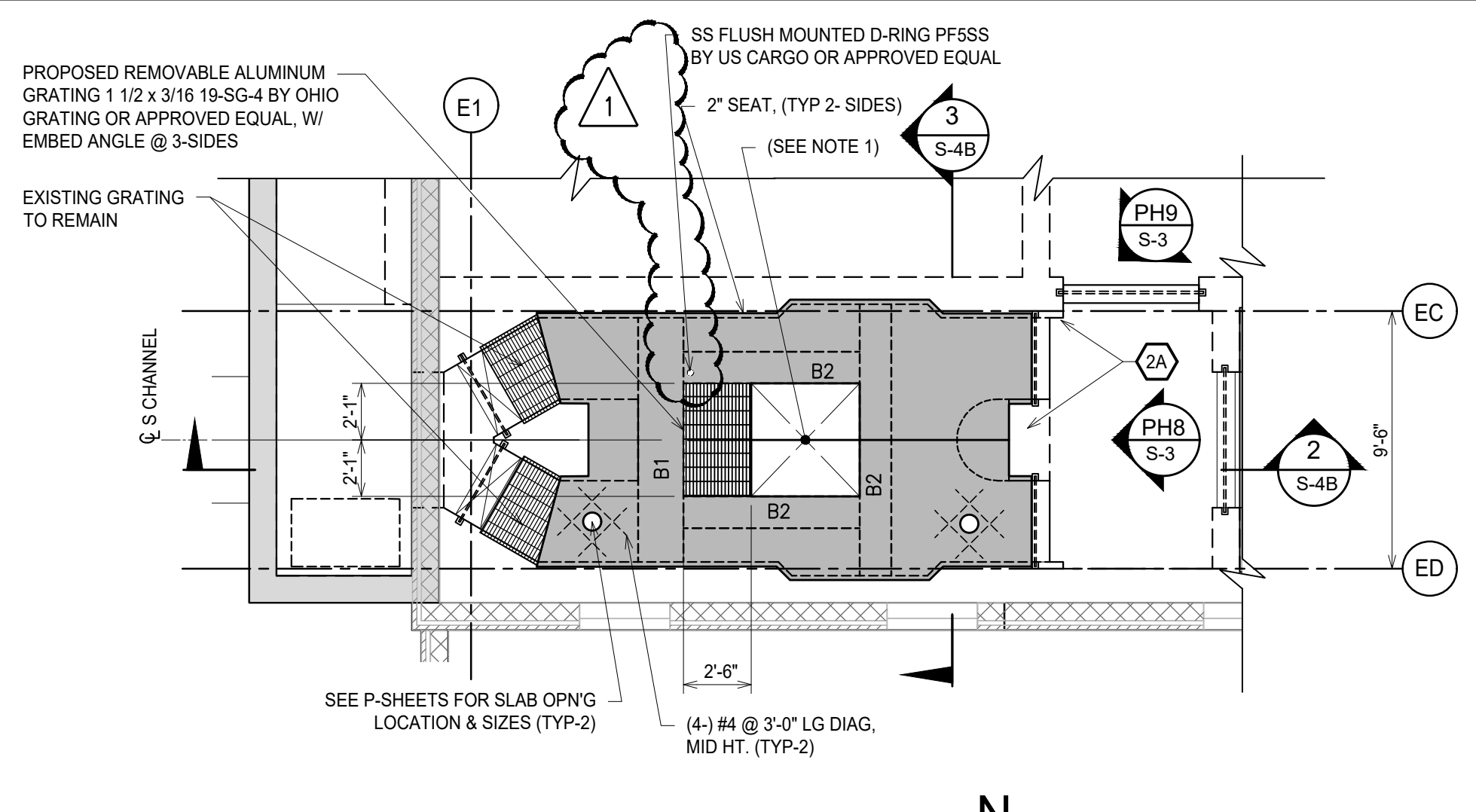
- THE QUANTITIES FOR THE WORK ITEM DESCRIPTIONS ABOVE ARE APPROXIMATE. CONTRACTOR SHALL BE PAID IN FULL FOR ACTUAL AS-CONSTRUCTED AMOUNTS USED ABOVE/BELOW BASE QUANTITY SHOWN. CONTRACTOR TO FILL IN PRICING SHEET ON THE BID FORM IN SPEC SECTION 00300.
- COMBINED TOTAL FOR BUILDING INTERIOR AND EXTERIOR PANELS. N & S GRIT CHANNEL PROPOSED ALUMINUM PANELS ARE DIFFERENT THAN 5 AND THEIR QUANTITY IS EXCLUDED.

PROPOSED ALUMINUM PANEL NOTES:

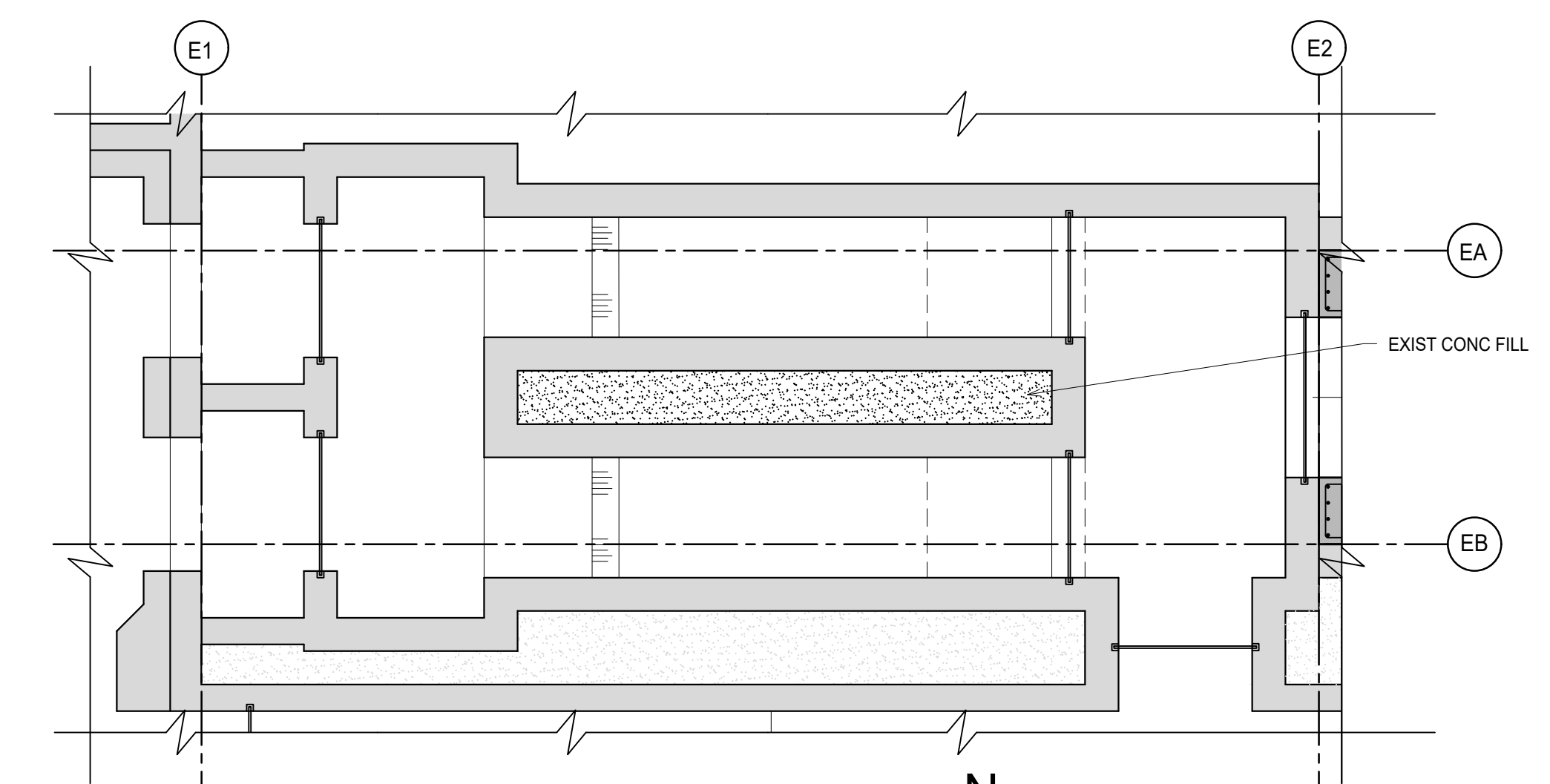
- THE DESIGN OF THE PROPOSED ALUMINUM PANELS AND THE STRUCTURAL SUPPORT SYSTEM FOR THE PANELS SHALL BE A CONTRACTOR'S DELEGATED DESIGN THAT SHALL MEET OR EXCEED THE REQUIREMENTS DEFINED ON THE CONTRACT DRAWINGS AND SPECIFICATION SECTION 11396.
- ALUMINUM PANELS SHALL BE RATED FOR THE FOLLOWING LIVE LOADS:
 - @ NORTH GRIT AND SOUTH GRIT CHANNELS (ALL ELEVATIONS):
 - UNIFORM..... 150 PSF.
 - CONCENTRATED..... 400 LBS ON 4"x4" AREA.
 - @ ALL OTHER LOCATIONS (ALL ELEVATIONS):
 - UNIFORM..... 100 PSF.
 - CONCENTRATED..... 300 LBS ON 4"x4" AREA.
- ALUMINUM PANEL AND SUPPORT SYSTEM LIVE LOAD DEFLECTION SHALL NOT EXCEED 1/4-INCH AND L/360 OF SPAN.
- AS PART OF THE WORK, EXISTING INTERIOR & EXTERIOR GRATING SHALL BE REPLACED WITH SOLID ALUMINUM PANELS. PANELS DEPTH SHALL MATCH THE DEPTH OF EXISTING GRATING. EXISTING GRATING SUPPORTS MAY REMAIN AND BE RE-USED. REFER TO STRUCTURAL DEMOLITION SHEETS FOR EXISTING GRATING LOCATIONS.
- THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS PRIOR TO THE PREPARATION OF FINAL SHOP DRAWINGS AND FABRICATION TO ENSURE PROPER FITTING OF THE WORK. THE CONTRACTOR SHALL VERIFY PANEL SIZES AND LOCATE OPENINGS TO ACCOMMODATE APPURTENANCE PENETRATION THROUGH THE PANELS.
- VACTOR UNLOADING STATION ALUMINUM PANEL DRAIN HOLES: FOR THIS PANEL, THE FABRICATOR SHALL PROVIDE STANDARD REMOVABLE PANEL(S) RATED FOR THE SPECIFIED LOADING AND DRILL EIGHT (8) - 1-INCH DIAMETER HOLES, EQUALLY SPACED IN A 1-FOOT x 1-FOOT SQUARE PATTERN AT THE CENTER OF THE PANEL(S). THE FABRICATOR SHALL LOCATE THE HOLES TO AVOID COMPROMISING THE PANEL'S STRUCTURAL INTEGRITY.
- ALL ALUMINUM PANELS SHALL BE REMOVABLE AND SHALL BE FLUSH MOUNTED.
- ALL PANELS SHALL BE FABRICATED WITH A 2% CAMBER TO ALLOW WATER RUNOFF, AND FABRICATED WITH DRAIN HOLES. PROVIDE (4) - 1" DIA. DRAIN HOLES IN EACH CORNER OF A PANEL.
- PANELS SHALL BE FABRICATED WITH AN INTEGRAL NON-SKID SURFACE WITH A COEFFICIENT OF FRICTION GREATER THAN OR EQUAL TO 0.6 AS DETERMINED BY ANS/NFSI B101.1.



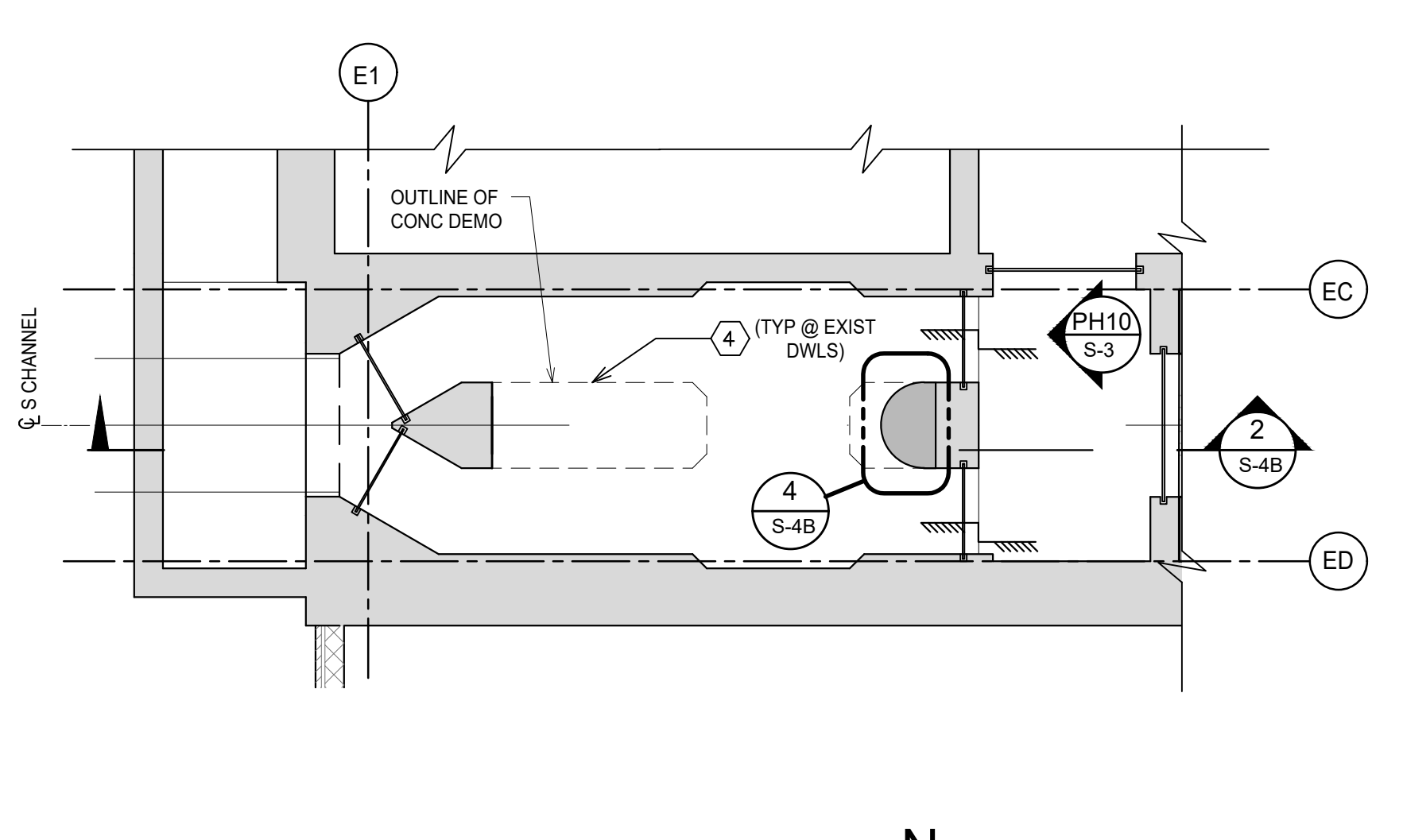
(NORTH SCREEN CHANNELS)
PARTIAL PLAN AT EL. 748.00
SCALE: 3/16" = 1'-0"



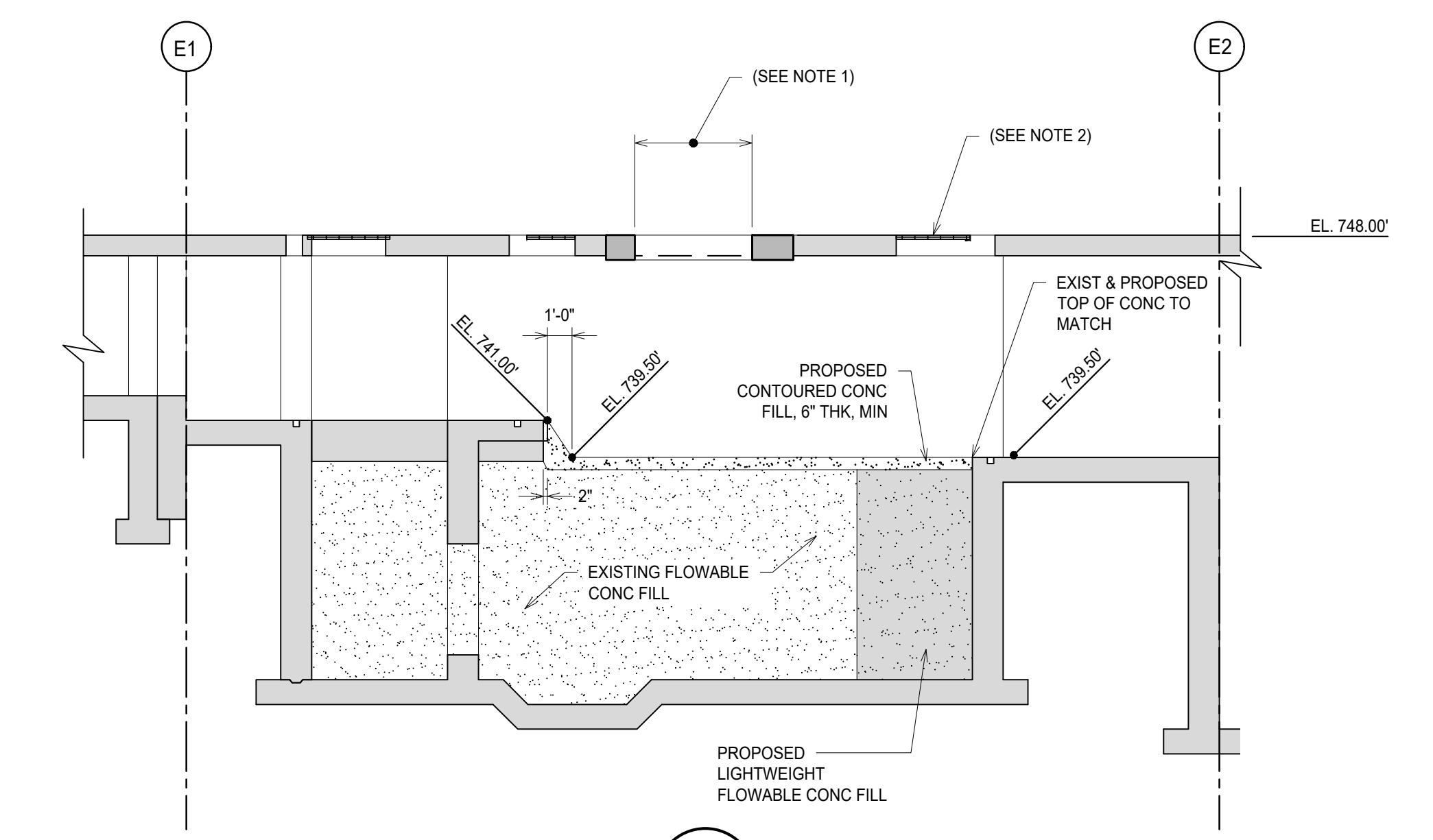
(SOUTH SCREEN CHANNELS)
PARTIAL PLAN AT EL. 748.50
SCALE: 3/16" = 1'-0"



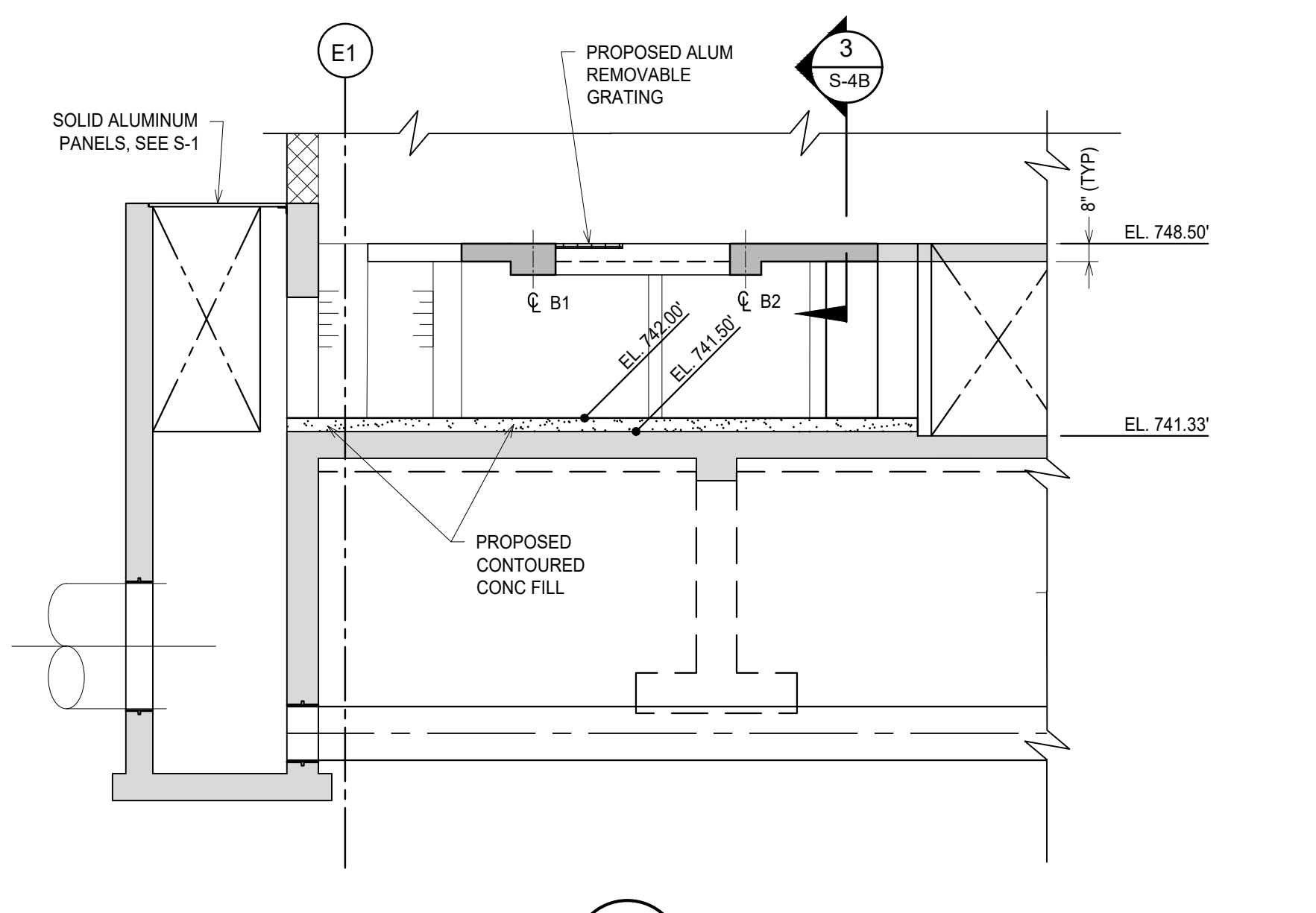
(NORTH SCREEN CHANNELS)
PARTIAL PLAN AT EL. 742.00
SCALE: 3/16" = 1'-0"



(SOUTH SCREEN CHANNELS)
PARTIAL PLAN AT EL. 742.50
SCALE: 3/16" = 1'-0"



SECTION 1
SCALE: 3/16" = 1'-0"
S-1/S-4B



SECTION 2
SCALE: 3/16" = 1'-0"
S-1/S-4B

SCREEN CHANNELS
MISCELLANEOUS QUANTITIES

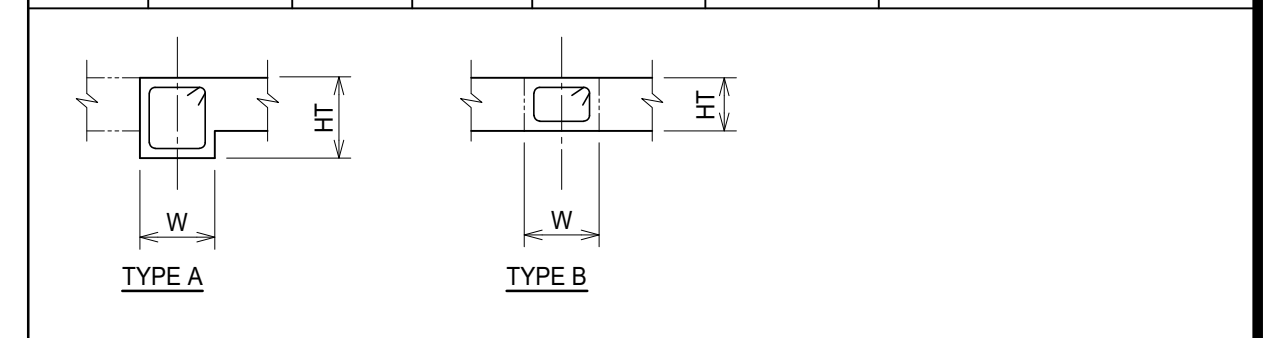
PROPOSED WORK ITEM DESCRIPTION (SEE S-2)	UNIT	QUANTITY
2A PRESSURE INJECTION OF NON-WEeping CRACKS REPAIR TYPE 2A	LF	100
3A CONCRETE SURFACE REPAIR TYPE 3A	SF	300
3B CONCRETE SURFACE REPAIR TYPE 3B	SF	100

NOTES:
THE QUANTITIES FOR THE WORK ITEM DESCRIPTIONS ABOVE ARE APPROXIMATE. CONTRACTOR SHALL BE PAID IN FULL FOR ACTUAL AS-CONSTRUCTED AMOUNTS USED ABOVE/BELOW BASE QUANTITY SHOWN. CONTRACTOR TO FILL IN PRICING SHEET ON THE BID FORM IN SPEC SECTION 00300.

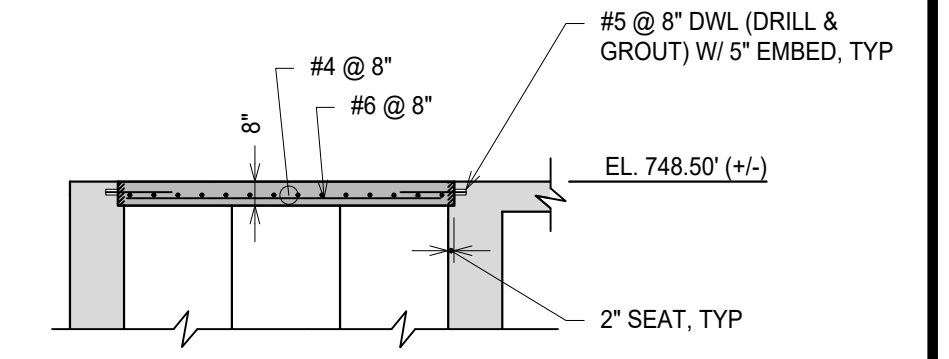
- NOTES:
- DETERMINE DIMENSIONS & BEAM LOCATIONS PER ENGINEER APPROVED SCREEN MECHANISM SHOP DRAWINGS.
 - FOR PROPOSED ALUMINUM GRATING, SEE SHT S-6 AND SPECIFICATIONS

BEAM SCHEDULE

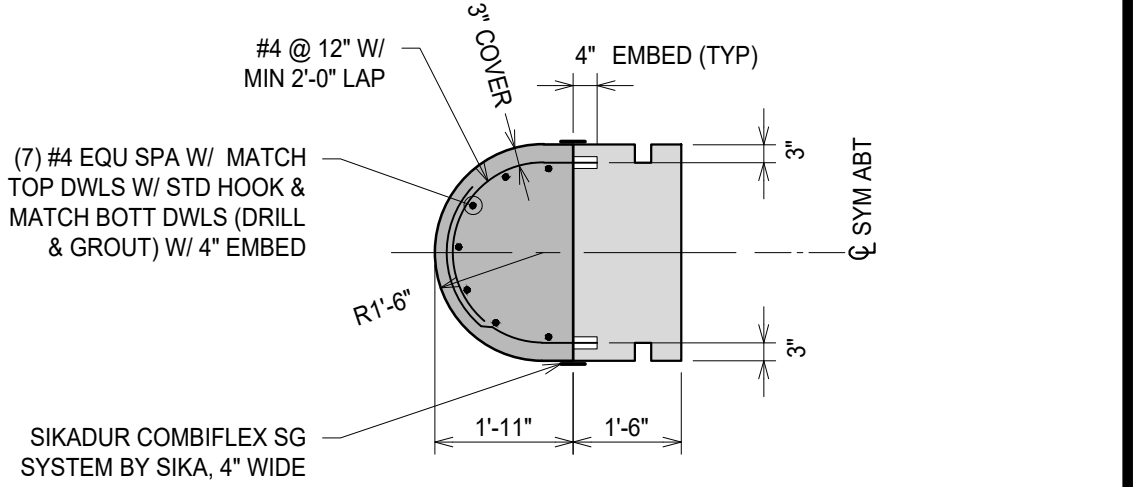
MARK	SHAPE	HT	W	TOP	BOTT	STIRRUPS
B1	TYPE A	12"	1'-8"	(3)-#5	(3)-#6	(11) - #3 @ 4" @ EA END #3 @ 8"
B2	TYPE A	12"	14"	(2)-#5	(2)-#6	(10) - #3 @ 4" @ EA END
B3	TYPE A	12"	8" MIN.	(2)-#5	(2)-#6	



- NOTES:
- TOP & BOTTOM REINF SHALL HAVE 90° HOOKS AT DISCONTINUED ENDS INTO PROPOSED CONC.
 - TOP & BOTTOM REINF SHALL HAVE MATCHING HORIZ DOWEL (DRILL AND GROUT) W/ 5" EMBEDMENT AND DISCONTINUED ENDS INTO EXIST CONC.

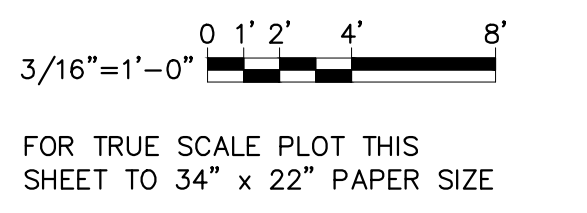


SECTION 3
SCALE: 3/16" = 1'-0"
S-4B



DETAIL 4
SCALE: 3/16" = 1'-0"
S-4B

NOTE:
ALL EXISTING CONCRETE SURFACES IN CONTACT WITH PROPOSED CONCRETE SHALL BE INTENTIONALLY ROUGHENED TO 1/2" AMPLITUDE AND THOROUGHLY CLEANED TO THE SATISFACTION OF THE ENGINEER. APPLY WELD-CRETE BONDING AGENT TO EXISTING CONCRETE SURFACES JUST PRIOR TO PROPOSED CONCRETE PLACEMENT.



811 Know what's below. Call before you dig.

ISSUED FOR ADDENDUM NO. 1

ISSUED FOR BIDS SET: 12-13-2021
90% DESIGN SUBMITTAL: 11-22-2021
70% DESIGN SUBMITTAL: 10-29-2021
50% DESIGN SUBMITTAL: 10-01-2021

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HEADWORKS IMPROVEMENTS PROJECT
SCREEN PLANS, SECTIONS & DETAILS - HYDRO-DYNE

SCALE: AS NOTED
DRAWING No.: 314
SHEET No.: S-4B

GRIT CHANNELS MISCELLANEOUS QUANTITIES

PROPOSED WORK ITEM DESCRIPTION (SEE S-2)	UNIT	QUANTITY
2A PRESSURE INJECTION OF NON-WEeping CRACKS REPAIR TYPE 2A	LF	100
2B PRESSURE INJECTION OF WEeping CRACKS/ JOINTS REPAIR TYPE 2B	LF	200
3A CONCRETE SURFACE REPAIR TYPE 3A	SF	300
3B CONCRETE SURFACE REPAIR TYPE 3B	SF	50
4 REMOVAL OF EMBEDMENTS REPAIR TYPE 4	LS	1

NOTES:
THE QUANTITIES FOR THE WORK ITEM DESCRIPTIONS ABOVE ARE APPROXIMATE. CONTRACTOR SHALL BE PAID IN FULL FOR ACTUAL AS-CONSTRUCTED AMOUNTS USED ABOVE/BELOW BASE QUANTITY SHOWN. CONTRACTOR TO FILL IN PRICING SHEET ON THE BID FORM IN SPEC SECTION 00300.

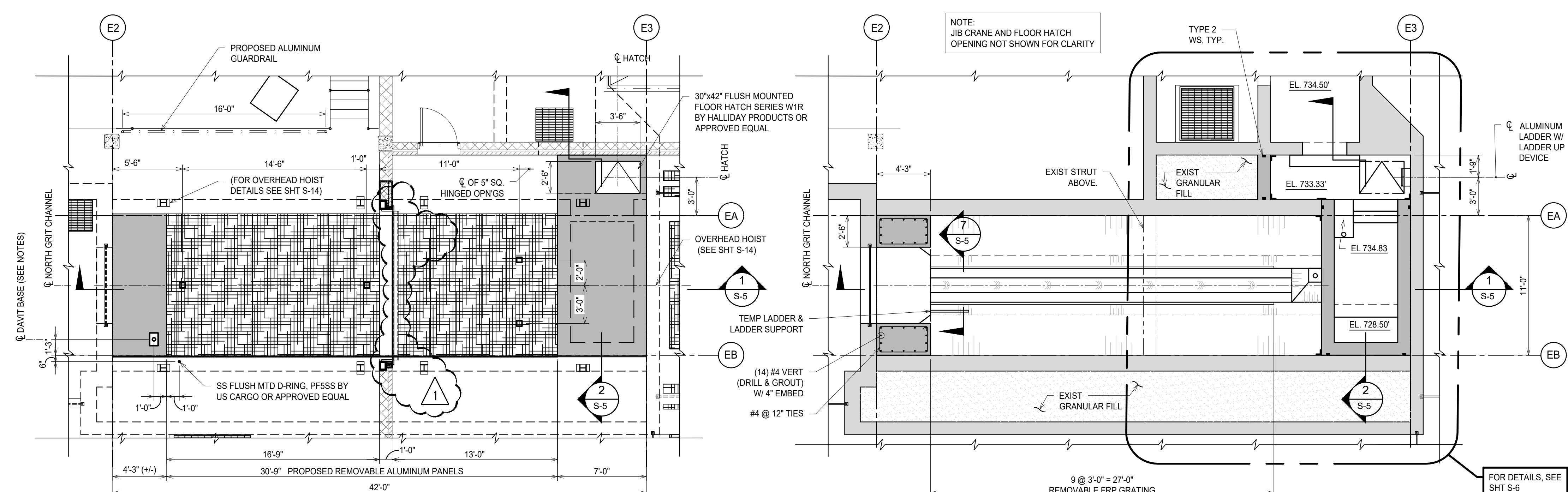
DAVIT BASE NOTES:

1. DAVIT BASE REFERS TO A FLOOR MOUNTED CAST-IN-PLACE SLEEVE DAVIT BASE WITH A SLEEVE CAP. THE DAVIT BASE SHALL BE CAST FLUSH TO THE TOP OF THE CONCRETE.
2. THE DAVIT BASE SHALL BE COMPATIBLE WITH THE OWNERS EXISTING DAVIT ARMS, AND FABRICATED BY THE SAME MANUFACTURER AS THE EXISTING DAVIT ARMS.
3. THE DAVIT BASE SHALL BE STAINLESS STEEL.
4. THE PROPOSED STRUCTURE AND MOUNTING HARDWARE IS DESIGNED TO WITHSTAND A 90,000 IN-LBS MOMENT AND 5,000 LBS VERTICAL LOAD (ULTIMATE).

ISSUED FOR ADDENDUM NO. 1	1-19-2022	DATE
ISSUED FOR BIDS SET	12-13-2021	DATE
90% DESIGN SUBMITTAL	11-22-2021	DATE
70% DESIGN SUBMITTAL	10-29-2021	DATE
50% DESIGN SUBMITTAL	10-01-2021	DATE
DESCRIPTION		
REV.		

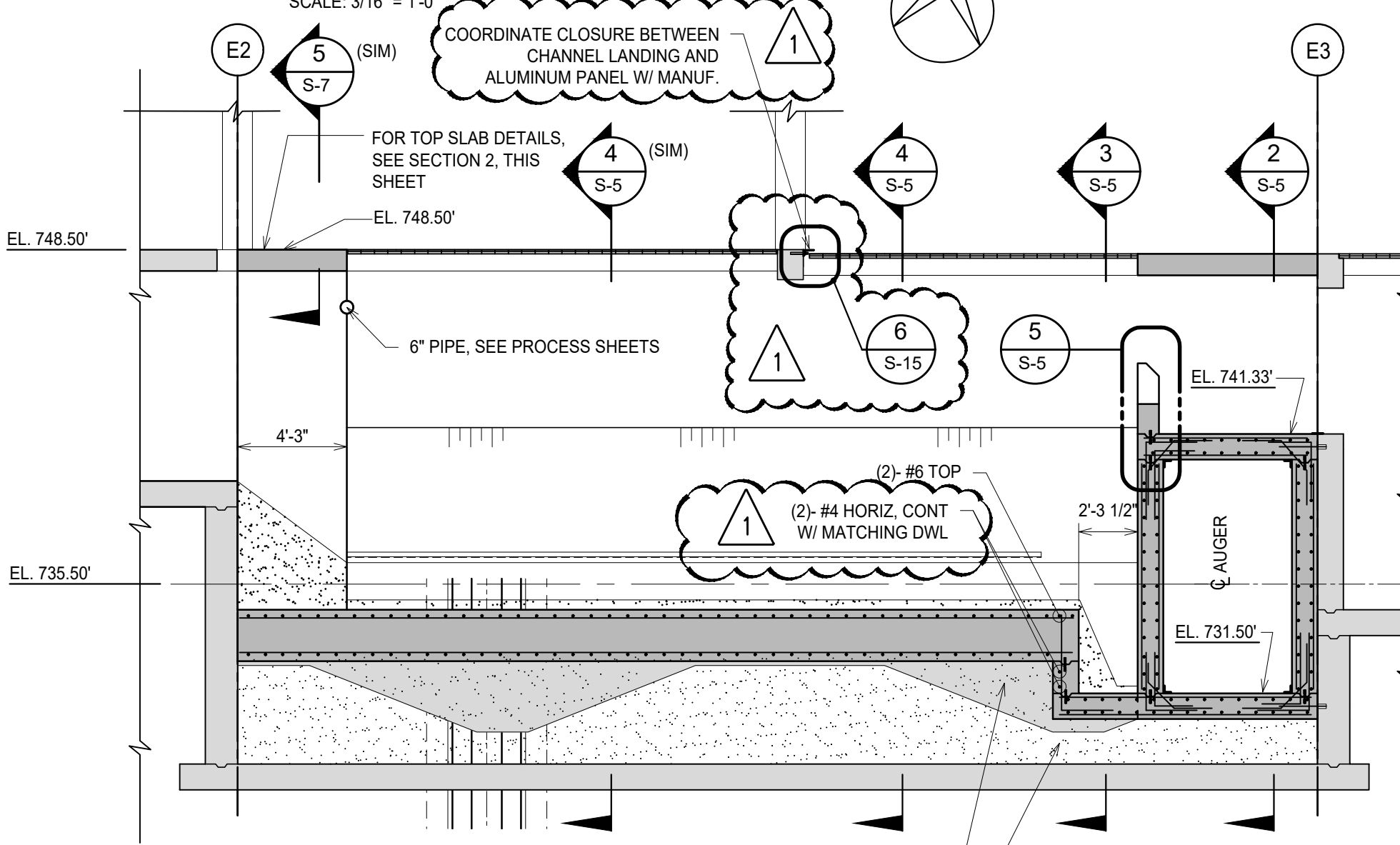
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ANN ARBOR, MI 48107-8647
ANN ARBOR 734.794.4410
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
NORTH GRIT PLANS AND SECTIONS
SHEET No. S-5

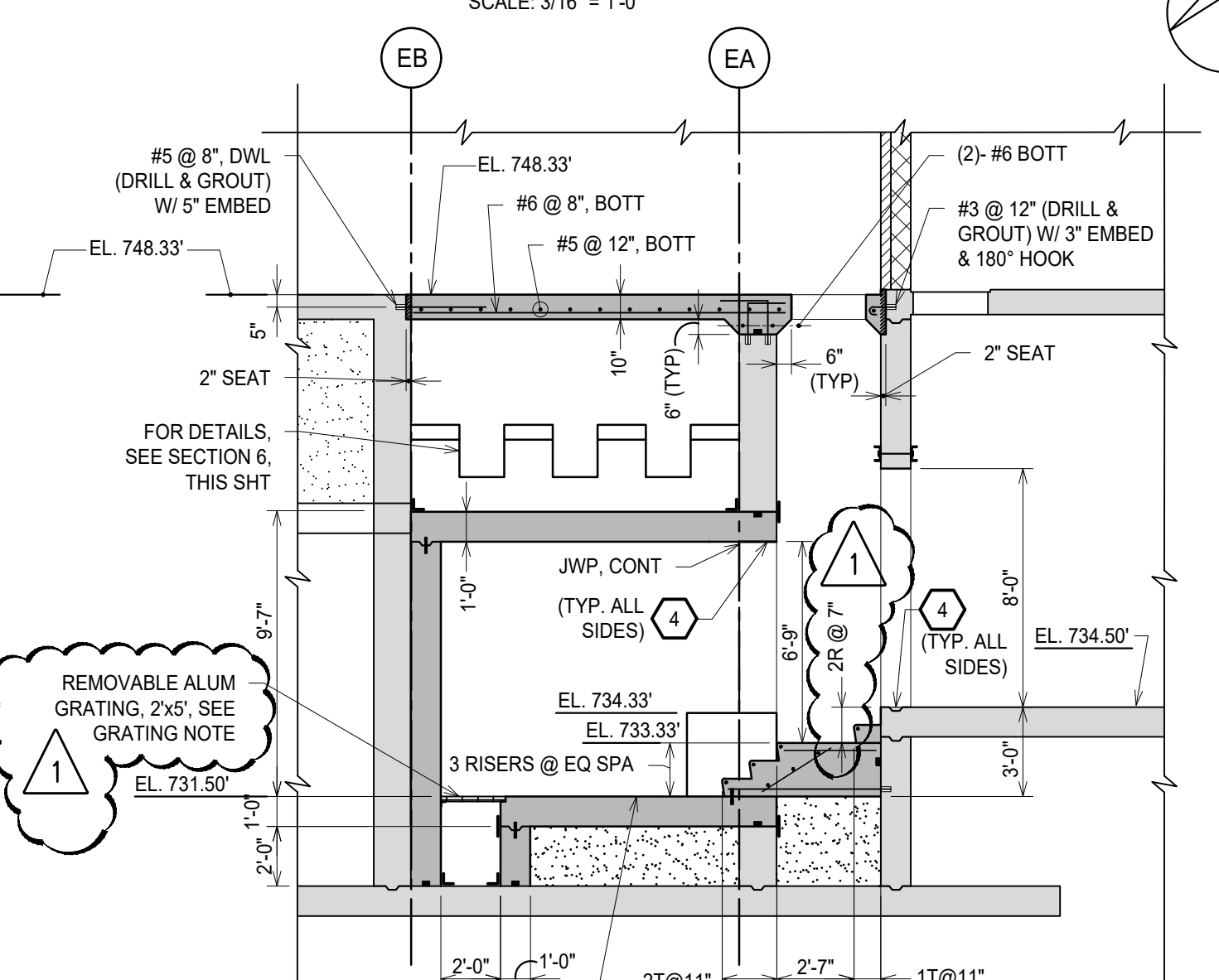


PARTIAL PLAN AT EL. 748.50
SCALE: 3/16" = 1'-0"

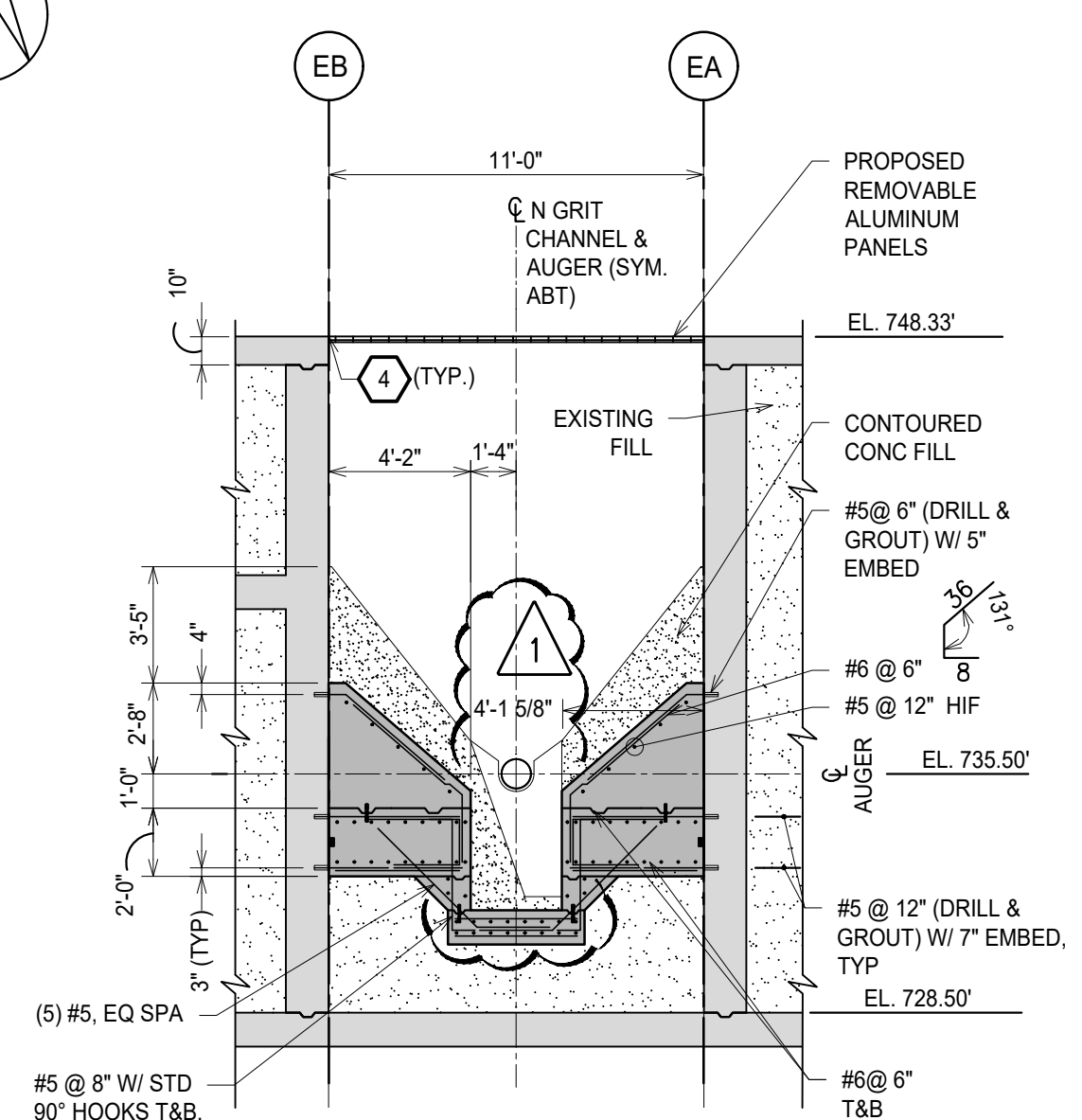
PARTIAL PLAN AT EL. 739.00
SCALE: 3/16" = 1'-0"



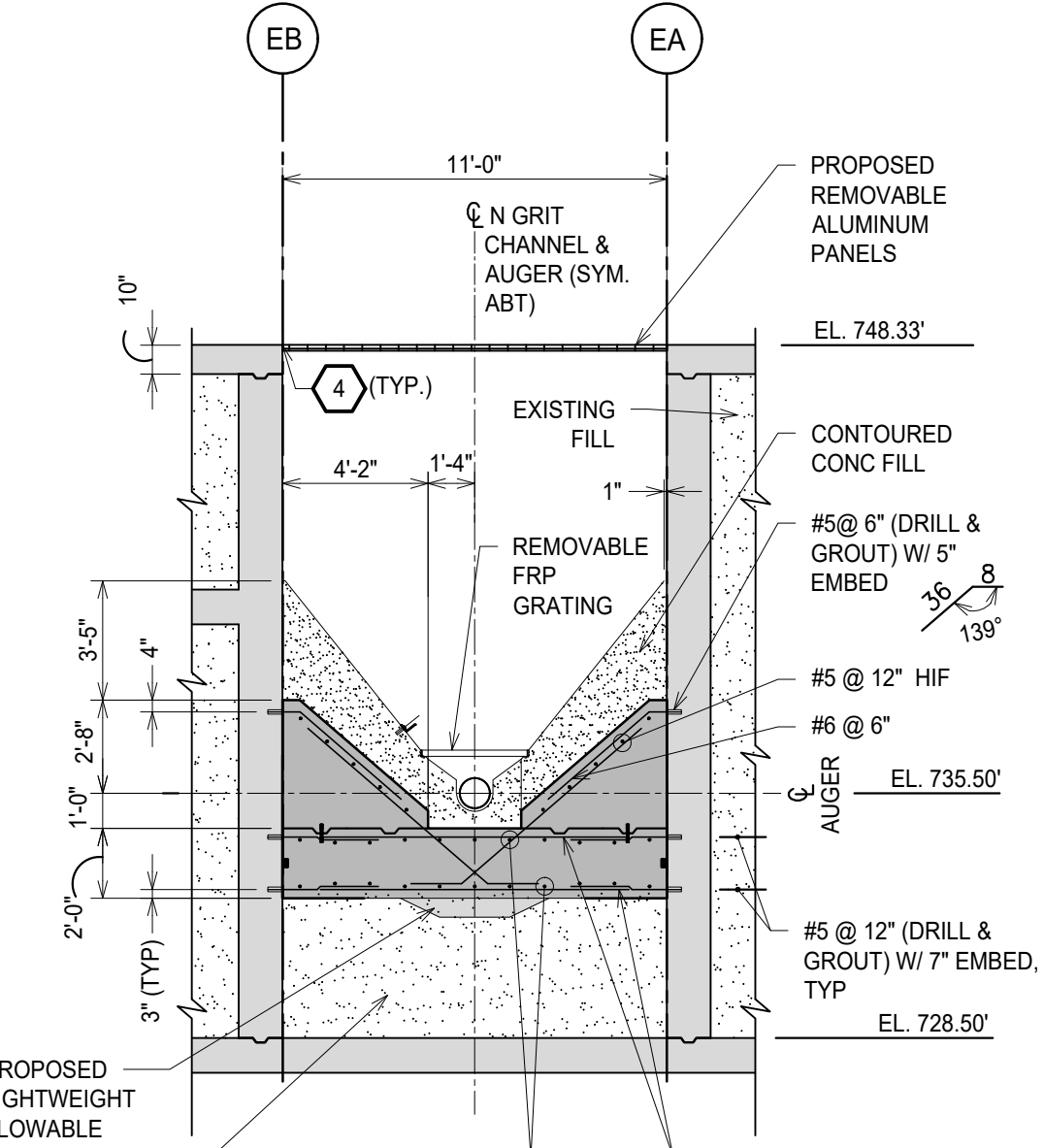
SECTION 1
SCALE: 3/16" = 1'-0"



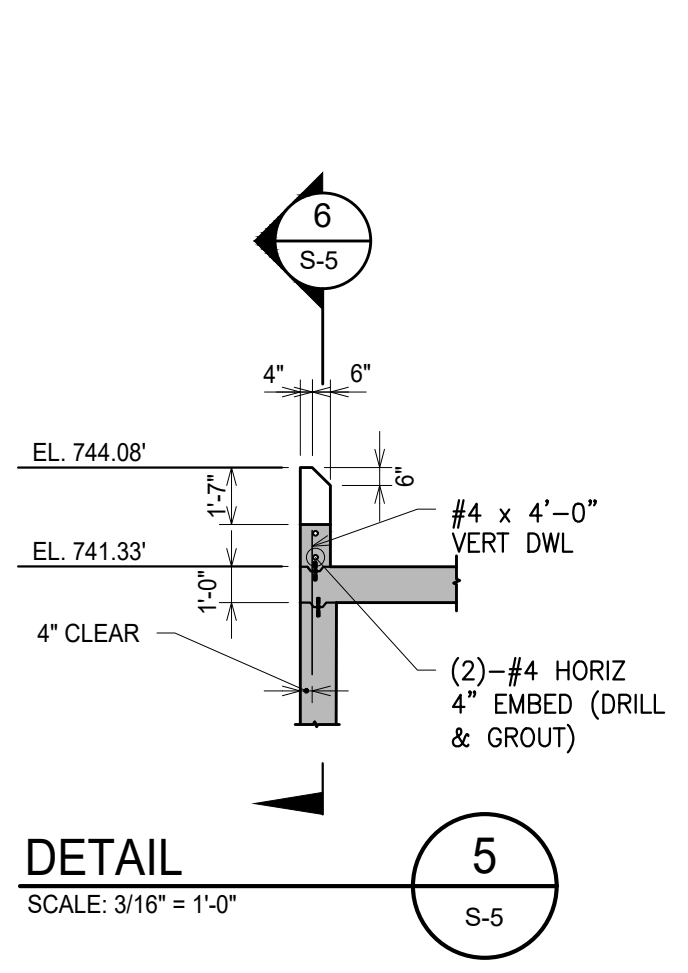
SECTION 2
SCALE: 3/16" = 1'-0"



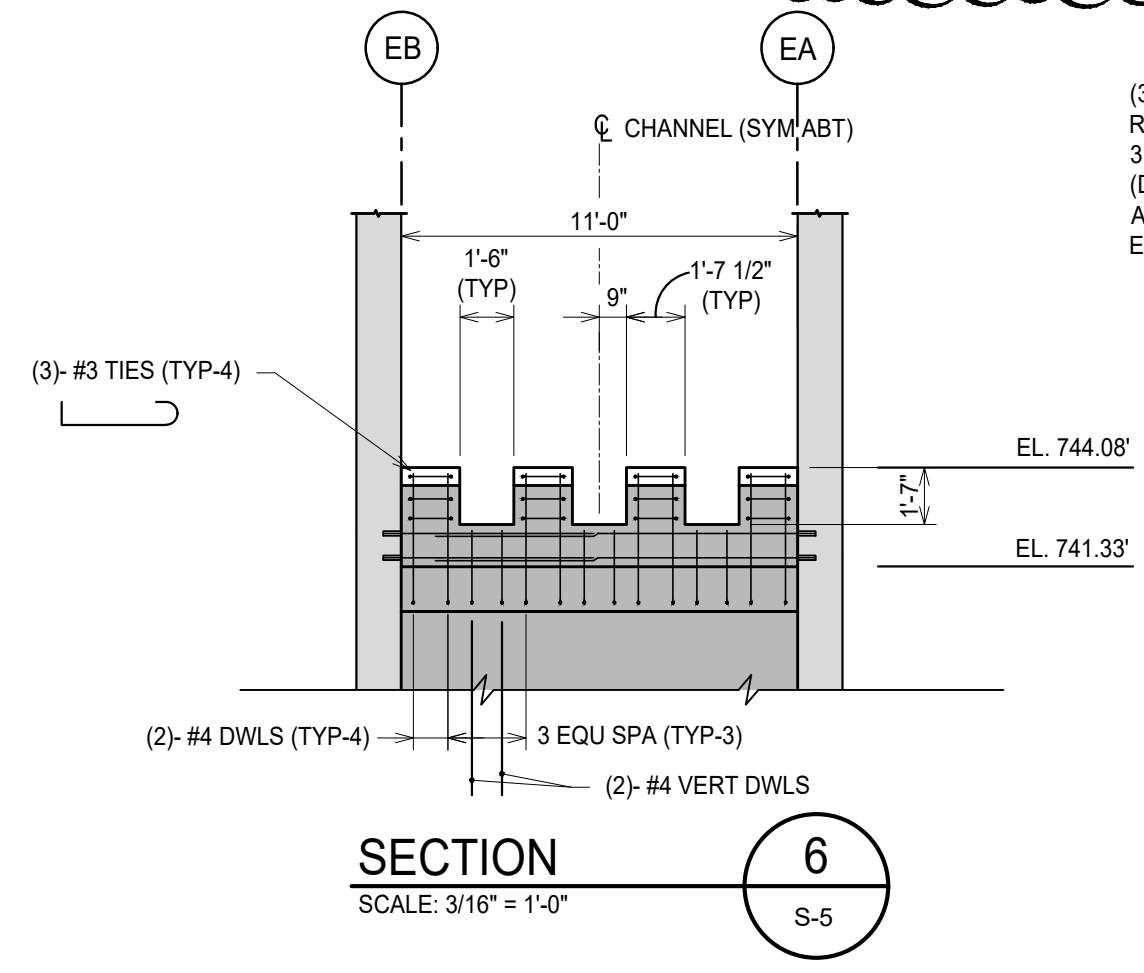
SECTION 3
SCALE: 3/16" = 1'-0"



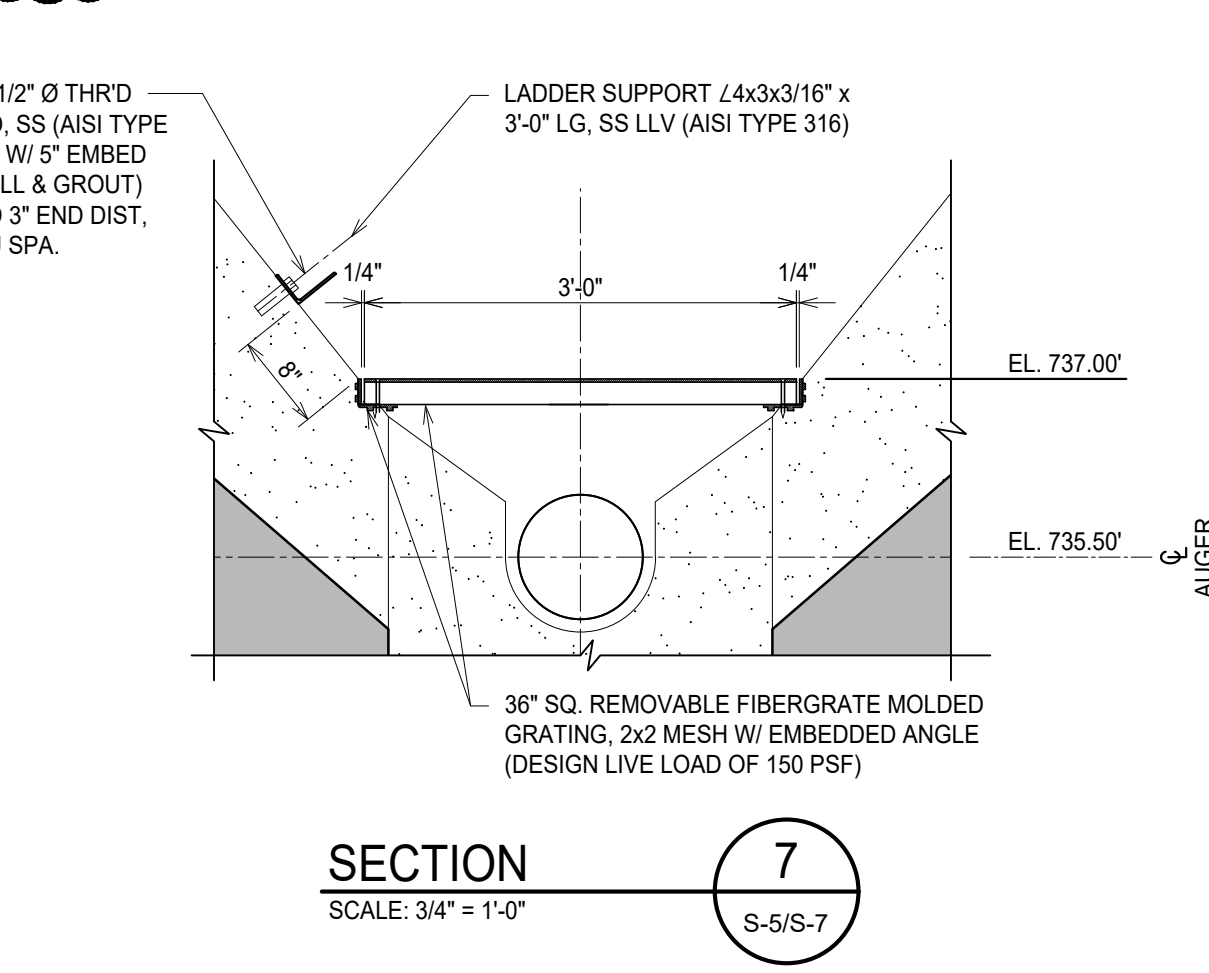
SECTION 4
SCALE: 3/16" = 1'-0"



DETAIL 5
SCALE: 3/16" = 1'-0"

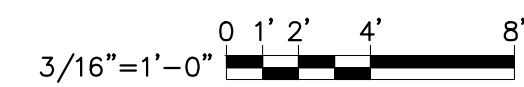


SECTION 6
SCALE: 3/16" = 1'-0"

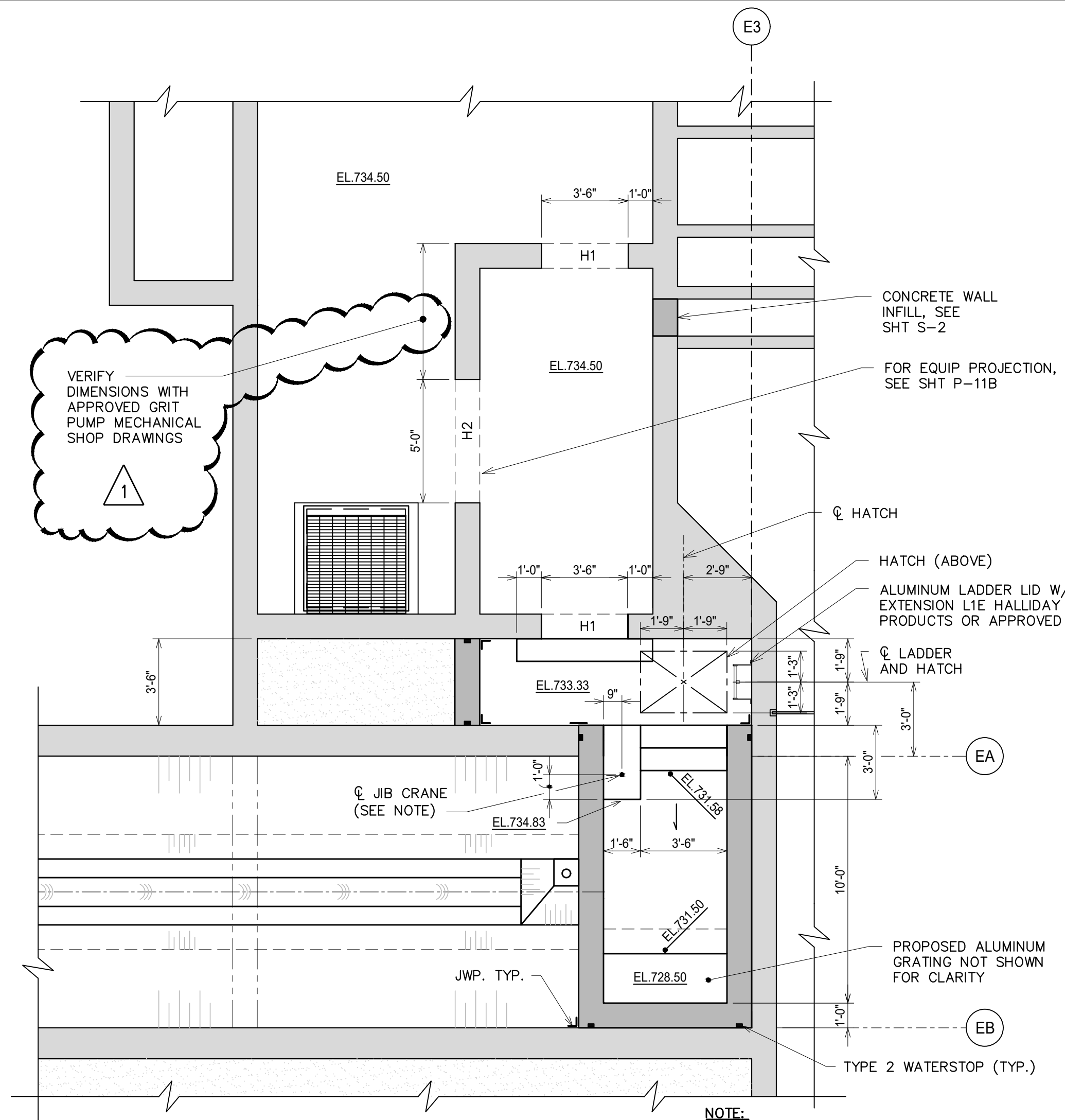


SECTION 7
SCALE: 3/4" = 1'-0"

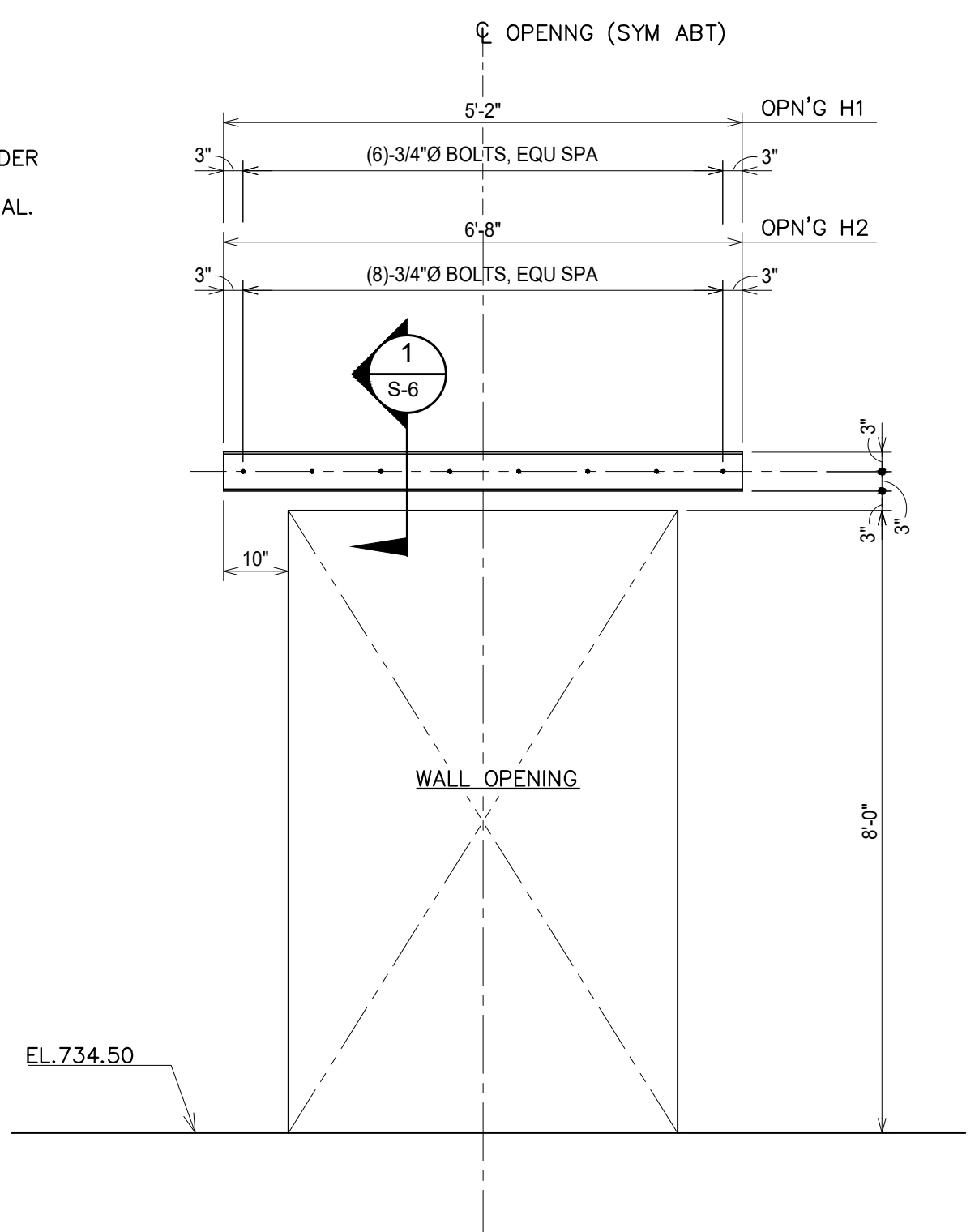
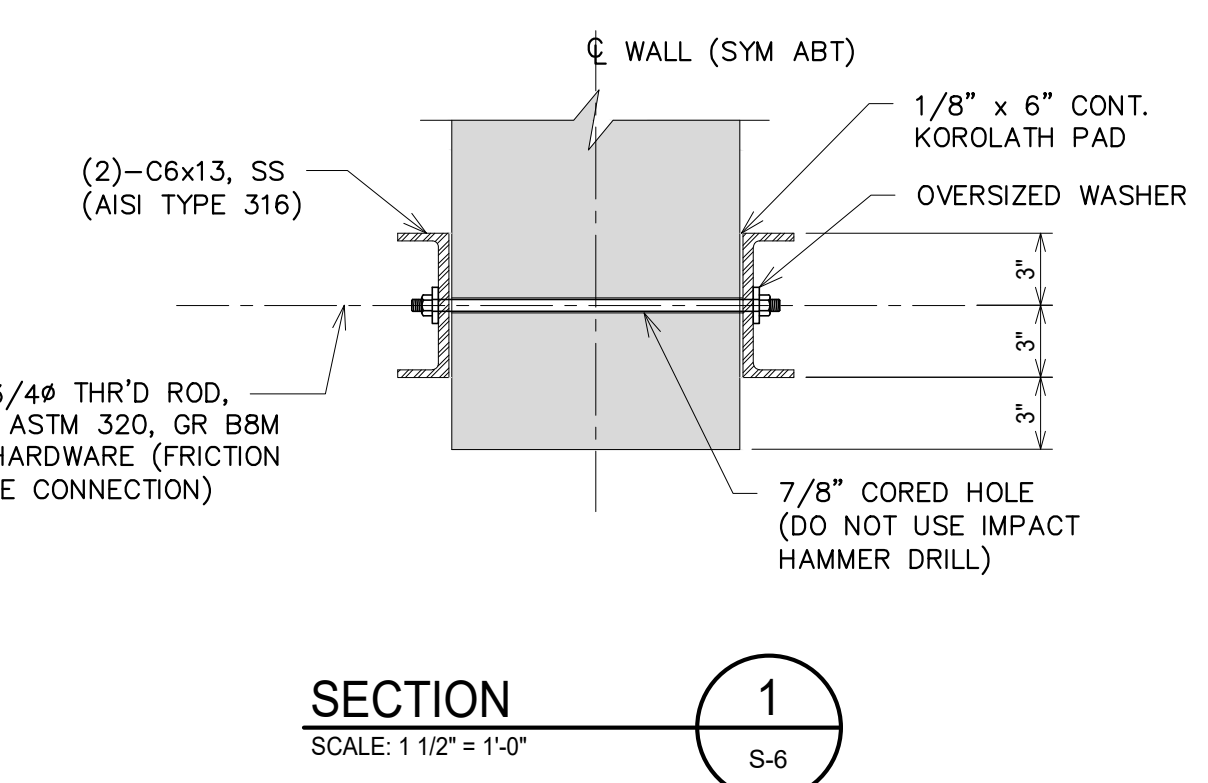
NOTE:
ALL EXISTING CONCRETE SURFACES IN CONTACT WITH PROPOSED CONCRETE SHALL BE INTENTIONALLY ROUGHENED TO 1/2" AMPLITUDE AND THOROUGHLY CLEANED TO THE SATISFACTION OF THE ENGINEER. APPLY WELD-CRETE BONDING AGENT TO EXISTING CONCRETE SURFACES JUST PRIOR TO PROPOSED CONCRETE.



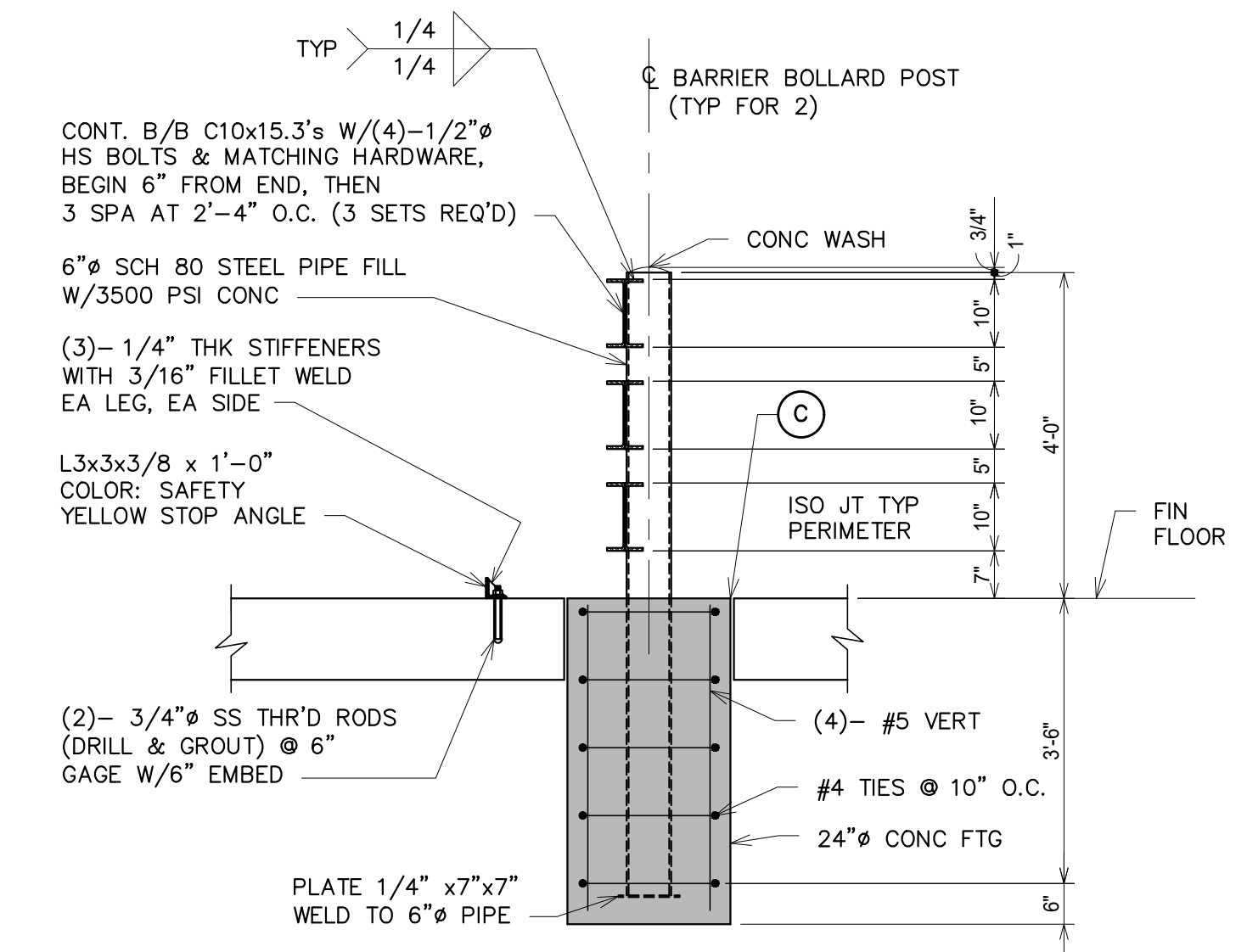
FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE



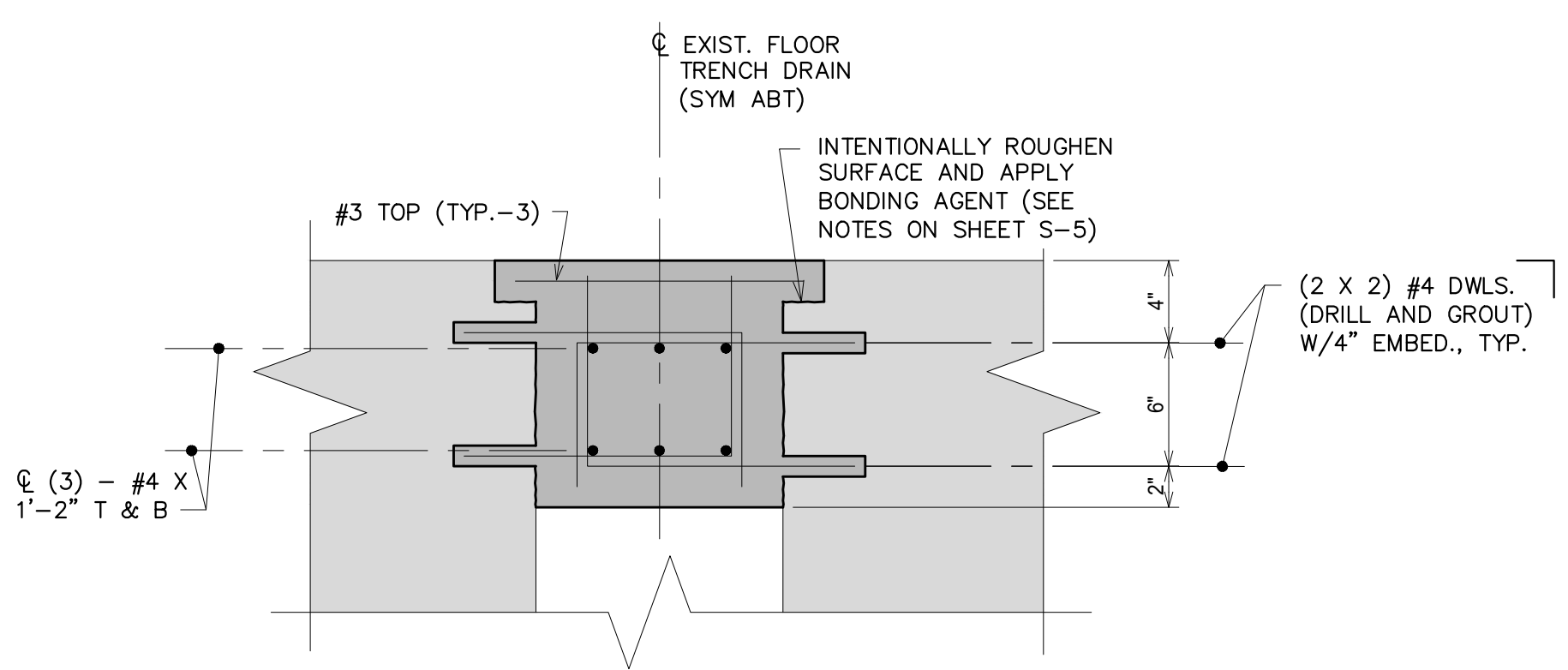
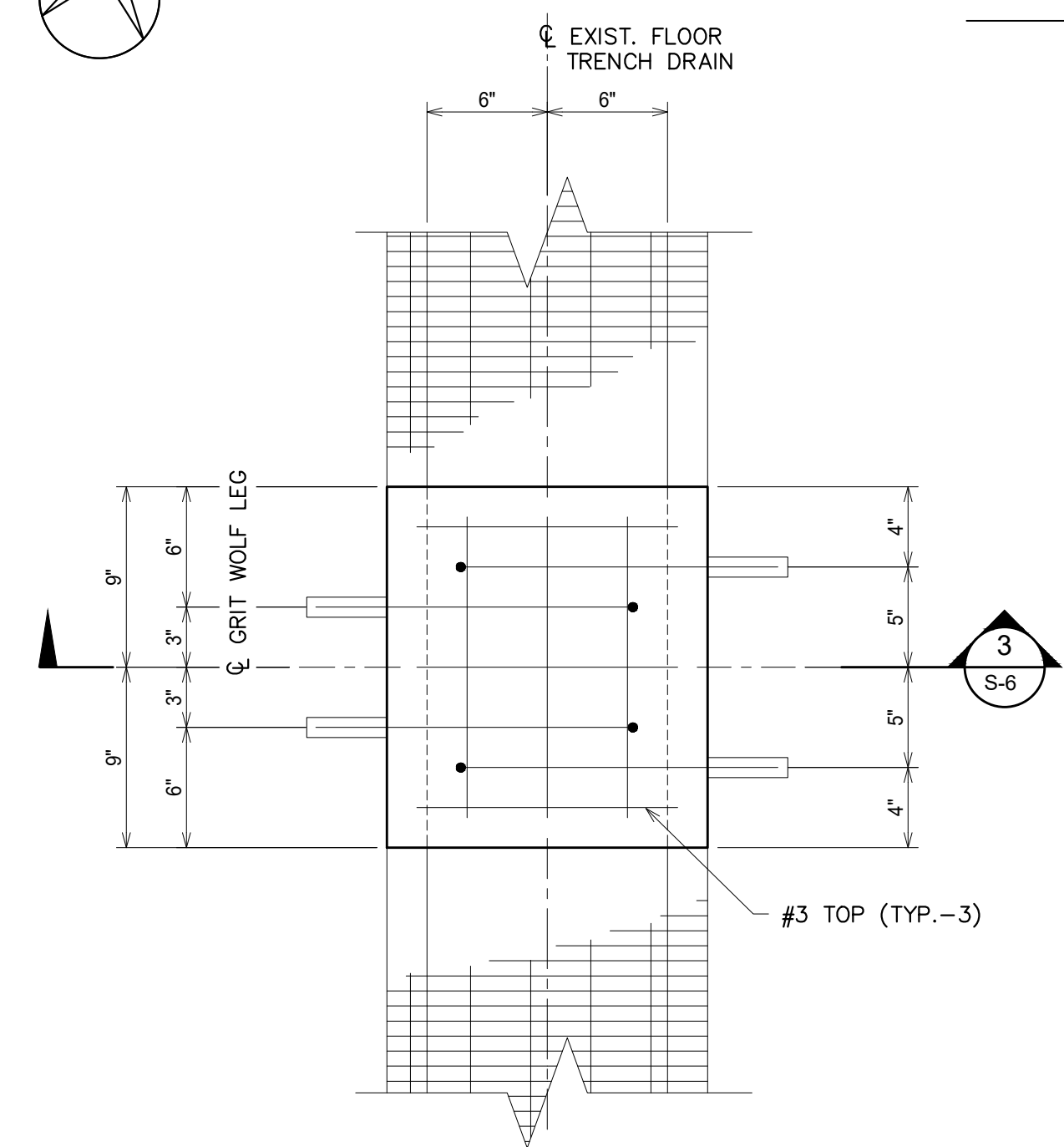
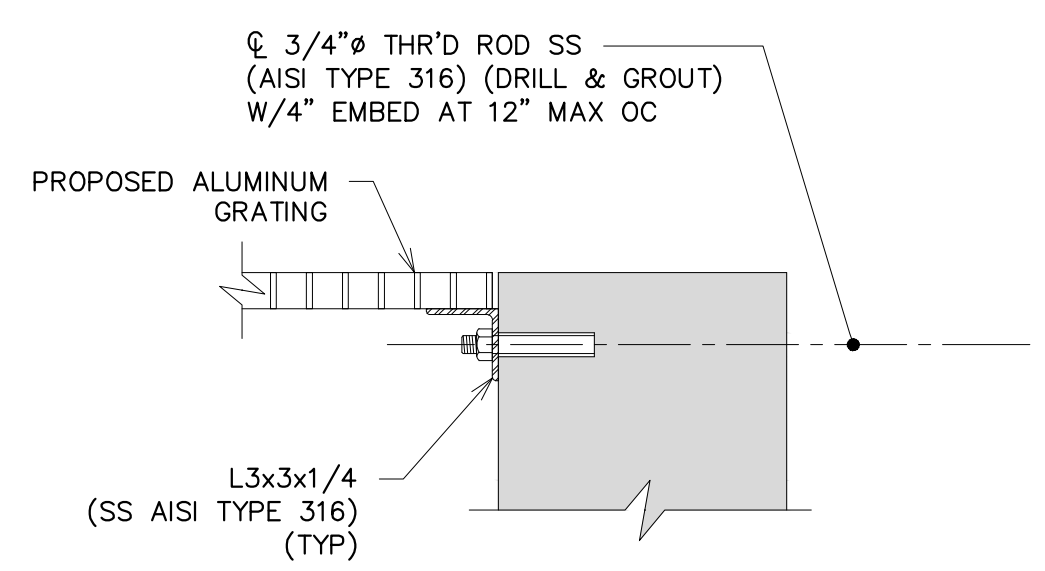
PARTIAL PLAN @ EL 739.00'
SCALE: 1/4" = 1'-0"



NOTE: FULLY INSTALL HEADERS PRIOR TO SAW CUTTING AND DEMO FOR WALL OPENING.



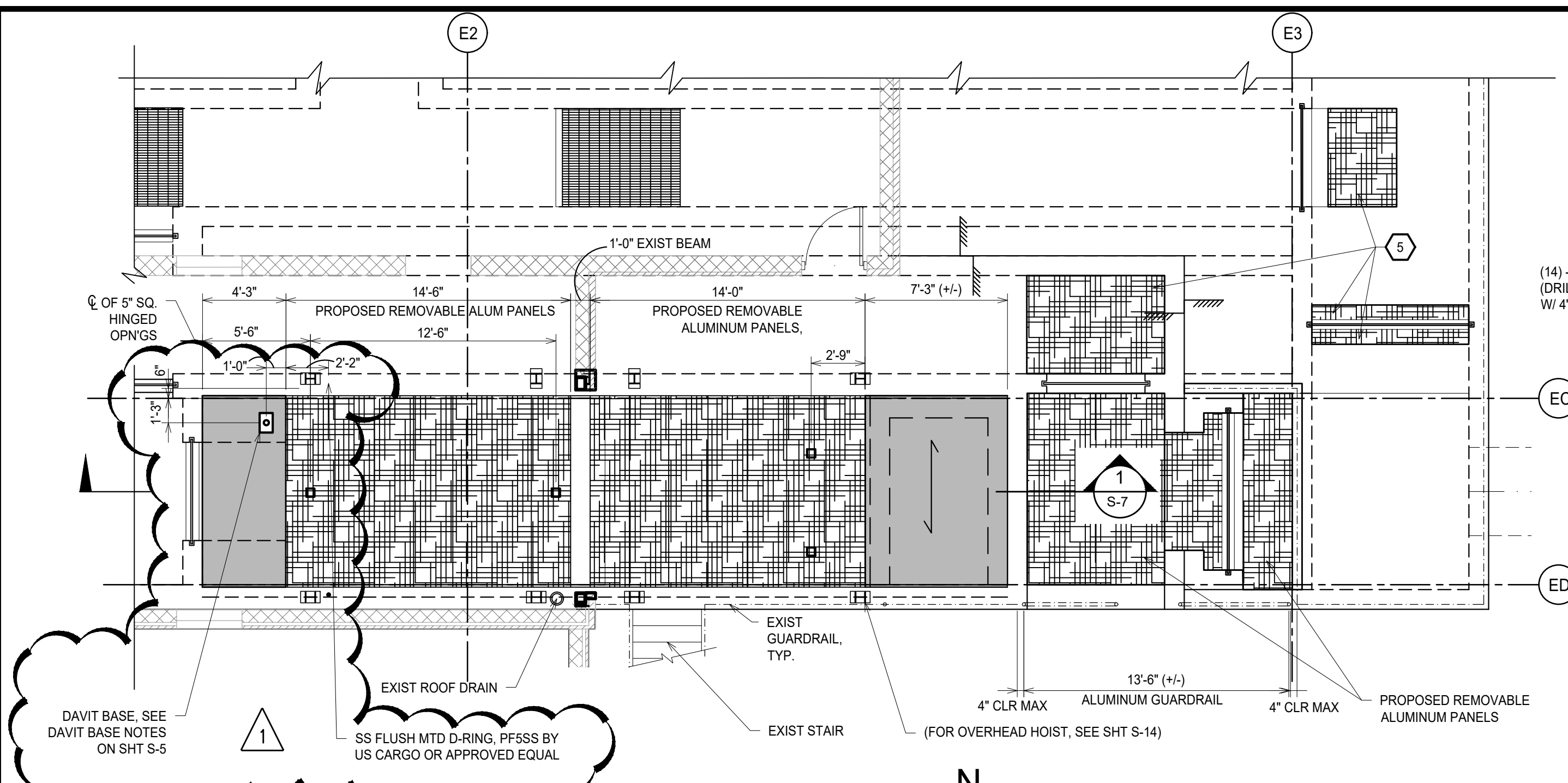
BOLLARD WITH GUARDRAIL DETAIL
SCALE: 1 1/2" = 1'-0"



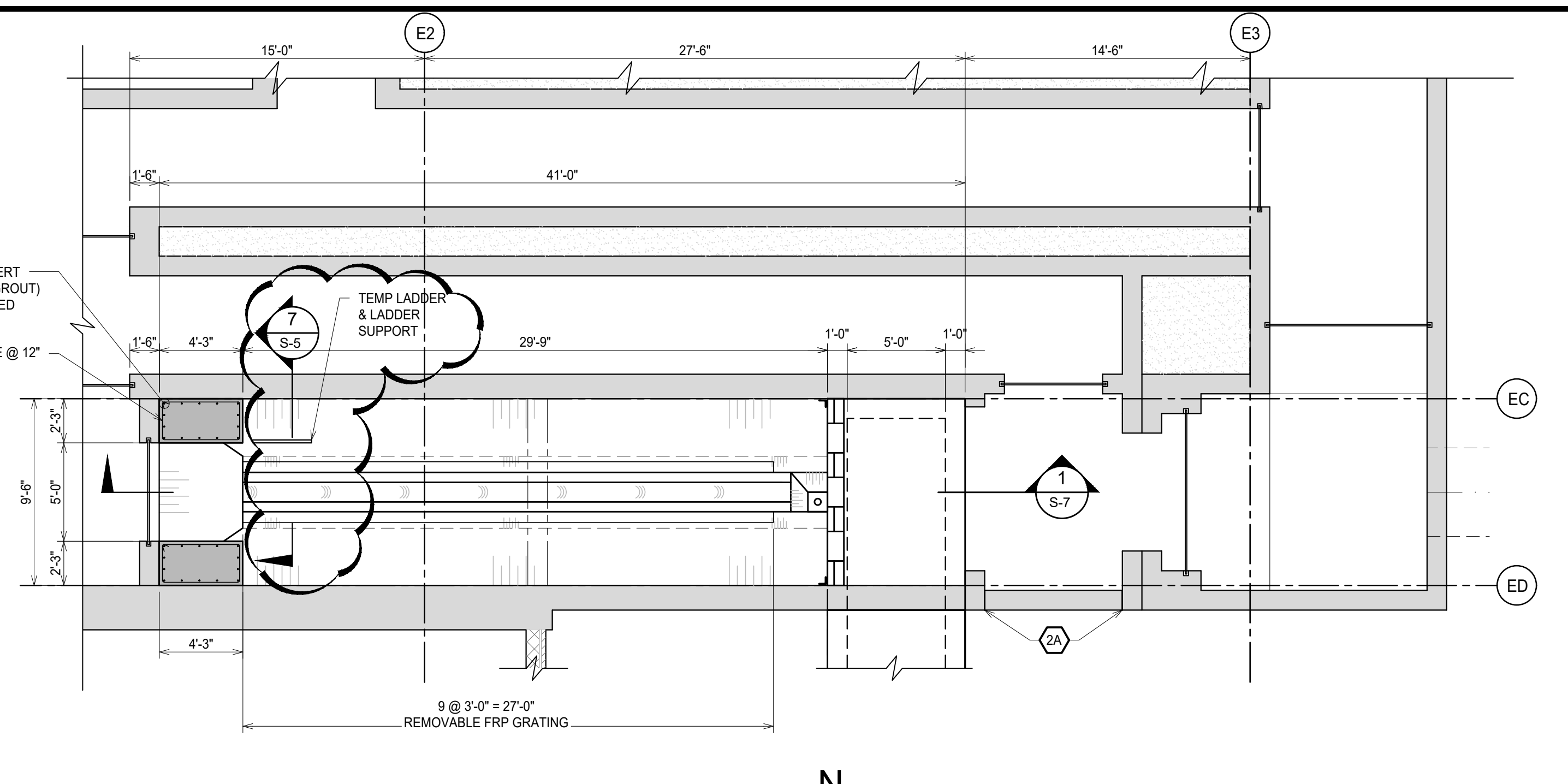
3/16" = 1'-0" 0 1' 2' 4' 8'

FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE

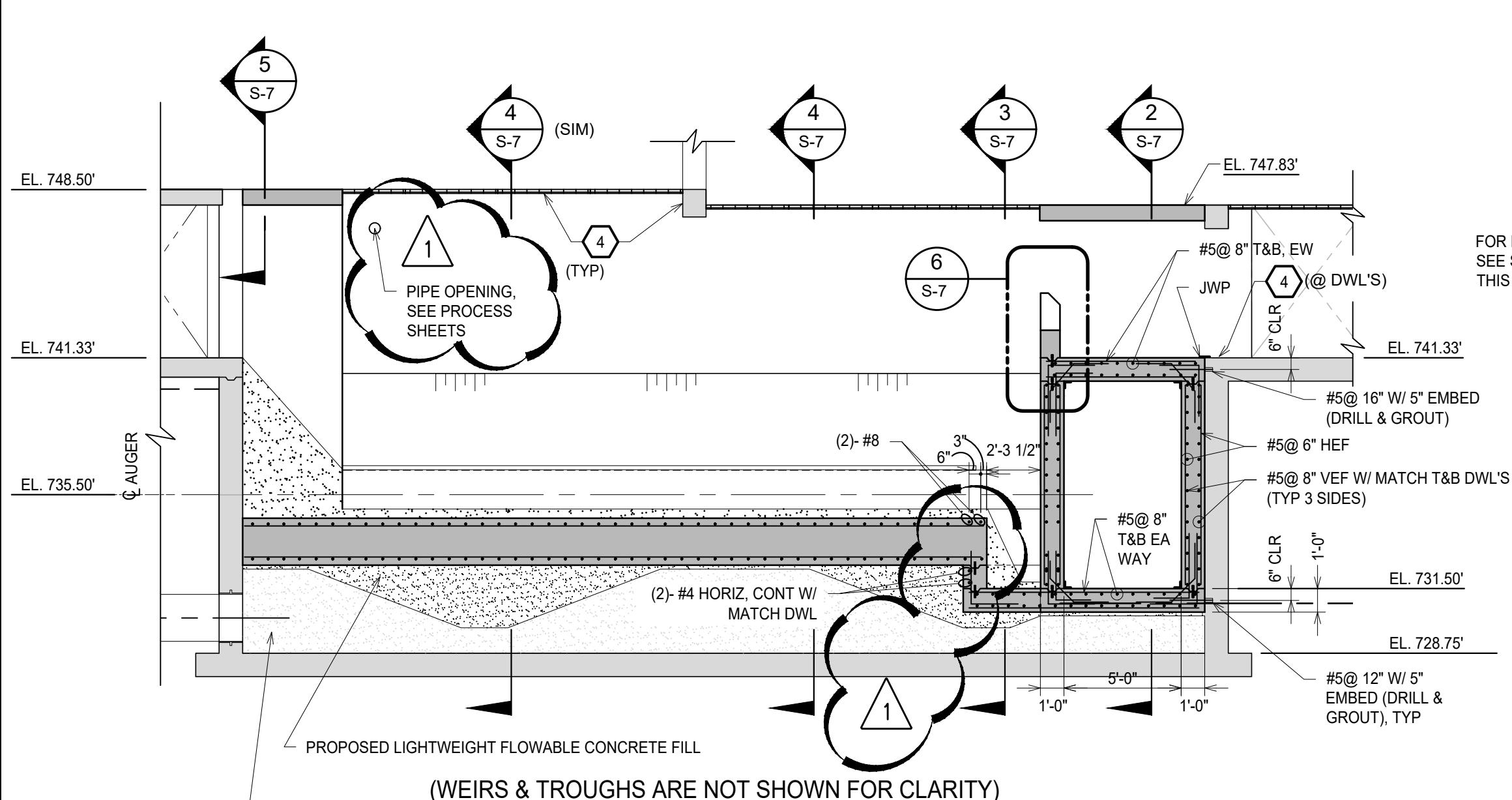
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PMH	12-13-2021
SDH	11-22-2021
PMH	10-29-2021
SDH	10-01-2021
CHECKED	DATE
DRAWN	DESCRIPTION
REV	REV
ISSUED FOR ADDENDUM NO. 1 ISSUED FOR BIDS SET 90% DESIGN SUBMITTAL 70% DESIGN SUBMITTAL 50% DESIGN SUBMITTAL	
CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET P.O. BOX 8647 ANN ARBOR MI 48107-8647 www.aagov.org	
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT NORTH GRIT SECTIONS AND DETAILS	
SCALE	AS NOTED
DRAWING No.	322
SHEET No.	S-6



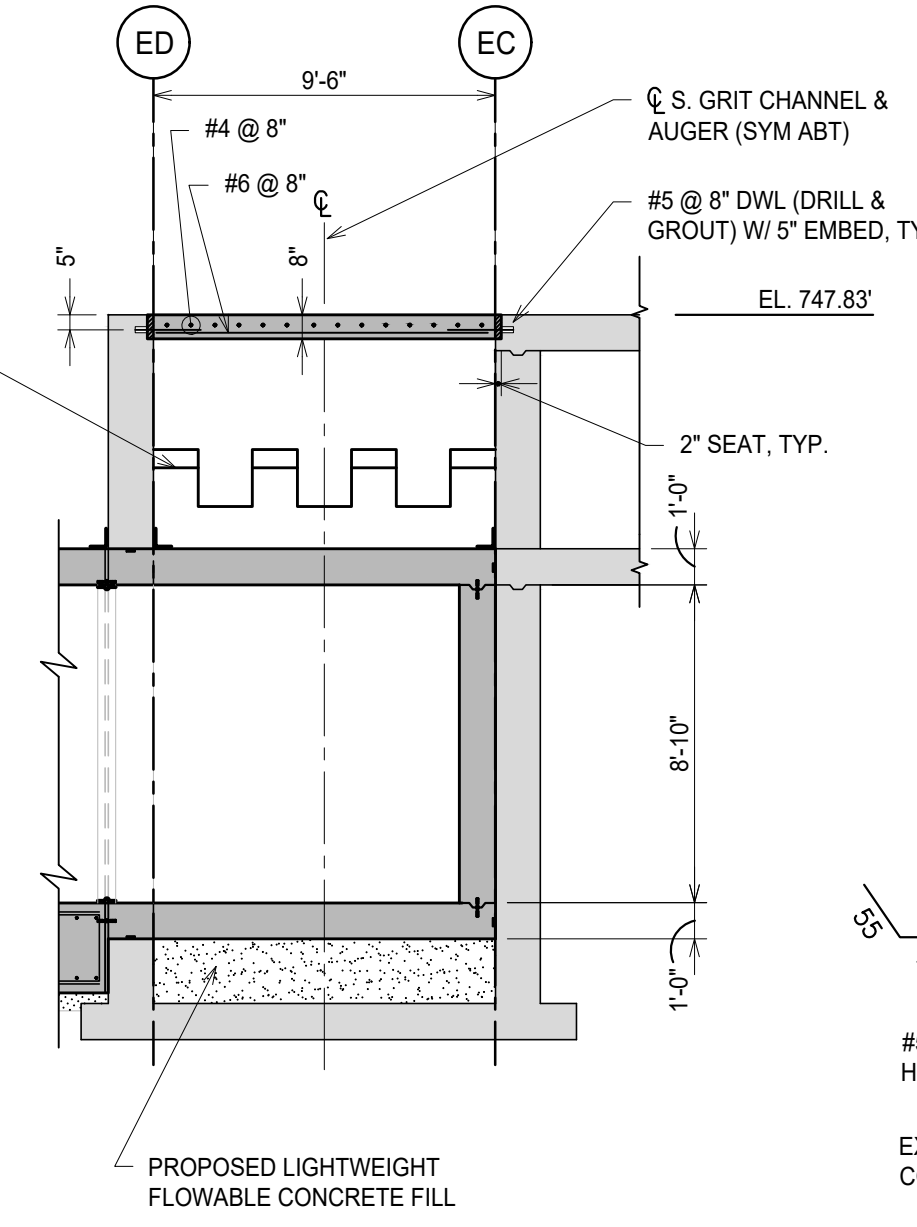
PARTIAL PLAN AT EL. 748.50
SCALE: 3/16" = 1'-0"



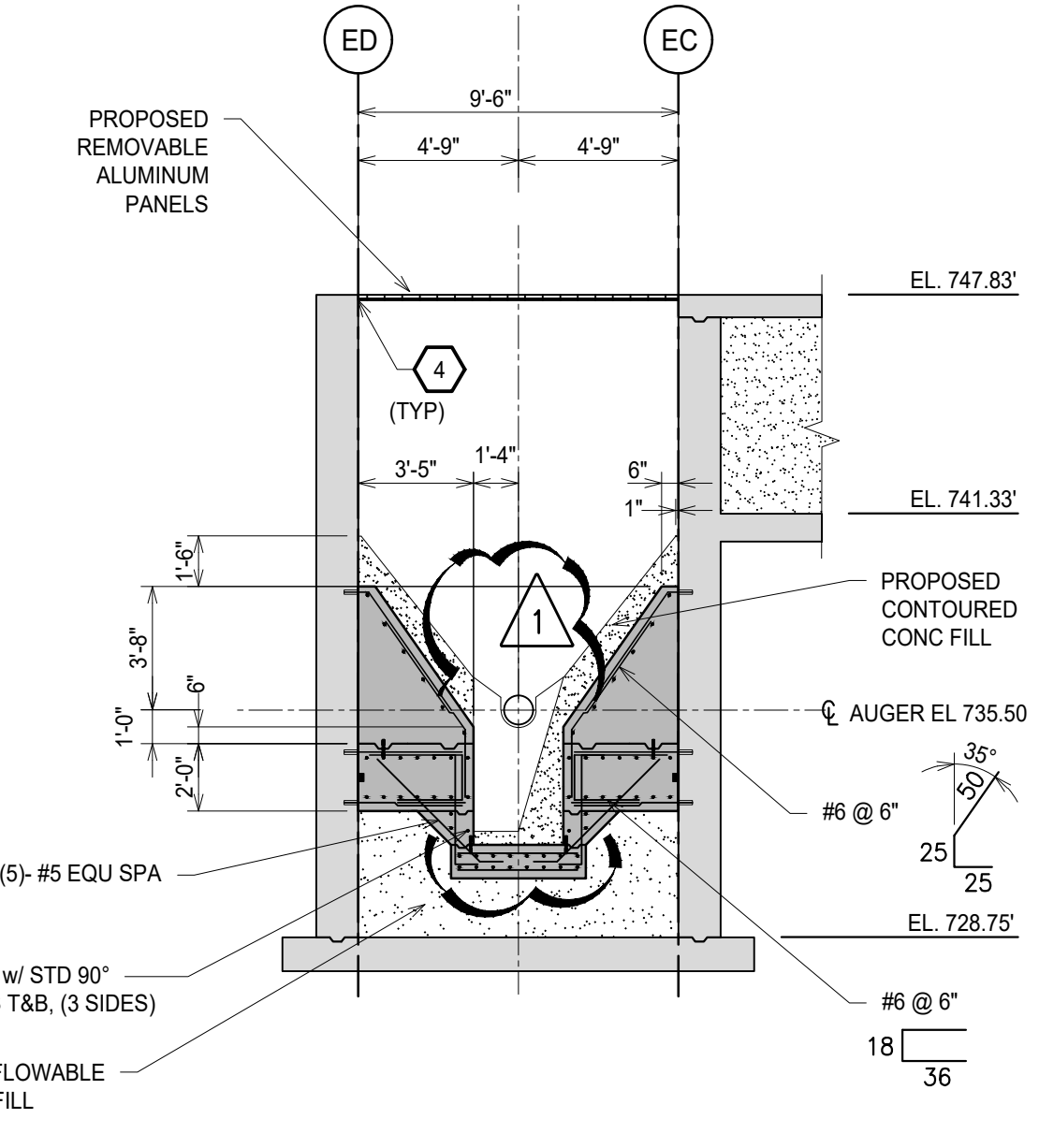
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SCALE: 3/16" = 1'-0"



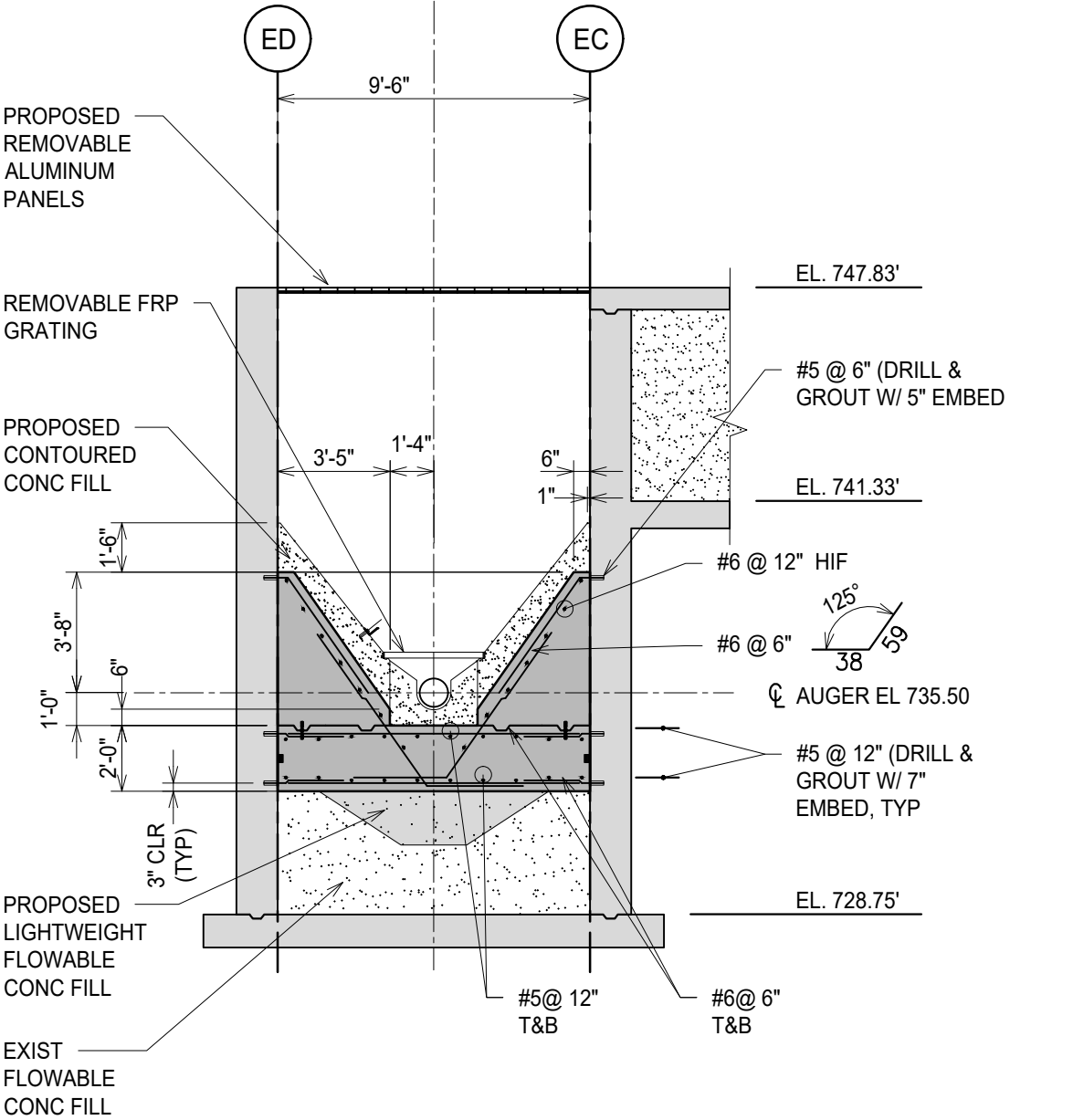
SECTION 1
SCALE: 3/16" = 1'-0"
S-1, S-7



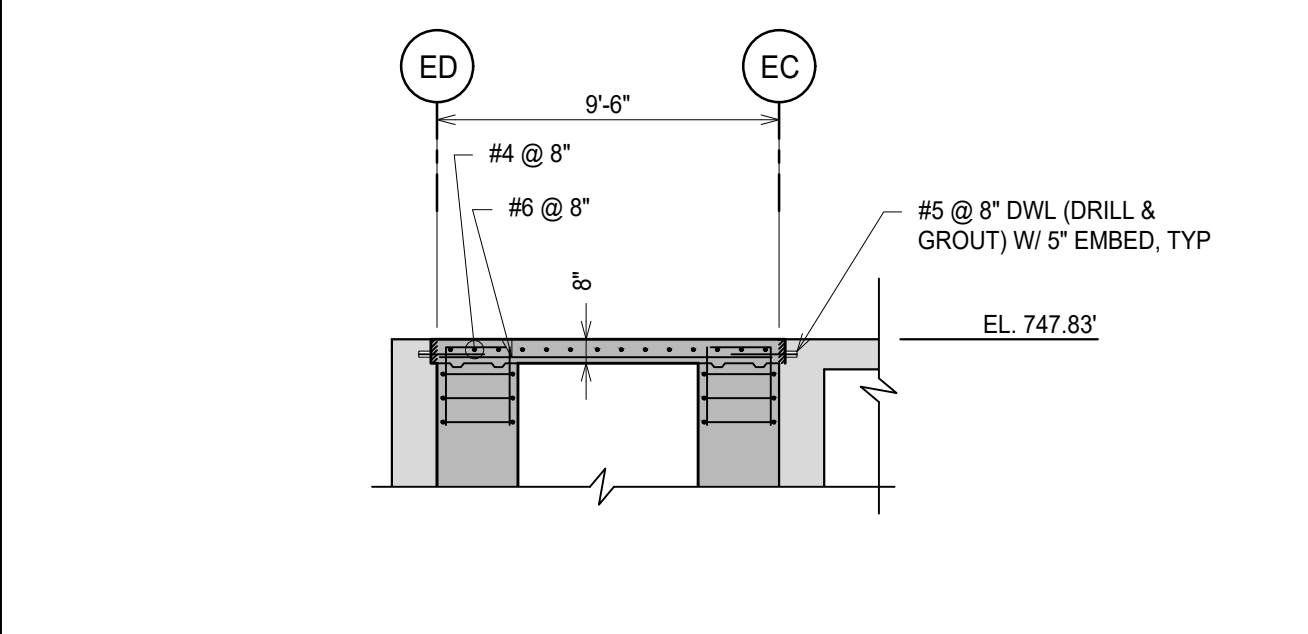
SECTION 2
SCALE: 3/16" = 1'-0"
S-7



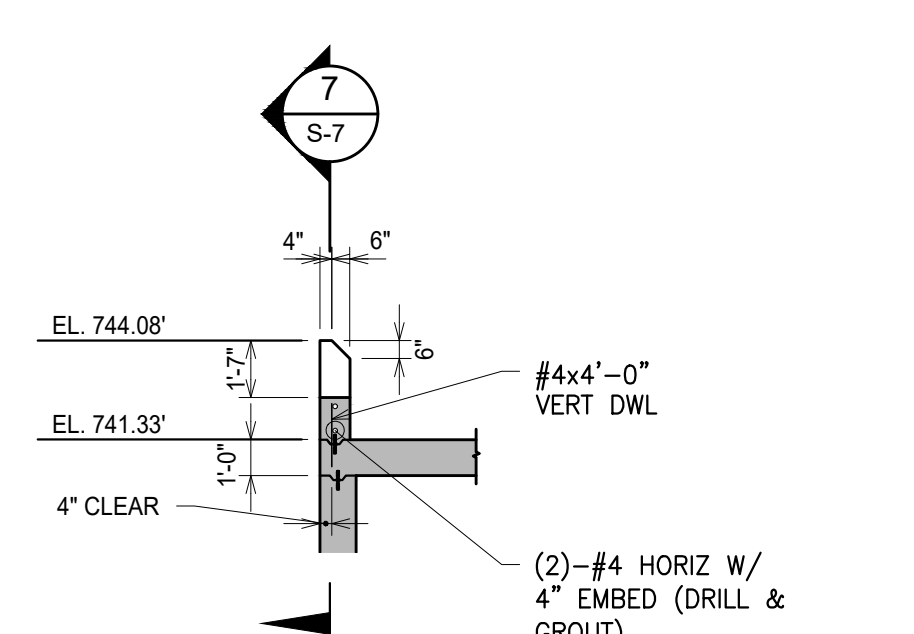
SECTION 3
SCALE: 3/16" = 1'-0"
S-7



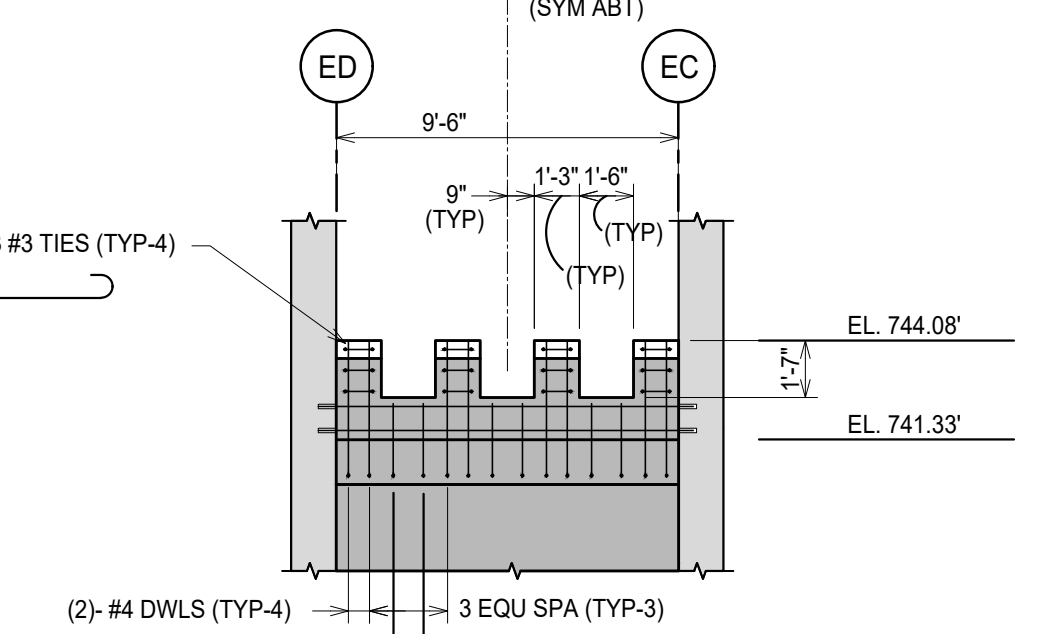
SECTION 4
SCALE: 3/16" = 1'-0"
S-7



SECTION 5
SCALE: 3/16" = 1'-0"
S-5/S-7

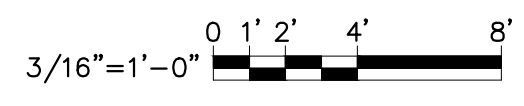


DETAIL 6
SCALE: 3/16" = 1'-0"
S-7




SECTION 7
SCALE: 3/16" = 1'-0"
S-7

NOTE:
ALL EXISTING CONCRETE SURFACES IN CONTACT WITH PROPOSED CONCRETE SHALL BE INTENTIONALLY ROUGHENED TO 1/4" AMPLITUDE AND THOROUGHLY CLEANED TO THE SATISFACTION OF THE ENGINEER. APPLY WELD-CRETE BONDING AGENT TO EXISTING CONCRETE SURFACES JUST PRIOR TO PROPOSED CONCRETE.




FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE



Know what's below.
Call before you dig.

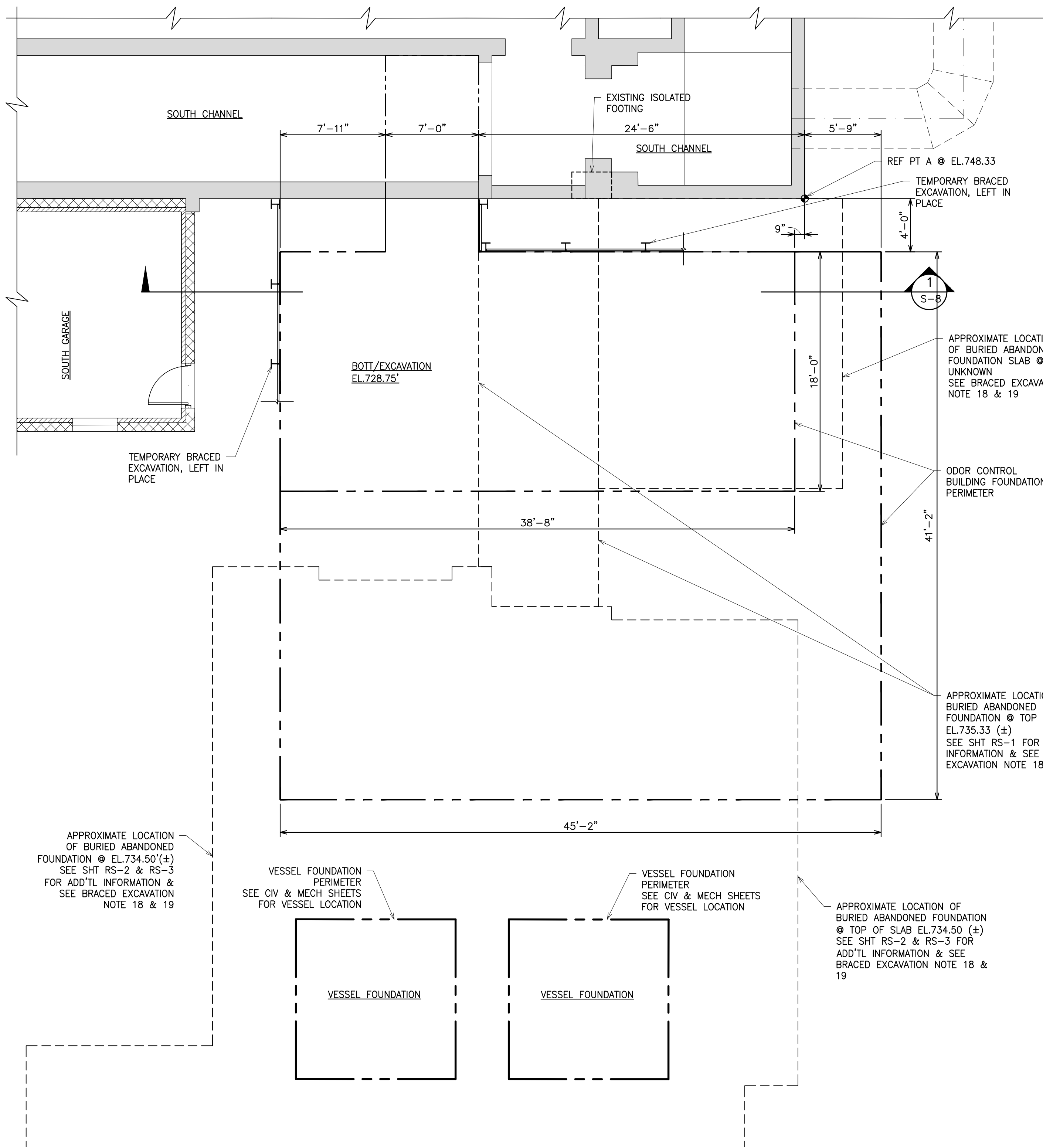
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2	10-29-2021	70% DESIGN SUBMITTAL		
3	11-22-2021	90% DESIGN SUBMITTAL		
4	12-13-2021	ISSUED FOR BIDS SET		
5	1-19-2022	ISSUED FOR ADDENDUM NO. 1		



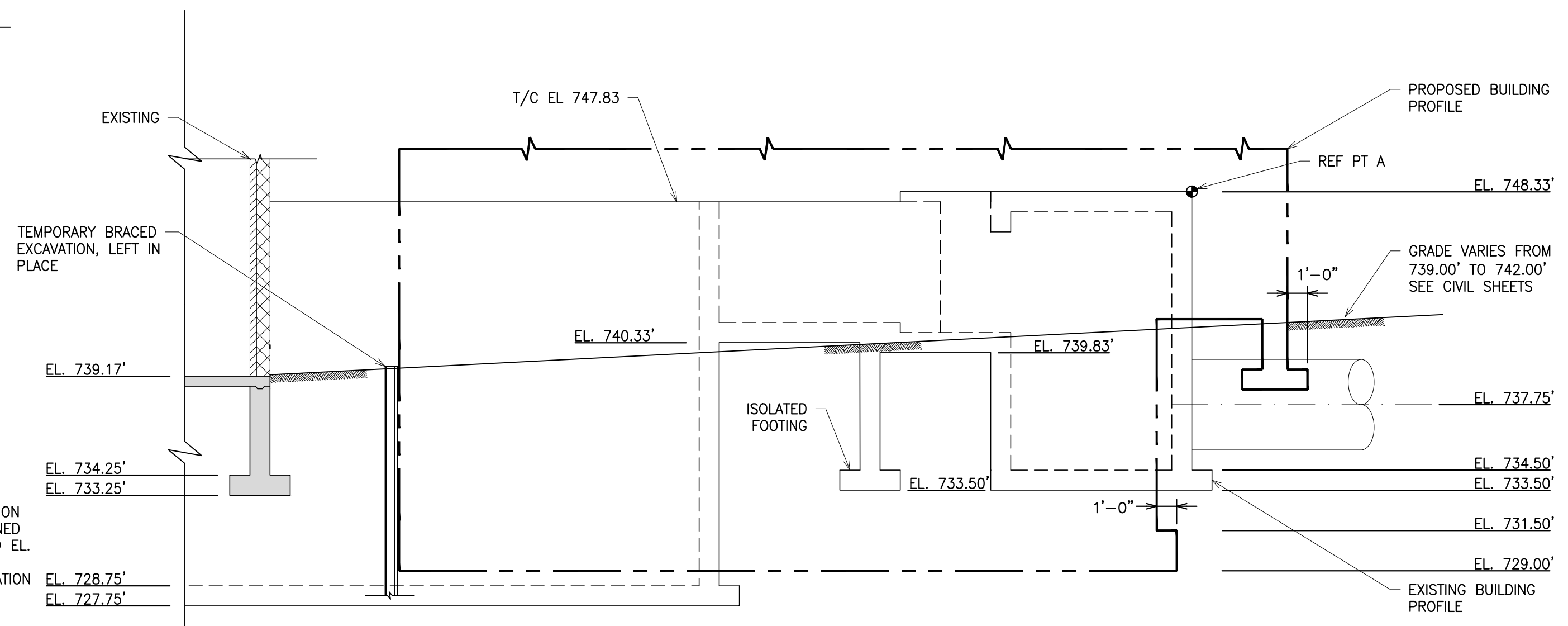
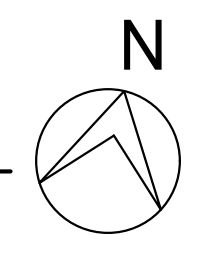
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PUBLIC SERVICES
301 EAST HURON STREET
ANN ARBOR, MI 48106-1007
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
SOUTH GRIT PLANS AND SECTIONS

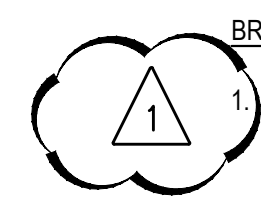
SCALE: AS NOTED
DRAWING No. 326
SHEET No. **S-7**



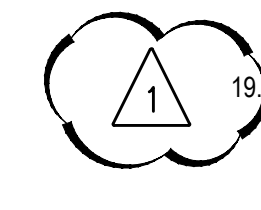
PARTIAL PLAN AT EL. 742.00
SCALE: 3/16" = 1'-0"



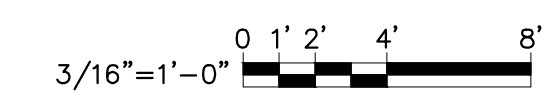
SECTION 1
SCALE: 3/16" = 1'-0"



- BRACED EXCAVATION NOTES:**
- BRACED EXCAVATIONS FOR THE ODOR CONTROL BUILDING AND VESSEL FOUNDATION SHALL BE DELEGATED TO THE CONTRACTOR, AND DESIGNED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE SECTION 02368, THE GEOTECHNICAL REPORT, AND THE FOLLOWING CRITERIA. THE CONTRACTOR SHALL MONITOR GROUND VIBRATION PER SECTION 02201. THE BRACED EXCAVATION DEPICTED ON THE DRAWINGS IS FOR GRAPHICAL DEPICTION ONLY. THE CONTRACTOR SHALL DETERMINE THE LIMITS OF THE BRACED EXCAVATION.
 - SUBMIT COMPLETE ENGINEERING DRAWINGS FOR BRACED EXCAVATIONS SHOWING MATERIAL, SIZE, AND LOCATION OF COMPONENTS, DETAILS OF CONNECTIONS AND REINFORCEMENT AT OPENINGS, INDICATE PERMANENT AND TEMPORARY INSTALLATIONS. THE CONTRACTOR'S LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN SHALL SIGN AND SEAL THESE DRAWINGS.
 - SUBMIT DESIGN CALCULATIONS PREPARED BY THE CONTRACTOR'S LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, WHO IS EXPERIENCED IN THE DESIGN OF BRACED EXCAVATIONS IN ACCORDANCE WITH PROJECT NOTES AND SPECIFICATIONS. REFERENCES USED IN THE DEVELOPMENT OF CALCULATIONS SHALL BE NOTED.
 - DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND "SOIL MECHANICS", DESIGN MANUAL 7.1 (5/82) AND "FOUNDATIONS AND EARTH STRUCTURES", DESIGN MANUAL 7.2 (9/86) MAY BE USED AS REFERENCE.
 - BRACED EXCAVATION SHALL CONSIST OF DRILLED SOLDIER PILES AND LAGGING UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 - LOCATE BRACING TO CLEAR COMPLETED WORK AND ARRANGE SO THAT STRESS IS NOT APPLIED TO ANY PORTION OF THE COMPLETED WORK UNTIL SUCH WORK HAS DEVELOPED SUFFICIENT STRENGTH. BRACING SHALL BE ARRANGED TO AVOID PLACING THROUGH THE WORK. NO ADDITIONAL CONSTRUCTION JOINTS WILL BE ADDED TO THE COMPLETED WORK.
 - DETERMINE APPLICABLE SOIL PARAMETERS FROM GEOTECHNICAL REPORT 213497 AS PREPARED BY G2 CONSULTING GROUP, DATED OCTOBER 11, 2021.
 - LATERAL LOADS:
 - DETERMINE HYDROSTATIC LOAD BASED ON GROUNDWATER LEVEL OR LOWERED WATER LEVEL IF DEWATERING.
 - SURCHARGE:
 - CONSTRUCTION TRAFFIC..... 3-FEET EARTH
 - SOUTH CHANNELS..... 19-FEET EARTH
 - EXISTING SOUTH GARAGE..... 5-FEET EARTH
 - DETERMINE ACTIVE LATERAL SOIL PRESSURE FROM THE GEOTECHNICAL REPORT.
 - DETERMINE BASE STABILITY PER NAVFAC DM-7.2, FIGURE 28.
 - MATERIALS:
 - BEECH, HICKORY, OR OAK HARDWOOD (1.6 KSI FLEXURAL STRENGTH) FOR WOOD LAGGING.
 - REFER TO STRUCTURAL STEEL NOTES FOR STEEL MATERIAL REQUIREMENTS.
 - WOOD LAGGING SHALL BE DESIGNED FOR MAXIMUM ALLOWABLE STRESS OF 2.4 KSI IN FLEXURE (1.6 KSI x 1.5 OVERLOAD = 2.4 KSI).
 - STRUCTURAL STEEL SHALL BE DESIGNED IN ACCORDANCE WITH AISC 360-10, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (ASD).
 - MATERIAL OVERSTRESS SHALL BE ALLOWED ONLY WHEN ACTUAL STRESSES ARE CHECKED AT FREQUENT INTERVALS USING STRAIN GAUGES.
 - ELEMENTS SUBJECT TO AXIAL AND FLEXURAL STRESSES SHALL BE DESIGNED FOR THE EFFECTS OF COMBINED STRESSES.
 - UNLESS OTHERWISE NOTED ON THE DRAWINGS, IF THE BRACED EXCAVATION SYSTEM CANNOT BE REMOVED WITHOUT DETRIMENT TO THE FINISHED STRUCTURE OR EXISTING STRUCTURE, THE BRACING SHALL BE LEFT IN PLACE AT NO ADDITIONAL COST TO THE OWNER. PERMANENT BRACING ELEMENTS SHALL BE CUT OFF AT THE LEVEL REQUIRED TO AVOID INTERFERENCE WITH SUBSEQUENT CONSTRUCTION.
 - BRACED EXCAVATION SHALL BE EQUIPPED WITH ADEQUATE FALL PROTECTION IN ACCORDANCE WITH MI-OSHA STANDARDS.
 - DRIVING OF VERTICAL STEEL SHEET PILING SHALL NOT BE PERMITTED.
 - REFER TO DRAWINGS RS-1, RS-2 AND RS-2 FOR HISTORIC RECORD DRAWINGS. HISTORICAL ELEVATIONS ON THESE DRAWINGS ARE BASED ON NGVD OF 1929. THE PROPOSED ELEVATIONS AND WORK ITEMS HAVE BEEN CONVERTED TO NAVD 88 DATUM. THE FOLLOWING CONVERSION EQUATION MAY BE USED: NAVD 1988 ELEV = NGVD 1929 ELEV - 0.50 FEET.
 - EXISTING FILL SOILS, EXISTING BURIED ABANDONED FOUNDATIONS, AND OBSTRUCTIONS SHALL BE REMOVED FULL DEPTH TO NATIVE SOILS & TO A MIN OF 3' OUTSIDE OF THE PROPOSED STRUCTURE FOR THE FULL PERIMETER. PROOF-ROLL THE EXPOSED SUBGRADE SOILS AND REPLACE WITH ENGINEERED FILL COMPACTED TO 95% OF THE MODIFIED PROCTOR. SEE SECTION 02200 AND THE GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS.
 - EXISTING AND PROPOSED UTILITIES ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE CIVIL DRAWINGS FOR EXISTING AND PROPOSED UTILITY LOCATIONS.
 - DETERMINE FROM NAVFAC DM-7.1; FIGURE 2 (p. 7.1 - 268); "PENETRATION OF CUT OFF WALL REQUIRED TO PREVENT PIPING IN ISOTROPIC SAND." SAFETY FACTOR = 2.



NOTICE:
PART OF THIS DRAWING HAS BEEN COPIED FROM A PREVIOUS CONSTRUCTION PROJECT. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION SHOWN ON THIS DRAWING PERTAINING TO OR IN RELATION OF THE EXISTING STRUCTURE. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION/DEMOLITION ACTIVITIES.



FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE

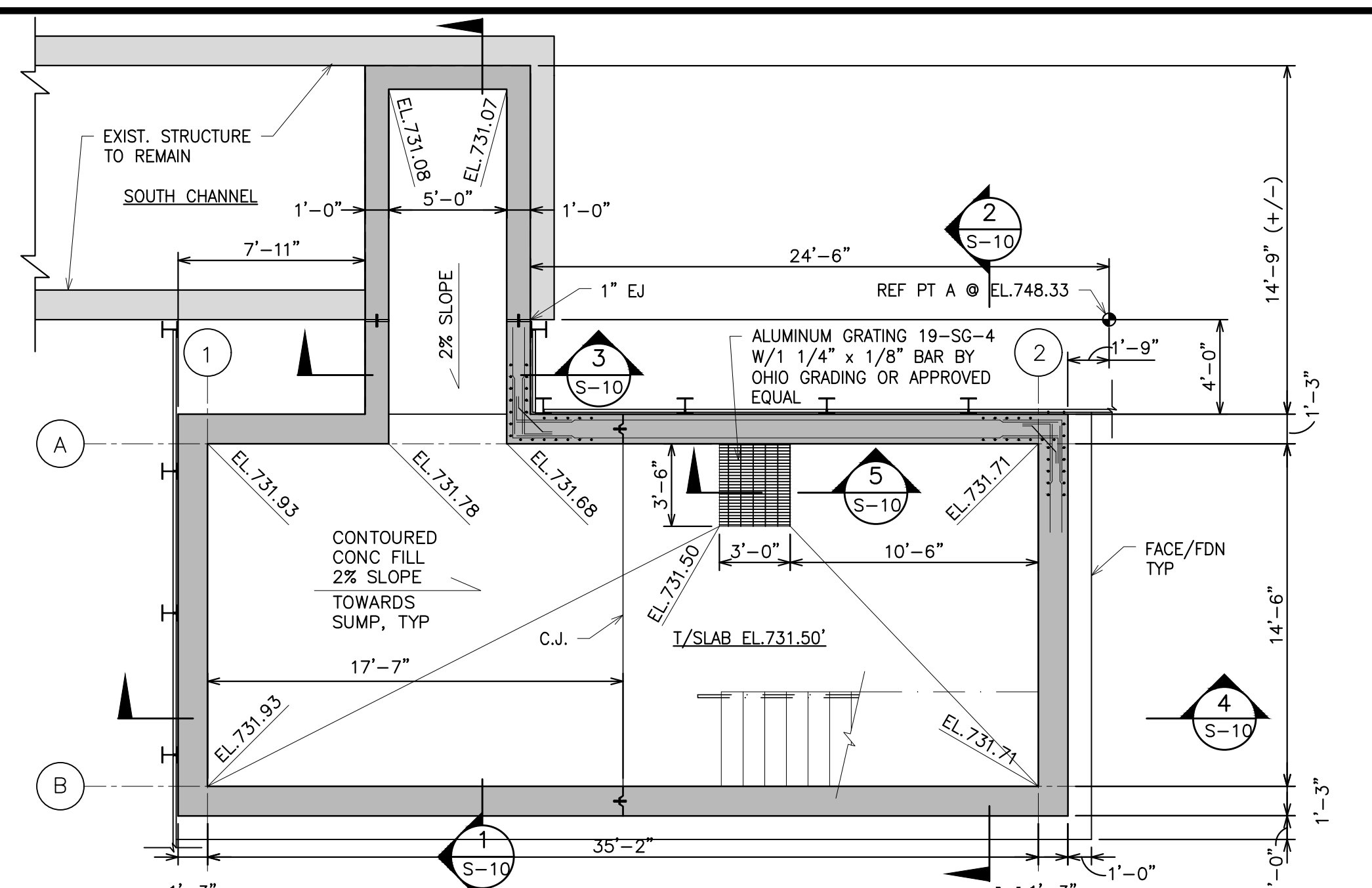
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PMH	12-13-2021	ISSUED FOR BIDS SET	DRAWN
SDH	11-22-2021	90% DESIGN SUBMITTAL	
PMH	10-29-2021	70% DESIGN SUBMITTAL	
SDH	10-01-2021	50% DESIGN SUBMITTAL	
DATE		DESCRIPTION	REV.

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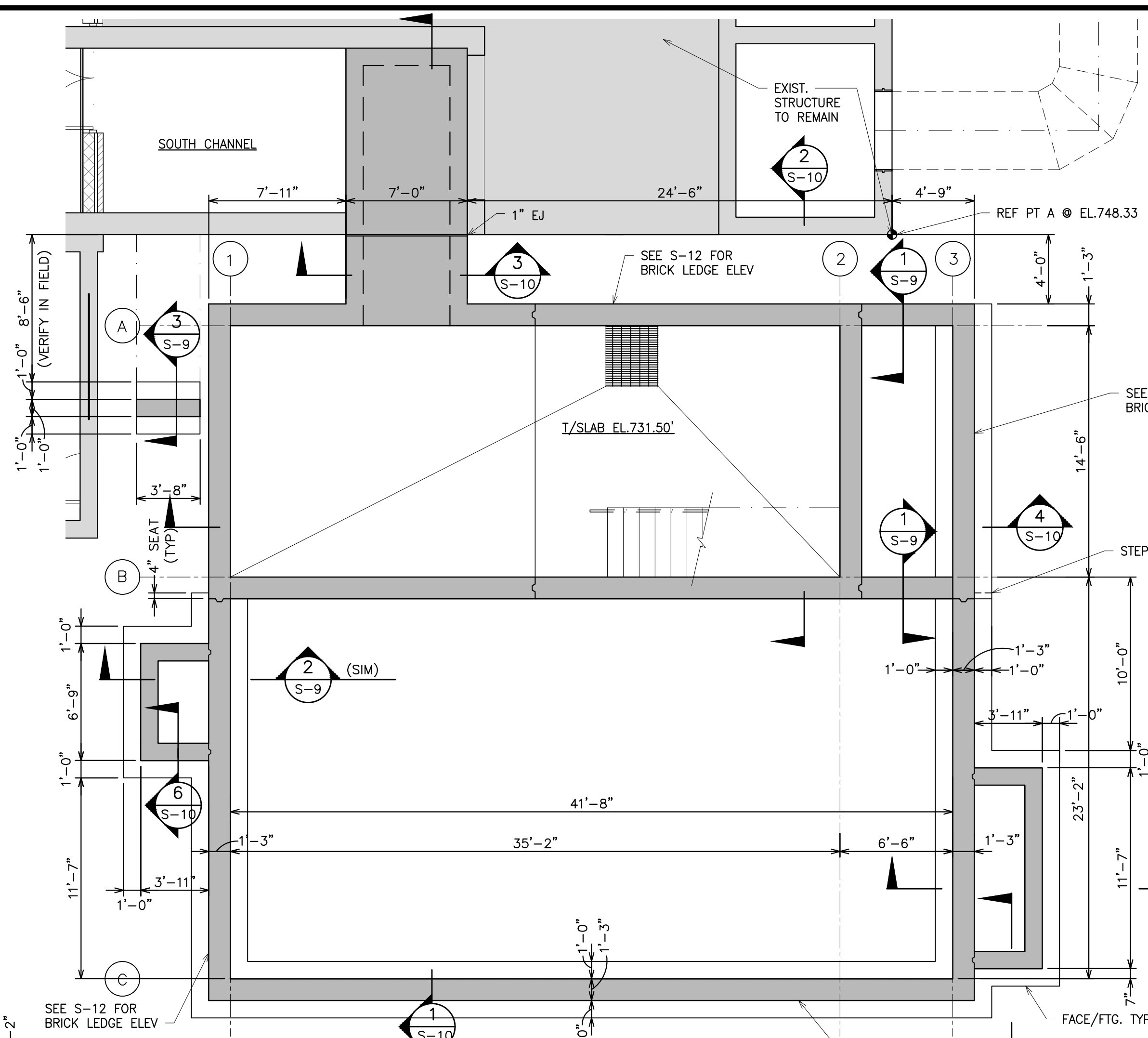
PROJECT MANAGEMENT - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ODOR CONTROL BUILDING BRACED EXCAVATION PLAN

SCALE AS NOTED	DRAWING No. 330
SHEET No. S-8	



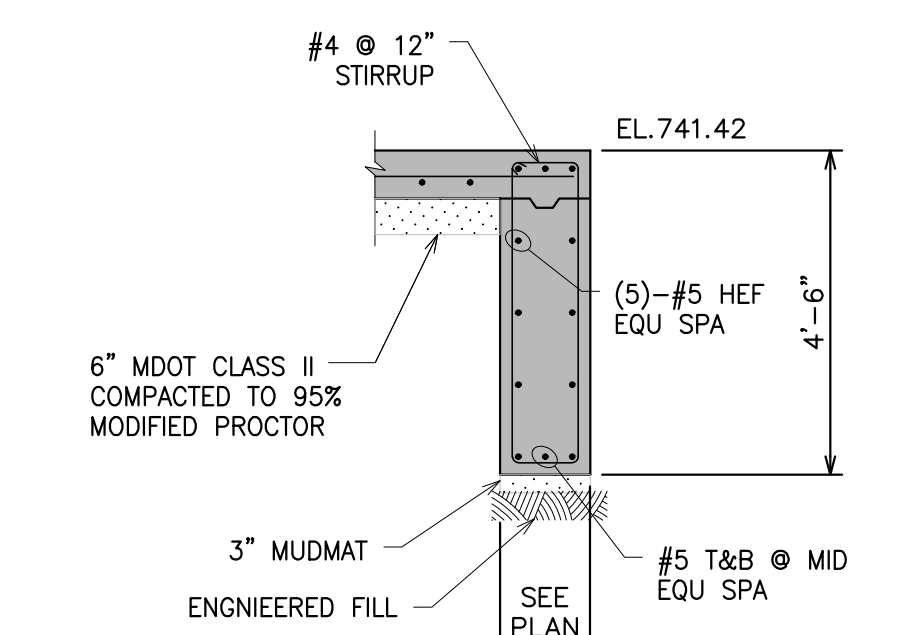
(SOUTH CHANNEL GROUT NOT SHOWN FOR CLARITY)
PARTIAL PLAN AT EL. 731.50
 SCALE: 3/16" = 1'-0"

NOTE:
 SEE MECH SHTS FOR
 EQUIPMENT PAD LAYOUT

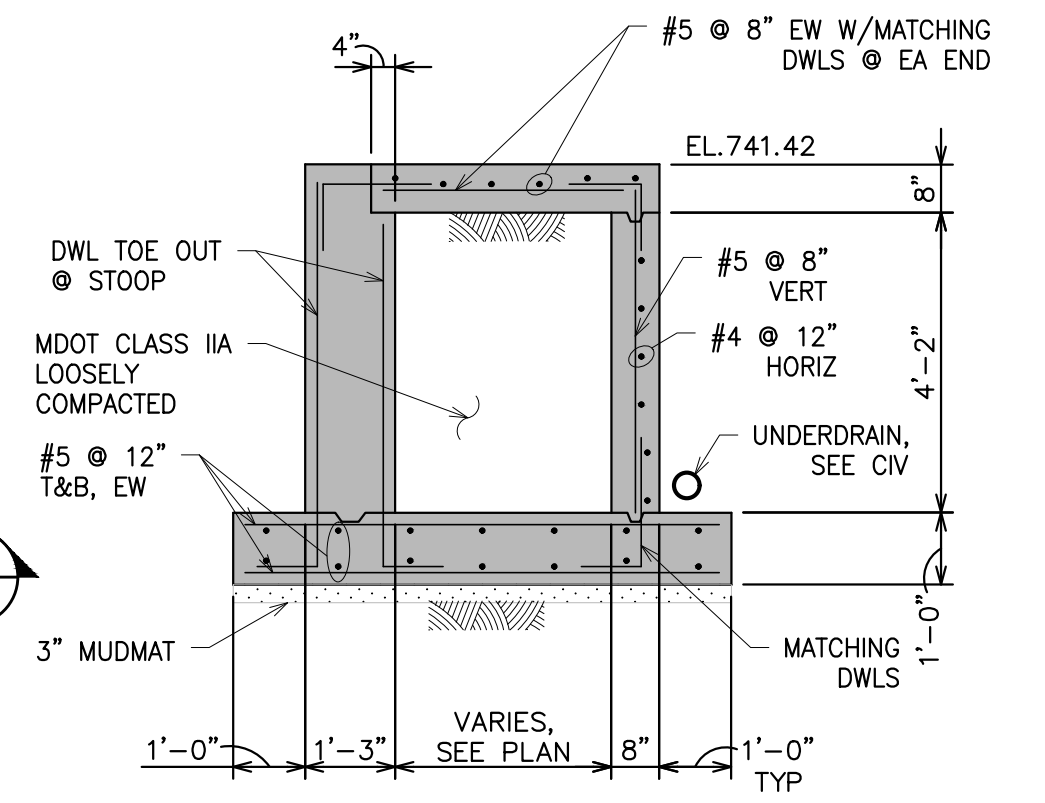


(SOUTH CHANNEL GROUT NOT SHOWN FOR CLARITY)
PARTIAL PLAN AT EL. 741.33
 SCALE: 3/16" = 1'-0"

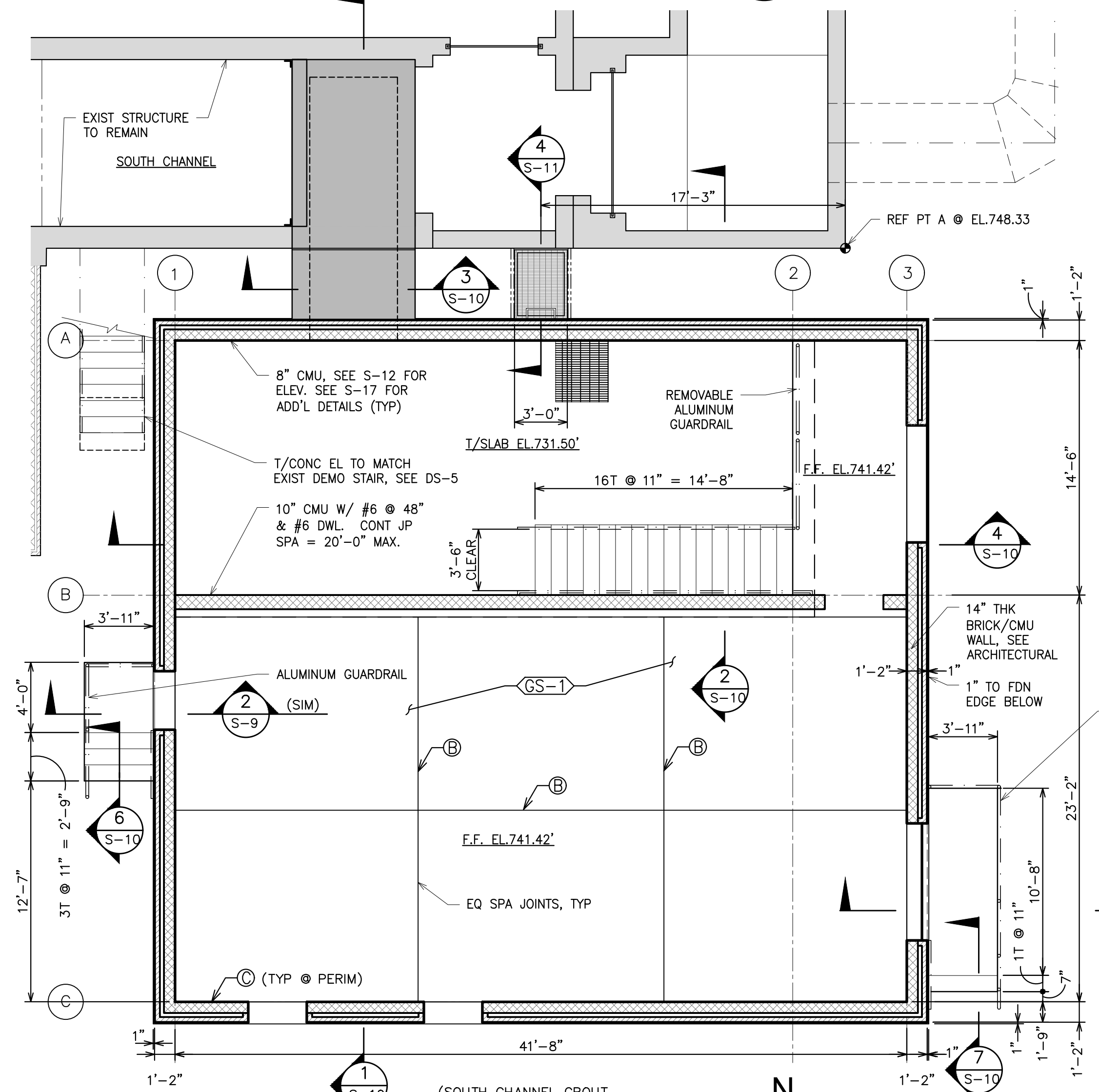
NOTE:
 SEE S-12 FOR
 BRICK LEDGE ELEV



SECTION 1
 SCALE: 3/8" = 1'-0"

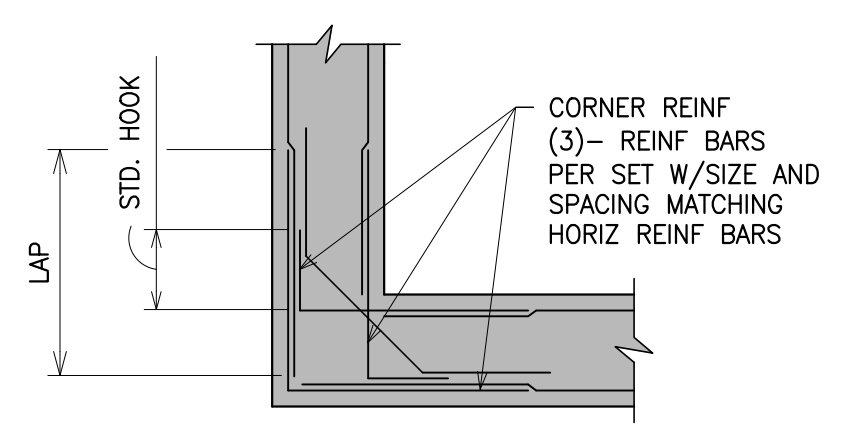


SECTION 2
 SCALE: 3/8" = 1'-0"

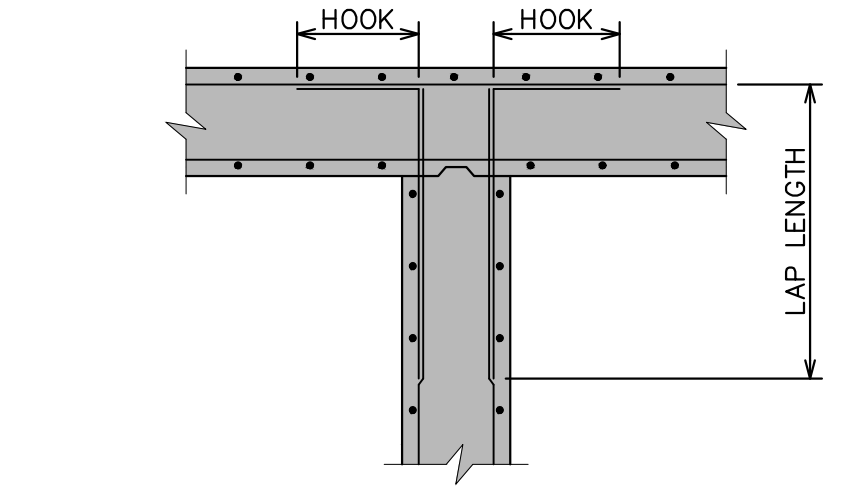


(SOUTH CHANNEL GROUT NOT SHOWN FOR CLARITY)
PARTIAL PLAN AT EL. 745.50
 SCALE: 3/16" = 1'-0"

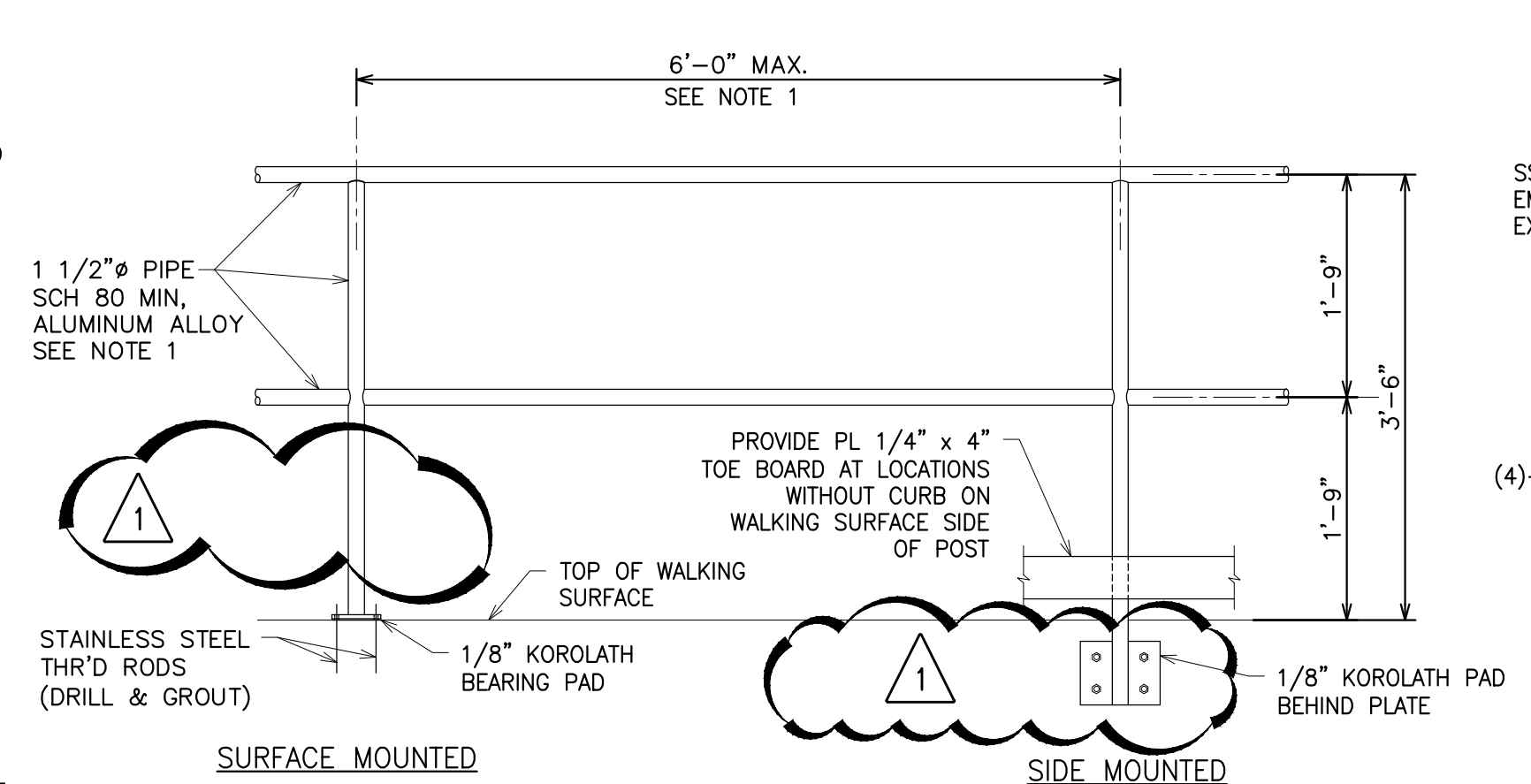
NOTE:
 SEE SHIT S-20 DETAIL
 FOR CONCRETE SLAB
 ON GROUND DETAILS
 SEE S-13 FOR VESSEL
 FOUNDATION.



(TYPICAL)
CORNER DETAIL
 N.T.S.

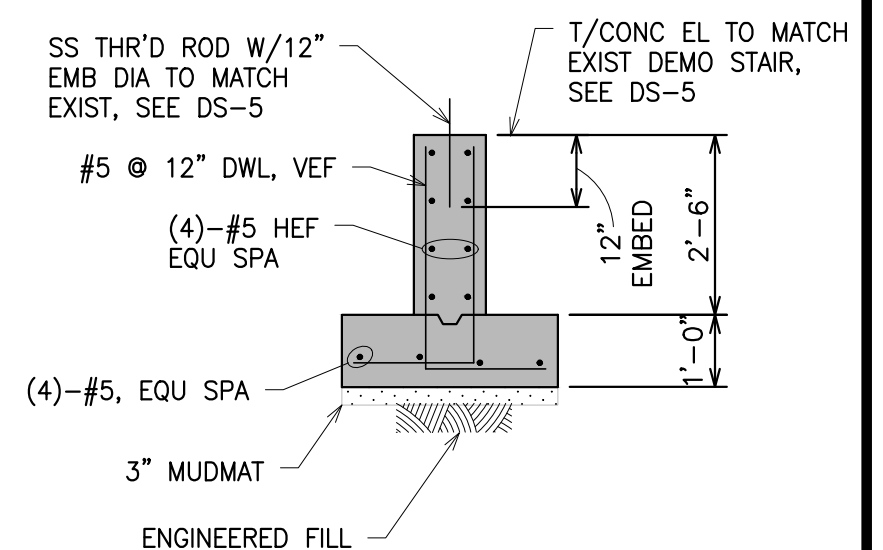


TYPICAL WALL INTERSECTION
 N.T.S.

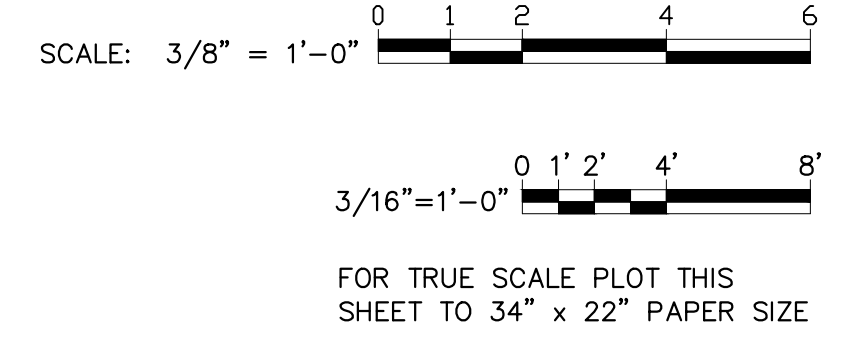



ALUMINUM GUARDRAIL DETAIL
 SCALE: 3/4" = 1'-0"

- NOTES:
- ALUMINUM GUARDRAIL SYSTEM SHALL BE DESIGNED IN STRICT ACCORDANCE WITH SPECIFICATION SECTION 05525 AND REQUIREMENTS DESCRIBED ABOVE BY THE CONTRACTOR'S LICENSED PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF MI. CONTRACTOR TO SUBMIT COMPLETE ENGINEERING DESIGN CALCULATIONS AND SHOP DRAWINGS FOR THE ALUMINUM GUARDRAIL AND ANCHORAGES FOR THE ENGINEER'S REVIEW PRIOR TO FABRICATION. ALL CALCULATIONS AND DRAWINGS SHALL BE SIGNED AND SEALED BY THE CONTRACTOR'S LICENSED PROFESSIONAL ENGINEER.
 - FOR SELF-CLOSING ACCESS GATE, SEE SPECIFICATION SECTION 05500.
 - PROVIDE TOP AND MID RAIL EXTENSION TO MEET EXISTING. TYP BOTH ENDS OF PLATFORM GUARDRAIL.
 - GUARDRAIL SHALL BE REMOVABLE AS INDICATED ON THE DRAWINGS. EACH REMOVABLE GUARDRAIL SEGMENT SHALL WEIGH LESS THAN 50 LBS.



SECTION 3
 SCALE: 3/8" = 1'-0"






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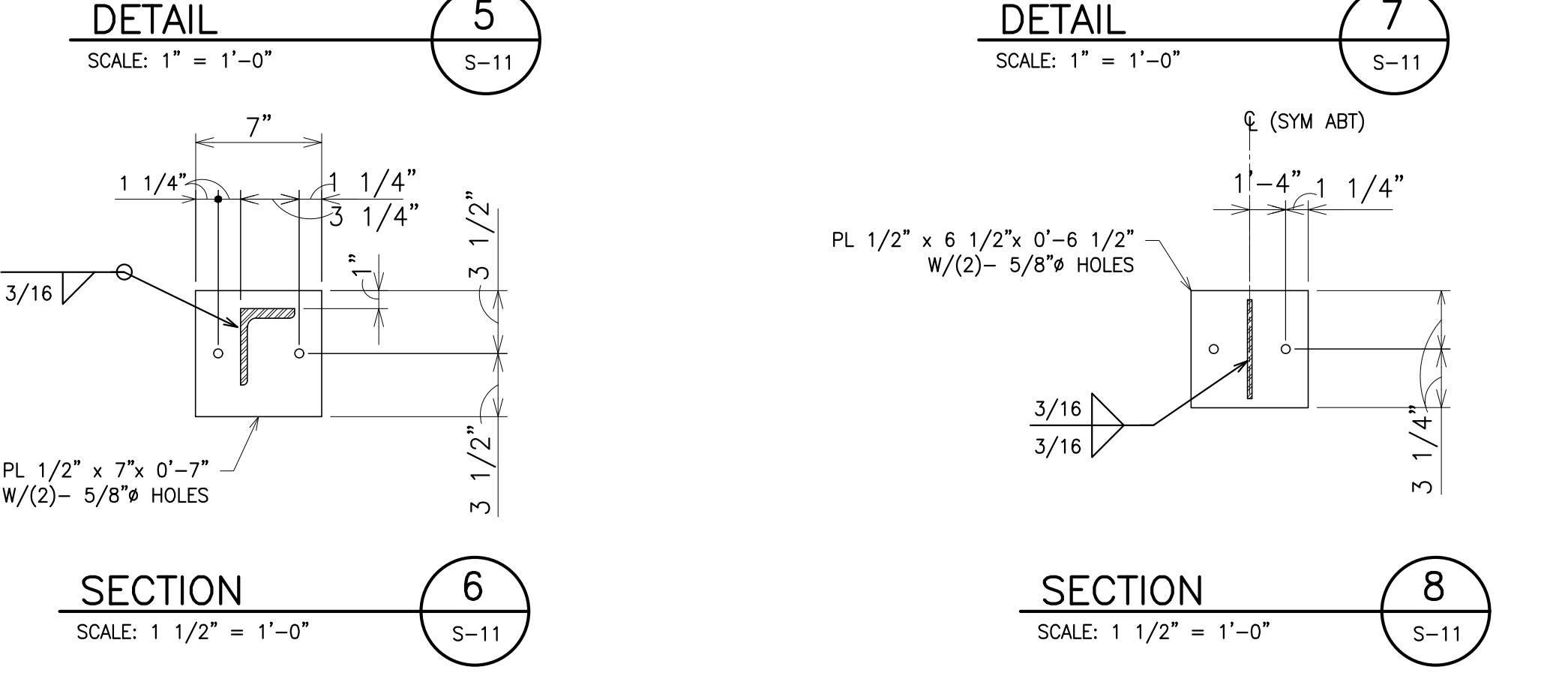
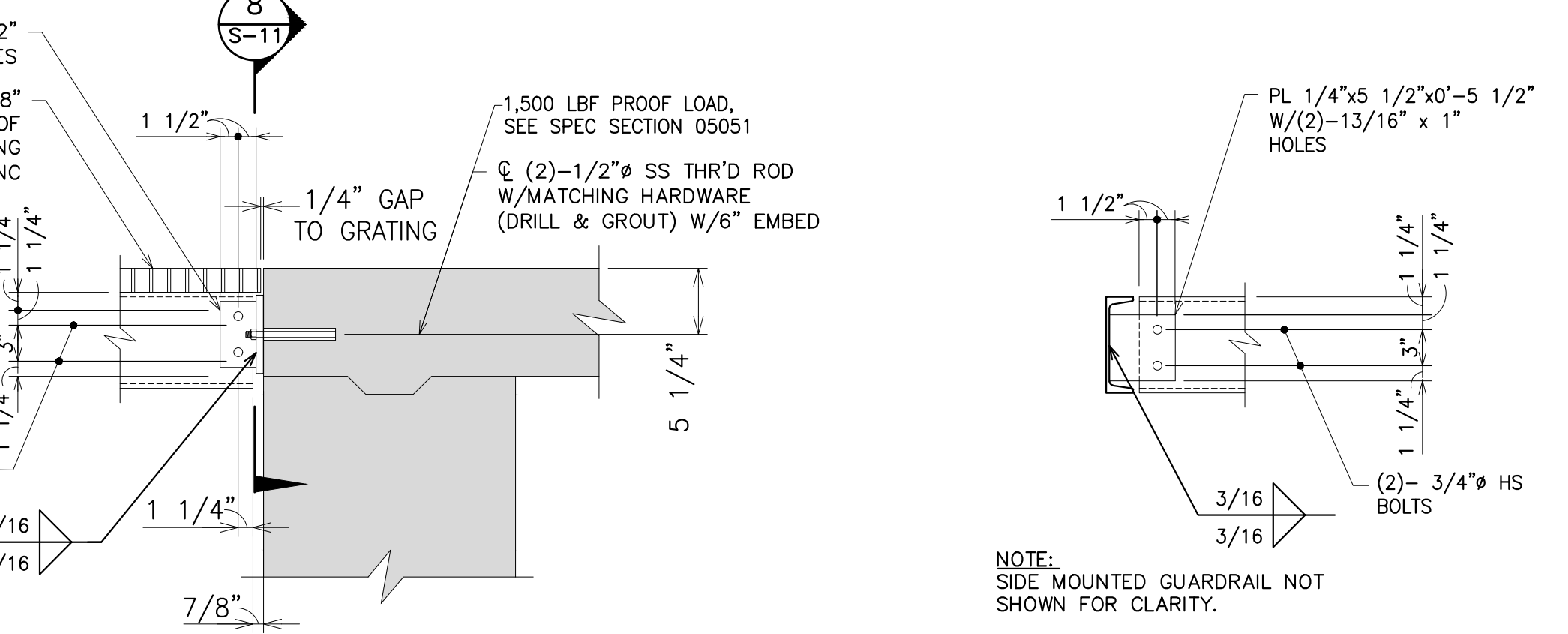
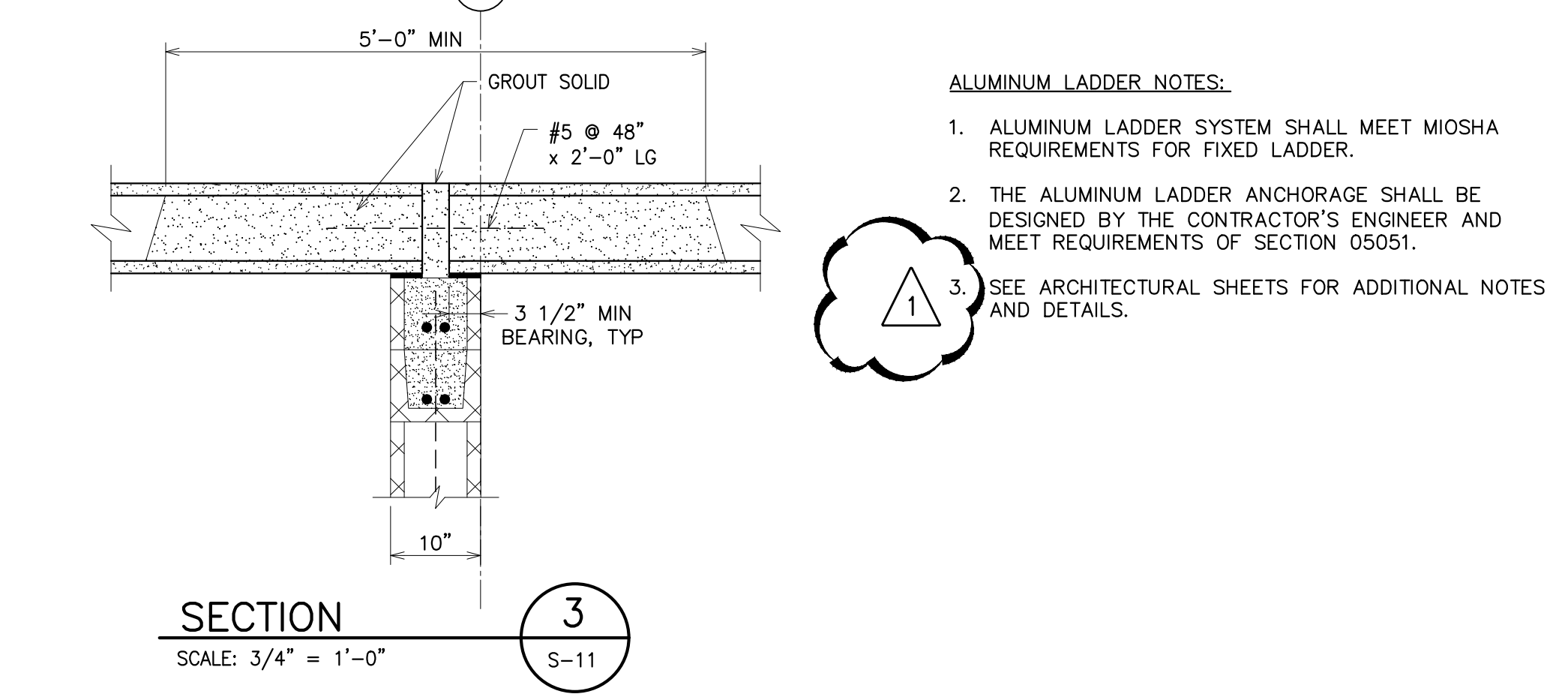
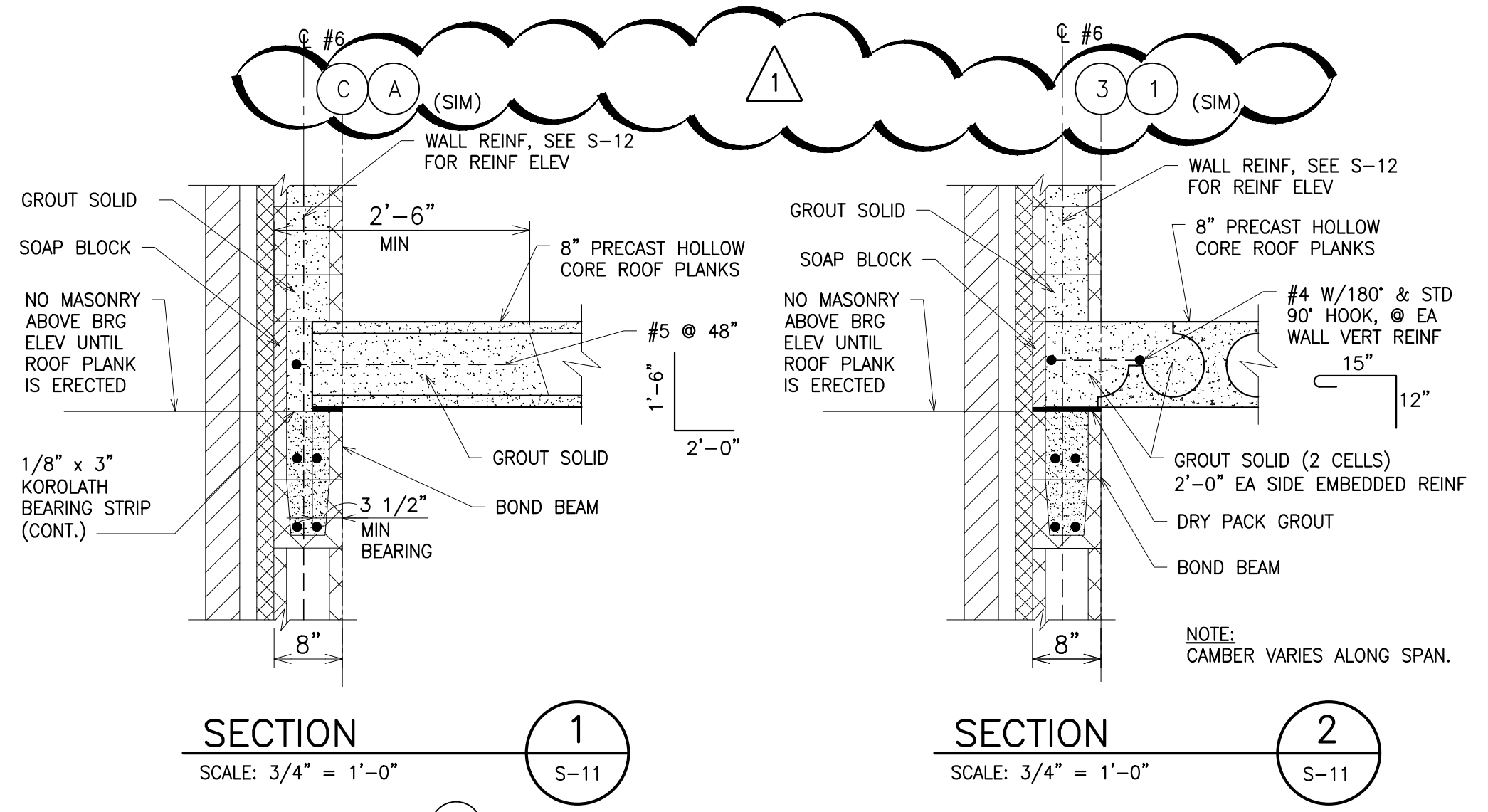
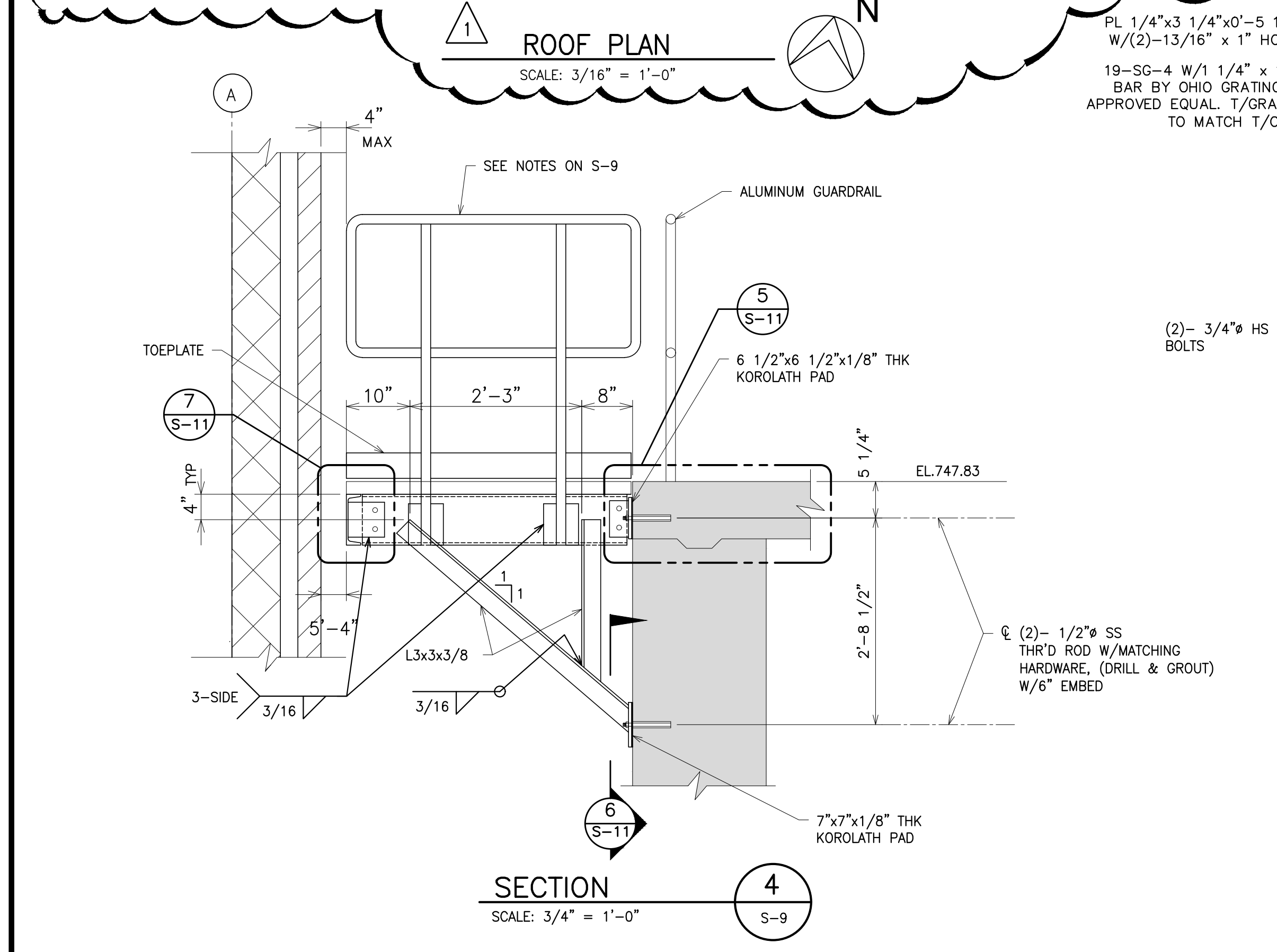
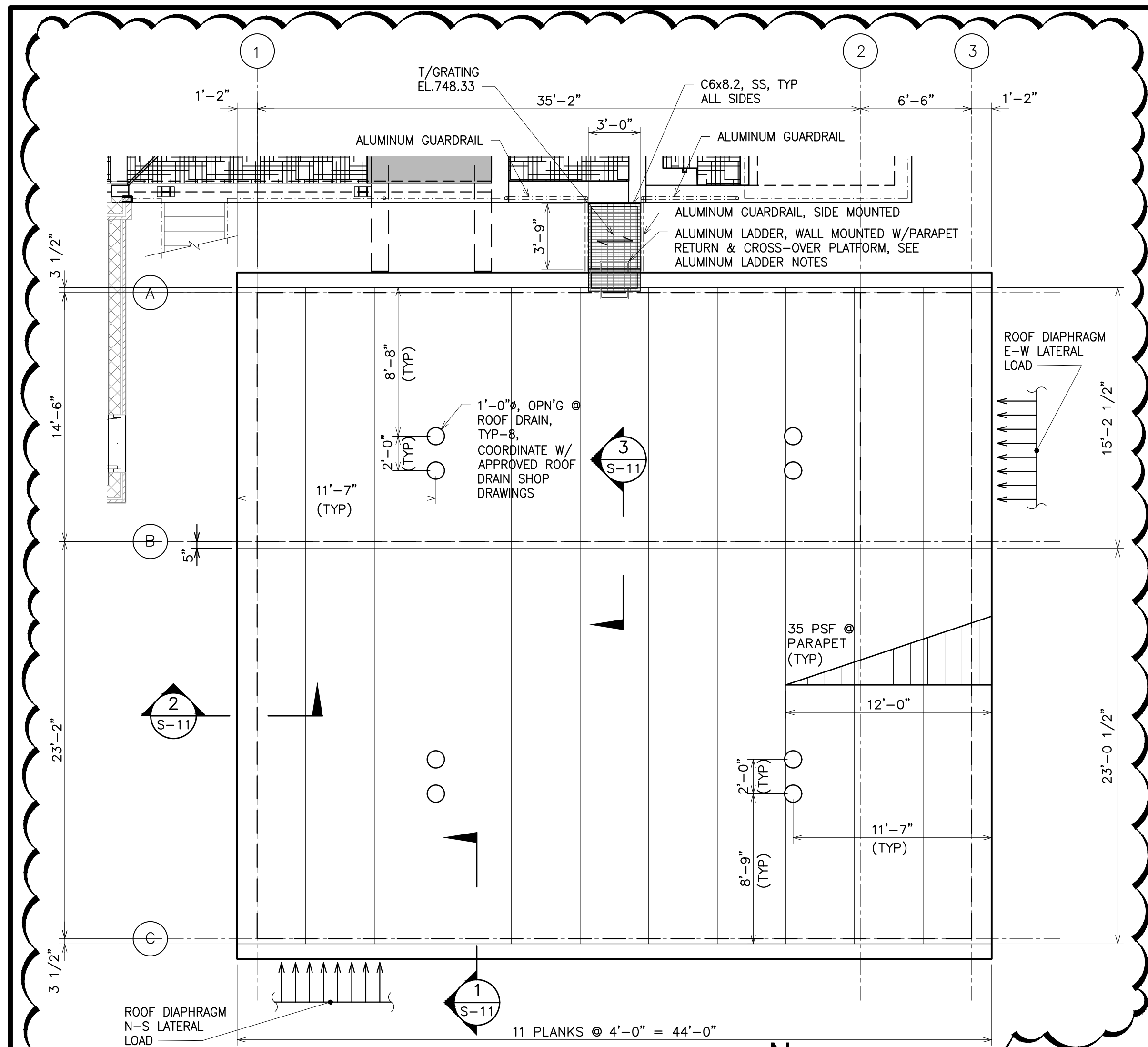
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SDH	PMH/RRK	FOR ADDENDUM NO. 1	11-19-2022	
SDH	PMH/RRK	ISSUED FOR BIDS SET	12-13-2021	
SDH	PMH	90% DESIGN SUBMITTAL	11-22-2021	
SDH	PMH	70% DESIGN SUBMITTAL	10-29-2021	
SDH	PMH	50% DESIGN SUBMITTAL	10-01-2021	
		DESCRIPTION		
		REV.		

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HEADWORKS IMPROVEMENTS PROJECT
 ODOR CONTROL BUILDING PLANS

SCALE AS NOTED
 DRAWING No. 331
 SHEET No. **S-9**



ROOF TOP EQUIPMENT LEGEND

MK - EQUIPMENT MARK
 WT# - EQUIPMENT WEIGHT (LBS.)
 COORDINATE EQUIPMENT SIZE, WEIGHT, LOCATION AND OPENING SIZE AND LOCATION WITH THE MANUF. AND MECHANICAL CONTRACTOR. TOLERANCE FOR EQUIPMENT LOCATION IS ±1'-0" FROM WHERE AS SHOWN ON THIS SHEET.

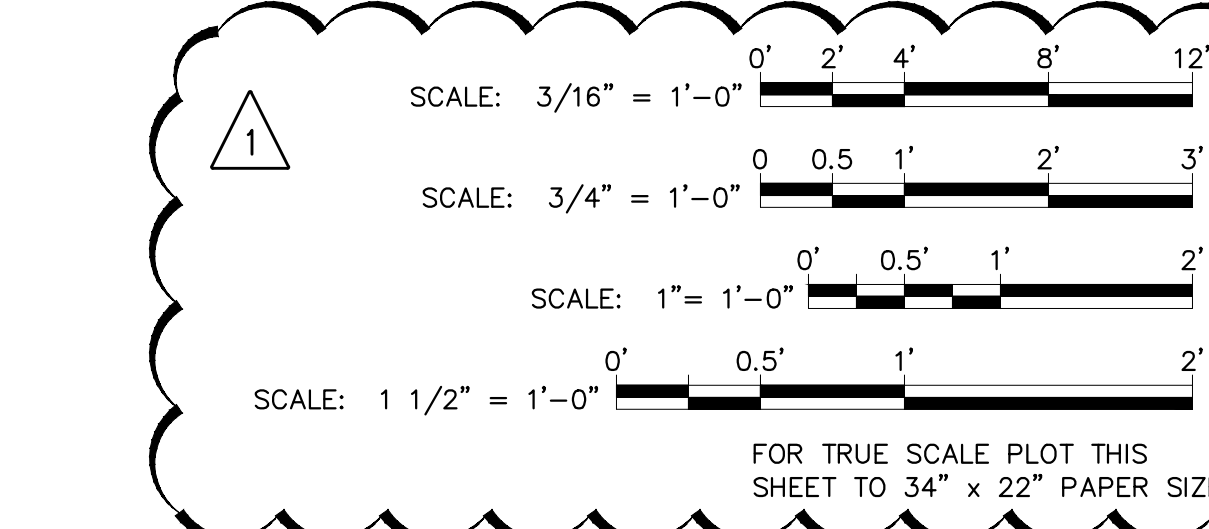
SNOW DRIFT LEGEND

Pd = DRIFT SURCHARGE LOAD
 W = DRIFT WIDTH

ROOF DIAPHRAGM LOADS

WIND:	N-S:	350 PLF
	E-W:	350 PLF
SEISMIC:	N-S:	500 PLF
	E-W:	550 PLF

- STRUCTURAL DESIGN CRITERIA**
- GOVERNING DESIGN CODE: MICHIGAN BUILDING CODE, 2015 EDITION, 1ST PRINTING.
 - ALL DESIGN, MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE MINIMUM REQUIREMENTS FOUND IN THE GOVERNING CODES AND ASSOCIATED REFERENCED STANDARDS.
 - ALL LOADS PROVIDED ARE NOMINAL LEVEL (UNFACTORED) LOADS AS DEFINED IN THE GOVERNING CODE.
 - DEAD LOAD CRITERIA:**
 ROOF:
 PLANK: 75 PSF
 INSULATION & ROOFING: 4 PSF
 MECHANICAL, ELECTRICAL & PLUMBING: 8 PSF
 - LIVE LOAD CRITERIA:**
 ROOF:
 UNIFORM: 20 PSF
 CONCENTRATED: 300 LBS ON 4"x4" AREA
 CONVEYOR HANGER: 1,000 LBS
 FLOOR @ ALL OTHER ROOMS (ALL ELEVATIONS):
 UNIFORM: 150 PSF
 CONCENTRATED: 2,000 LBS ON 12"x12" AREA
 - SNOW LOAD CRITERIA:**
 (SEE ASCE 7-10 FIGURE 7-5 & 7-8 FOR DETAILS):
 GROUND SNOW LOAD, P_g: 25 PSF
 FLAT ROOF SNOW LOAD, BUILDING P_f: 20 PSF
 SLOPED ROOF SNOW LOAD P_s: 20 PSF
 SNOW LOAD EXPOSURE FACTOR, C_e: 1.0
 SNOW LOAD IMPORTANCE FACTOR I_s: 1.1
 THERMAL FACTOR, C_t: 1.0
 - WIND LOAD CRITERIA:**
 ULTIMATE WIND SPEED, V_{ULT}: 120 MPH
 ALLOWABLE WIND SPEED, V_{ASD}: 93 MPH
 RISK CATEGORY: III
 WIND IMPORTANCE FACTOR, I_w: 1.0
 WIND EXPOSURE CATEGORY: B
 INTERNAL PRESSURE COEFFICIENT, GC_p: ± 0.18
 - MINIMUM COMPONENT AND CLADDING LOADS:**
 (SEE ASCE 7-10 FIGURE 30.5-1 FOR DETAILS):
 ROOF INTERIOR ZONE 1: +10/-23 PSF
 ROOF END ZONE 2: +17/-25 PSF
 ROOF CORNER ZONE 3: +22/-36 PSF
 WALL INTERIOR ZONE 4: +16/-18 PSF
 WALL END ZONE 5: +19/-23 PSF
 PARAPET: +89/-63 PSF
 (+/- INDICATES PRESSURE ACTING TOWARD/AWAY FROM PROJECTED SURFACE, RESPECTIVELY)
 - SEISMIC LOAD CRITERIA:**
 RISK CATEGORY: III
 SEISMIC IMPORTANCE FACTOR, I_e: 1.25
 MAPPED SPECTRAL RESPONSE ACCELERATION, S_s: 0.95g
 MAPPED SPECTRAL RESPONSE ACCELERATION, S₁: 0.48g
 DESIGN SPECTRAL RESPONSE ACCELERATION, S_{DS}: 0.101g
 DESIGN SPECTRAL RESPONSE ACCELERATION, S_{DI}: 0.076g
 SITE CLASS: D
 SEISMIC DESIGN CATEGORY: B
 BASIC SEISMIC FORCE - RESISTING SYSTEM: ORDINARY REINFORCED MASONRY SHEAR WALLS
 SEISMIC RESPONSE COEFFICIENT, C_s: 0.06
 RESPONSE MODIFICATION FACTOR, R: 2.0
 ANALYSIS PROCEDURE: ELF
 DESIGN BASE SHEAR: 28,000 LBS



811
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ISSUED FOR ADDENDUM NO. 1

REV.	DATE	DESCRIPTION
1	10-01-2021	50% DESIGN SUBMITTAL
2	10-29-2021	70% DESIGN SUBMITTAL
3	11-22-2021	90% DESIGN SUBMITTAL
4	12-13-2021	PMH/RRK
5	1-19-2022	PMH

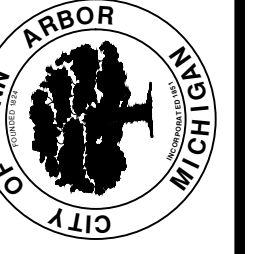
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 ODOR CONTROL BUILDING ROOF PLAN, SECTIONS AND DETAILS

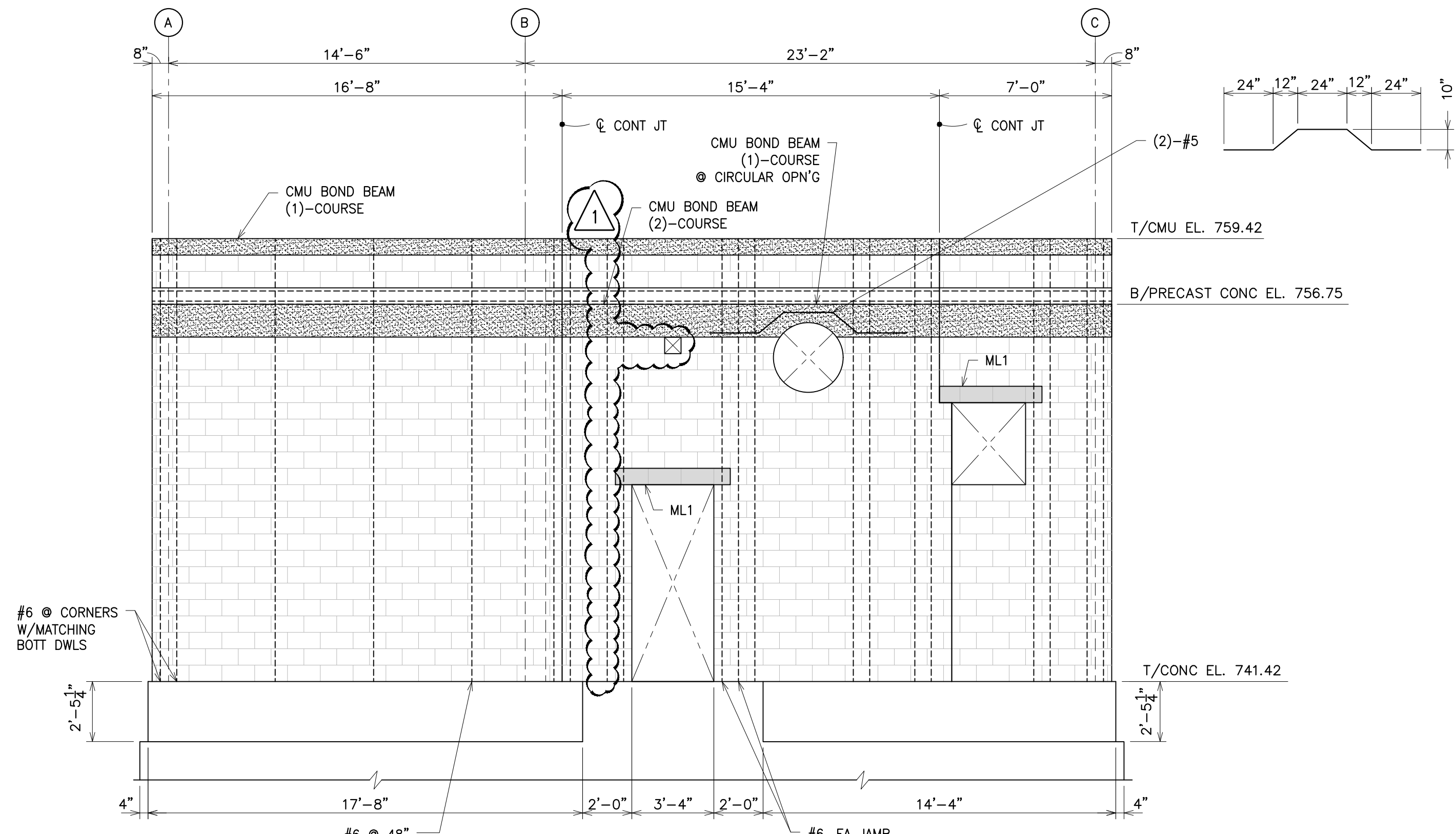
SCALE AS NOTED
 DRAWING No. **S-11**
 SHEET No. 333

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RRK	RRK	12-13-2021			ISSUED FOR BIDS SET
SDH	PMH	11-22-2021			90% DESIGN SUBMITTAL
SDH	PMH	10-29-2021			70% DESIGN SUBMITTAL
SDH	PMH	10-01-2021			50% DESIGN SUBMITTAL

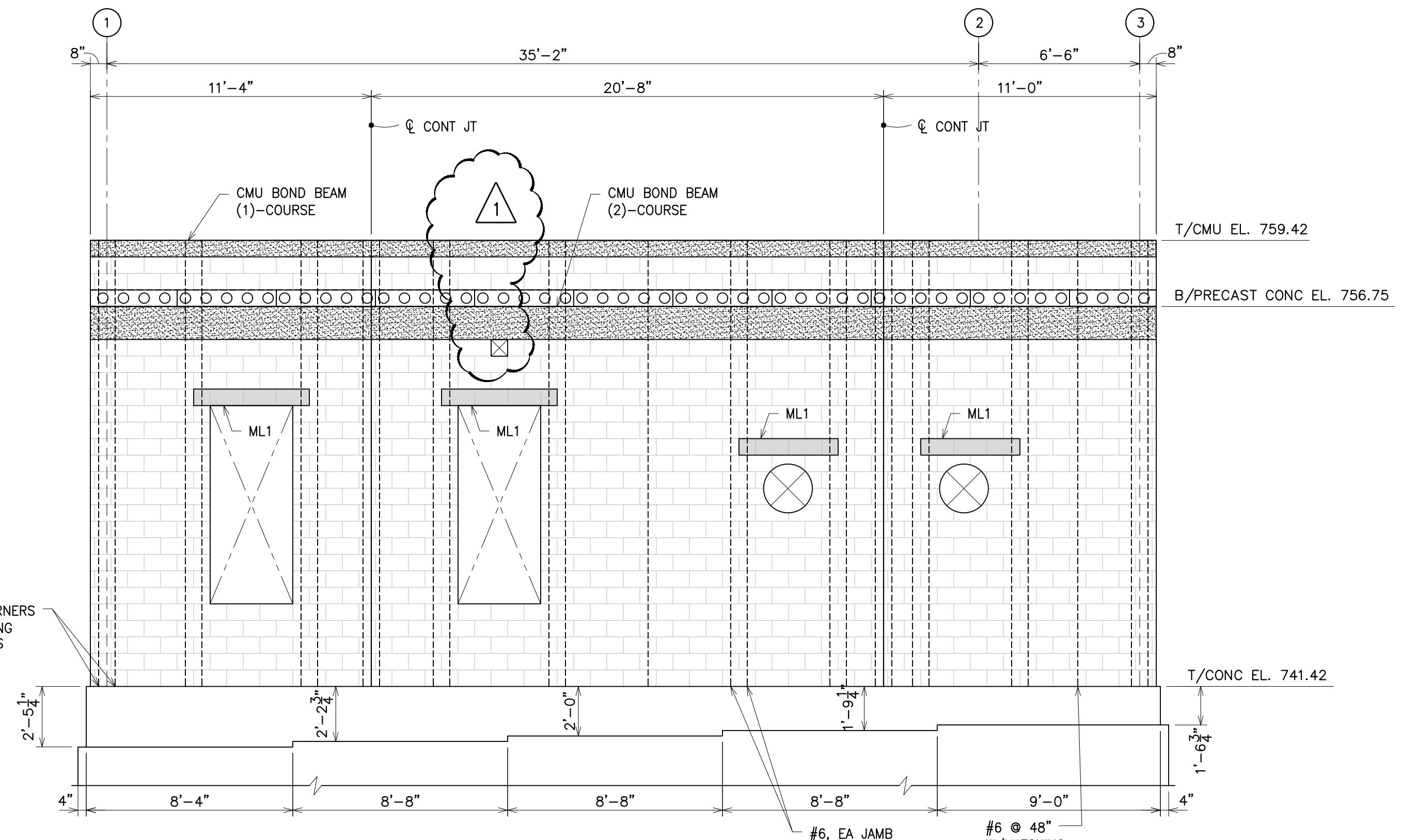
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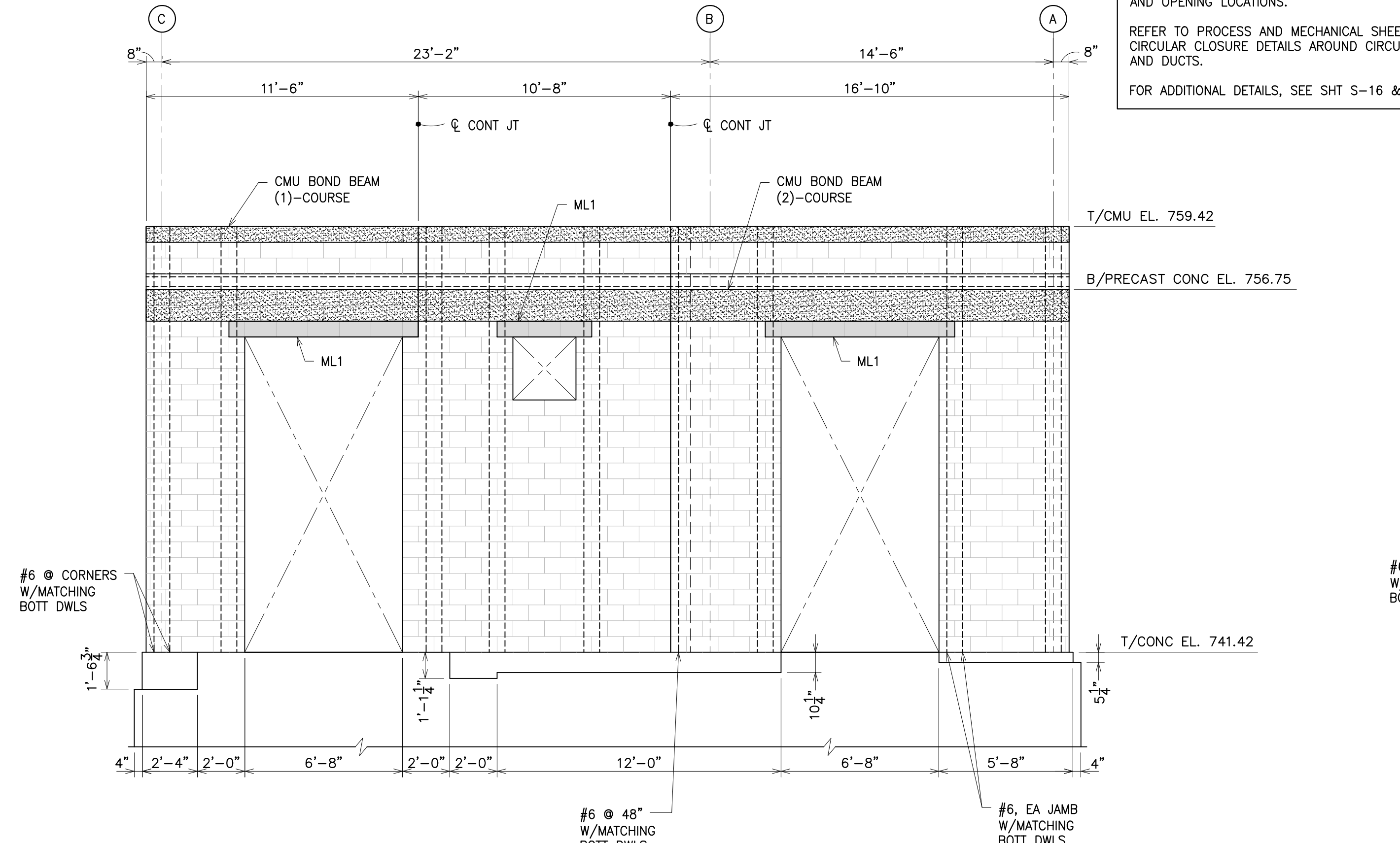
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ODOR CONTROL BUILDING SECTIONS, DETAILS
AND ELEVATIONS



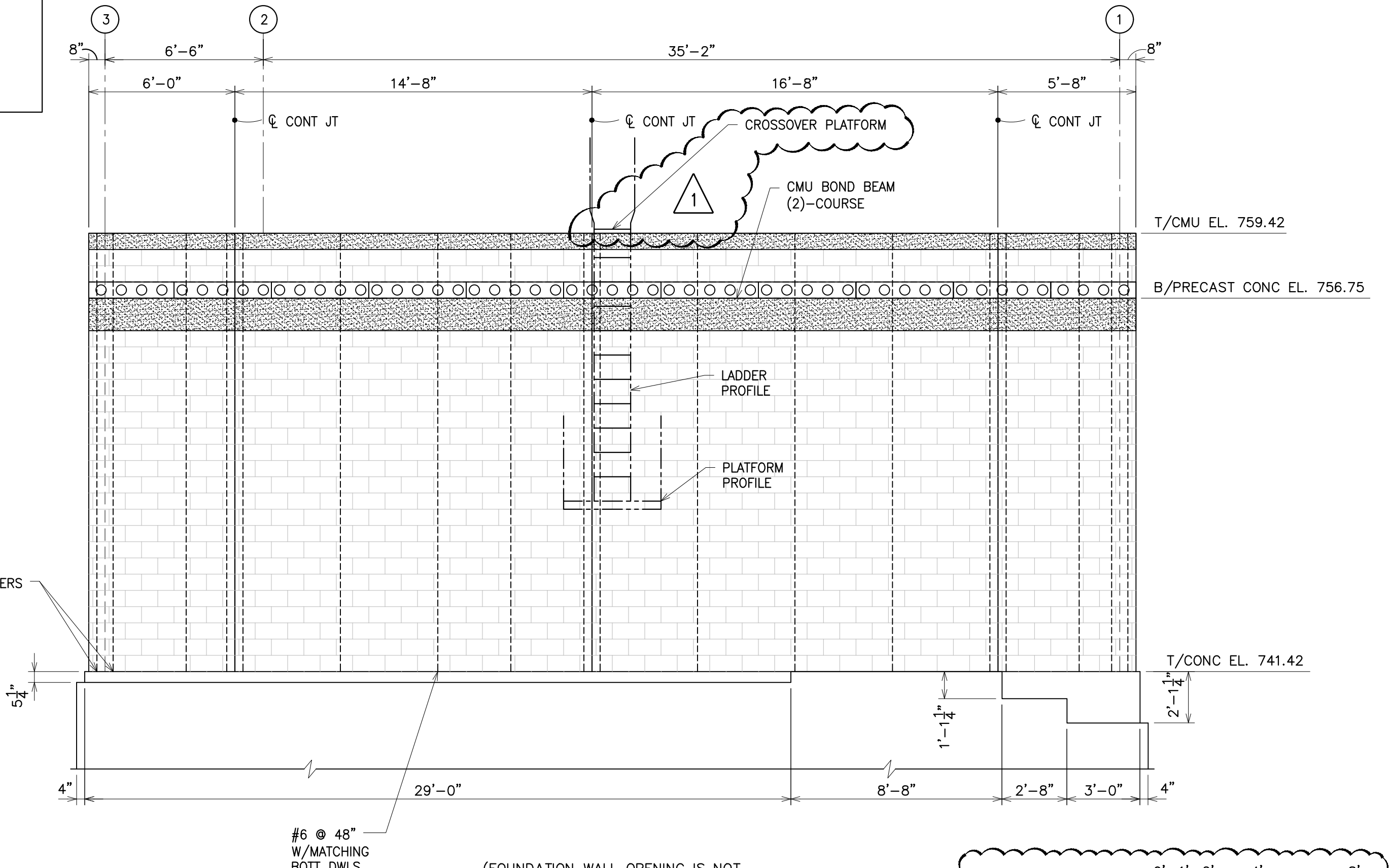
WEST ELEVATION
SCALE: 1/4" = 1'-0"



SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



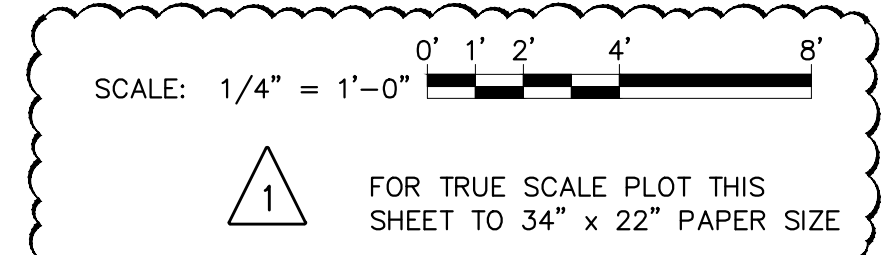
EAST ELEVATION
SCALE: 1/4" = 1'-0"

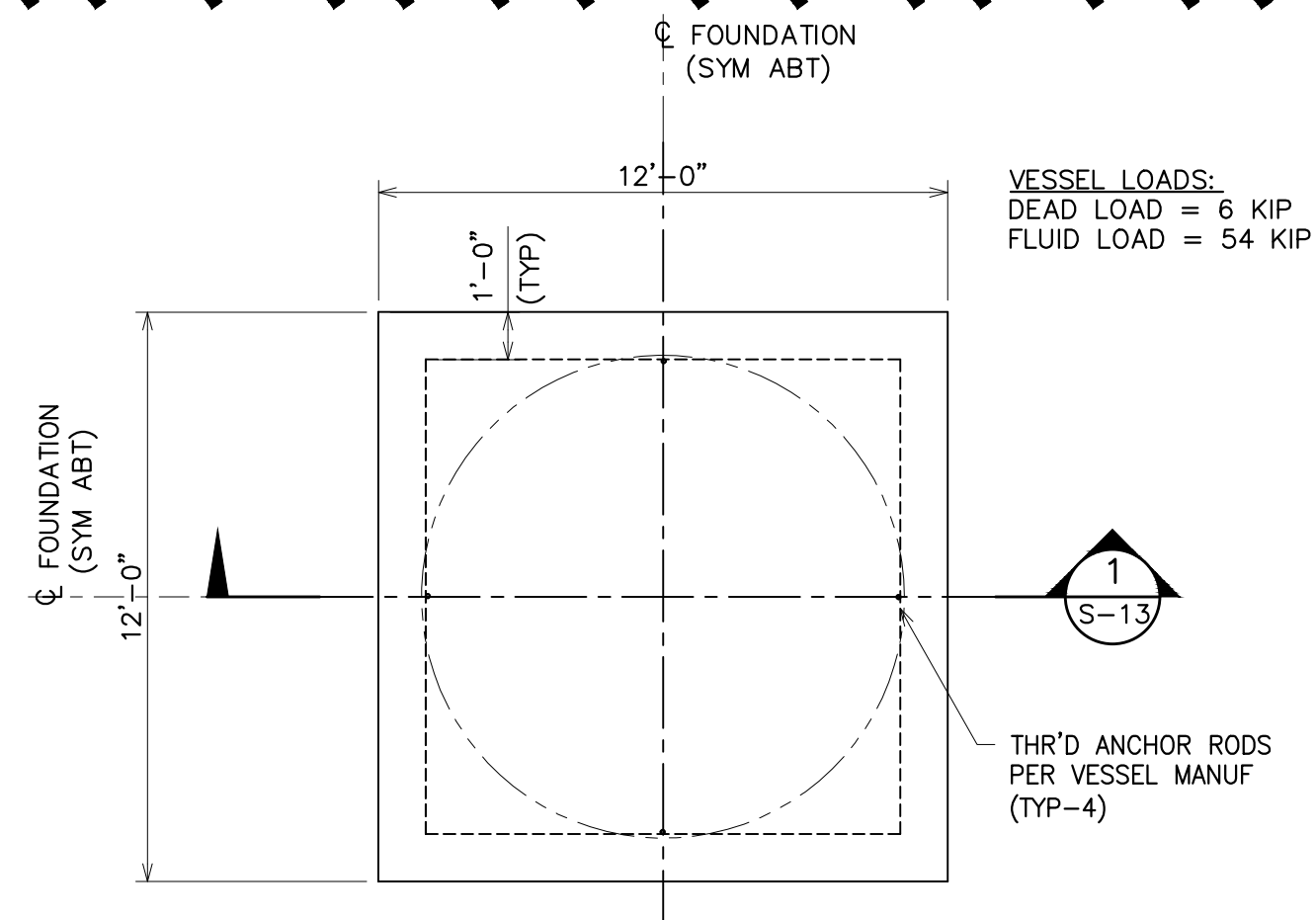


NORTH ELEVATION
SCALE: 1/4" = 1'-0"

NOTE:
BLOCK PATTERN AND OPENINGS SHOWN ARE NOT ACTUAL LAYOUT. REFER TO ARCH SHEETS FOR BLOCK LAYOUT AND OPENING LOCATIONS.
REFER TO PROCESS AND MECHANICAL SHEETS FOR CIRCULAR CLOSURE DETAILS AROUND CIRCULAR PIPES AND DUCTS.
FOR ADDITIONAL DETAILS, SEE SHT S-16 & S-17.

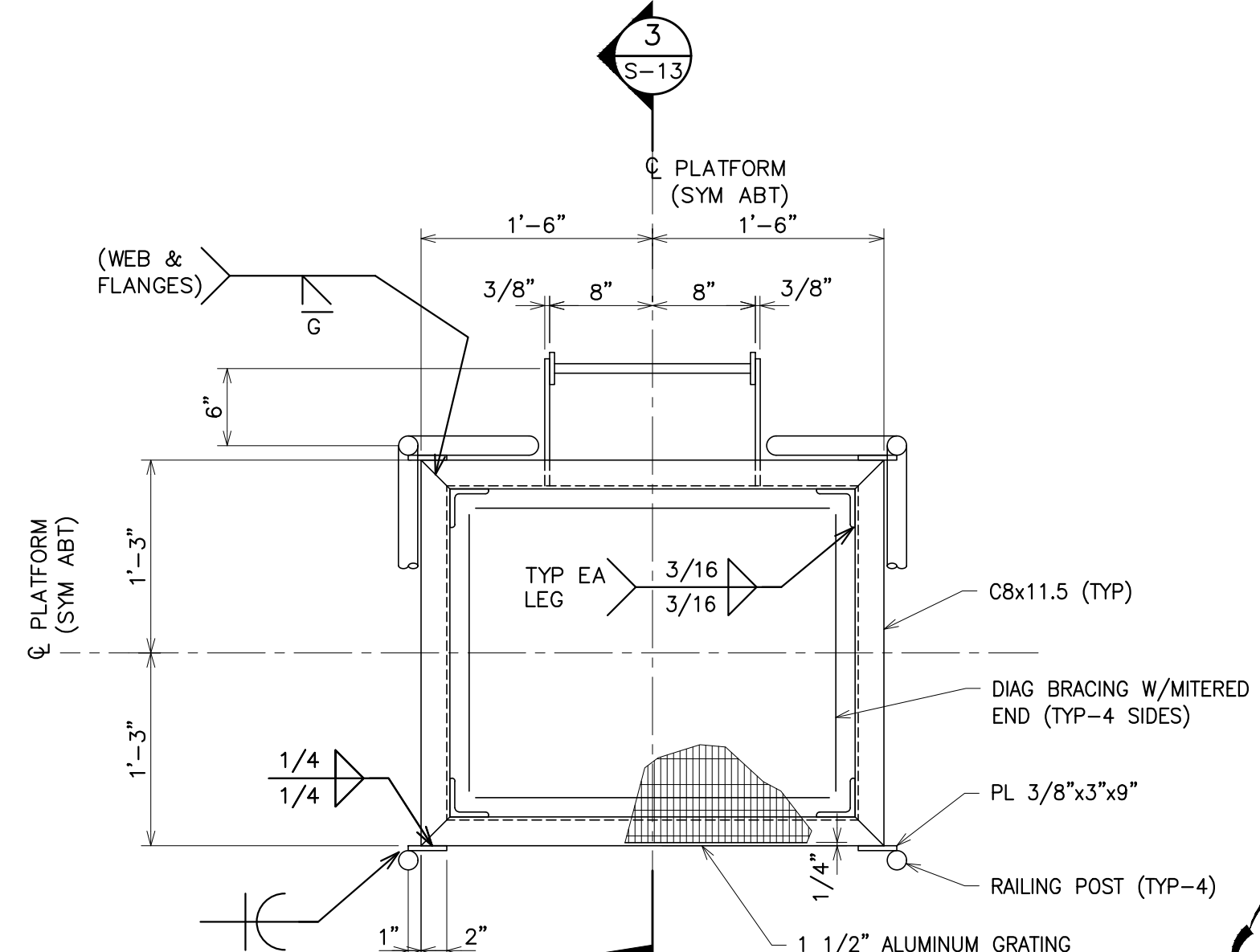
(FOUNDATION WALL OPENING IS NOT SHOWN FOR CLARITY)





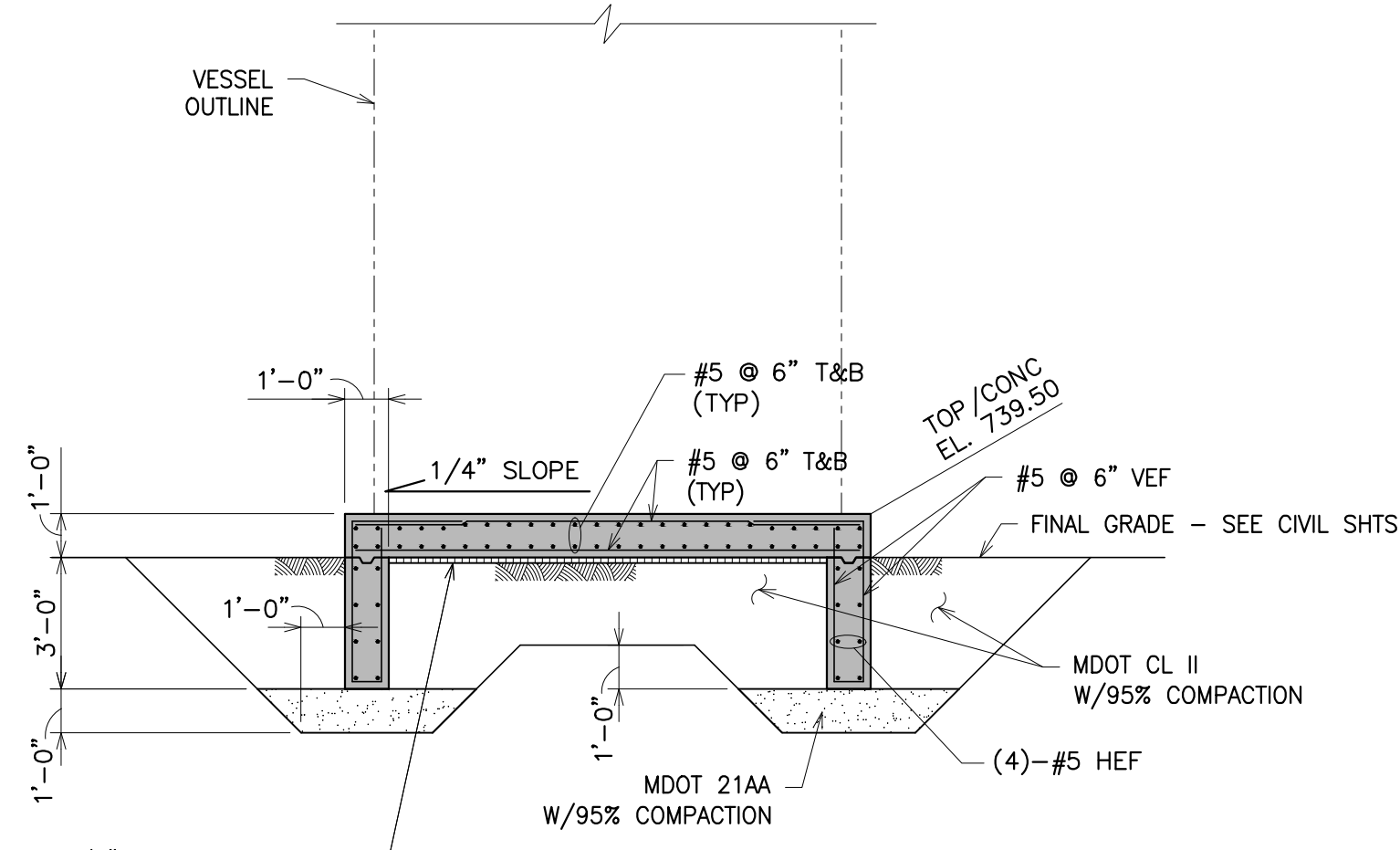
- NOTES:**
 1. FOR FDN LOCATIONS, SEE CIVIL & MECH SHTS.
 2. VESSEL & EQUIPMENT ANCHORAGE DESIGN SHALL BE DELEGATED TO THE CONTRACTOR.

(TYP-2)
VESSEL FOUNDATION
TOP PLAN
 SCALE: 1/4" = 1'-0"



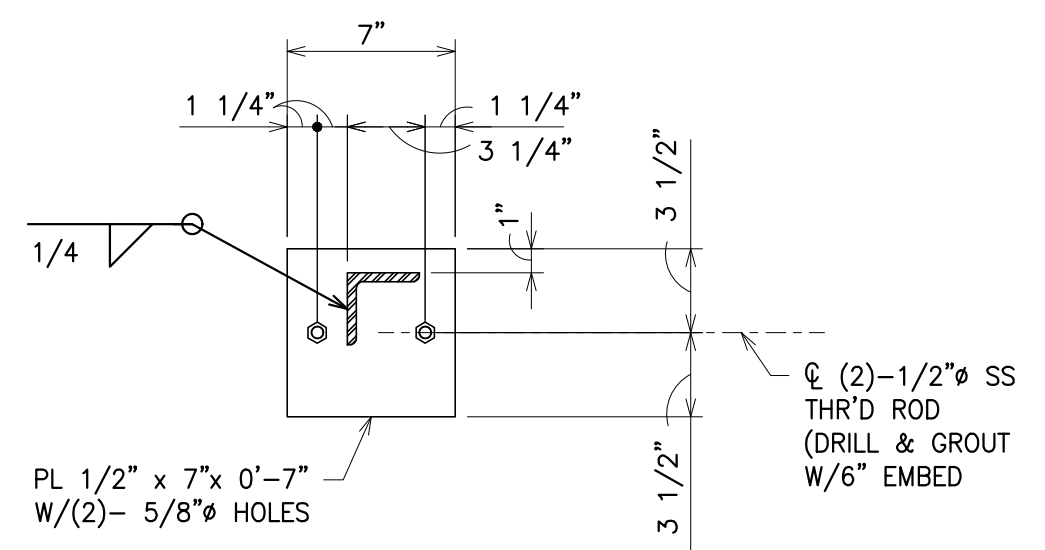
NOTE:
 PLATFORM FRAMING AND GUARDRAILS SHALL BE SS AISI TYPE 316

(TYP-2)
GRIT WASHER PLATFORM PLAN
 SCALE: 1" = 1'-0"

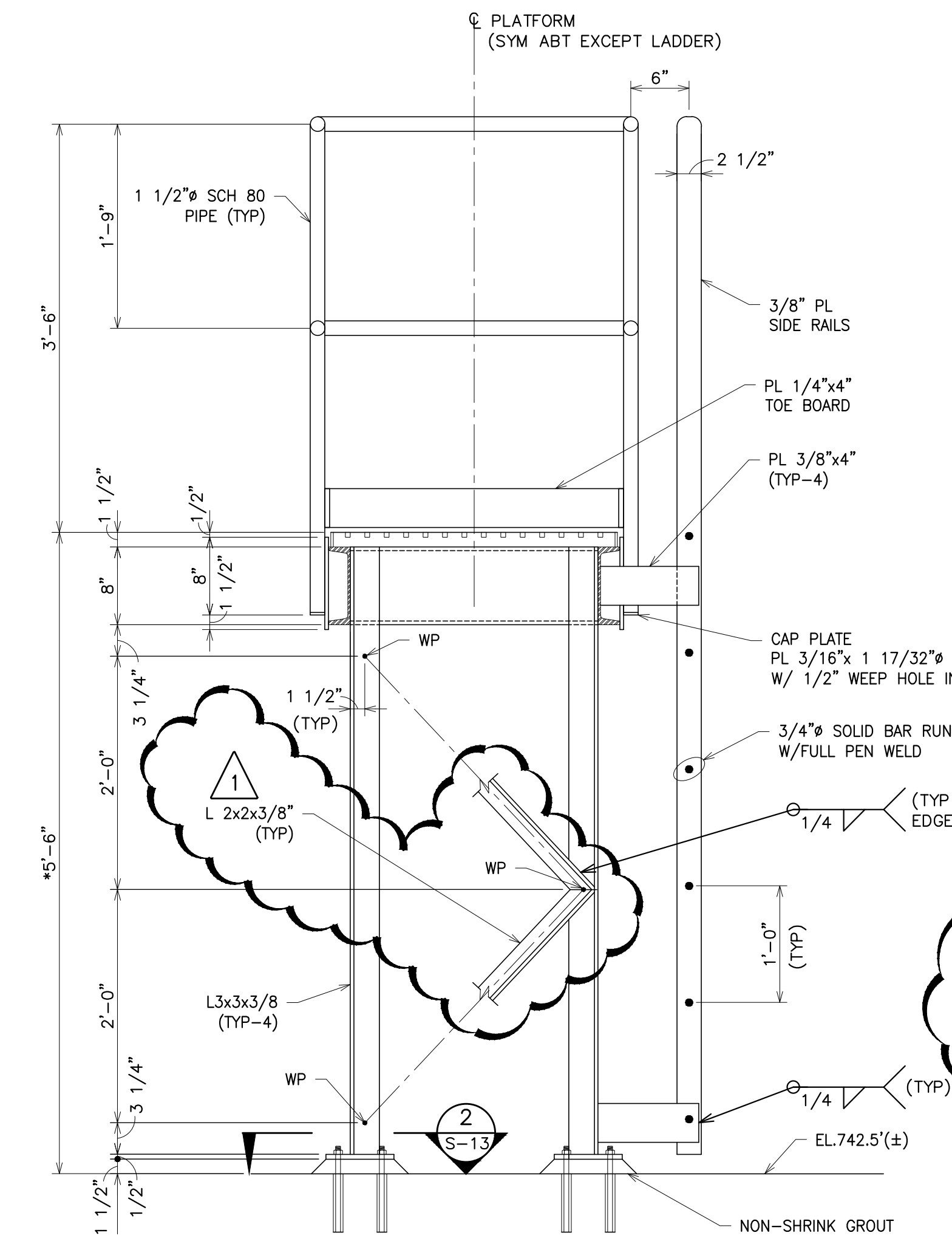


- NOTES:**
 1. HORIZ REINF SHALL BE CONT, SEE SHT S-9.
 2. FOR LAP AND HOOK LENGTHS, SEE SHT S-19.

SECTION 1
 SCALE: 1/4" = 1'-0"

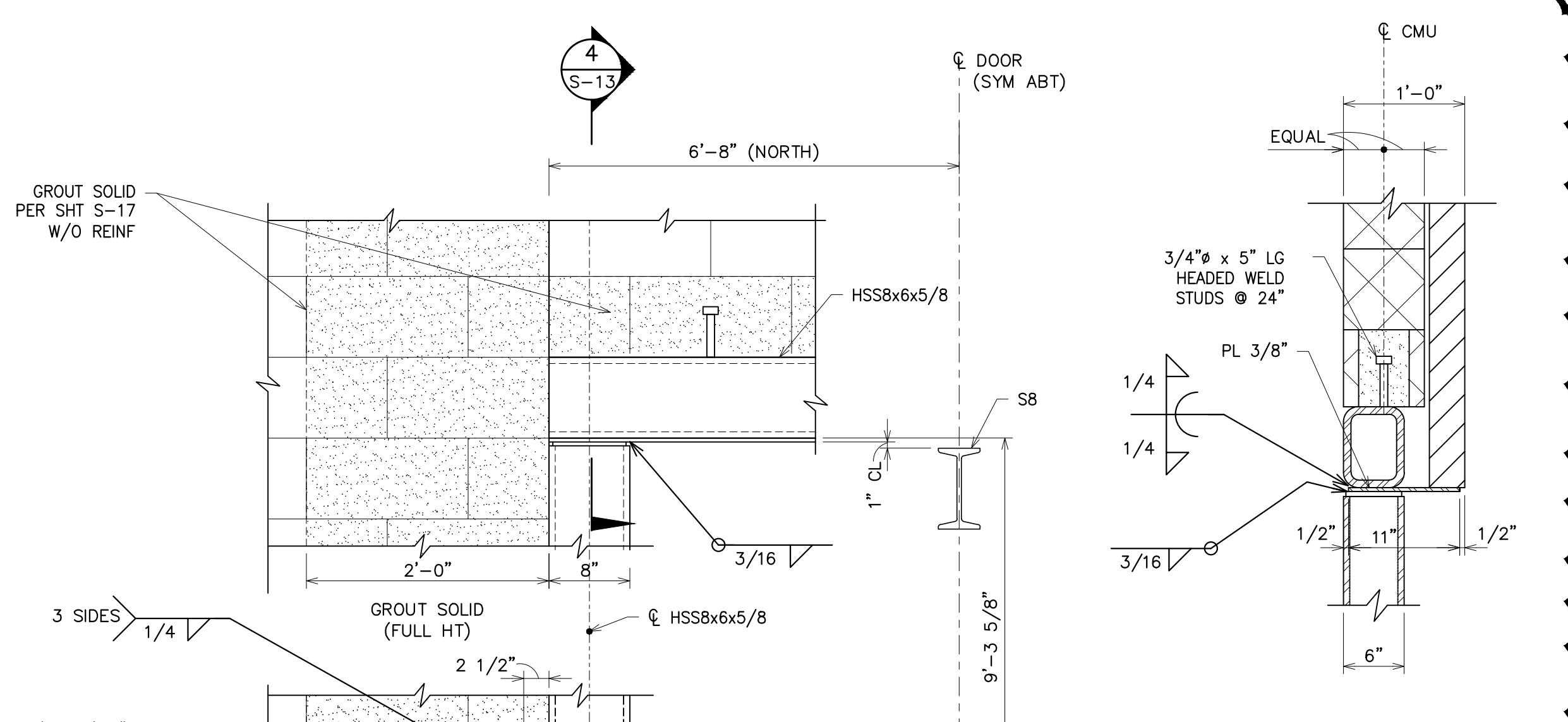


SECTION 2
 SCALE: 1 1/2" = 1'-0"

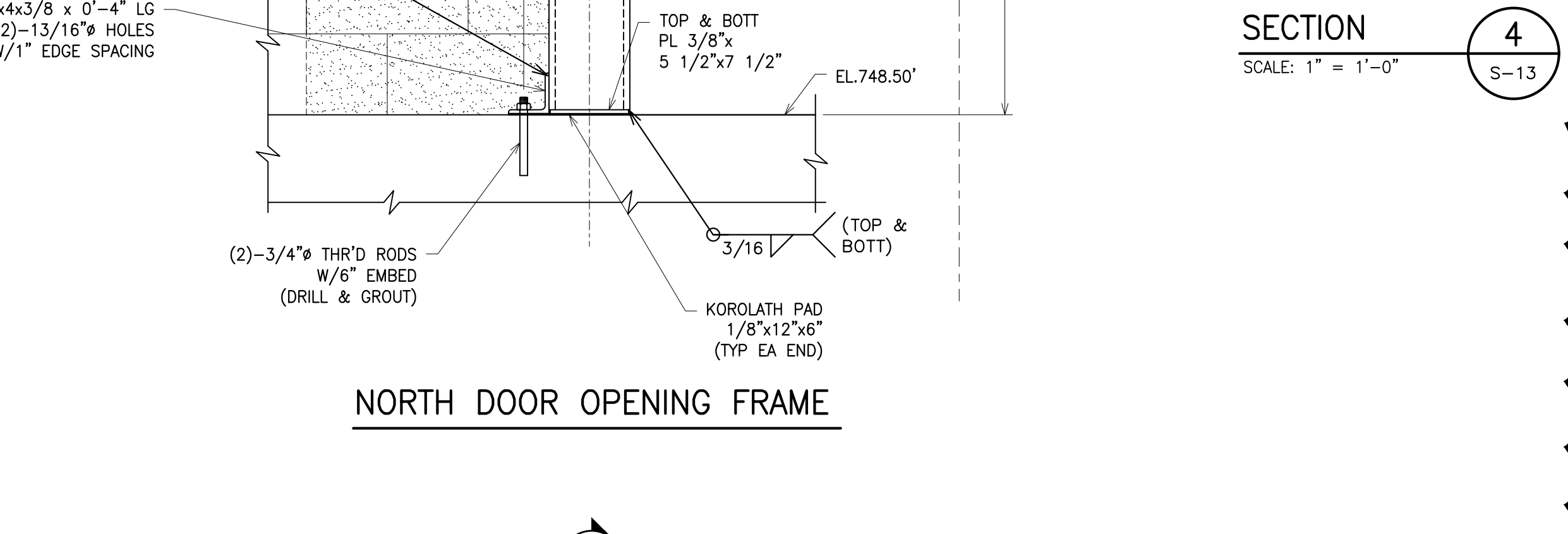


NOTE:
 * COORDINATE W/APPROVED SHOP DRAWINGS FOR GRIT WASHER.

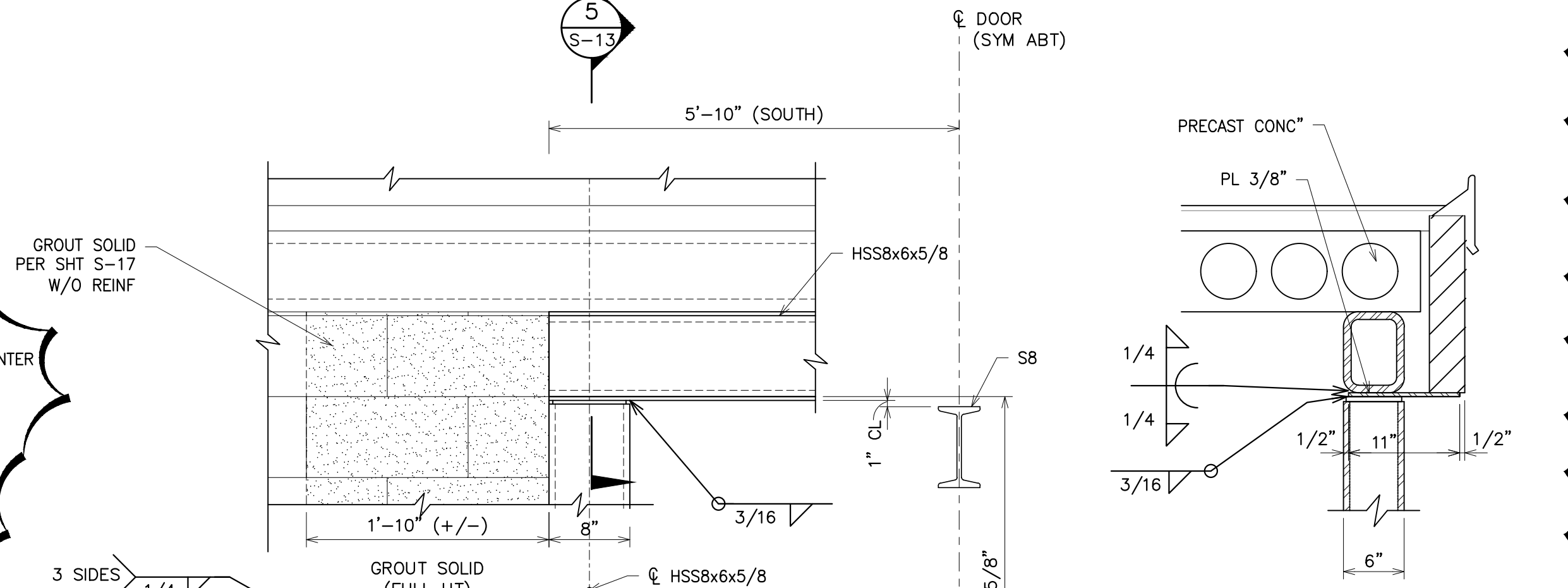
SECTION 3
 SCALE: 1" = 1'-0"



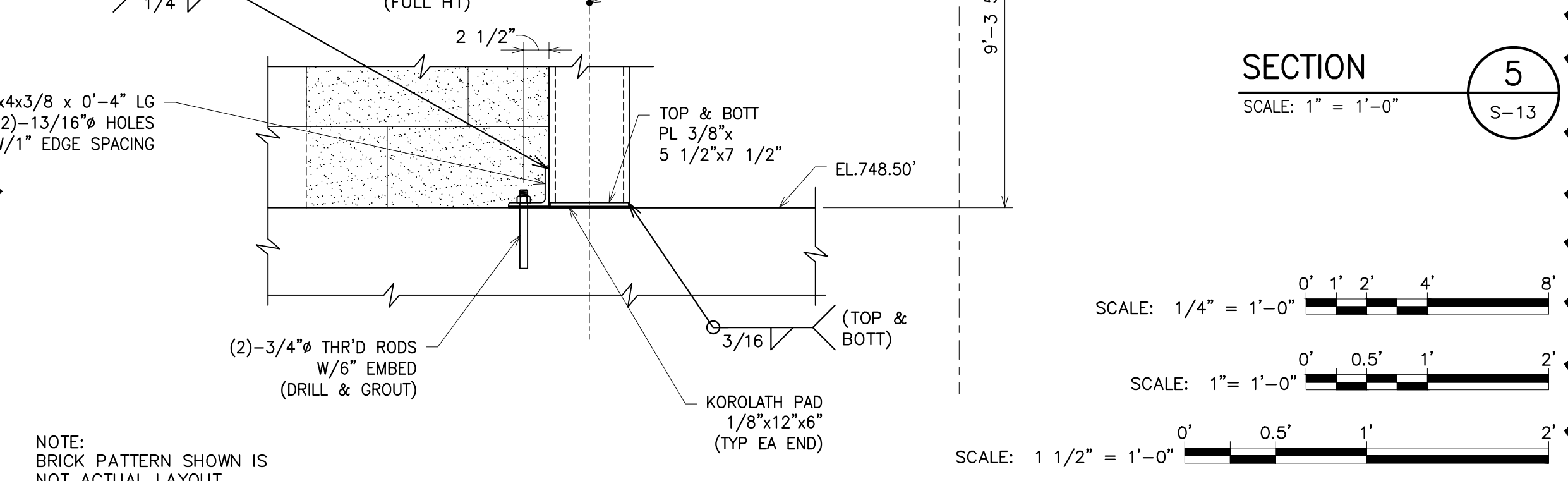
NORTH DOOR OPENING FRAME



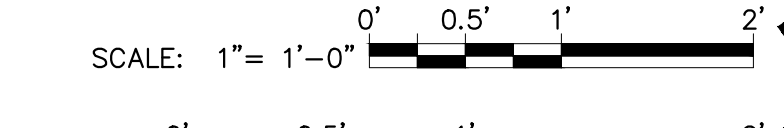
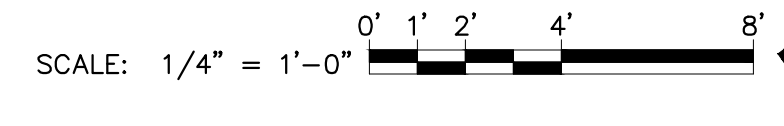
SECTION 4
 SCALE: 1" = 1'-0"



SOUTH DOOR OPENING FRAME



SECTION 5
 SCALE: 1" = 1'-0"



FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE

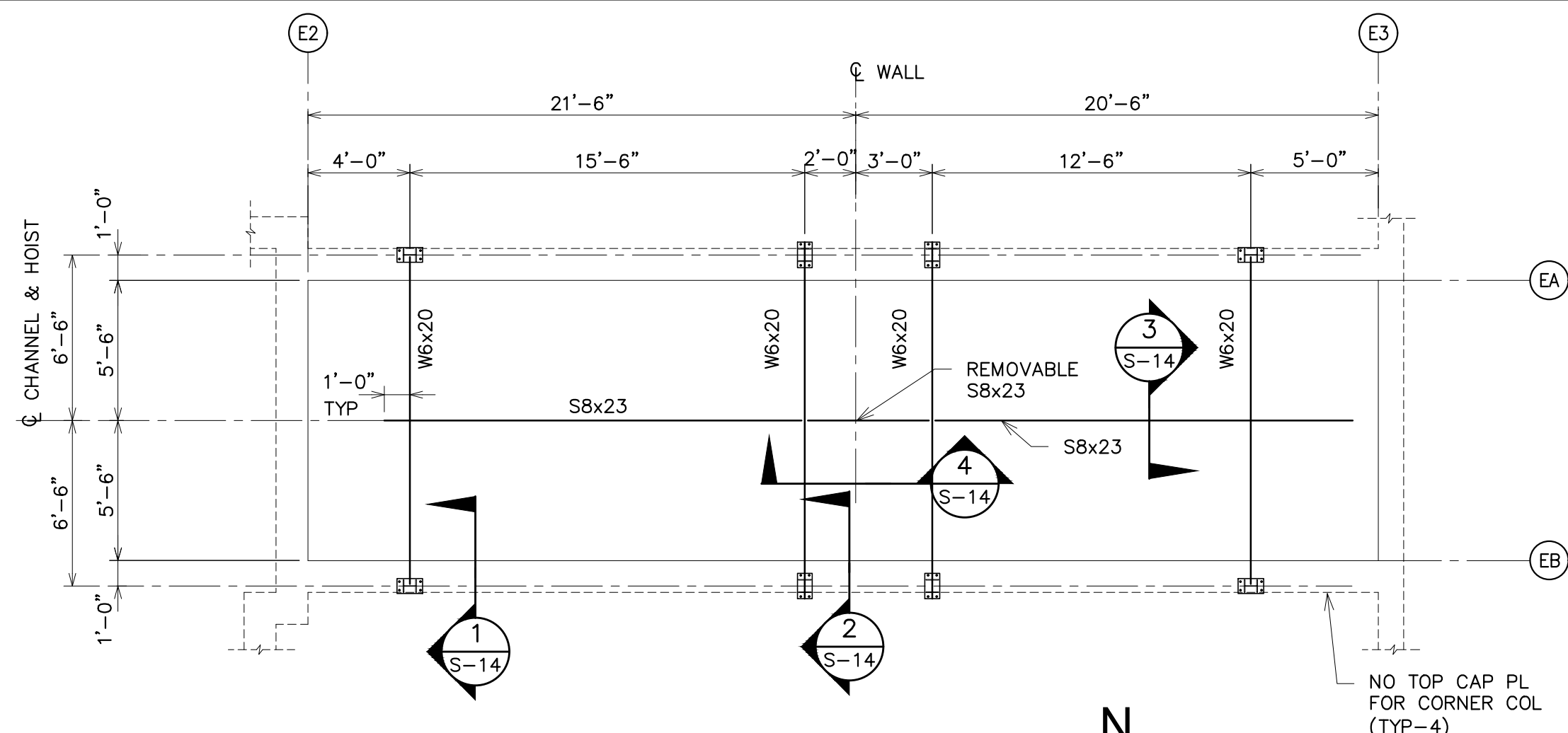
811
 Know what's below. Call before you dig.

ISSUED FOR	DATE	BY	DESCRIPTION
ADDENDUM NO. 1	1-19-2022	PMH	
ISSUED FOR BIDS SET	12-13-2021	RRK	
90% DESIGN SUBMITTAL	11-22-2021	PMH	
70% DESIGN SUBMITTAL	10-29-2021	PMH	
50% DESIGN SUBMITTAL	10-01-2021	PMH	

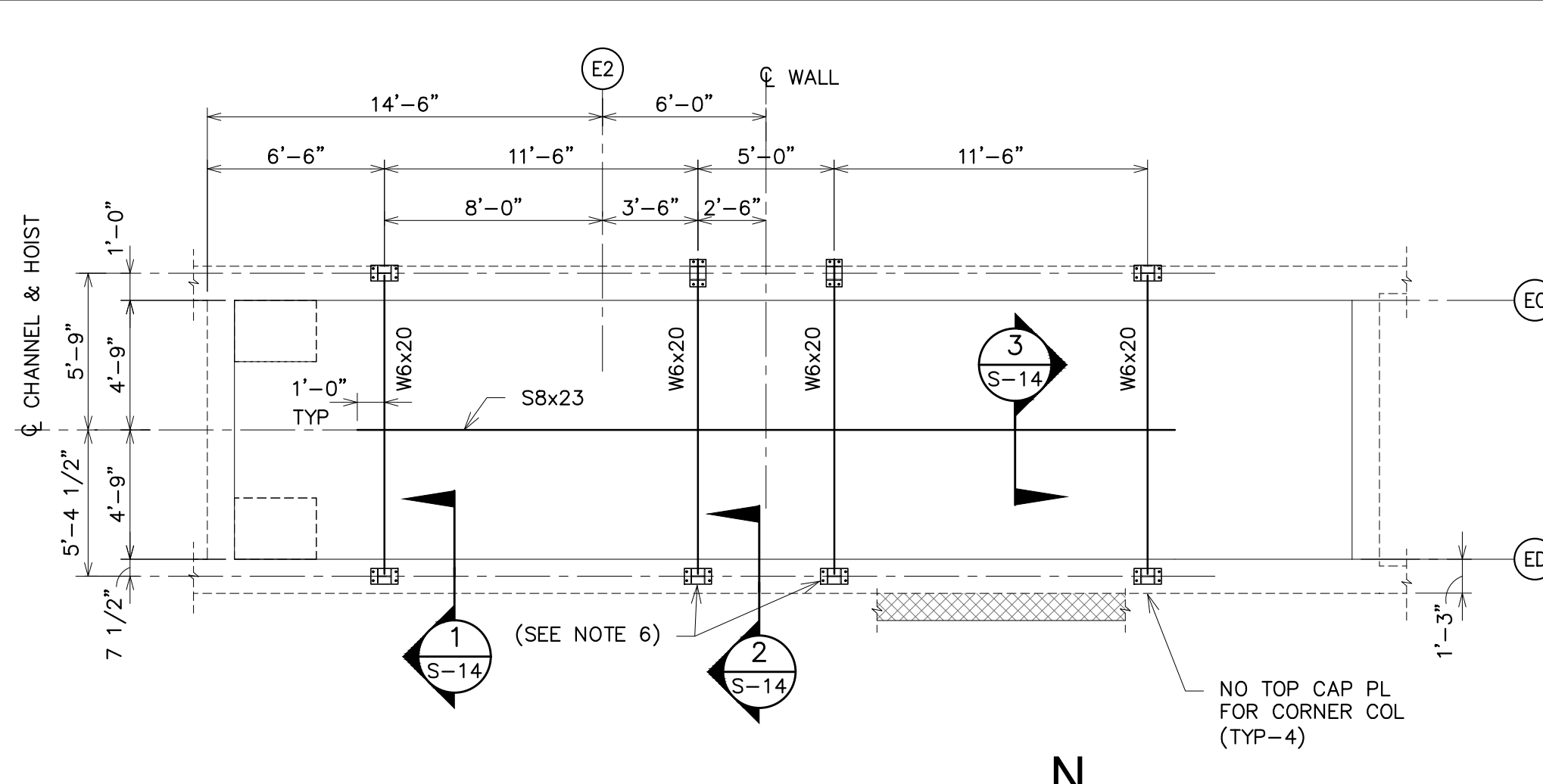
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HEADWORKS IMPROVEMENTS PROJECT
 VESSEL FOUNDATION AND PLATFORM PLAN AND SECTIONS

SCALE AS NOTED
 DRAWING No. 336
 SHEET No. **S-13**

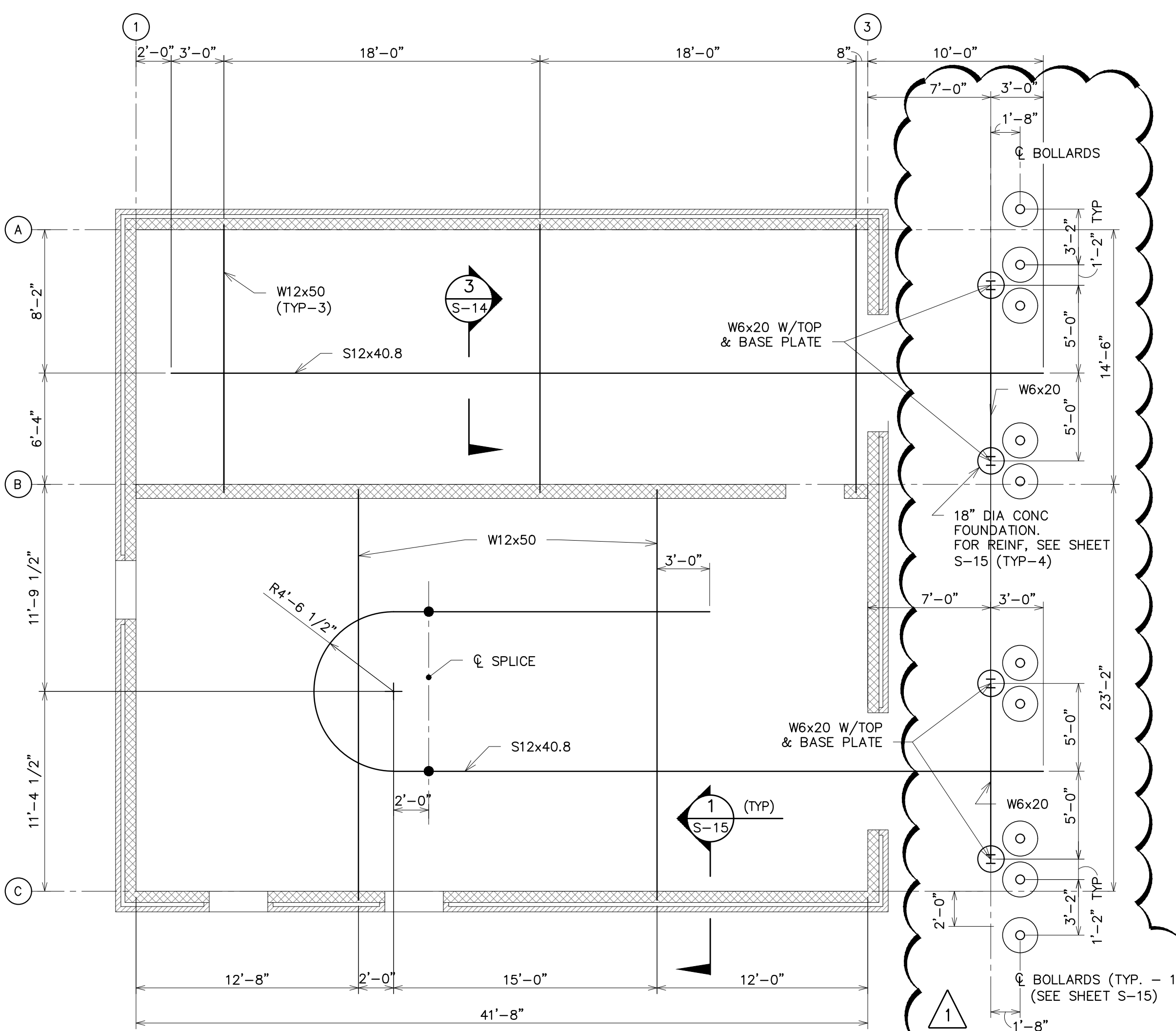


NORTH GRIT CHANNEL PLAN
SCALE: 3/16" = 1'-0"

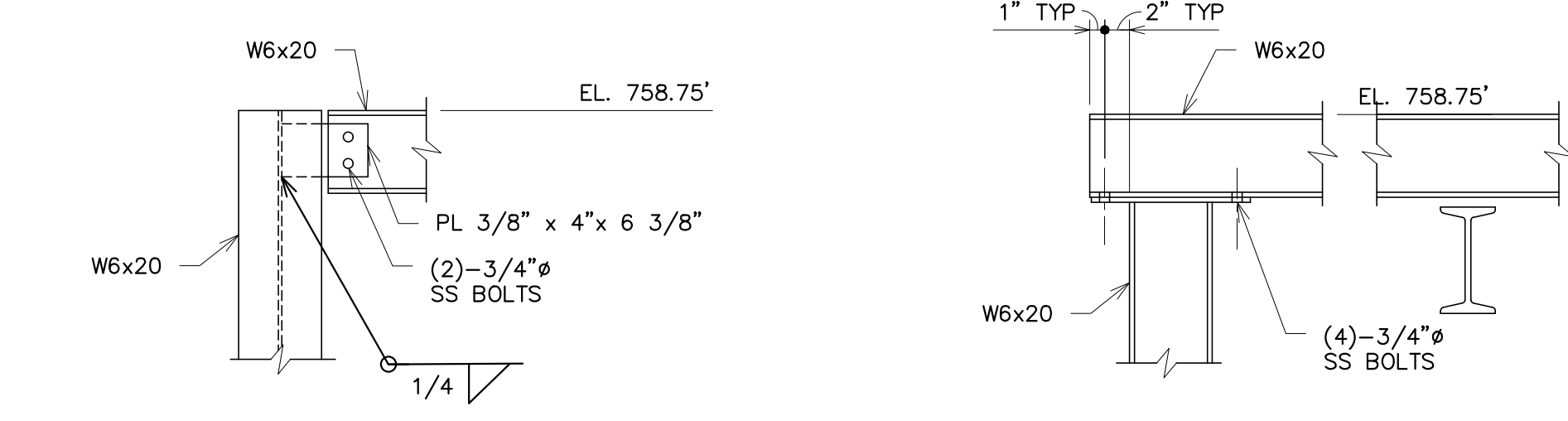


SOUTH GRIT CHANNEL PLAN
SCALE: 3/16" = 1'-0"

- NOTES:
- OVERHEAD HOIST WILL BE LOCATED IN A BUILDING WITH HAZARDOUS ATMOSPHERE. ALL MOTORS SHALL BE NON-SPARKING WITH STAINLESS STEEL HARDWARE AND ALL STEEL STRUCTURES SHALL BE DESIGNED WITH A 1/16" CORROSION ALLOWANCE ON ALL SURFACES.
 - HOIST CAPACITY - 1 TON
 - NUTS AND BOLTS SHALL BE STAINLESS STEEL ASTM A320, GR B8M.
 - OVERHEAD HOIST SHALL BE MODEL U11-200 BY DEMAG HOIST. OVERHEAD SUPPORT FRAME SHALL BE ASTM A992 & A572, GR 50 AND GALV (ASTM A123). ALL ASSOCIATED HARDWARE SHALL BE STAINLESS STEEL.
 - HOIST SHALL BE WIRELESS.
 - ROTATE COLUMN TOP AND BASE PLATE 90° FROM THAT DETAILED. COLUMN ORIENTATION REMAINS AS SHOWN ON PLAN.
 - SPREADER BAR SHALL BE ADJUSTABLE LIFTING BEAM ITEM #44N635 BY GRAINGER.

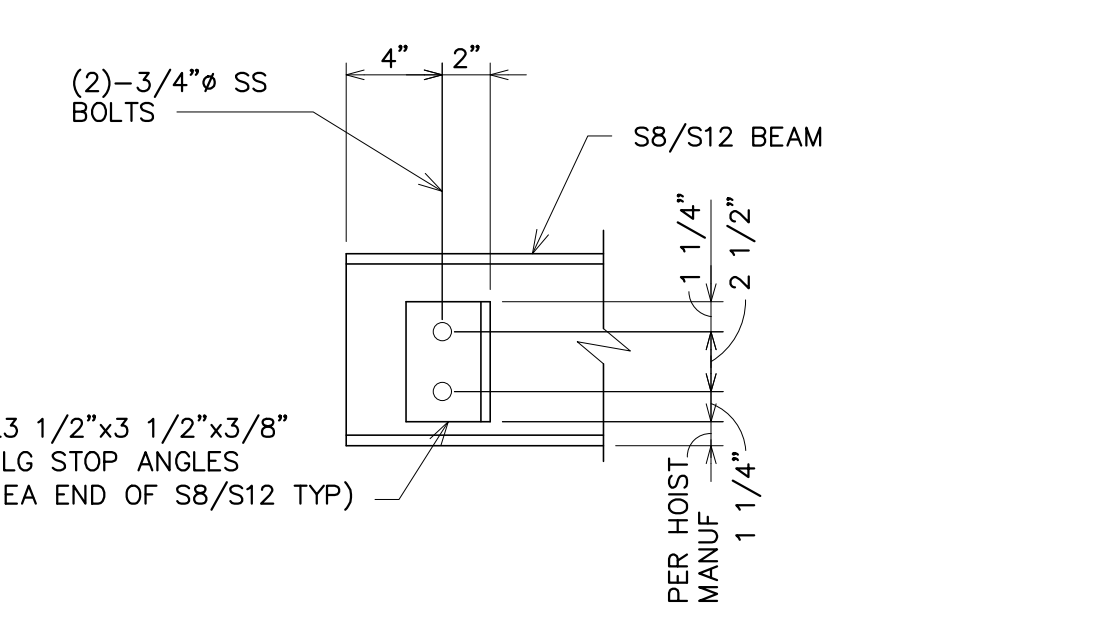


ODOR CONTROL BUILDING
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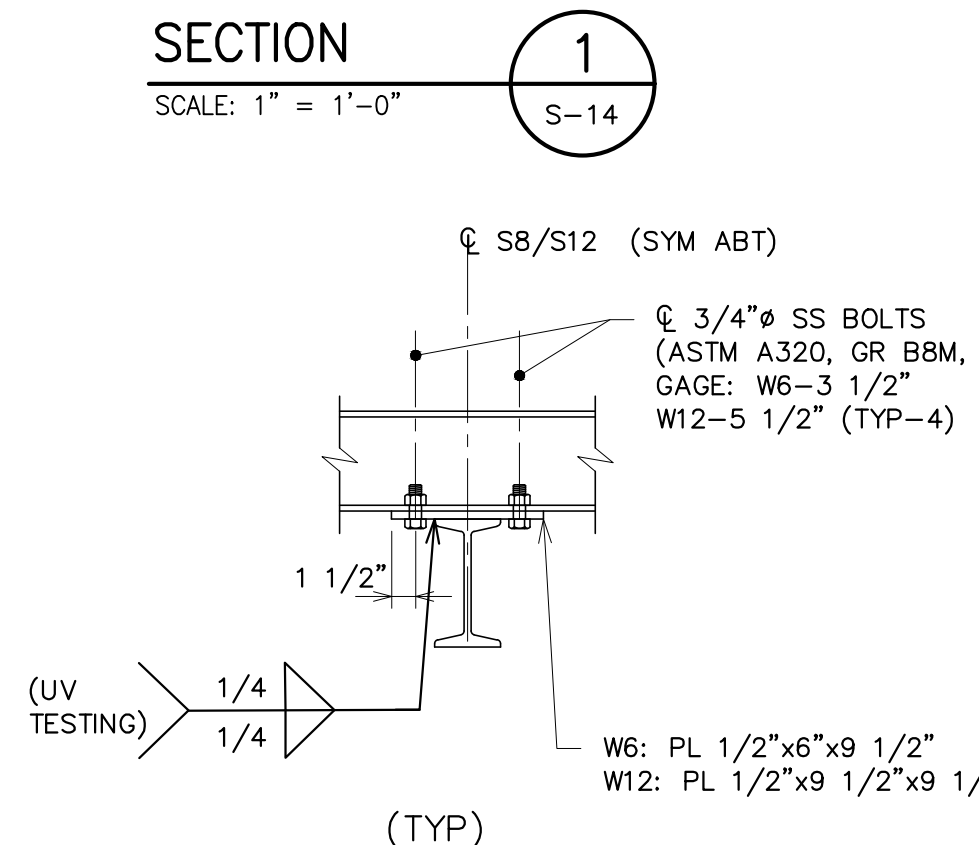


SECTION 1
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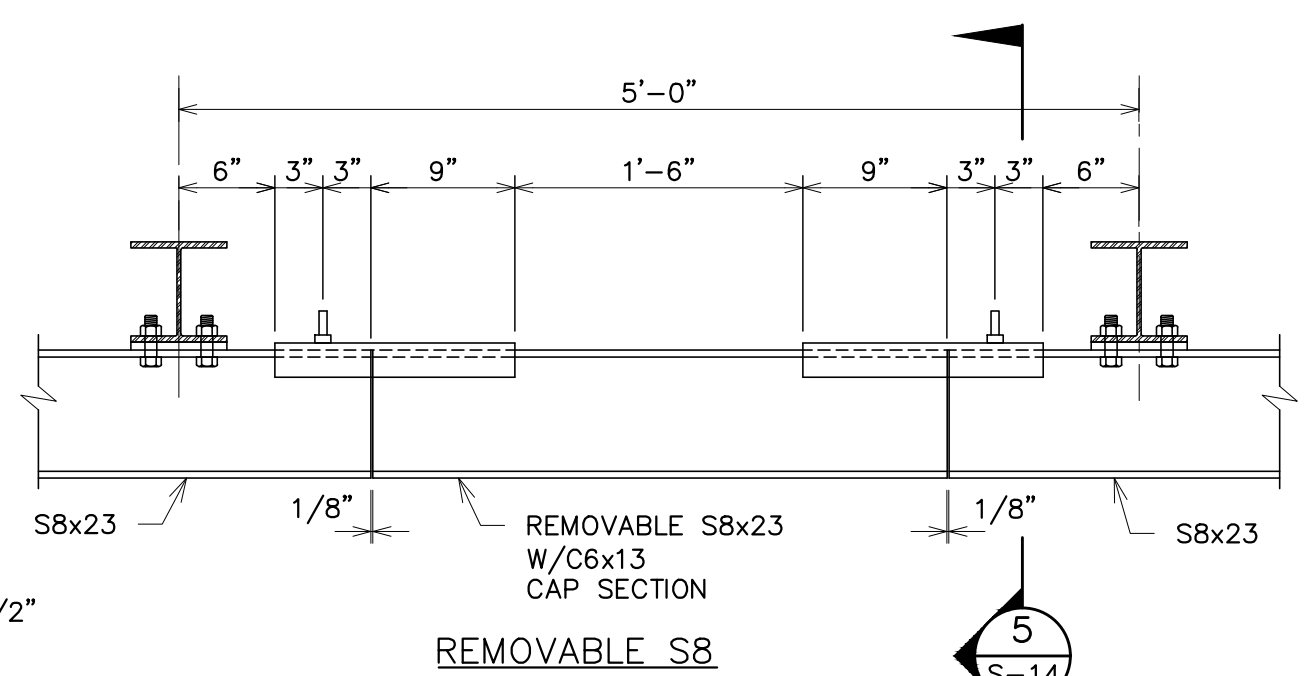
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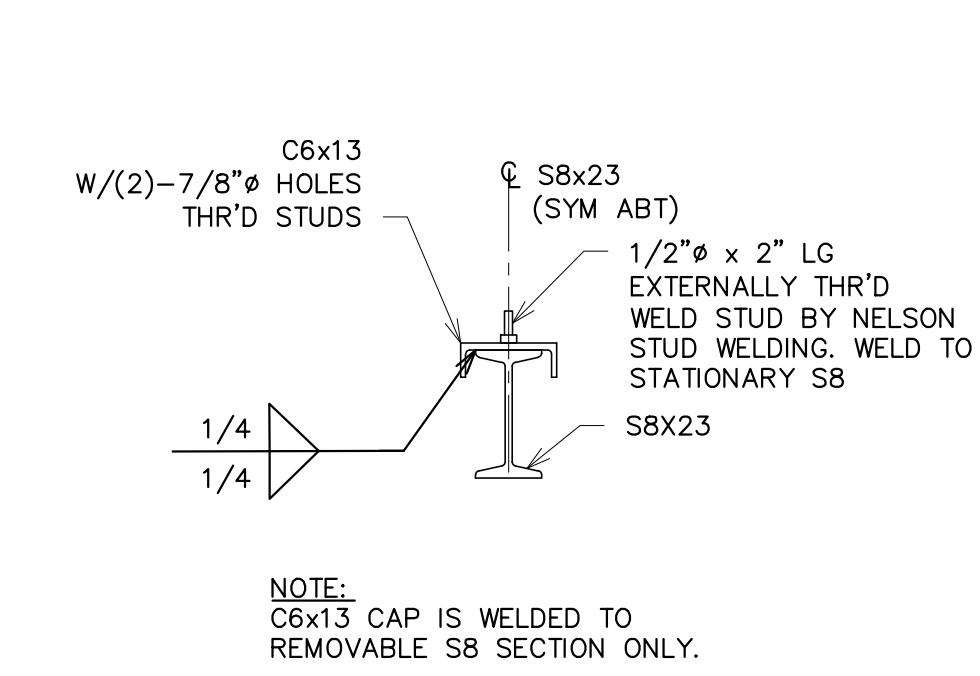
END STOP
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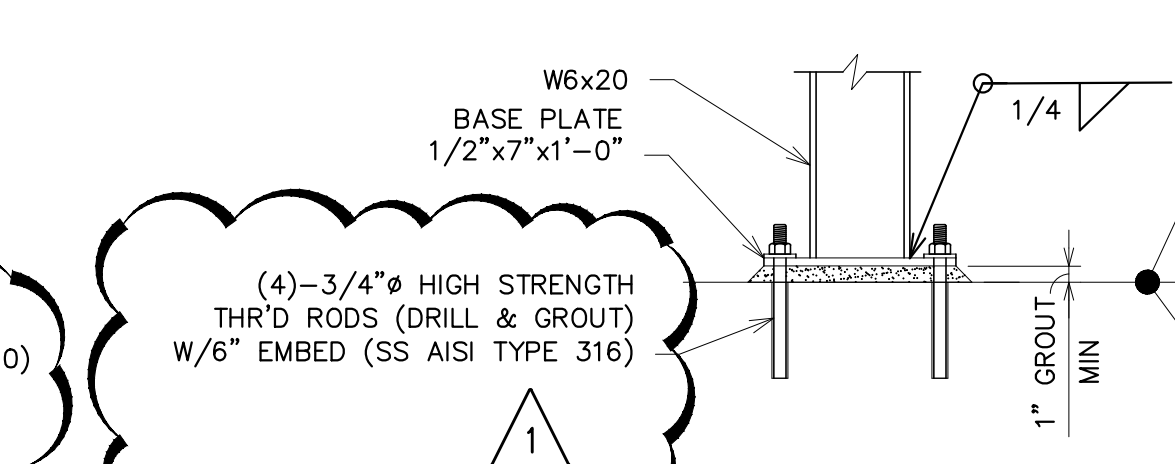
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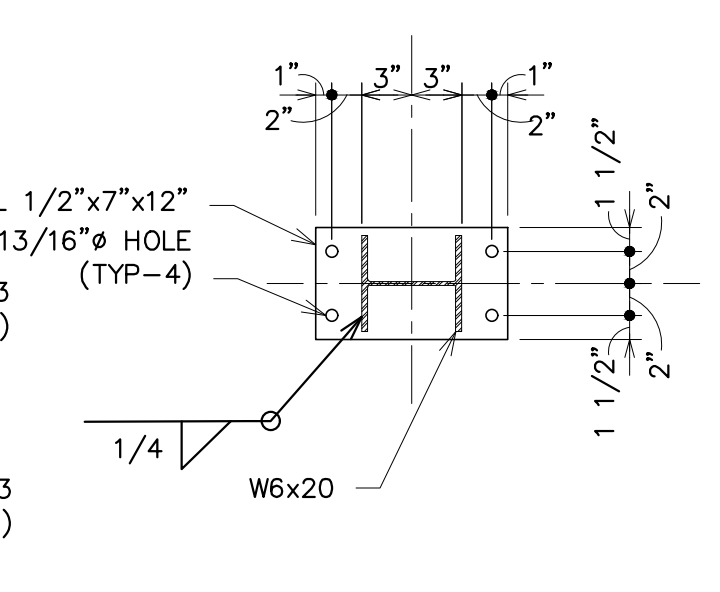
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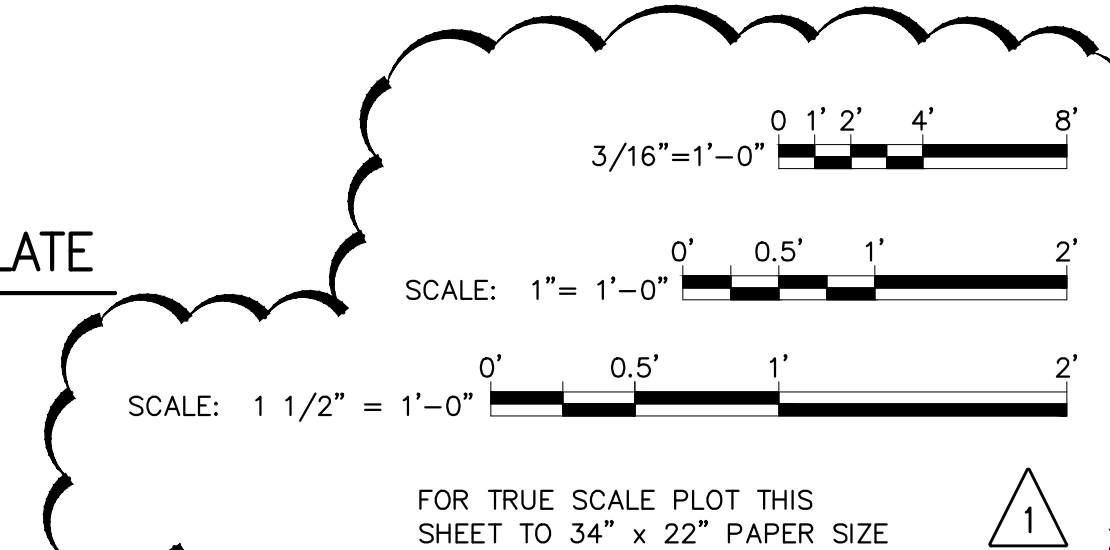
SECTION 5
SCALE: 1" = 1'-0"



COLUMN BASE PLATE
SCALE: 1" = 1'-0"



COLUMN TOP & BASE PLATE
SCALE: 1" = 1'-0"



SCALE: 1" = 1'-0"

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

FOR TRUE SCALE PLOT THIS SHEET TO 34" x 22" PAPER SIZE

811
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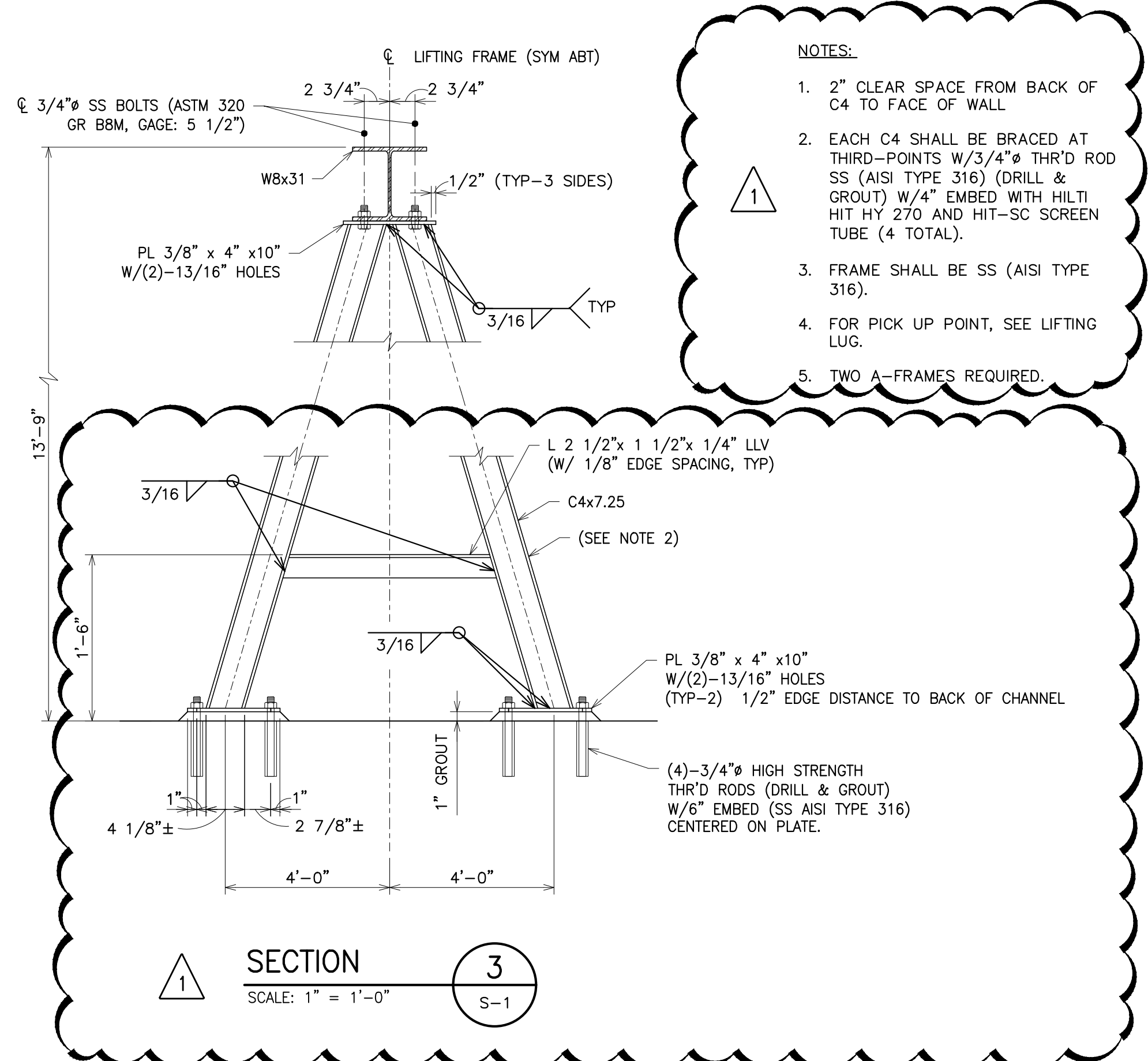
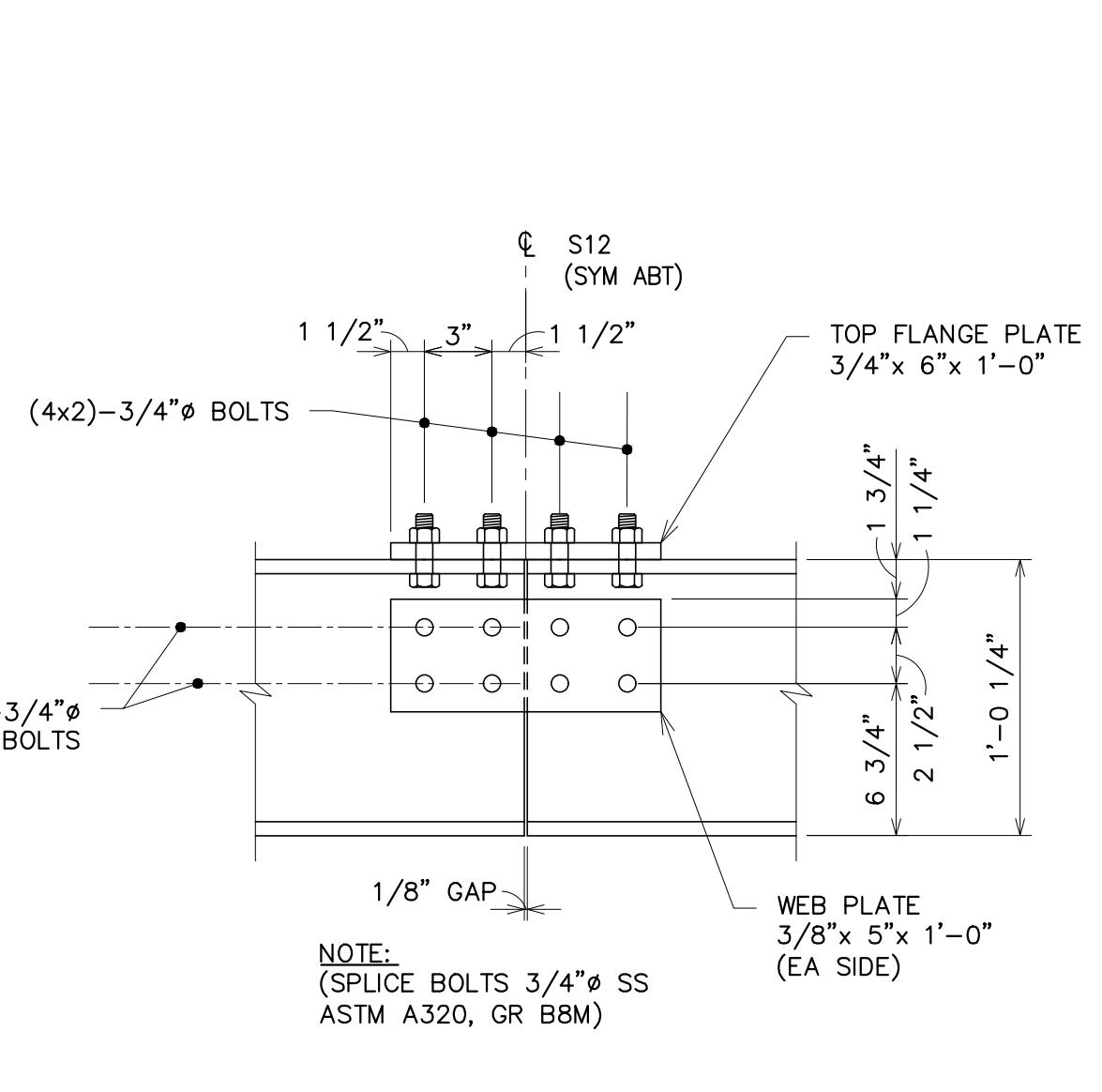
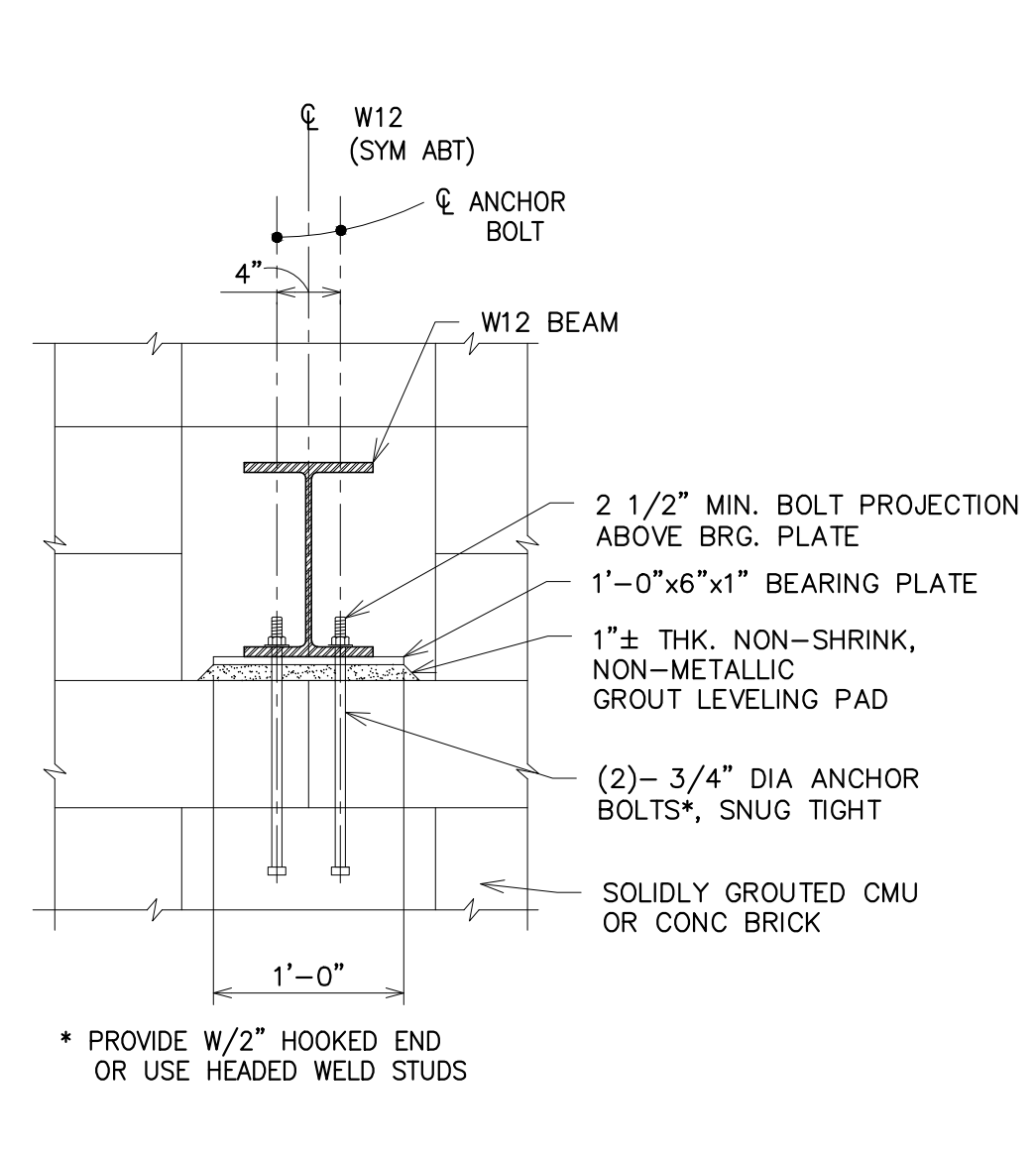
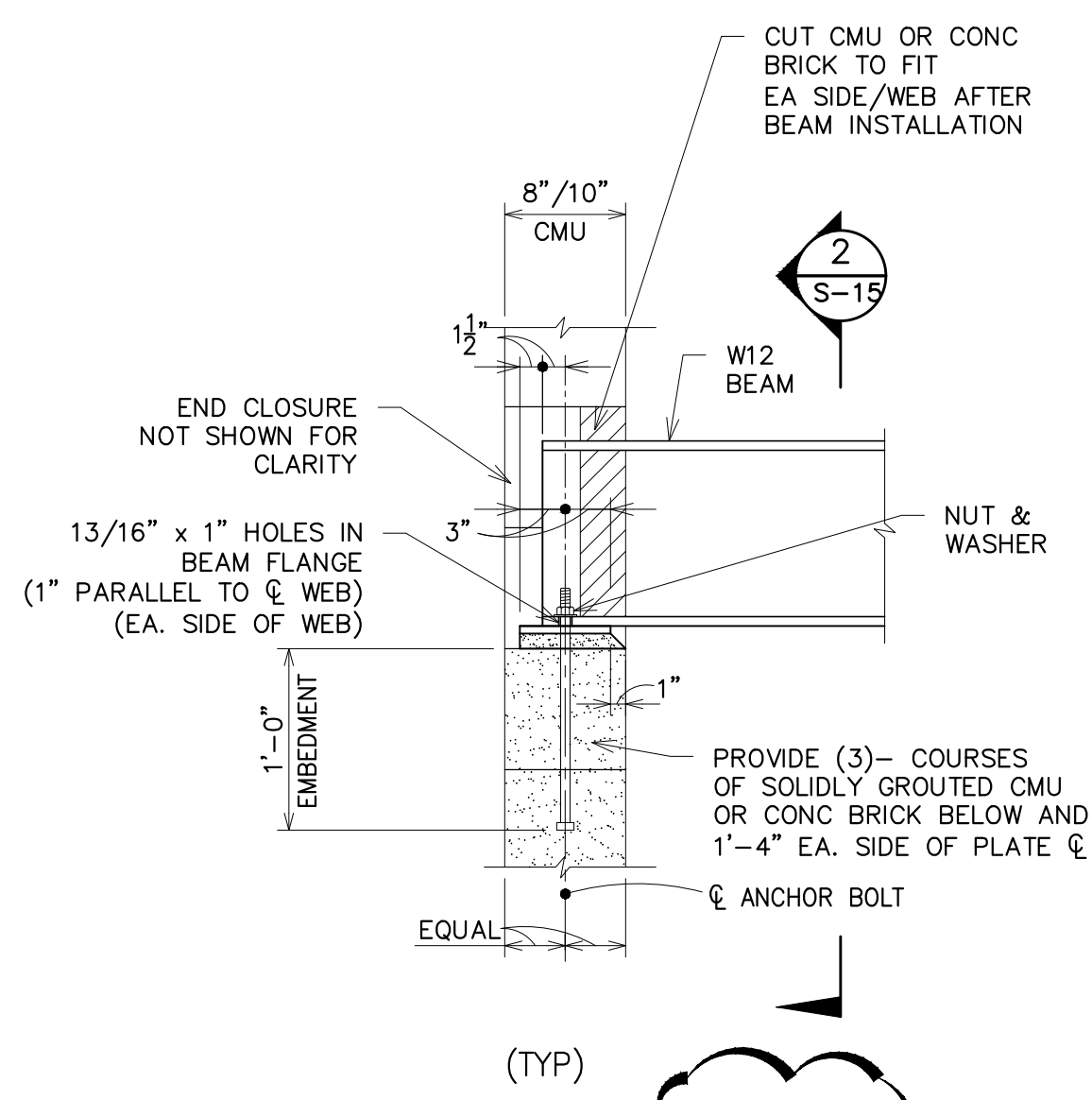
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ISSUED FOR BIDS SET	12-13-2021	PMH	DRAWN
90% DESIGN SUBMITTAL	11-22-2021	KRK	
70% DESIGN SUBMITTAL	10-29-2021	PMH	
50% DESIGN SUBMITTAL	10-01-2021	SDH	
DESCRIPTION	DATE		

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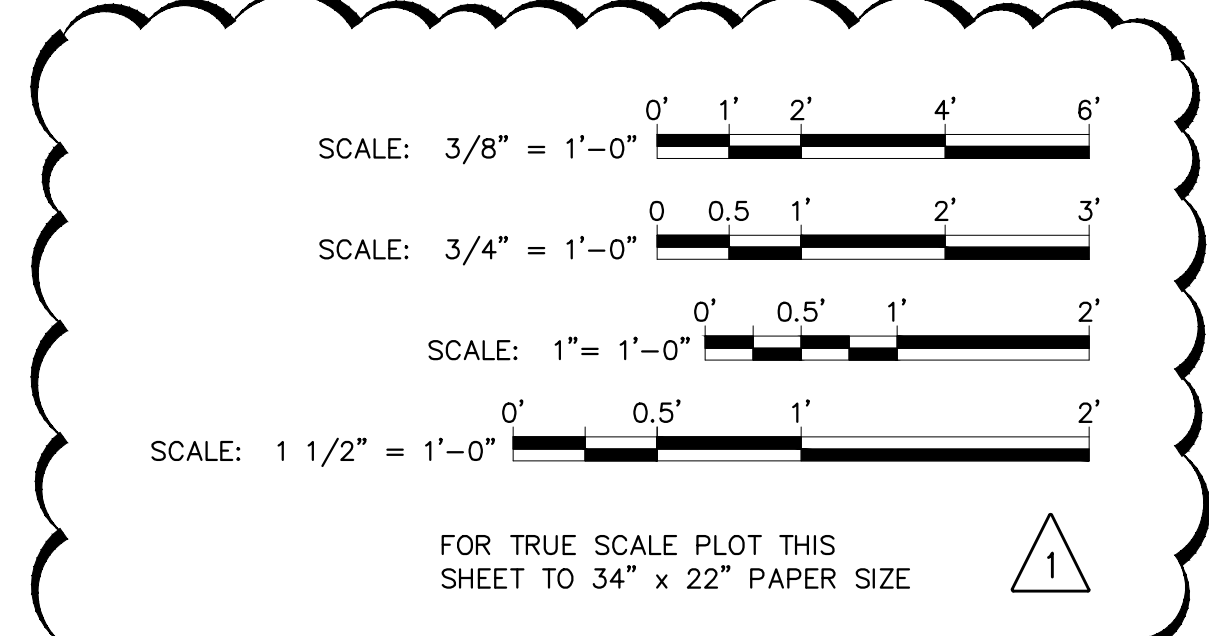
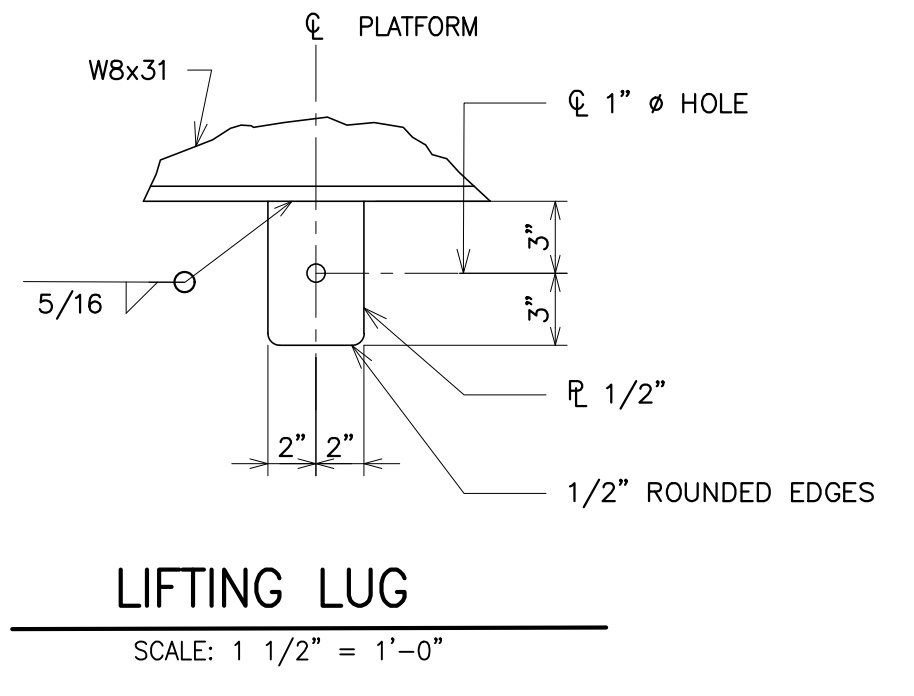
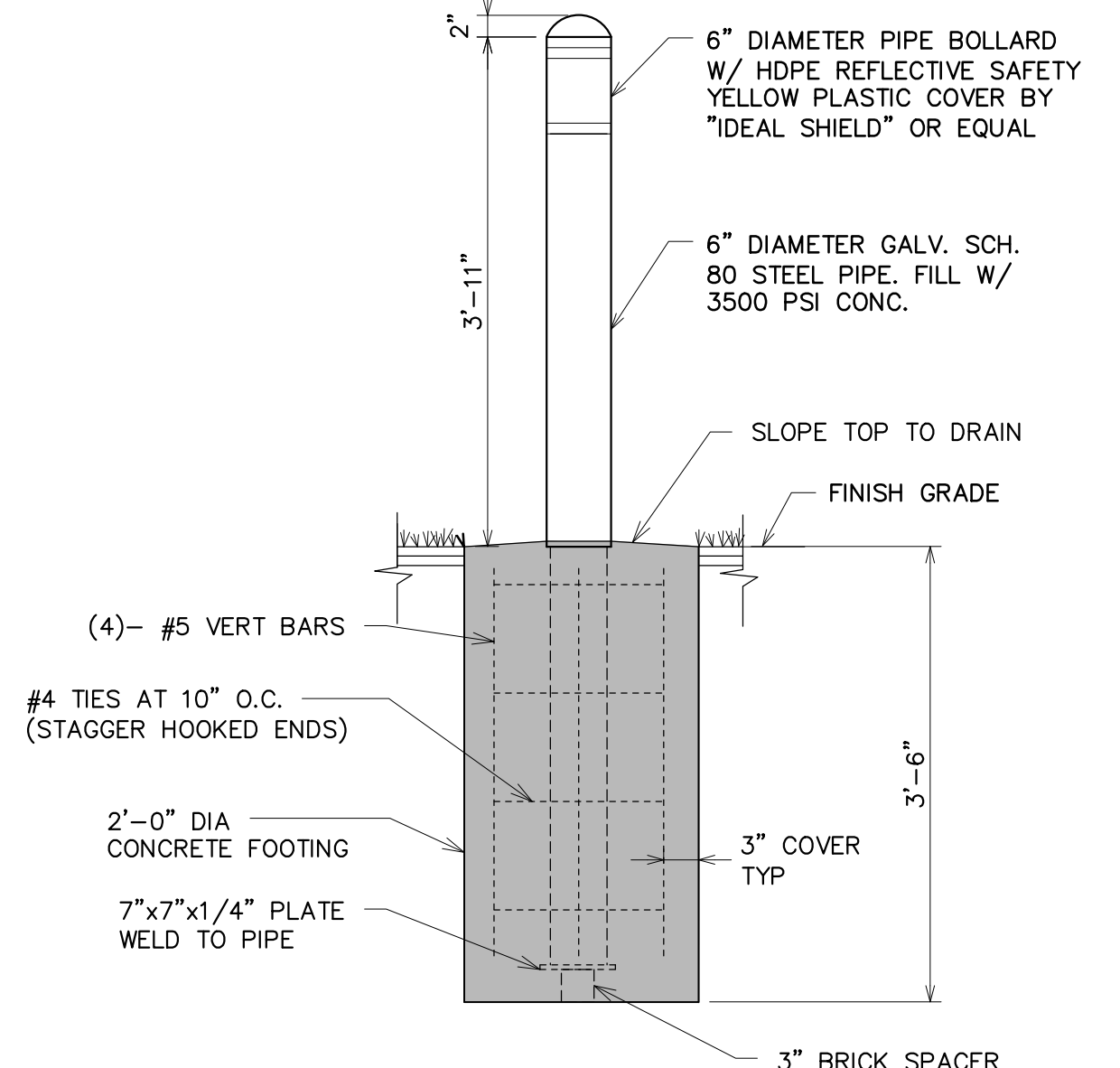
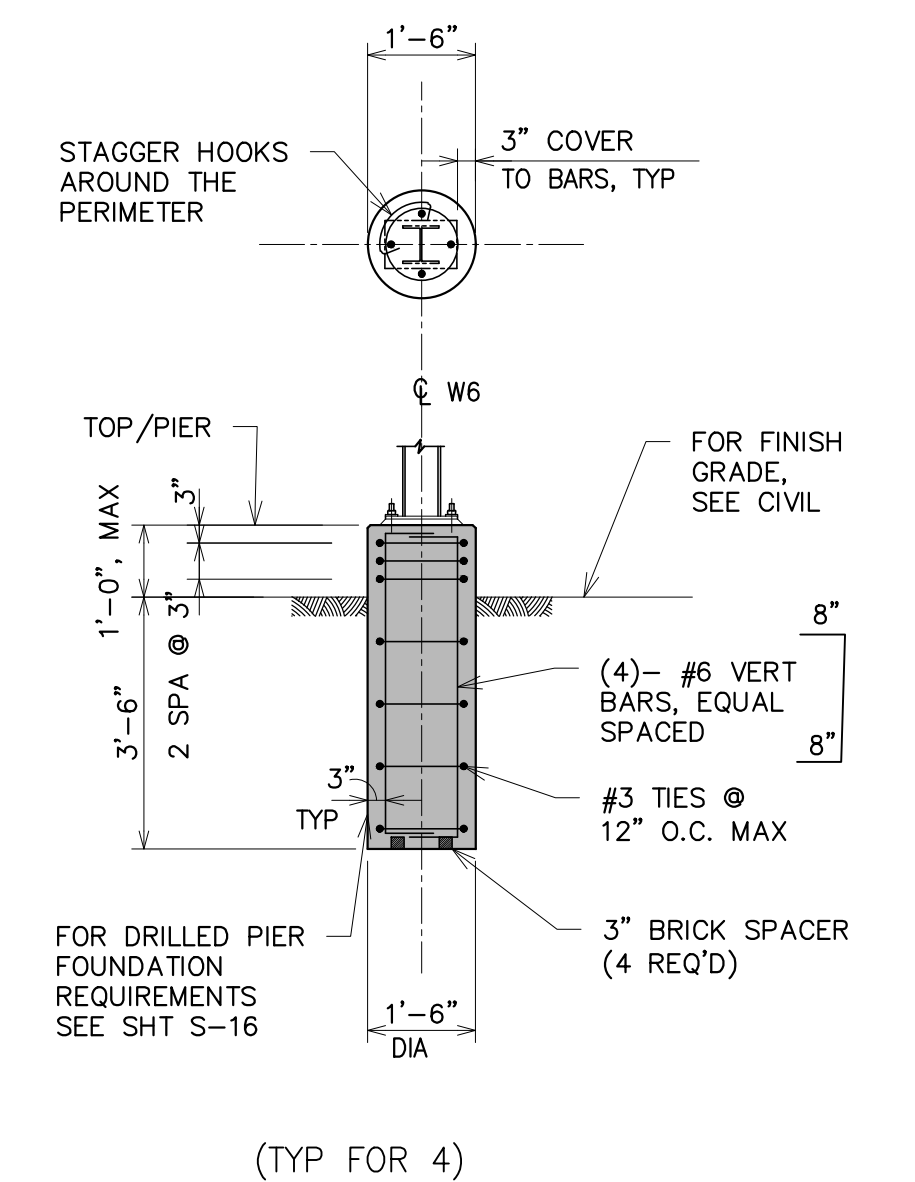
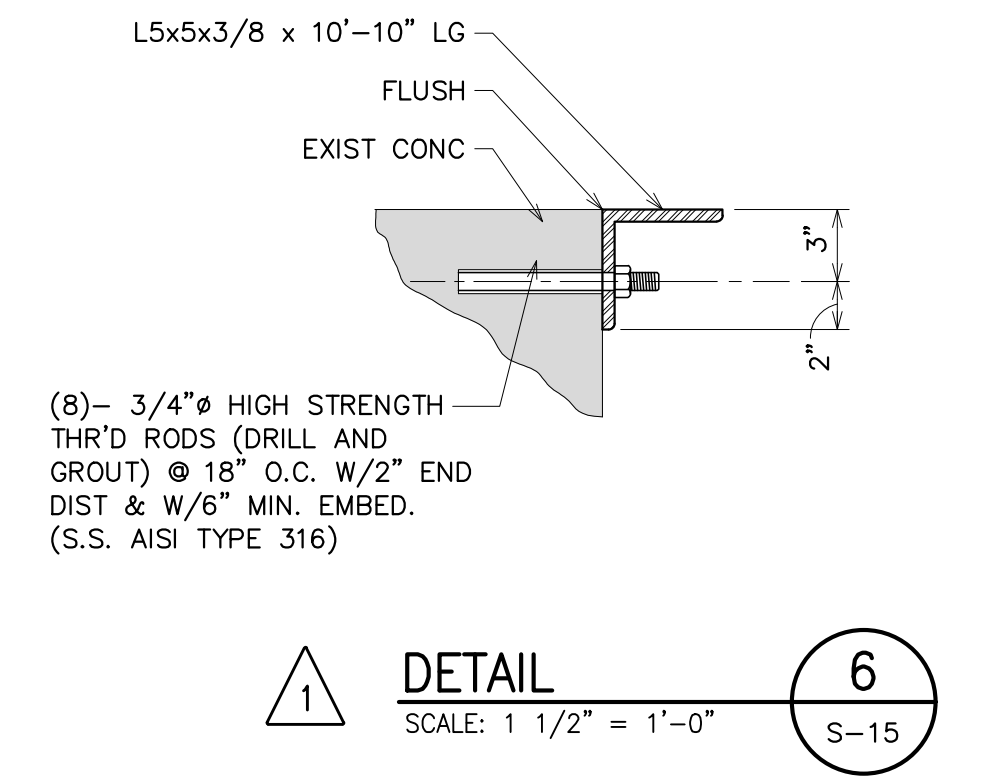
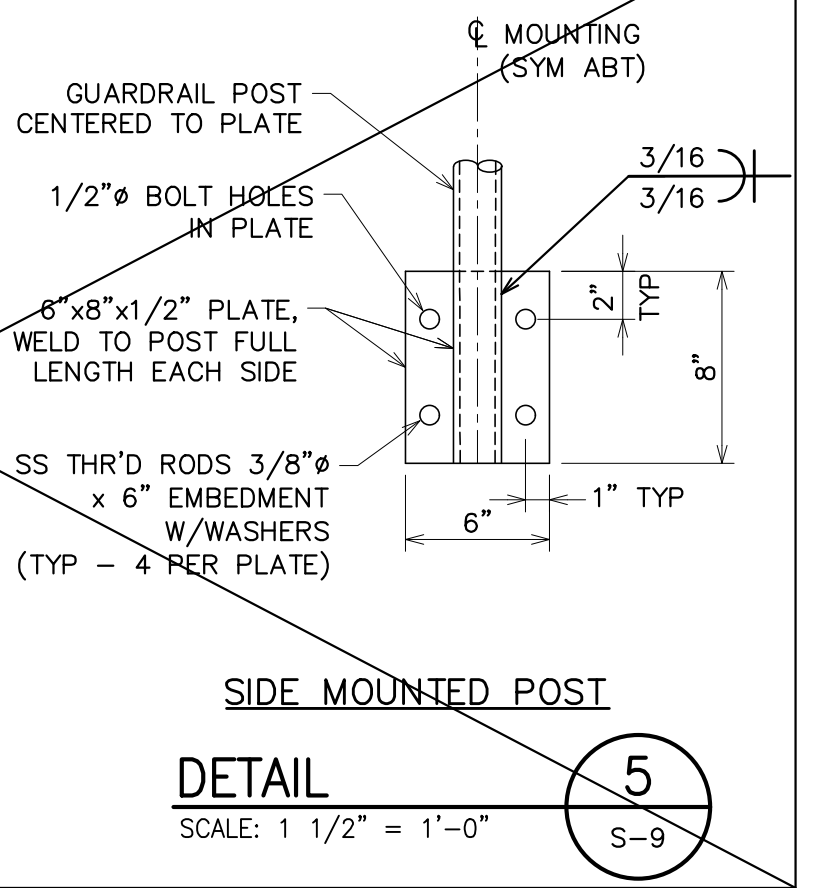
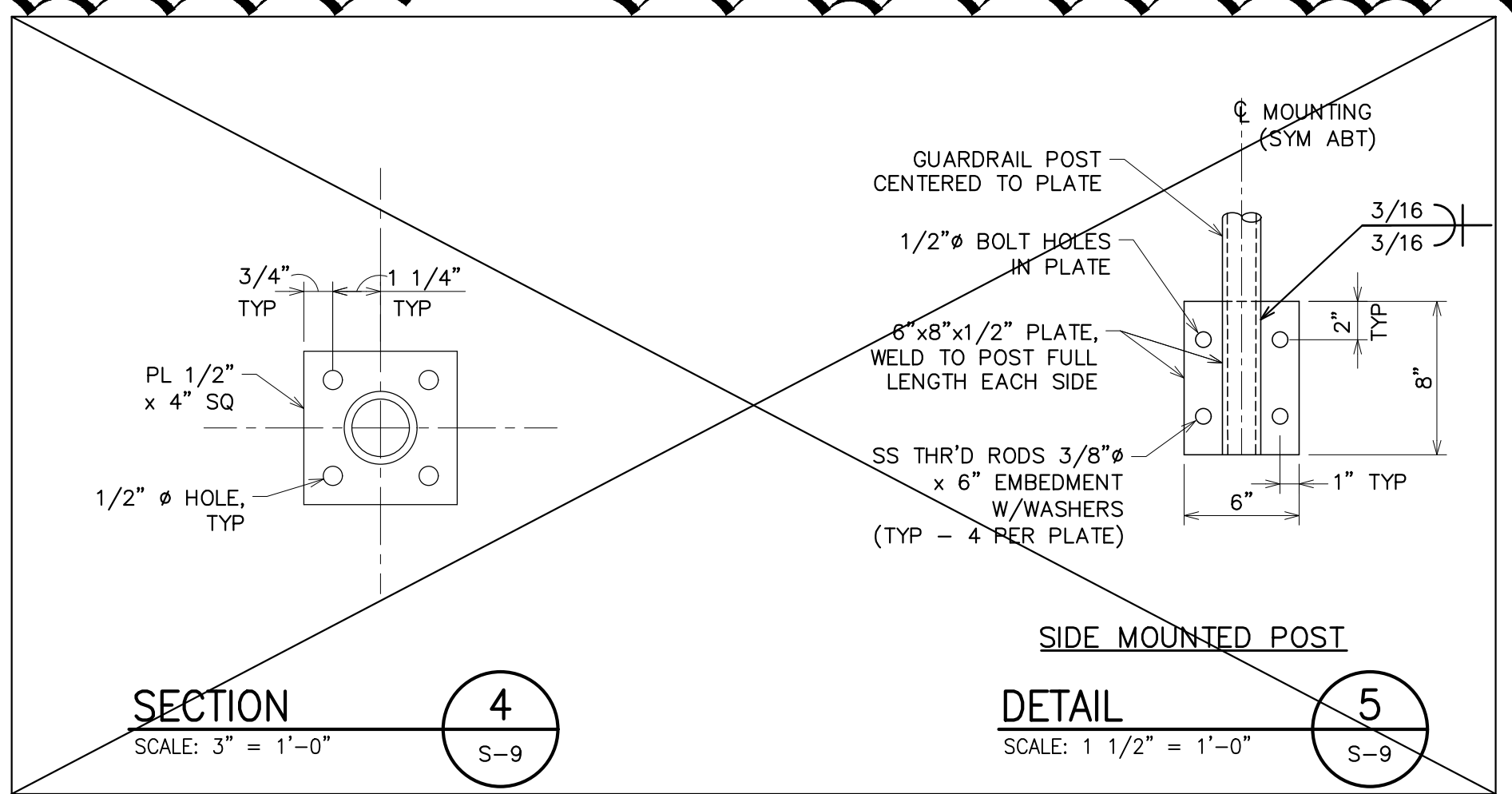
ANN ARBOR MI

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
OVERHEAD HOIST DETAILS

SCALE AS NOTED
DRAWING No. 340
SHEET No. S-14



- NOTES:**
- 2" CLEAR SPACE FROM BACK OF C4 TO FACE OF WALL
 - EACH C4 SHALL BE BRACED AT THIRD-POINTS W/3/4" THRD ROD SS (AISI TYPE 316) (DRILL & GROUT) W/4" EMBED WITH HILTI HIT HY 270 AND HIT-SC SCREEN TUBE (4 TOTAL).
 - FRAME SHALL BE SS (AISI TYPE 316).
 - FOR PICK UP POINT, SEE LIFTING LUG.
 - TWO A-FRAMES REQUIRED.



SPECIFICATIONS:

GENERAL REQUIREMENTS:

- CONTRACTOR SHALL COORDINATE ALL WORK PRIOR TO INSTALLATION OR FABRICATION OF ANY COMPONENTS. ALL OPENINGS SHALL ALSO BE COORDINATED.
- ALL WORK MUST CONFORM TO ALL STATUTES OF THE MICHIGAN BUILDING CODE (EDITION IN EFFECT AT THE TIME OF PERMIT), ALL STATE, COUNTY AND LOCAL ORDINANCES, CURRENT BARRIER FREE REGULATIONS, MIOSHA STRUCTURAL GUIDELINES, ASTM STANDARD TESTING PROCEDURES, OWNER'S PRACTICES AND GENERALLY ACCEPTED DESIGN PRACTICES. IF DISCREPANCIES IN DRAWING APPEAR, WORK MUST BE DONE PER CODE. CITY WILL COVER THE COST OF BUILDING, ELECTRICAL, MECHANICAL, AND PLUMBING PERMITS. CONTRACTOR MUST STILL APPLY FOR THE PERMITS.
- EXISTING CONDITIONS OF BUILDING SHOWN ON CONSTRUCTION DOCUMENTS ARE ILLUSTRATIVE OF CONDITIONS VISIBLE TO ARCHITECT AND BASED ON EXISTING DRAWINGS. ALL EXISTING DIMENSIONS, CONDITIONS, SIZES & LOCATIONS ARE TO BE FIELD VERIFIED.
- CONTRACTOR SHALL PROVIDE NEW OPENINGS AND SUPPORTS AS NOTED. FINAL OPENING DIMENSIONS, CONNECTION SIZES, CLEARANCES, ETC. MUST BE COORDINATED DURING CONSTRUCTION WITH APPROVED COMPONENTS. SEAL TIGHT ALL OPENINGS (ROOF, WALL AND CEILING), EQUIPMENT AND/OR PENETRATIONS - FROM AIR AND MOISTURE.
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND APPROVED MANUFACTURERS.
- ALL INSTALLATIONS TO BE COORDINATED WITH EXISTING CONDITIONS FOR PROPER SIZE, LOCATION AND PROVISIONS REQUIRED TO INSTALL COMPONENTS.
- PIPING & CONDUIT HANGERS AND SUPPORT LOCATION ARE NOT SHOWN ON DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE PIPING AND CONDUIT HANGERS AND SUPPORTS NECESSARY AS REQUIRED PER CODE.
- CONTRACTOR SHALL PROVIDE ALL REQUIRED TRANSITIONS, FITTINGS AND APPURTENANT CONNECTIONS.
- CONFIRM ANY COLOR SELECTIONS WITH OWNER. COLORS TO COORDINATE WITH EXISTING BUILDINGS ON SITE.
- PREVENT GALVANIC ACTION AND OTHER FORMS OF CORROSION BY INSULATING METALS OR OTHER MATERIALS FROM DIRECT CONTACT WITH INCOMPATIBLE MATERIALS.
- SHOP DRAWINGS AND PRODUCT DATA - THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND PROJECT ENGINEER, SHOP DRAWINGS & PRODUCT DATA SUBMITTALS FOR ALL PRODUCTS AND COMPONENTS TO BE USED ON THIS PROJECT. MAINTAIN ONE COPY OF ALL APPROVED SUBMITTALS AT THE SITE FOR THE OWNER'S REFERENCE.
- "RECORD" DRAWINGS - THE CONTRACTOR SHALL MAINTAIN A SET OF "AS-BUILT" PRINTS, MARKED UP AT THE SITE, CONTAINING ALL "AS-BUILT" INFORMATION. TURN SET OVER TO ENGINEER UPON COMPLETION OF THE WORK.
- INSTALL ALL MATERIALS IN COMPLIANCE W/ MFR. RECOMMENDATIONS AND CODE REQUIREMENTS.
- CONTRACTOR MUST VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO START OF DEMOLITION AND MAKE EVERY EFFORT TO PROTECT THEM OR RELOCATE AS REQUIRED.
- ALL PERMANENT WOOD BLOCKING, SHEATHING, FRAMING, ETC. UTILIZED IN CONSTRUCTION TO BE FIRE RETARDANT TREATED.
- CONTRACTORS TO REFER TO ENTIRE SET OF DRAWINGS AND SPECIFICATIONS FOR FULL SCOPE OF WORK. CROSS COORDINATION BETWEEN CIVIL, PROCESS, MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS IS REQUIRED.

FOUNDATION & WALL INSULATION

- 2 INCH THICK EXTRUDED POLYSTYRENE, OWENS CORNING "FOAMULAR" OR EQUAL, COMPLIANT WITH ASTM C578 TYPE IV AND ASTM E84.

FIRE EXTINGUISHERS:

- FIRE EXTINGUISHERS & ACCESSORIES: DRY CHEMICAL TYPE, UL299, HEAVY DUTY STEEL CYLINDER W/ PRESSURE GAGE; RECHARGEABLE UNIT; TYPE 10-A-120-B-C; PAINTED FINISH, COLOR RED. PROVIDE CHROMED STEEL MOUNTING BRACKETS & ALUM. WALL SIGNAGE (WHITE GOTHIC LETTERS ON RED BACKGROUND), BRADY SIGNAGE NO. 43294, 14X10, ALUM. PROVIDE WITH SIGNAGE ABOVE EXTINGUISHER. EXACT LOCATIONS TO BE DETERMINED BY FIRE MARSHALL & OWNER IN FIELD. PROVIDE (1) EXTINGUISHER WALL MOUNTED ON BLDG. INTERIOR ADJACENT TO EACH EXTERIOR MANDOOR, AND STAIR DOOR WITH SIGNAGE ABOVE EXTINGUISHER AT BUILDING - TOTAL OF (4) FIXTURES.

GENERAL NOTES:

- PROVIDE TEMPORARY OPENING PROTECTION TO PREVENT FALLS AND WEATHER INTRUSION AT ALL HATCHES/ACCESS COVERS AND FLOOR/ROOF OPENINGS THAT ARE TO BE REMOVED OR MODIFIED AS PART OF THIS WORK.
- REFER TO PLANS AND ELEVATIONS FOR ALL BUILDINGS TO DETERMINE SCOPE OF EXTERIOR AND INTERIOR MASONRY REPOINTING. VERIFY EXACT EXTENT OF REPAIR EFFORTS IN THE FIELD.
- INTERIOR SPACES OF BUILDINGS AFFECTED BY THIS WORK SCOPE ARE TO BE CLEANED OF ALL DUST AND DEBRIS PRIOR TO FINAL CLOSE OUT OF JOB.
- ANY EXISTING BROKEN OR DAMAGED BRICK ARE TO BE REPLACED WITH NEW TO MATCH EXISTING (MODULE, COLOR, TEXTURE, ETC.) AT LOCATIONS SPECIFIED ON THE PLANS - SEE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION. NEW MASONRY AT INFILL AND REPLACEMENT LOCATIONS MUST MATCH EXISTING AND BE TOOTHED INTO EXISTING.
- CONTRACTORS TO REFER TO ENTIRE SET OF DRAWINGS AND SPECIFICATIONS FOR FULL SCOPE OF WORK. CROSS COORDINATION BETWEEN CIVIL, PROCESS, MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS IS REQUIRED.

- TOUCH UP PAINT AT WALLS AND CEILINGS WHERE DAMAGED OR DISTURBED BY WORK SCOPE. MATCH EXISTING COLOR/FINISH.
- ADHERE TO DISPLAYED DIMENSIONS ON PLANS. DO NOT SCALE OFF OF PLANS. SUBMIT RFI IF APPARENT CONFLICT IS DETECTED.
- REFER TO SPECIFICATION BOOK FOR A COPY OF THE HAZARDOUS MATERIAL REPORT, WHICH DELINEATES THE HAZARDOUS MATERIALS THAT MAY BE ENCOUNTERED DURING DEMOLITION/CONSTRUCTION.

SEALANT FOR NEW CONCRETE FLOORS (NOT RECEIVING OTHER FINISHES):

- ALL NEW CONCRETE FLOOR SURFACES SHALL BE SEALED WITH EUCCO-GUARD 100 BY EUCLID CHEMICAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ALL CONCRETE FLOOR SURFACES SHALL BE PREPARED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS PRIOR TO APPLICATION



DENOTES PHOTO NUMBER AND SHEET

CODE REFERENCES

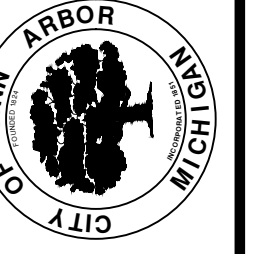
APPLICABLE CODES:

- 2015 MICHIGAN BUILDING CODE (MBC)
- 2017 NATIONAL ELECTRIC CODE (NEC) WITH MICHIGAN AMENDMENTS
- 2015 MICHIGAN MECHANICAL CODE
- 2018 MICHIGAN PLUMBING CODE
- 2015 MICHIGAN UNIFORM ENERGY CODE
- 2015 MICHIGAN REHAB CODE FOR EXISTING BUILDINGS (MRCEB)
- ICC ANSI A117.1 - 2009
- 2015 INTERNATIONAL FIRE CODE



ISSUED FOR ADDENDUM NO. 1	ISSUED FOR BIDS SET	90% DESIGN SUBMITTAL	70% DESIGN SUBMITTAL	50% DESIGN SUBMITTAL	DATE	CHECKED	DRAWN

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HEADWORKS IMPROVEMENTS PROJECT
ARCHITECTURAL NOTES AND DETAILS

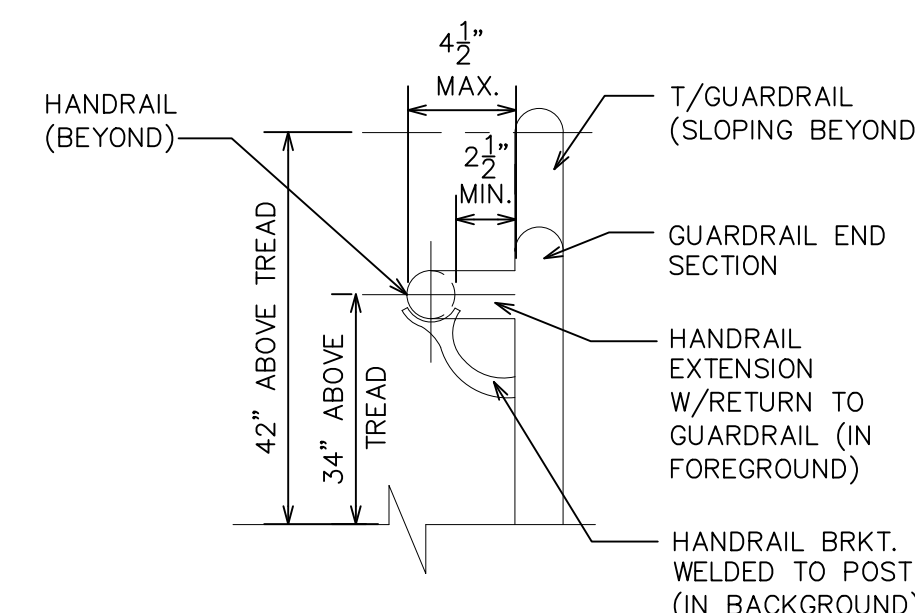
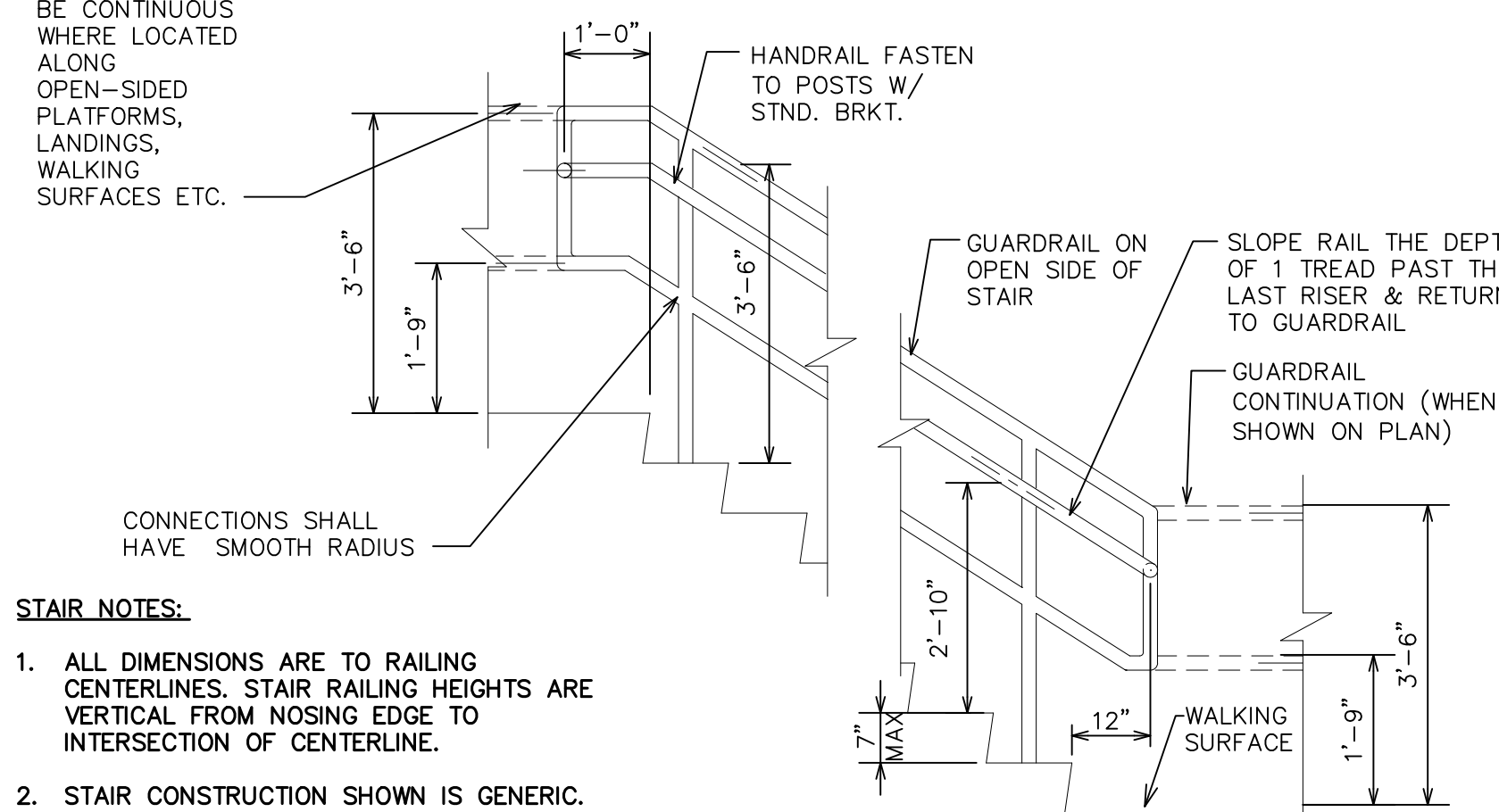
SCALE AS SHOWN
DRAWING No. 400
SHEET No. A-1

GUARDRAIL SHALL BE CONTINUOUS WHERE LOCATED ALONG OPEN-SIDED PLATFORMS, LANDINGS, WALKING SURFACES ETC.

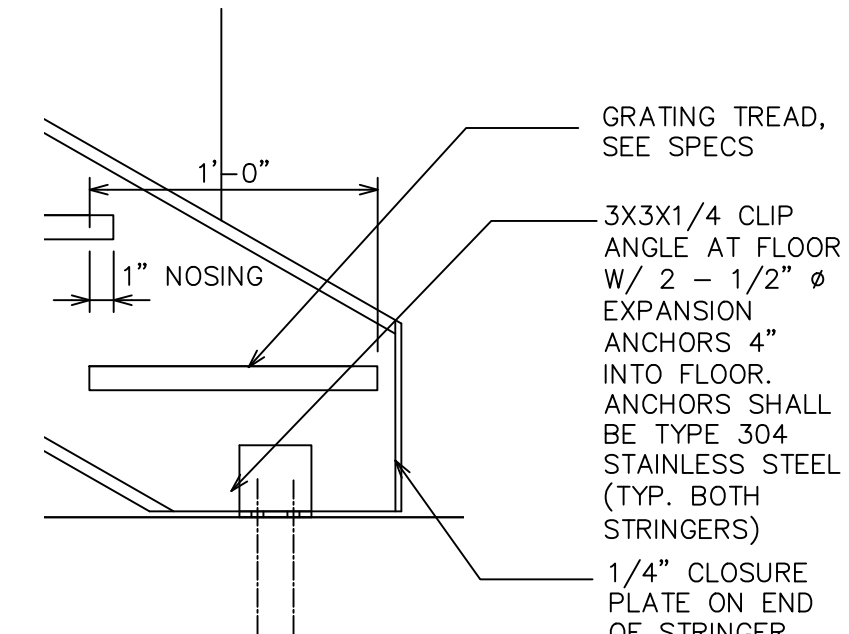
STAIR NOTES:

- ALL DIMENSIONS ARE TO RAILING CENTERLINES. STAIR RAILING HEIGHTS ARE VERTICAL FROM NOSING EDGE TO INTERSECTION OF CENTERLINE.
- STAIR CONSTRUCTION SHOWN IS GENERIC. SEE DWGS. FOR SPECIFIC STAIR ORIENTATION, LAYOUT, DETAILS ETC. SPECIFIC TO EACH STAIR. REFER TO SPECIFICATIONS AND STRUCTURAL DETAILS FOR FURTHER INFO.

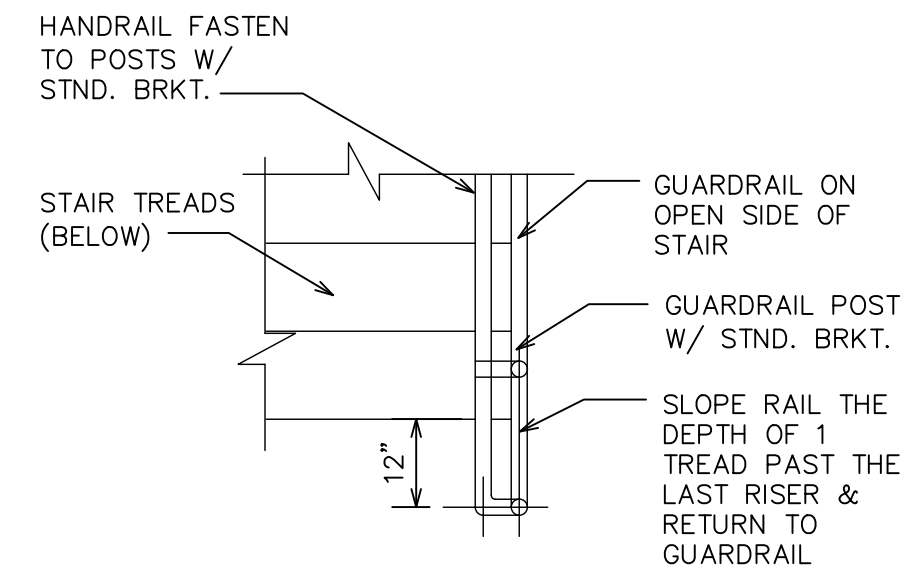
TYP. GUARDRAIL/HANDRAIL ELEV.
SCALE: 1/2" = 1'-0"



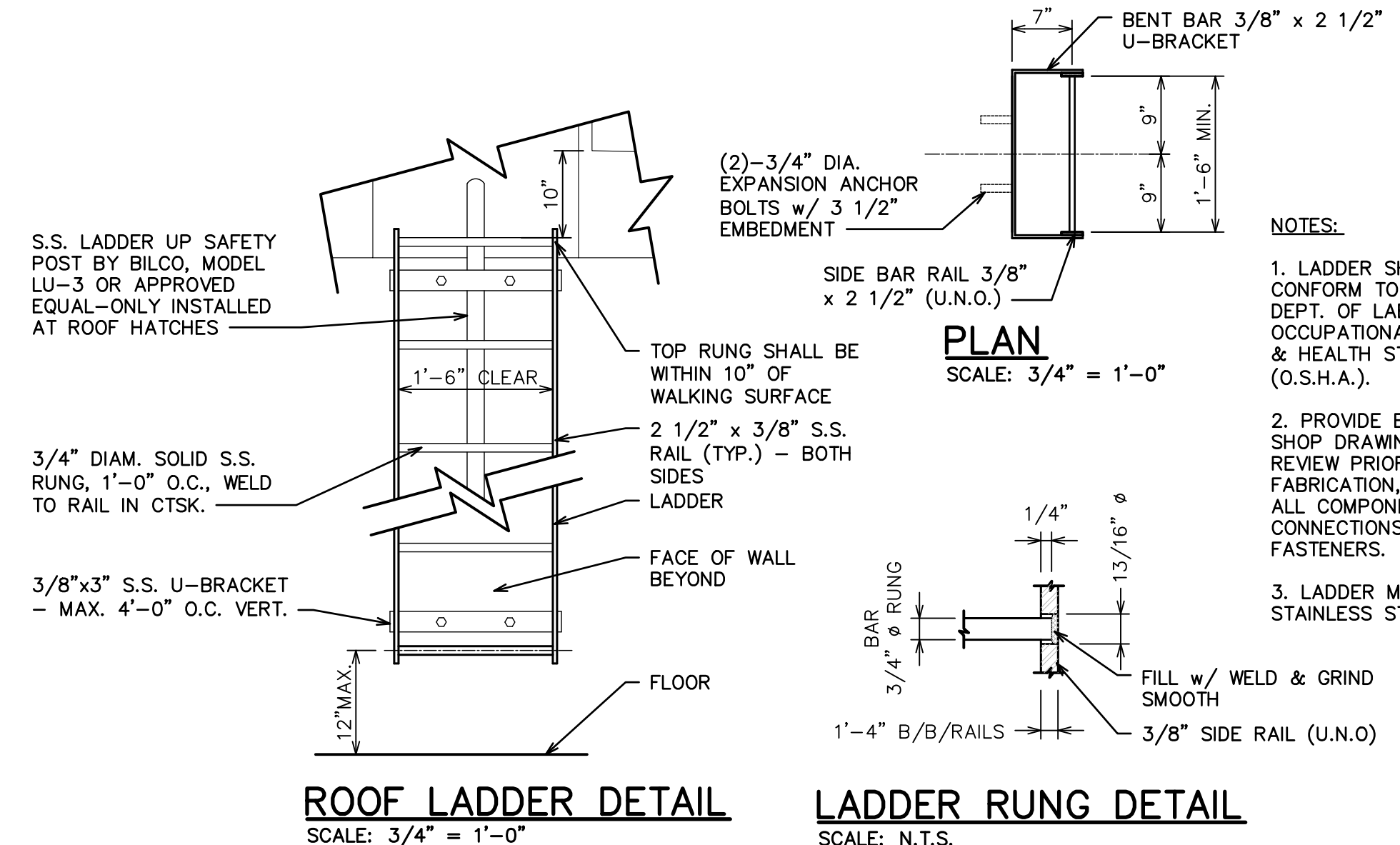
TYP. HANDRAIL RETURN-END VIEW
SCALE: 1 1/2" = 1'-0"



TYP. GRATING TREAD
SCALE: 1 1/2" = 1'-0"



TYP. HANDRAIL RETURN-PLAN
SCALE: 1 1/2" = 1'-0"

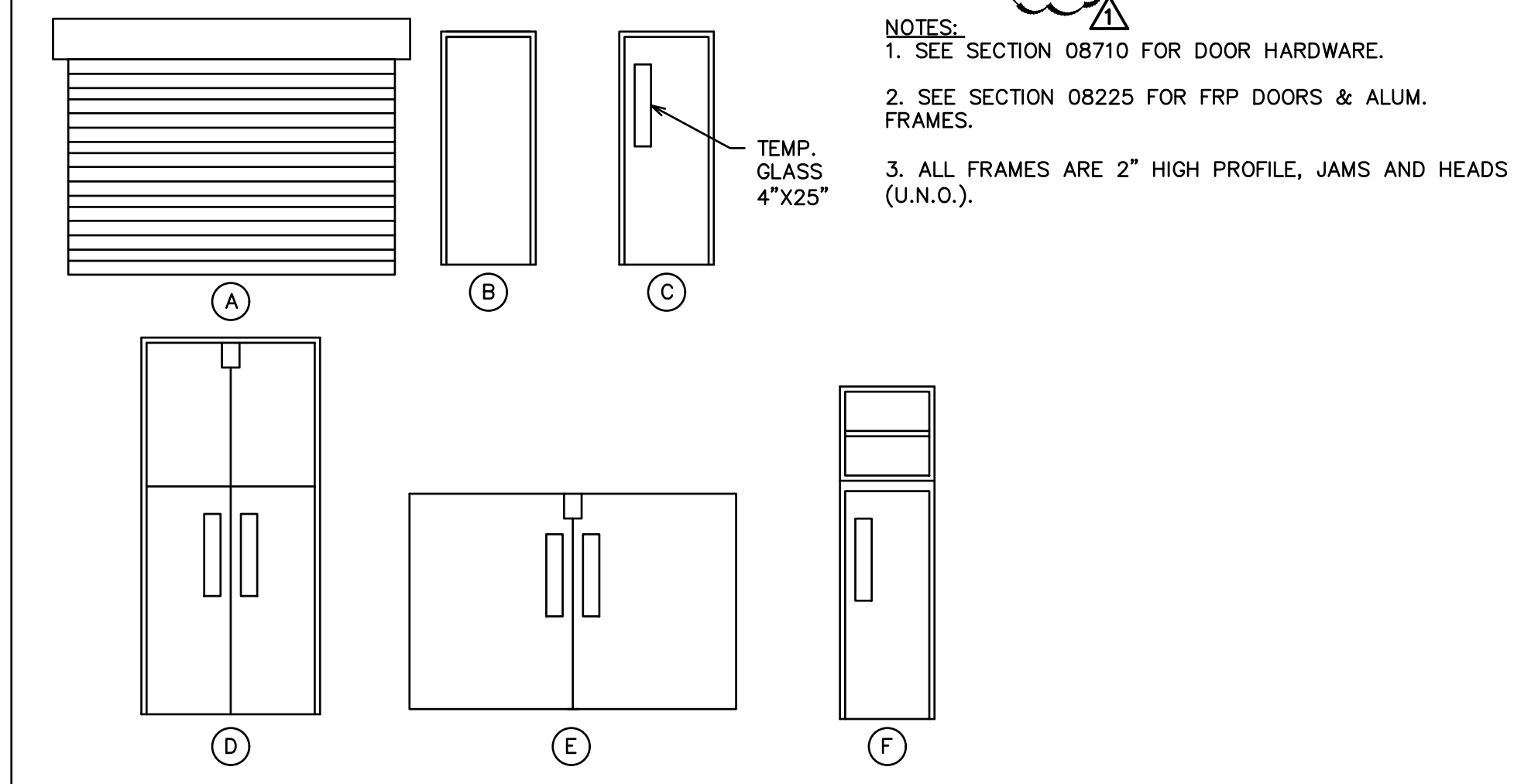


ROOF LADDER DETAIL
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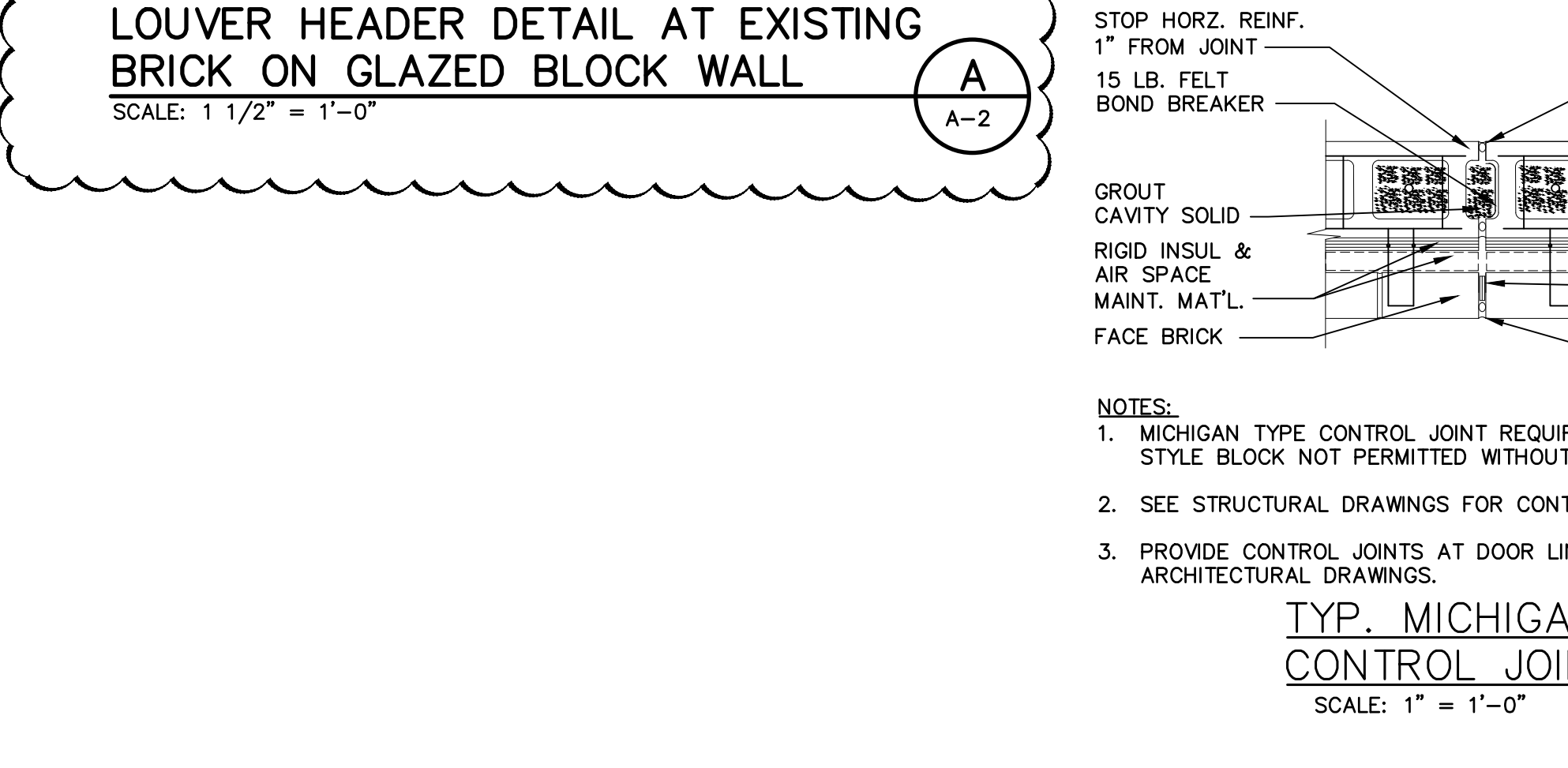
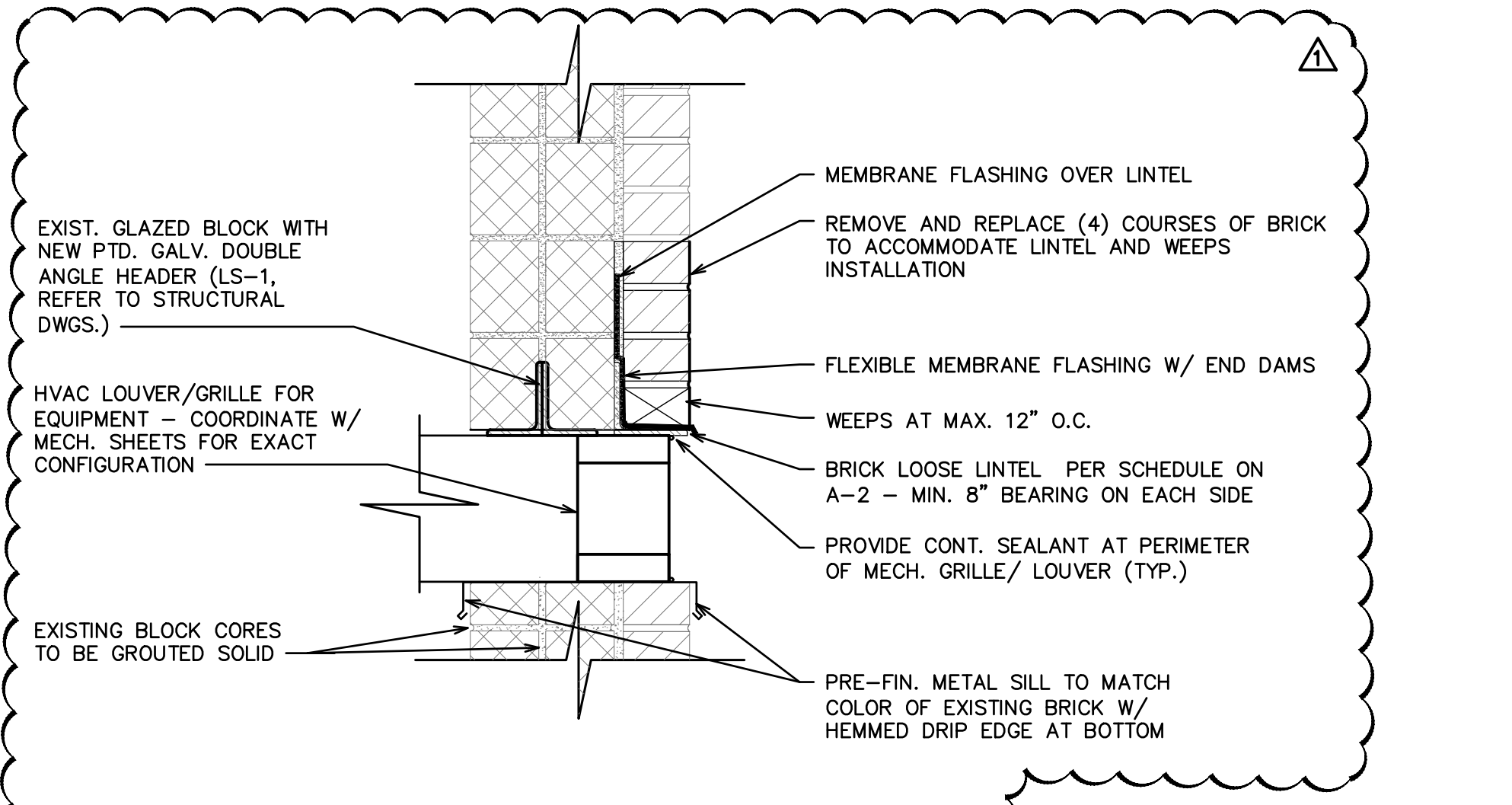
LADDER RUNG DETAIL
SCALE: N.T.S.

- NOTES:**
- LADDER SHALL CONFORM TO CURRENT DEPT. OF LABOR OCCUPATIONAL SAFETY & HEALTH STANDARD (O.S.H.A.).
 - PROVIDE ENGINEERED SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION, INCLUDING ALL COMPONENTS, CONNECTIONS AND FASTENERS.
 - LADDER MATERIALS: STAINLESS STEEL.

DOOR SCHEDULE													
DOOR NO.	DOOR LOCATION	SIZE (WXH)	TYPE	SILL DTL.	JAMB DTL.	HEAD DTL.	INT.	EXT.	MATERIAL		HMDR. SET	LABEL	REMARKS
									DOOR	FRAME			
OD01	VESTIBULE	3'-0" X 7'-10"	C	S1	J1	H1			FRP	FRP	1		SEE NOTES BELOW
OD02	VESTIBULE	(2) 3'-2" X 7'-10"	D	S1	J1	H1			FRP	FRP	3		62" PANEL
OD03	FAN ROOM	(2) 3'-2" X 7'-10"	D	S1	J1	H1			FRP	FRP	3		62" PANEL
OD04	FAN ROOM	3'-0" X 7'-0"	C	S1	J2	H2			FRP	FRP	6		4" HEAD
H01	HEADWORKS	12'-0" X 9'-4"	A						ALUM	STL			
H02	HEADWORKS	(2) 3'-0" X 9'-1"	E						FRP	FRP	2		
H03	GARAGE	3'-0" X 7'-10"	F						FRP	FRP	1		TRANSOM



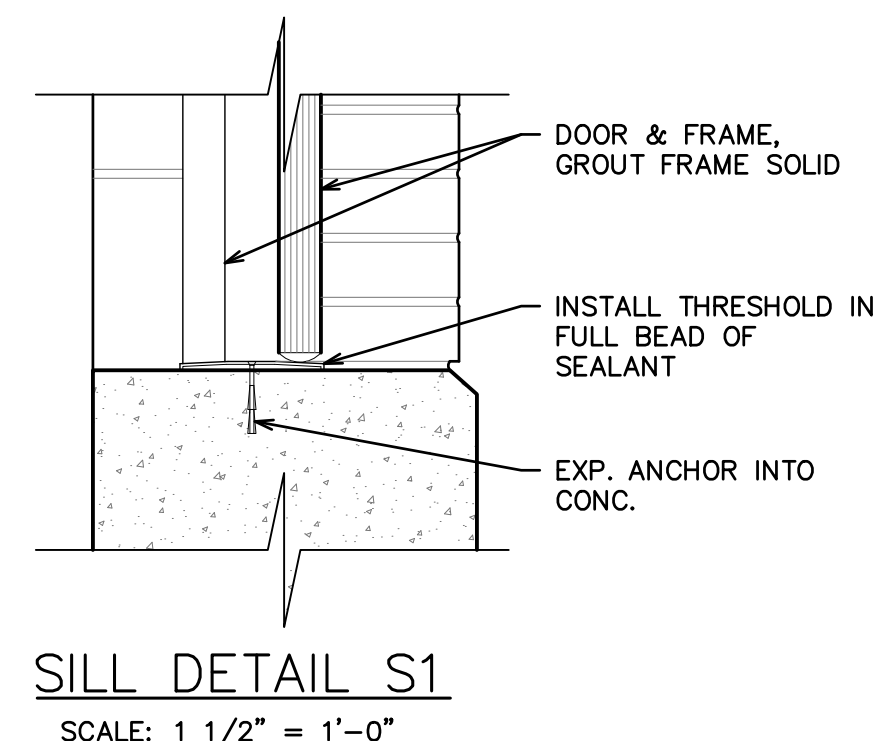
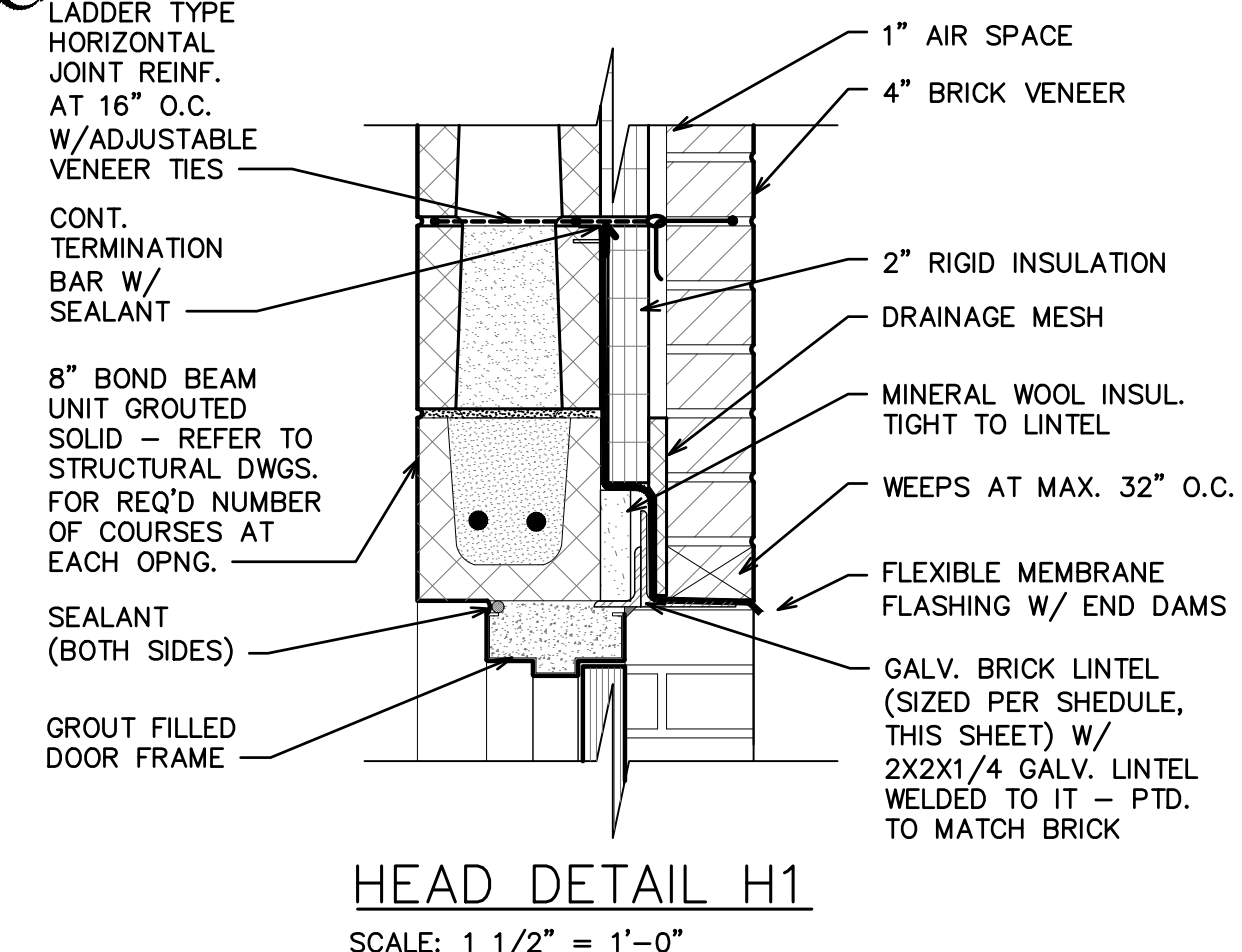
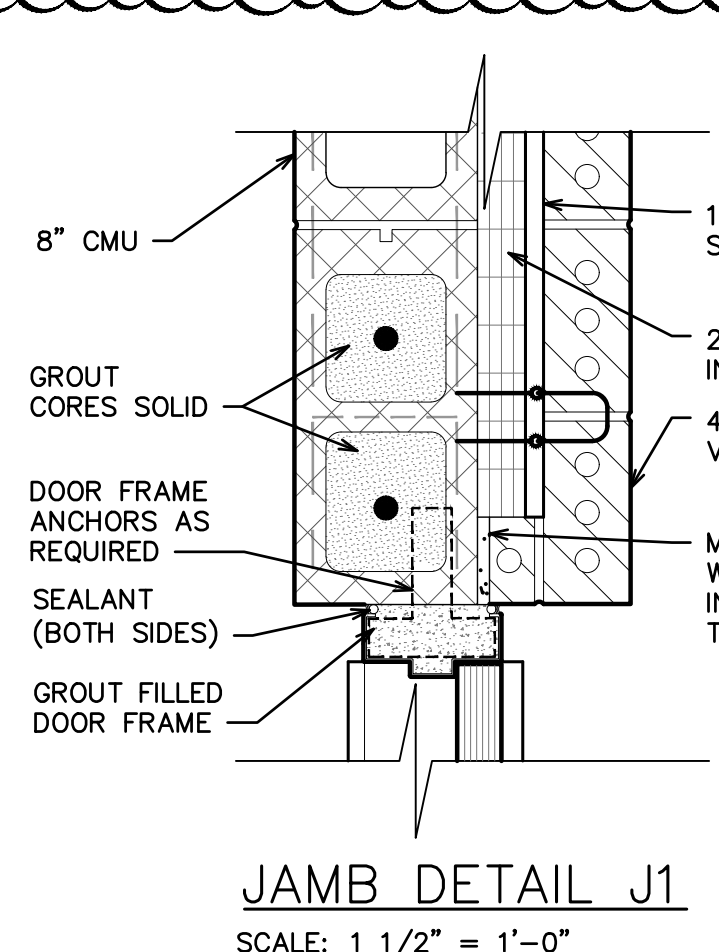
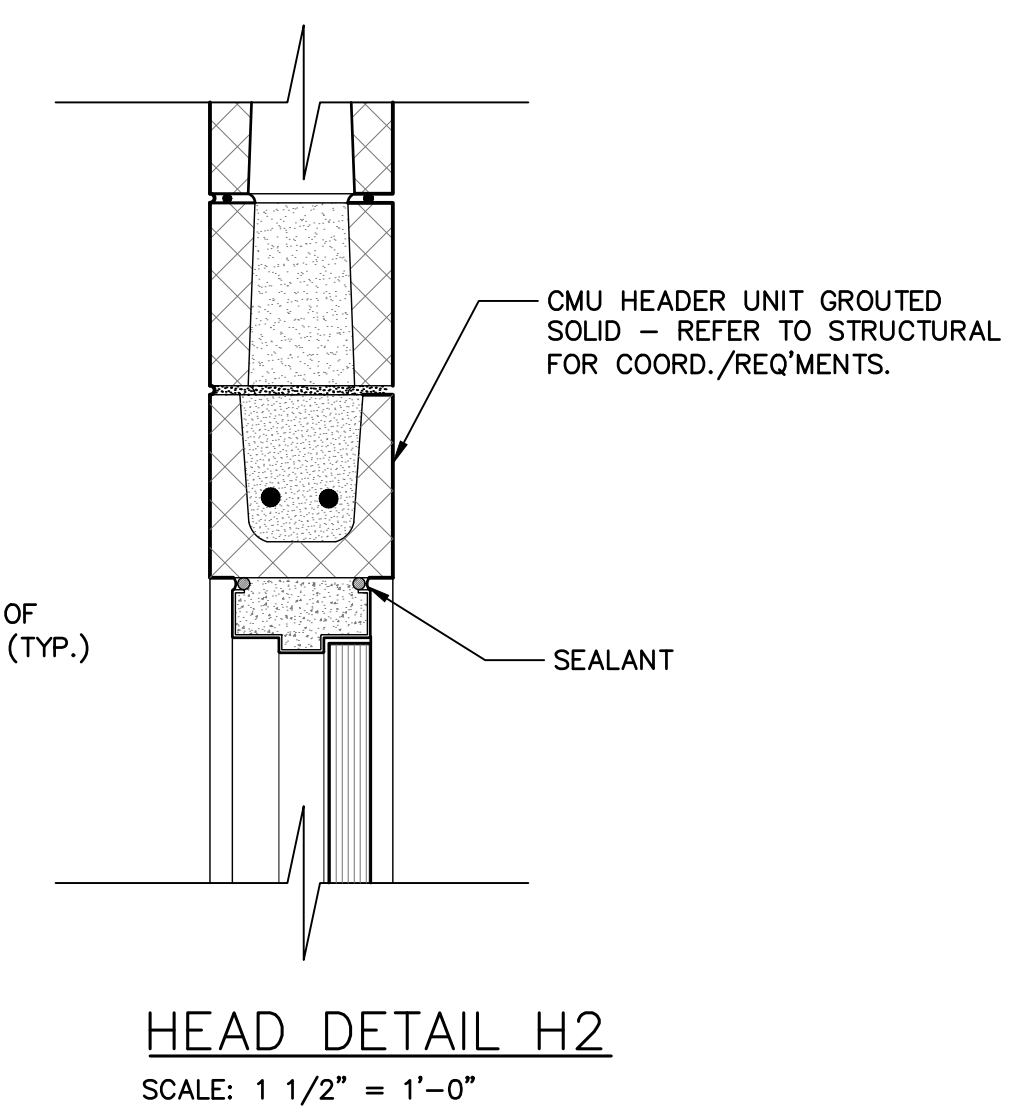
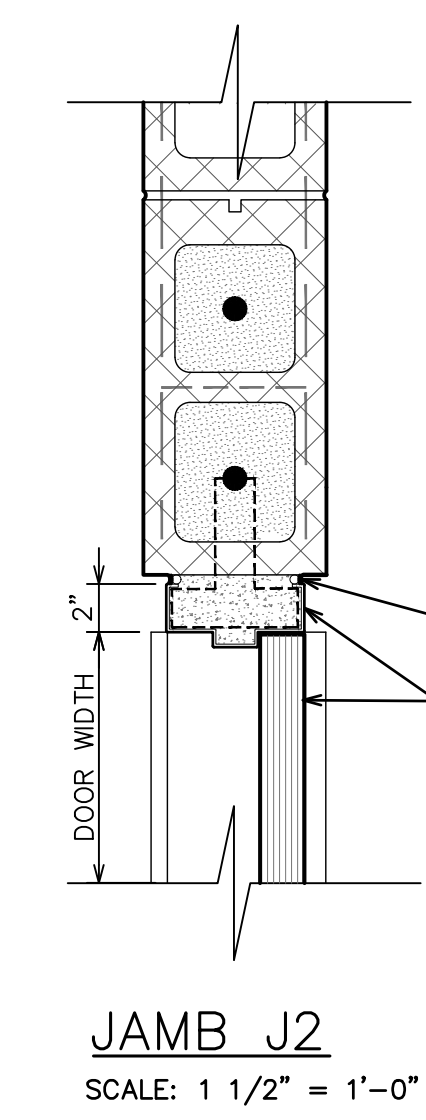
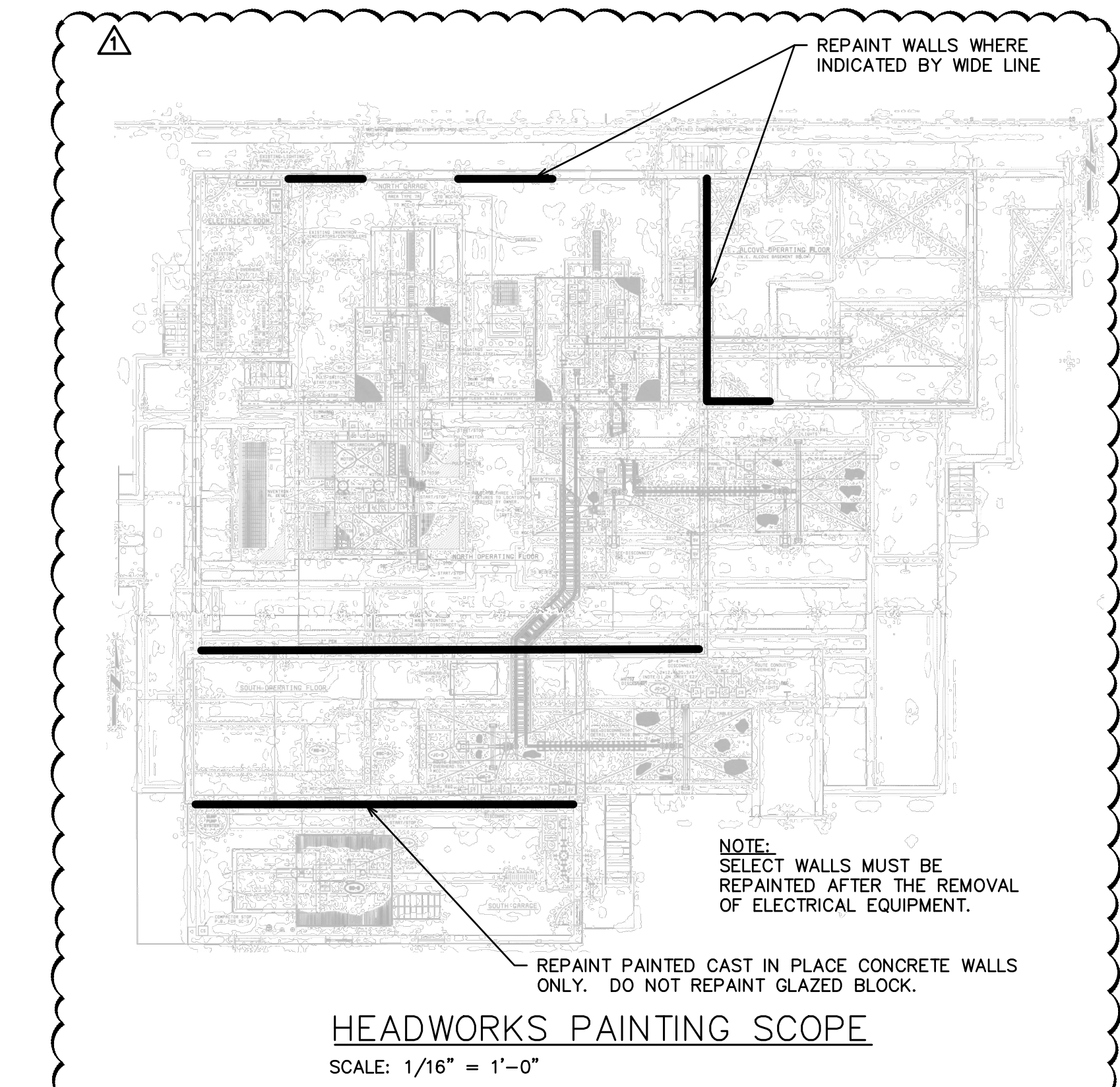
DOOR AND WINDOW NOTES:
 1. FIELD VERIFY ALL DOOR & WINDOW OPENING DIMENSIONS PRIOR TO FABRICATION.
 2. ALL DOOR FRAMES SHALL BE GROUDED SOLID.
 3. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON DOORS, FRAMES, WINDOWS AND HARDWARE.



ROOM FINISH NOTES:
 1. AT GRADE LEVEL, PAINT EXPOSED CMU, PRECAST CEILINGS, EXPOSED STRUCT. STEEL, ANGLES, ETC.
 2. PROVIDE CONCRETE FLOOR SEALER FOR BLDG. INTERIOR FLOOR SURFACES, CURBS ETC. (SEE ITEM 4 BELOW). SEALER SHALL BE EUCCO-GUARD 100 BY EUCLID CHEMICAL COMPANY OR ENGINEER APPROVED EQUAL.
 3. ALL CONC. WALLS BELOW GRADE SHALL RECEIVE CONCRETE SEALER NOTED IN NOTE 2 ABOVE.
 4. FLOORS, CONCRETE PADS/BASES, CONCRETE CURBS, CONCRETE STAIRS (INCLUDING UNDERSIDE OF LANDINGS) DO NOT REQUIRE PAINTING. THESE SURFACES DO REQUIRE CLEAR SEALER AS SPECIFIED ABOVE.
 5. SEE SECTION 09900 FOR PAINTING REQUIREMENTS.

ROOM FINISH SCHEDULE													
ROOM NO.	ROOM DESCRIPTION	FLOOR			BASE	CEILING		WALLS				REMARKS	
		CONC.	SEALED	EXISTING	NONE	CONCRETE (PTD.)	EXP. STRUCTURE	NORTH	SOUTH	EAST	WEST		
	ODOR CONTROL												
OD100	DRY PIT	X		X	X			C	C	C	C	N/A	
OD200	LANDING VESTIBULE (INCLUDING BLOCK WALL OVER DRY PIT)	X		X	X			A	A	A	A	15'-4"	
OD201	FAN ROOM	X		X	X			A	A	A	A	15'-4"	
	GARAGE												
	NEW ELECTRICAL ROOM		X	X		X		A	A	B	A	14'-3"	ONLY PAINT CONC. SURFACES, NOT GLAZED BLOCK
	GARAGE		X	X		X		A	B	A	B	14'-3"	ONLY PAINT CONC. SURFACES, NOT GLAZED BLOCK

BRICK LINTEL SCHEDULE	
OPENING CLEAR SPAN	LOOSE ANGLE
UP TO 4'-0"	L 4"x4"x1/4" (LLV)
UP TO 6'-0"	L 5"x4"x5/16" (LLV)
UP TO 8'-0"	L 6"x4"x3/8" (LLV)



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ISSUED FOR ADDENDUM NO. 1
 1-19-2022
 ISSUED FOR BIDS SET
 12-13-2021
 90% DESIGN SUBMITTAL
 11-22-2021
 70% DESIGN SUBMITTAL
 10-29-2021
 50% DESIGN SUBMITTAL
 10-01-2021

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 ARCHITECTURAL SCHEDULES AND DETAILS

SCALE AS SHOWN
 DRAWING No. 401

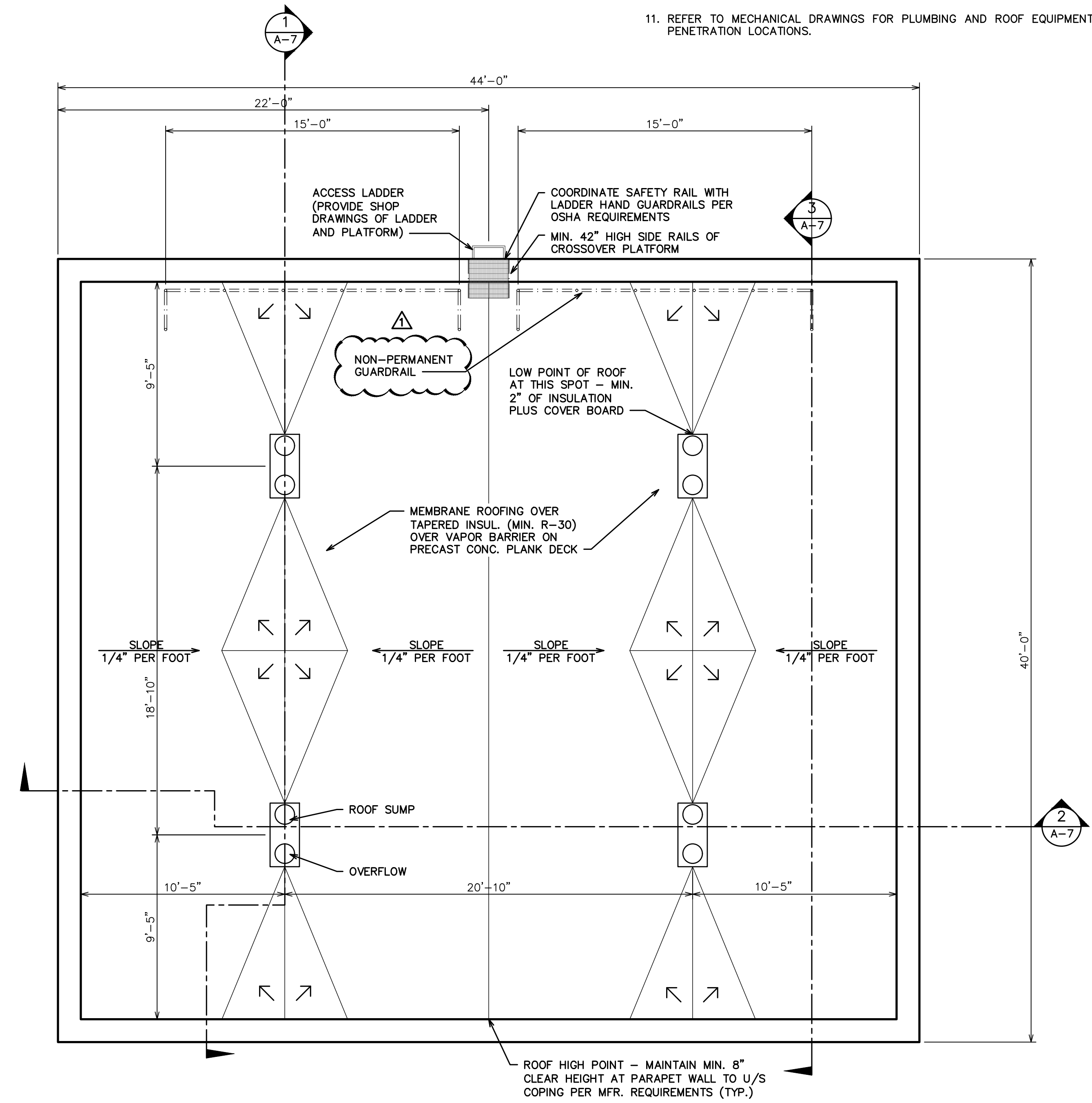
SHEET No. **A-2**

NON-PERMANENT GUARDRAIL:

1. PROVIDE FREESTANDING, NON-PENETRATING, WEIGHTED-BASE GUARDRAIL SYSTEM TO COMPLY WITH FALL PROTECTION REQUIREMENTS OF THE CURRENT MICHIGAN BUILDING CODE AND MIOSHA STANDARDS. SYSTEM BY NYSTROM, SKYLINE FALL PROTECTION OR APPROVED EQUAL.
2. PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR ALL COMPONENTS AND LAYOUTS FOR REVIEW AND APPROVAL. SHOP DRAWINGS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF MICHIGAN. PROVIDE SEALED STRUCTURAL LOAD CALCULATIONS FOR DESIGN AS PART OF SUBMITTALS.
3. SEALED CALCULATIONS SHALL INCLUDE THE FOLLOWING:
 - 3.1. GOVERNING LOAD CASES PER MBC AND ASCE 7, CURRENT EDITIONS
 - 3.2. SECTION PROPERTIES FOR ALL ELEMENTS OF SYSTEM INCLUDING BUT NOT LIMITED TO RAILS, POSTS, FLANGES, BASE PLATES AND CONNECTOR ELEMENTS
 - 3.3. GOVERNING LIMIT STATES FOR ALL ELEMENTS LISTED IN 3.2
 - 3.4. ACTING AND ALLOWABLE STRESSES FOR ALL ELEMENTS LISTED IN 3.2 AND CONCRETE BEARING PER AISC 360 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS AND AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITIONS
 - 3.5. MINIMUM SAFETY FACTOR FOR RATIO OF ALLOWABLE VERSUS ACTING STRESSES SHALL BE 1.50
 - 3.6. PROVIDE ANALYSIS OF WELDS AND CONNECTORS, WHERE USED
 - 3.7. LOAD SHARING AND OVERSTRESS ALLOWANCE ARE NOT PERMITTED
4. POSTS, RAILS, BASE PLATES, SWING GATES AND CONNECTORS TO BE GALVANIZED STEEL, SUITABLE FOR EXTERIOR USE. ALL COMPONENTS TO BE PAINTED METALLIC SILVER PER SPECS TO COORDINATE WITH PAINTED GUARDRAIL ELSEWHERE IN PROJECT.
5. SWING GATE TO BE SECURED TO GUARDRAIL SYSTEM. GATE MUST BE SELF-CLOSING WITH APPLIED SAFETY USE GRAPHICS, SUITABLE FOR EXTERIOR USE. MINIMUM CLEAR OPENING OF GATE TO BE 30" WIDE.
6. PROVIDE ADDITIONAL SHEET OF COMPATIBLE MEMBRANE ROOFING (MIN. 60 MIL THICK) DIRECTLY BELOW NEW BASE PLATES TO PROTECT EXISTING ROOFING.
7. REFER TO DRAWINGS FOR LOCATIONS AND CONFIGURATIONS OF RAILING AT EACH BUILDING.

ROOFING NOTES:

1. ONLY MAJOR ROOF PENETRATIONS & EQUIP. ARE SHOWN. THE ROOF PLAN REPRESENTS THE GENERAL WORK AREA ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS, OPENINGS, ETC. PRIOR TO BEGINNING WORK, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THIS PLAN.
2. PROVIDE WALKWAY PADS FROM ROOF HATCH TO ALL H&V UNITS, FANS, ROOF DRAINS, ETC. IN THE MOST DIRECT ROUTE OF TRAVEL.
3. PROVIDE NEW MIFAB RUBBER SUPPORT BLOCKS AT ROOF AREA FOR CONDUIT(S) & GAS PIPING. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
4. METALS FOR NEW FLASHING SHALL BE AS SPECIFIED IN SECTION 07620.
5. PROVIDE NEW FABRICATED FLASHINGS AT PENETRATIONS PER ROOFING MANUFACTURER REQUIREMENTS FOR WARRANTY COVERAGE SPECIFIED. PROVIDE PRE-FABRICATED ROOF CURBS FOR ALL NEW OPENINGS LARGER THAN 8" DIAM.
6. ALL CURBS SHALL BE EXTENDED TO MIN. 8" ABOVE TOP OF ROOFING. INSTALL NEW MEMBRANE UP AND OVER CURBS, FASTEN TO INSIDE FACE OF CURBS PER ROOFING MFR. STANDARD DETAIL. (TYP.)
7. PROVIDE MIN. 1/4" PER FT. SLOPE AT ENTIRE ROOF AREA (U.N.O.).
8. ROOF SADDLES ARE TO HAVE A MIN. SLOPE OF 1/2" PER FT. SLOPE (U.N.O.).
9. PROVIDE CRICKETS ON HIGH SIDE OF ALL CURBED ITEMS. MIN 1/2" PER FOOT (U.N.O.) PER ROOFING MANUFACTURERS WARRANTY REQUIREMENTS.
10. INSTALL CONTROL JOINTS PER MFR. RECOMMENDATIONS WITH COMPRESSIBLE TUBE.
11. REFER TO MECHANICAL DRAWINGS FOR PLUMBING AND ROOF EQUIPMENT COORDINATION AND PENETRATION LOCATIONS.



ROOF PLAN
SCALE: 1/4" = 1'-0"

ISSUED FOR ADDENDUM NO. 1	1-19-2022	ISSUED FOR BIDS SET	12-13-2021	90% DESIGN SUBMITTAL	11-22-2021	70% DESIGN SUBMITTAL	10-29-2021	50% DESIGN SUBMITTAL	10-01-2021	DATE	DRAWN	CHECKED
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT ODOR CONTROL BUILDING ROOF PLAN												
SCALE AS SHOWN DRAWING No. 405												
SHEET No. A-5												

ELEVATION NOTES

①	4" BRICK VENEER - MATCH EXISTING BRICK AT HEADWORKS BLDG.	⑩	ALUMINUM WINDOW
②	DUCT PENETRATING WALL - COORD. SIZE/LOCATION WITH MECH. SHEETS	⑪	EXTERIOR WALL MOUNT LIGHT FIXTURE (REFER TO ELEC. DWGS.)
③	PRE-FIN. METAL PARAPET CAP W/ CONCEALED CLEATS & HEMMED EDGE	⑫	LIMESTONE WINDOW SILL
④	MASONRY CONTROL JOINT	⑬	"COW'S TONGUE" OVERFLOW DRAIN
⑤	SLIP PLANES AT WIDE DOOR HEADERS (REFER TO STRUCTURAL DWGS.)	⑭	ROOF ACCESS LADDER WITH PLATFORM
⑥	DOOR & FRAME	⑮	TEMPORARY GUARDRAIL
⑦	INSULATED DOOR PANEL AT TRANSOM	⑯	CONCENTRIC VENT (SEE MECH.)
⑧	PLATES MOUNTED TO DOORS, COPED TO FIT AROUND BEAMS W/ RUBBER OR BRUSH GASKET AT EDGE	⑰	BRICK CONTROL JOINT
⑨	GLAZED TILE ACCENT BAND		SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

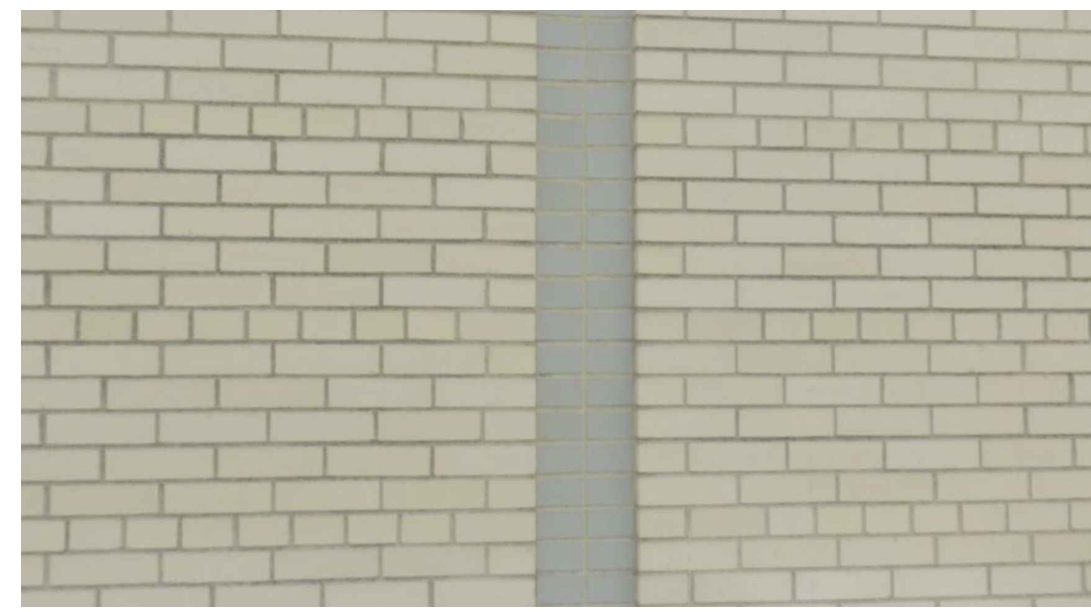
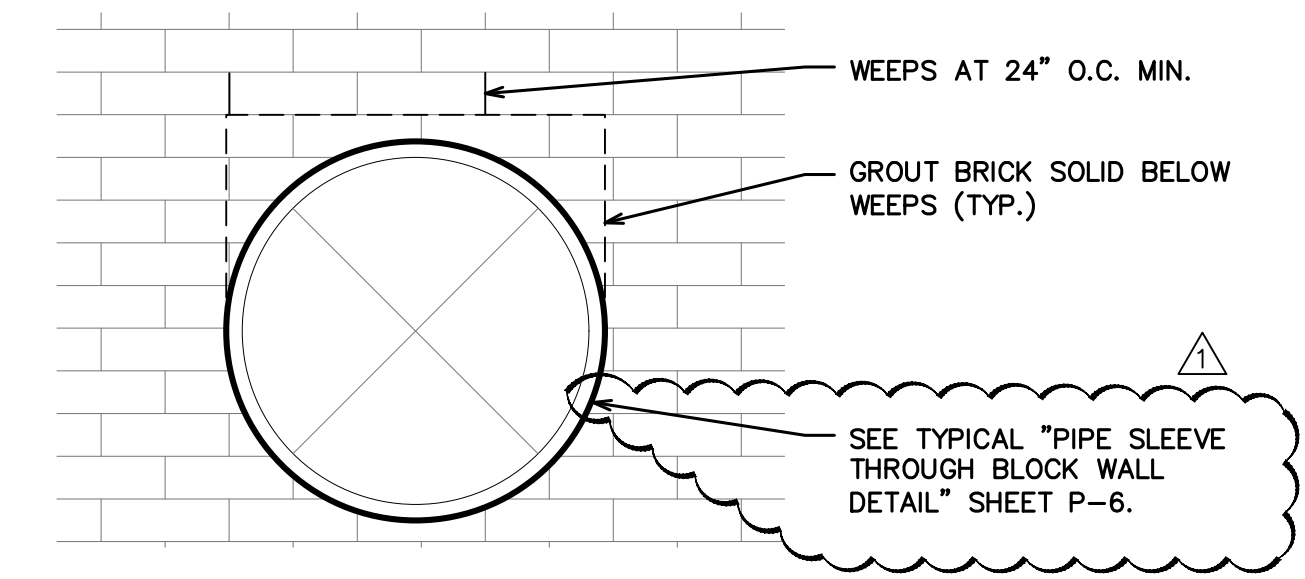
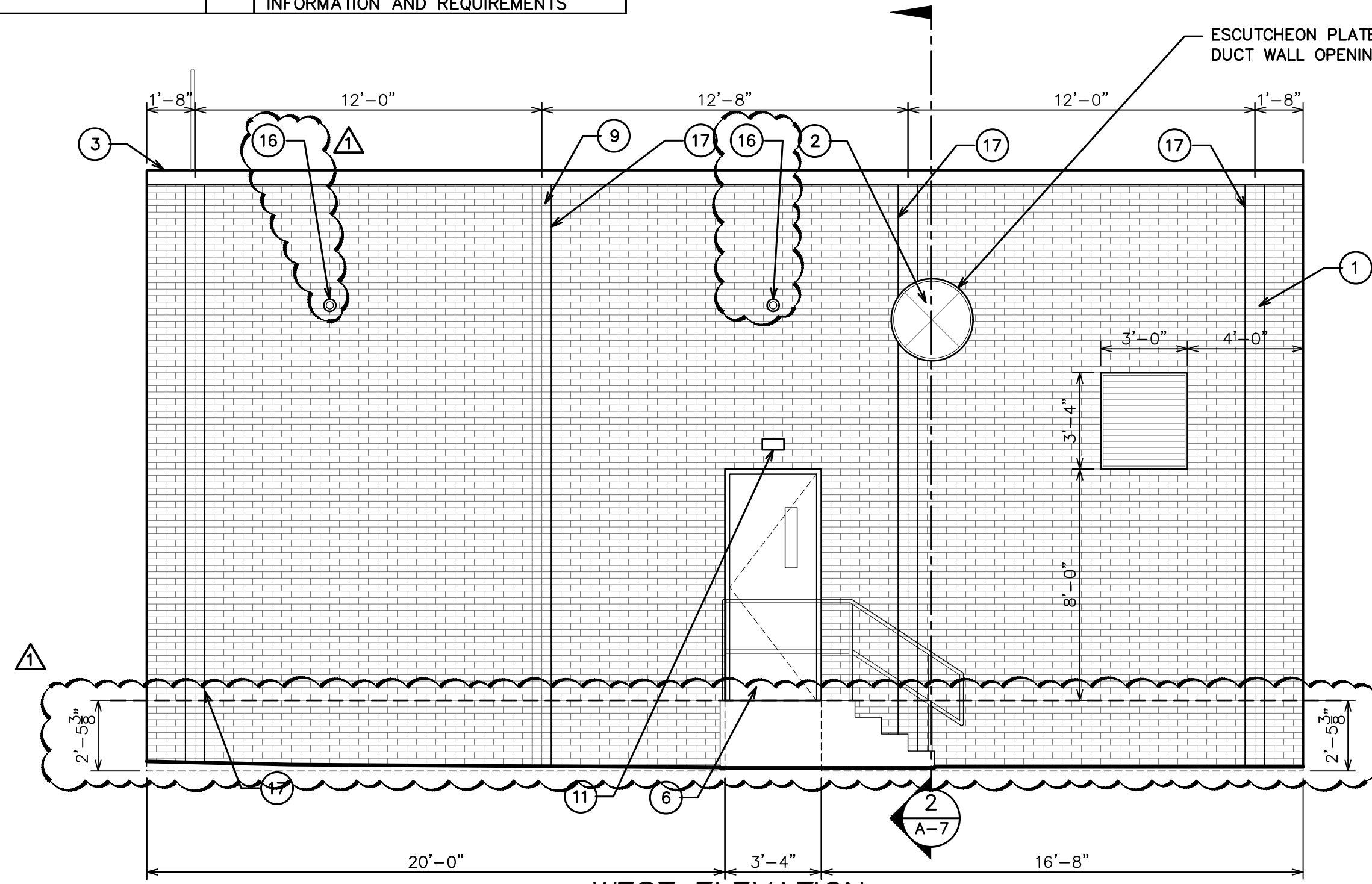


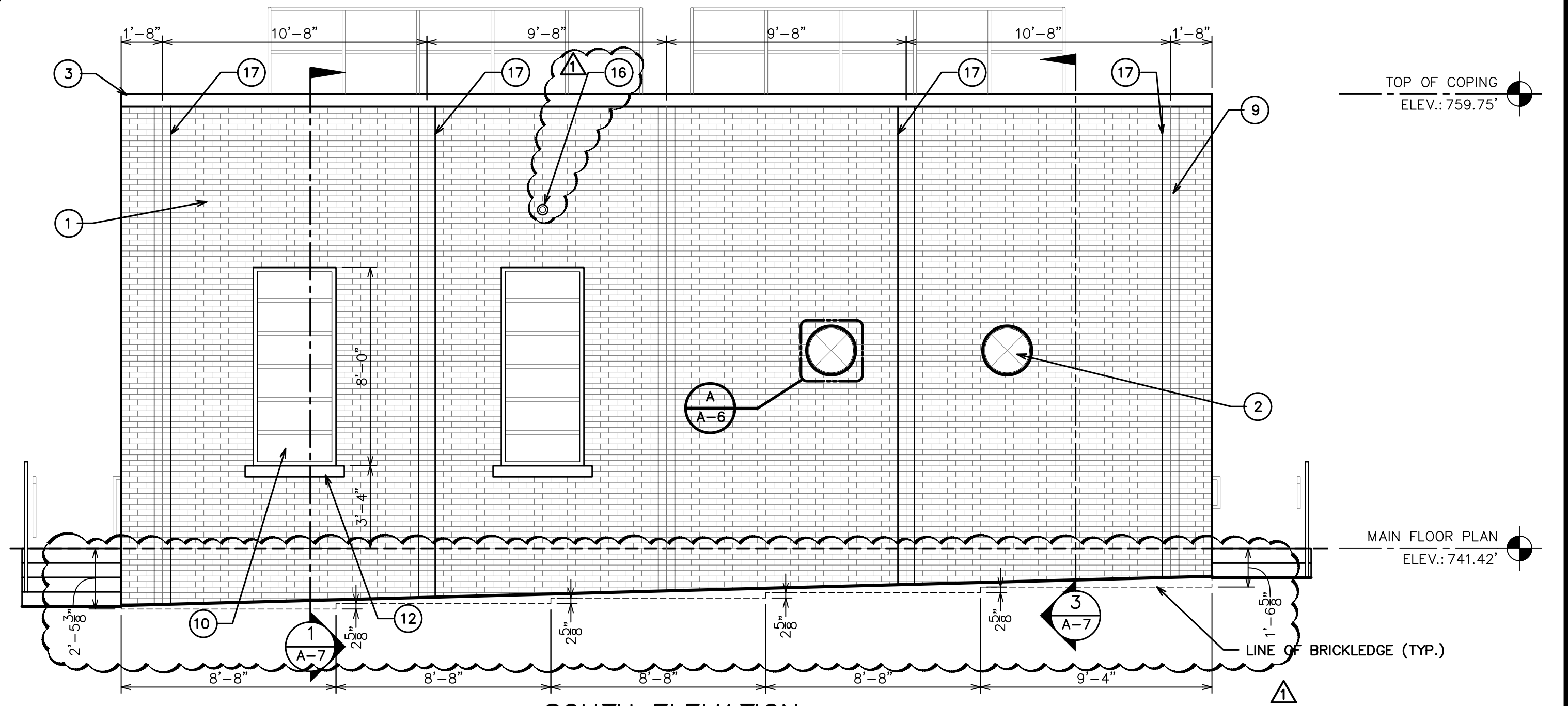
PHOTO OF EXISTING DECORATIVE BRICK TO MATCH
SCALE: N.T.S.



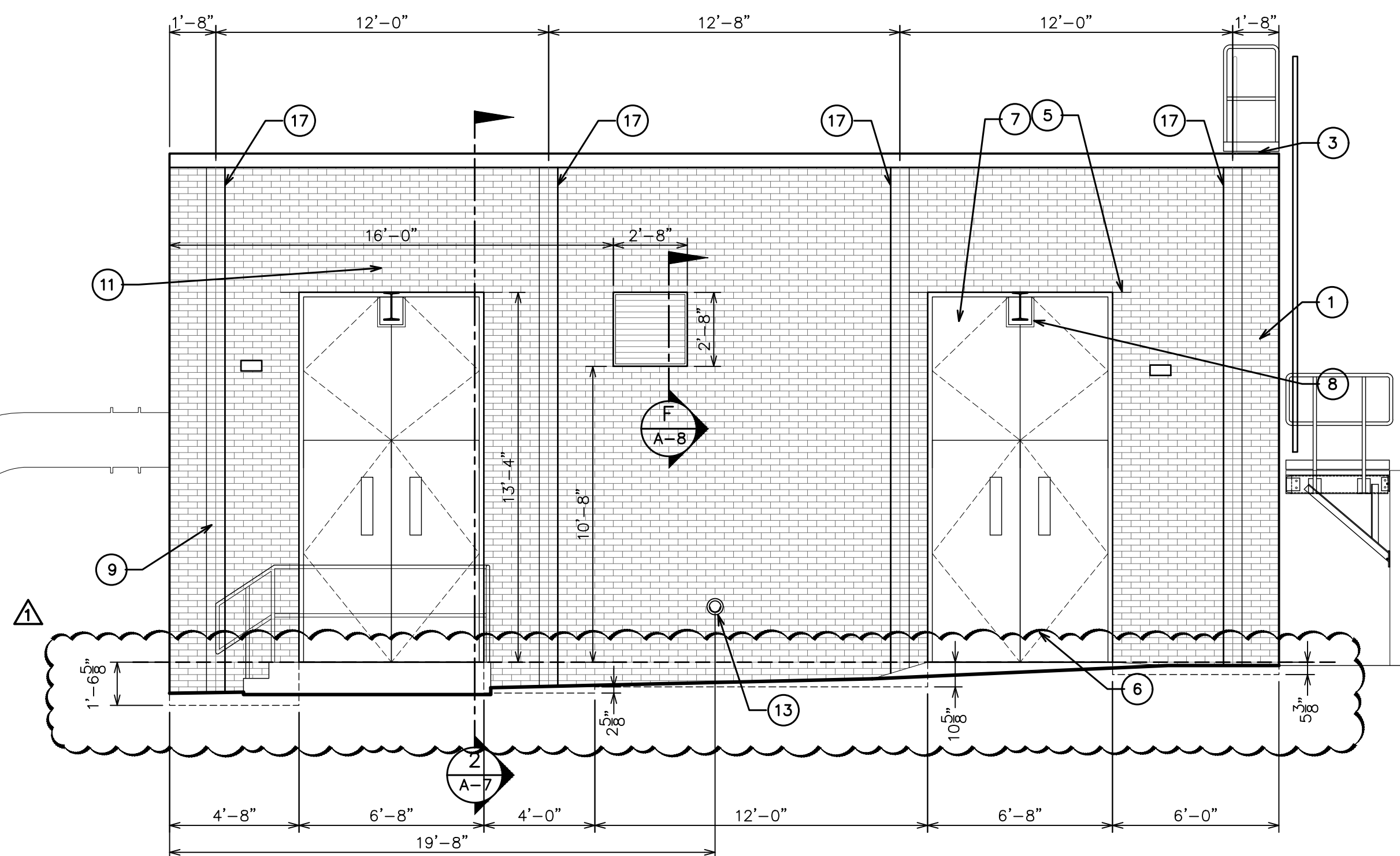
DUCT WALL PENETRATION CONDITION A
SCALE: 1" = 1'-0"



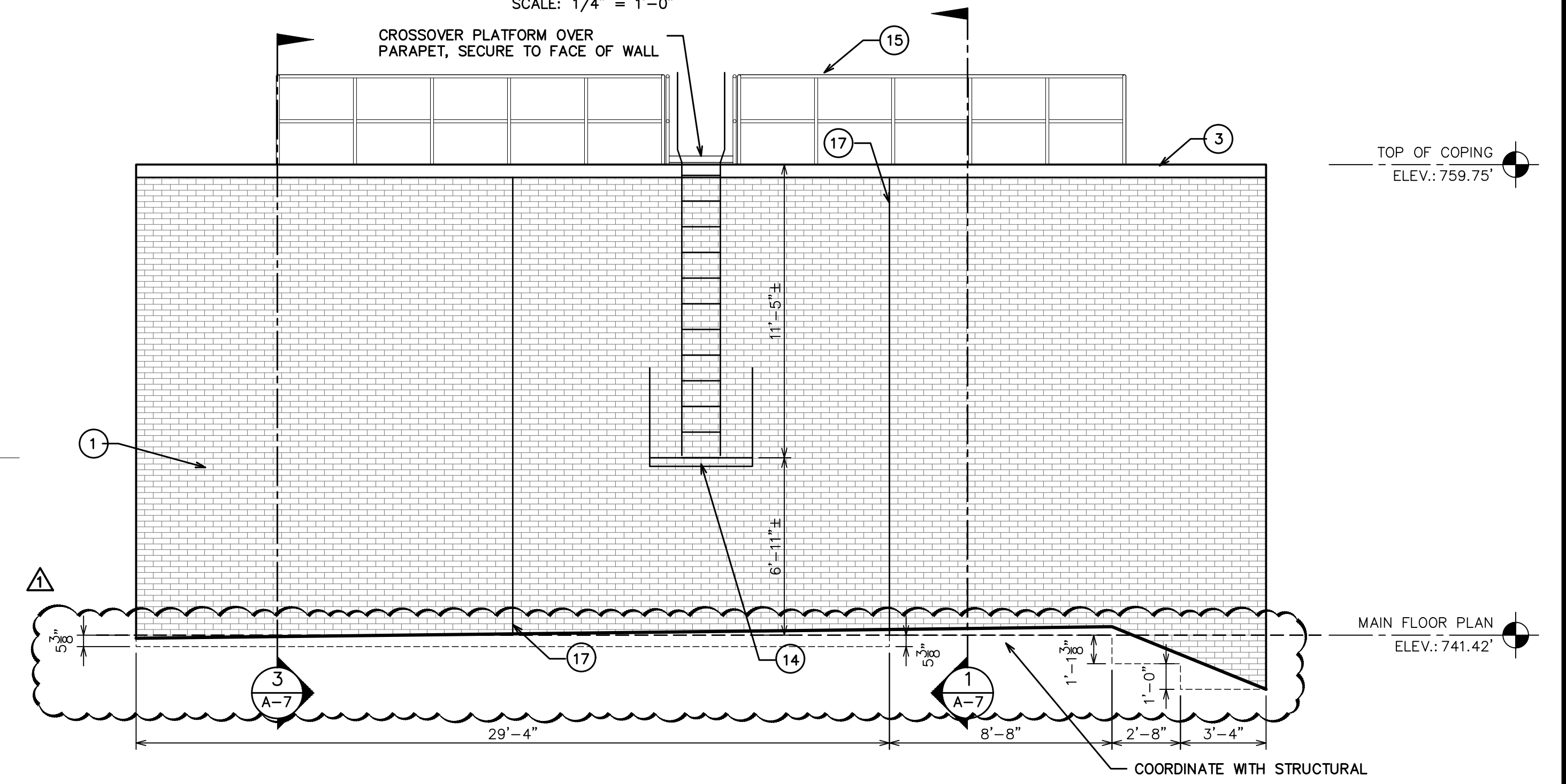
WEST ELEVATION
SCALE: 1/4" = 1'-0"



SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



EAST ELEVATION
SCALE: 1/4" = 1'-0"



NORTH ELEVATION
SCALE: 1/4" = 1'-0"

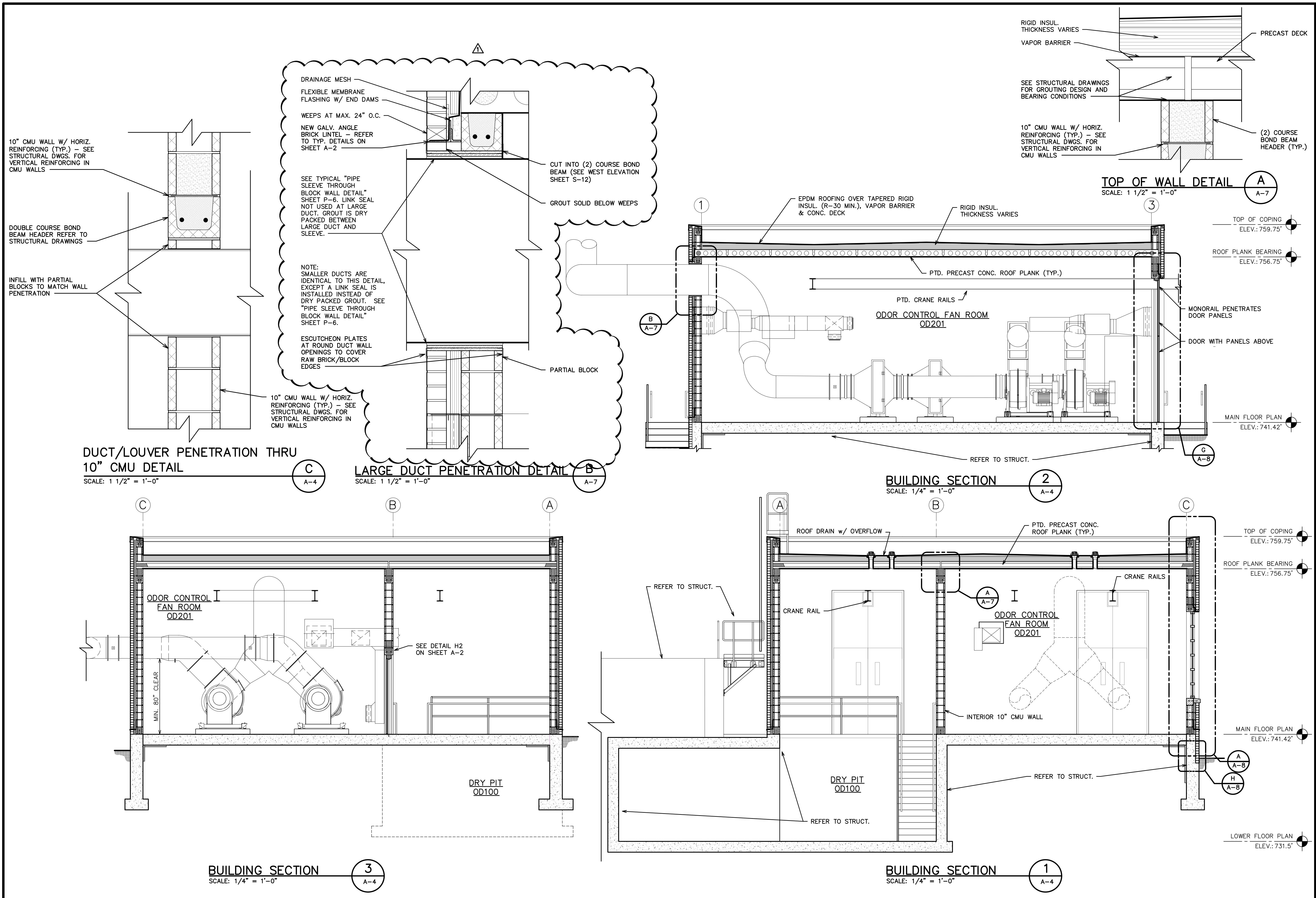
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ISSUED FOR BIDS SET	12-15-2021	DATE	DRAWN
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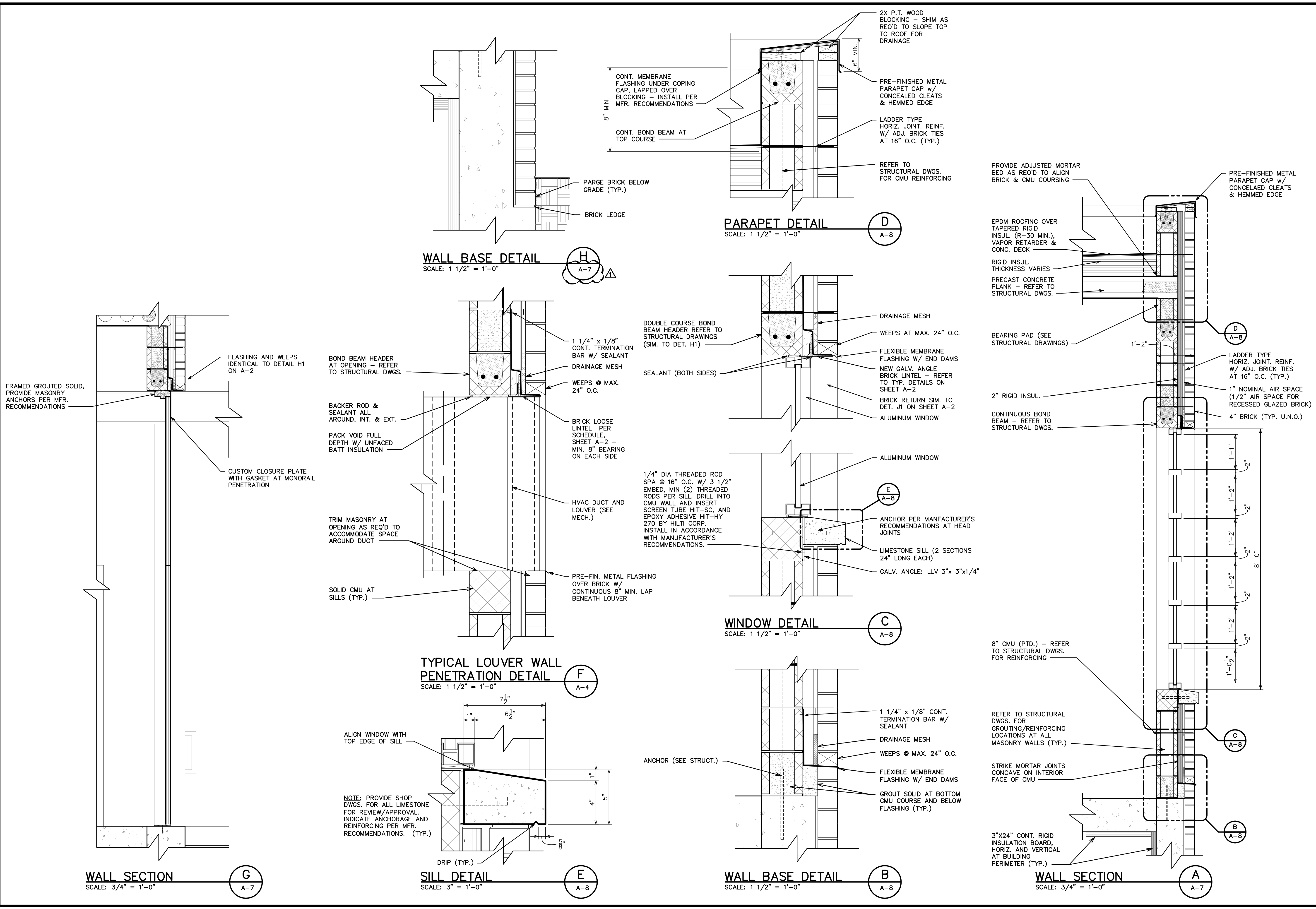
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ODOR CONTROL BUILDING ELEVATIONS

SCALE: AS SHOWN
DRAWING No.: 406
SHEET No.: **A-6**

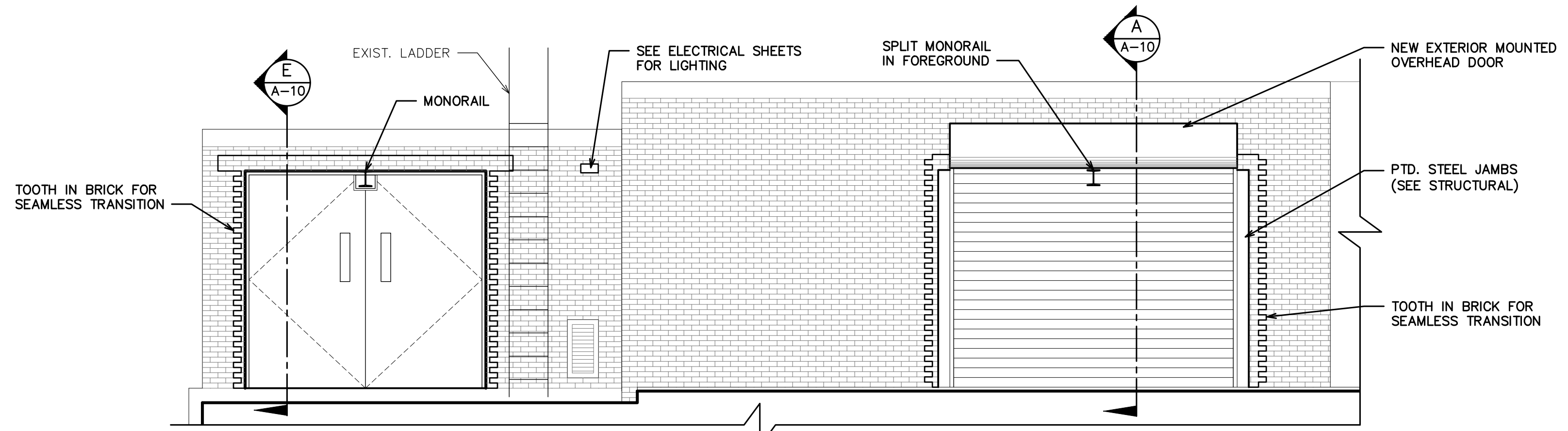
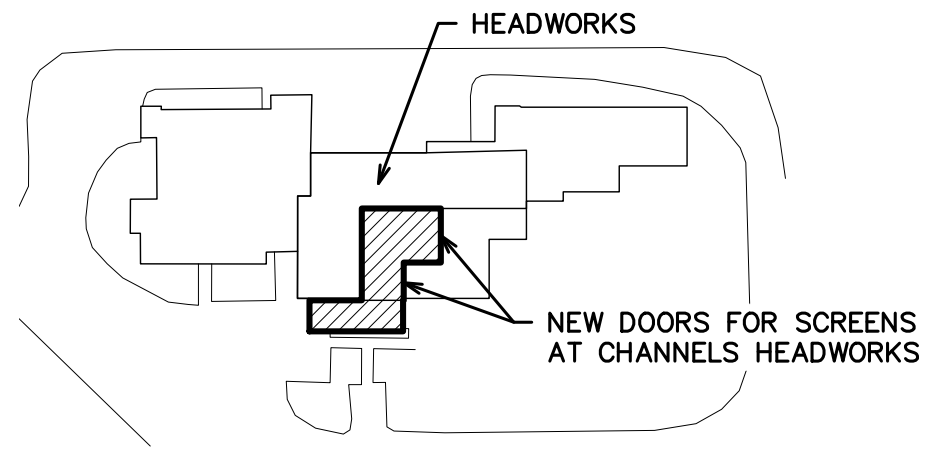


ISSUED FOR ADDENDUM NO. 1 1-19-2022 12-13-2021 11-22-2021 10-29-2021 10-01-2021	CHECKED DRAWN DATE
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT ODOR CONTROL BUILDING SECTIONS	
SCALE AS SHOWN DRAWING No. 407	SHEET No. A-7



ISSUED FOR ADDENDUM NO. 1	1-19-2022
ISSUED FOR BIDS SET	12-13-2021
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT ODOR CONTROL SECTIONS AND DETAILS	
SCALE	AS SHOWN
DRAWING No.	408
SHEET No.	A-8

NOTE:
 THESE DRAWINGS ARE BASED ON FIELD MEASUREMENTS AND INDICATE THE GENERAL ARRANGEMENT OF THE EXISTING FACILITY. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION SHOWN ON THIS DRAWING. PARTIES USING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO DEMOLITION AND CONSTRUCTION ACTIVITIES.



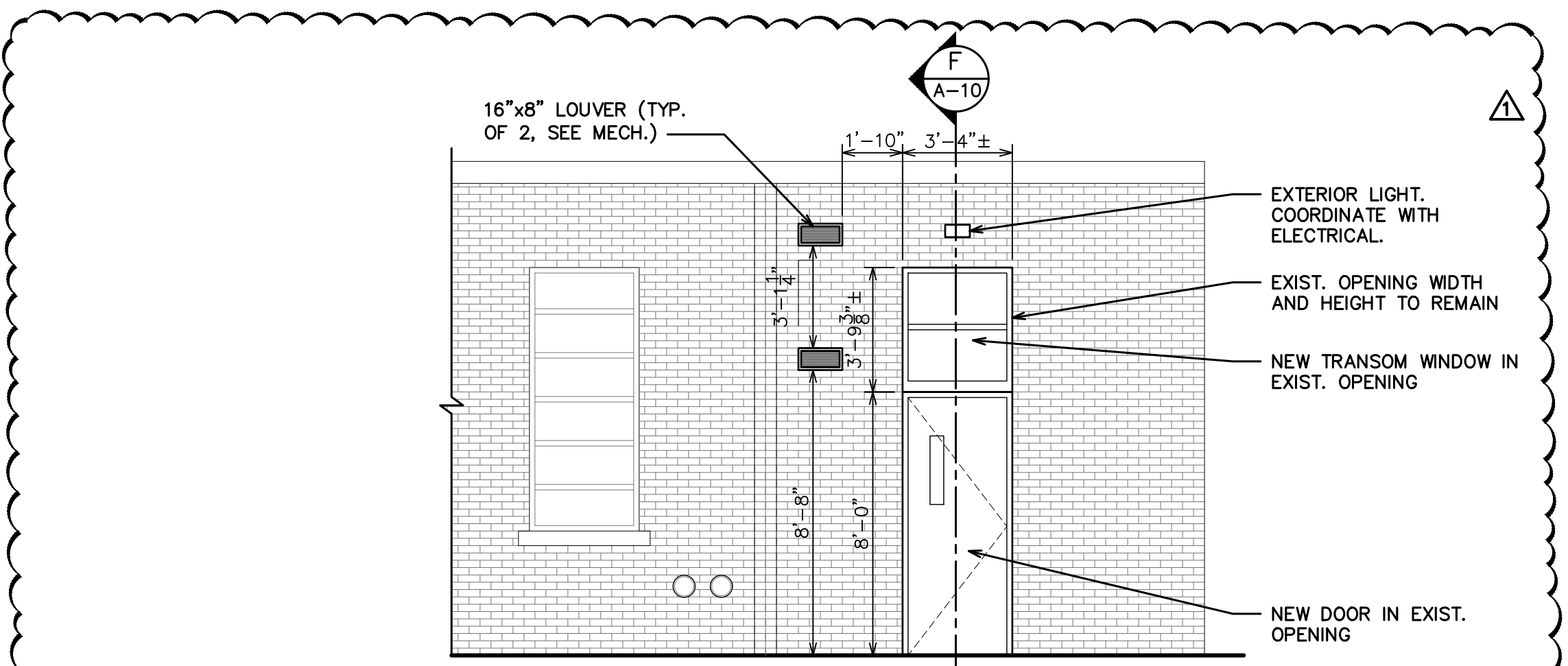
HEADWORKS EAST ELEVATION
 SCALE: 1/4" = 1'-0"

HEADWORKS SCOPE ITEMS		
DESCRIPTION	UNIT	AMOUNT
RECAULK EXTERIOR JOINTS AND OPENINGS AT REPAIRED AREAS	LS	1
BRICK REPOINTING	LF	200
PAINT LINTELS AT REPAIRED OPENINGS	EA	4
BRICK REPLACEMENT	EA	10
NEW DOORS	LS	1
NEW DUCT OPENINGS	LS	1
ELECTRICAL ROOM WORK	LS	1

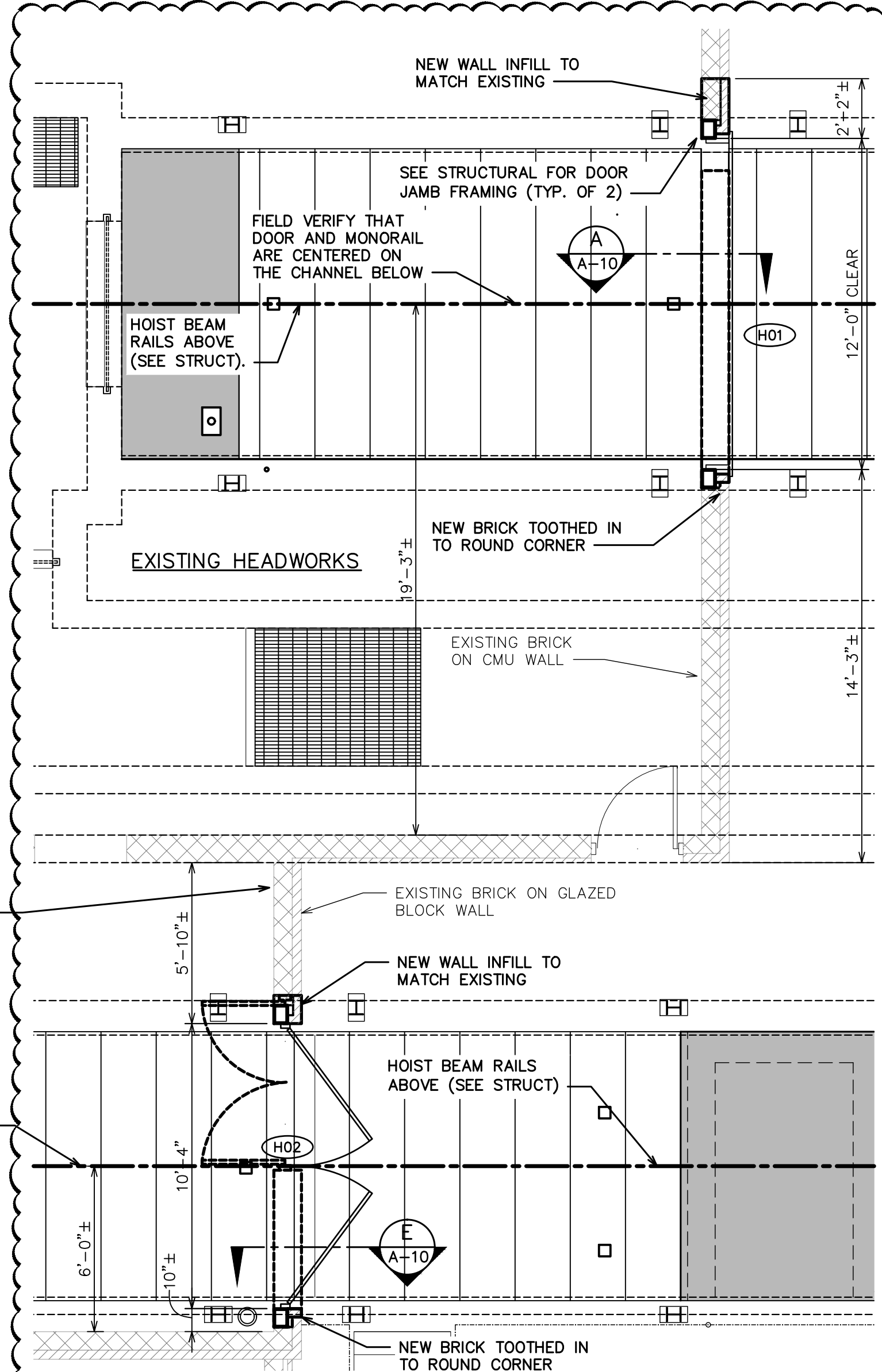
NOTES:
 THE QUANTITIES AND DESCRIPTIONS ABOVE ARE PROVIDED FOR CLARIFICATION AND INFORMATION ONLY. THE CONTENTS OF THIS TABLE ARE TO BE USED FOR THE CONSTRUCTION BIDDING PROCESS ONLY AND ARE NOT TO BE CONSTRUED AS INDIVIDUAL PAY/BID ITEMS.

- EXISTING BUILDING MASONRY NOTES:**
- EXISTING MORTAR AT MASONRY JOINTS TO BE REPOINTED AT CRACKED AND/OR DAMAGED LOCATIONS. EXACT QUANTITY TO BE DETERMINED IN FIELD, AT OWNER WALK THROUGH DURING CONSTRUCTION. FOR PRICING PURPOSES IN BID PROPOSAL, CONTRACTOR TO INCLUDE REPOINTING QUANTITIES NOTED ON THIS SHEET, AND UNIT PRICING PER LINEAL FOOT.
 - EXISTING CRACKED AND/OR DAMAGED BRICK UNITS TO BE REMOVED AND REPLACED WITH NEW TO MATCH EXISTING SIZE, COLOR, MODULE AND TEXTURE. EXACT QUANTITY TO BE DETERMINED IN FIELD, AT OWNER WALK THROUGH DURING CONSTRUCTION. FOR PRICING PURPOSES IN BID PROPOSAL, CONTRACTOR TO INCLUDE REPLACEMENT BRICK QUANTITIES NOTED ON THIS SHEET, AND UNIT PRICING PER BRICK. THIS WORK DOES NOT INCLUDE INFILL WORK REQUIRED AT REMOVED OPENINGS OR WHERE NEW CONSTRUCTION TIES INTO EXISTING.

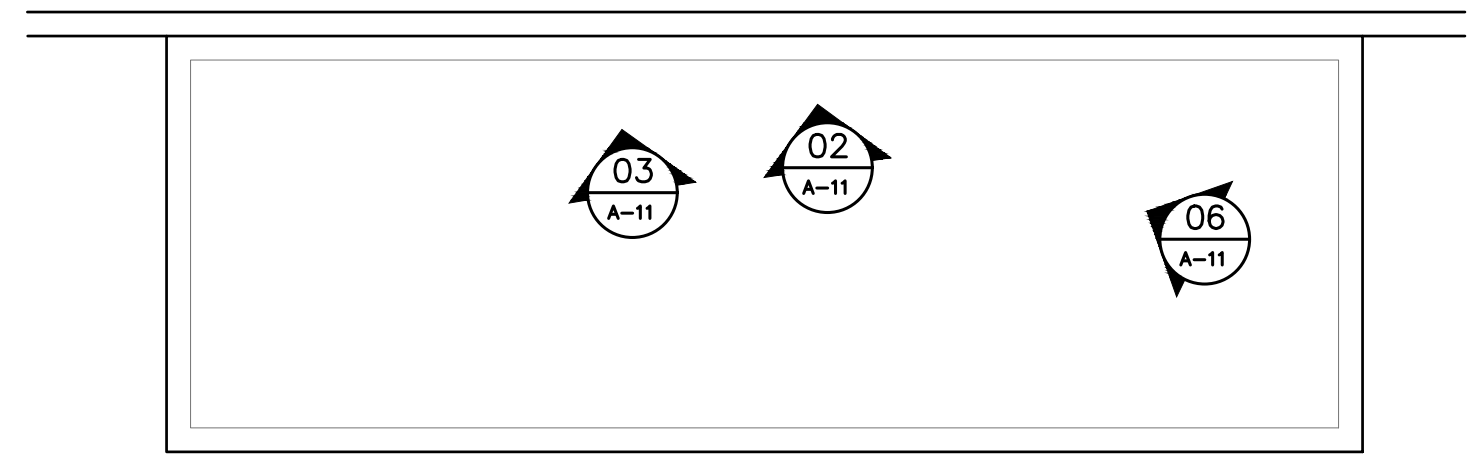
- FINISH NOTES:**
- REFER TO SPEC SECTION 09900 FOR PAINTING REQUIREMENTS.
 - DO NOT PAINT FRP, STAINLESS STEEL OR ALUMINUM (U.N.O.).



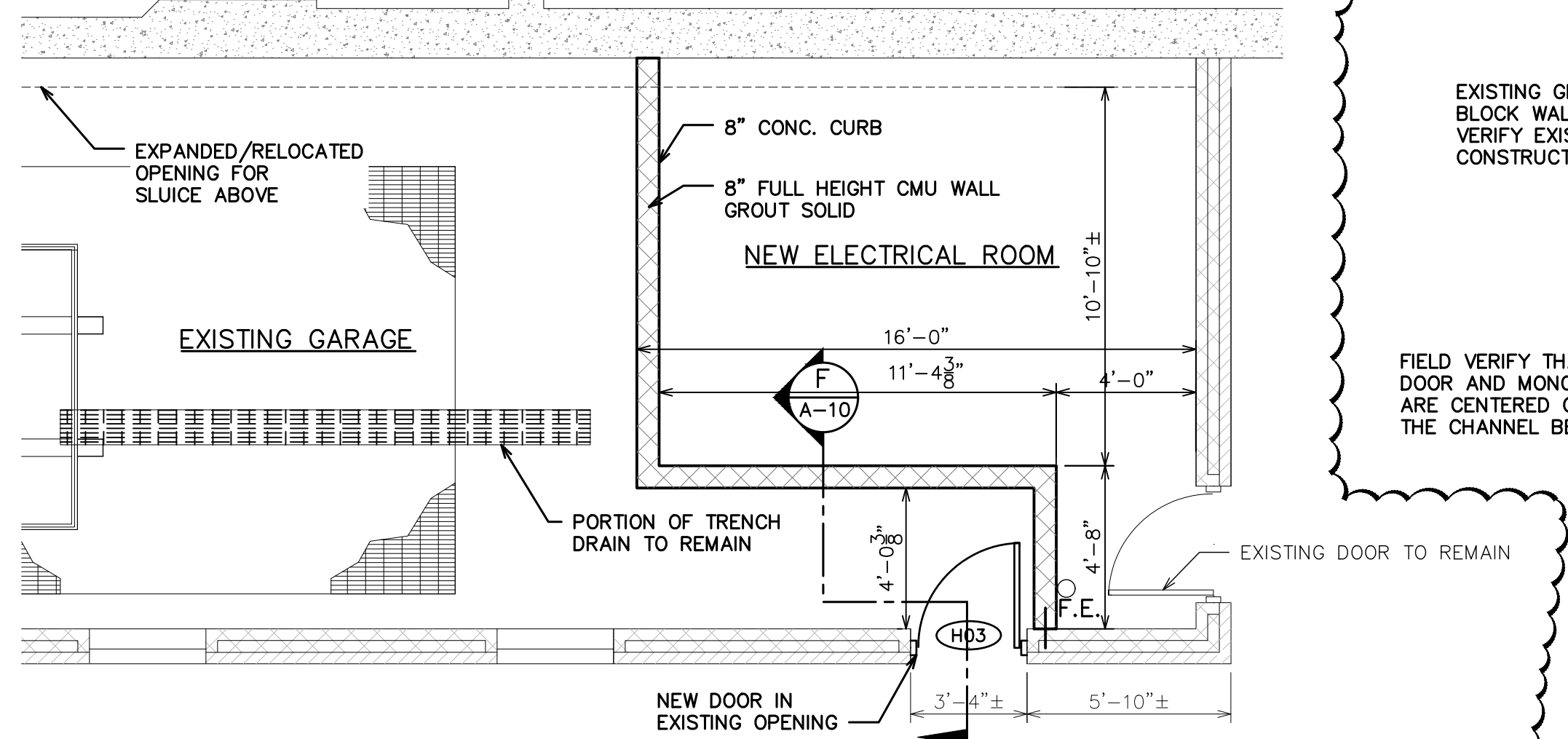
GARAGE SOUTH EXTERIOR ELEVATION
 SCALE: 1/4" = 1'-0"



HEADWORKS DOOR MODIFICATION FLOOR PLAN
 SCALE: 1/4" = 1'-0"



GARAGE ROOF PLAN (FOR REFERENCE PHOTOS)
 SCALE: 1/8" = 1'-0"



GARAGE FLOOR PLAN
 SCALE: 1/4" = 1'-0"

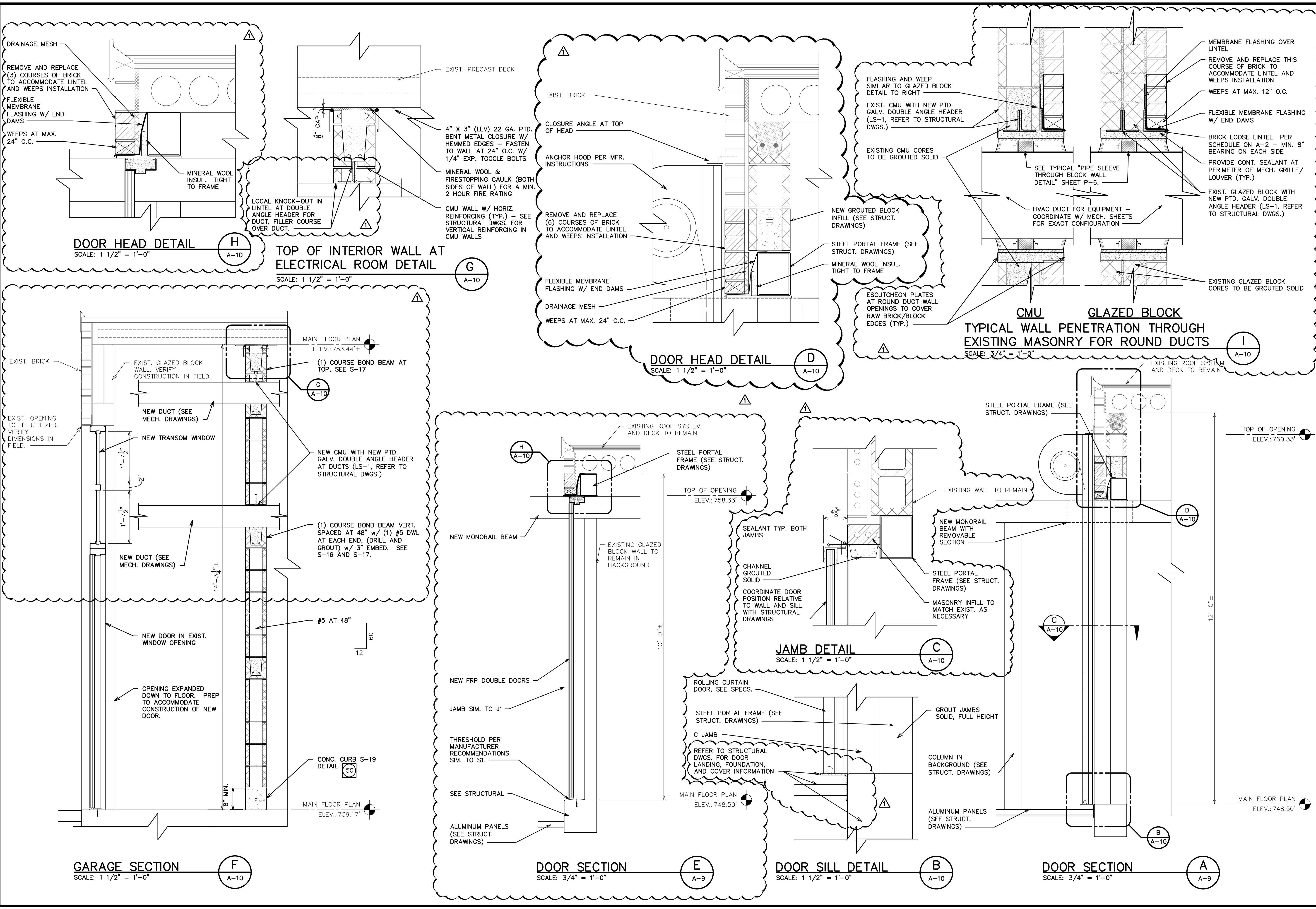
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 HEADWORKS MODIFICATIONS PLANS AND ELEVATIONS

SCALE: AS SHOWN
 DRAWING No.: 409
 SHEET No.: **A-9**



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70% DESIGN SUBMITTAL	10-29-2021				
50% DESIGN SUBMITTAL	10-01-2021				
DATE		DESCRIPTION			
REV.					

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HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS MODIFICATIONS SECTIONS AND DETAILS

SCALE AS SHOWN
DRAWING NO. 410
SHEET NO. **A-10**



PHOTO 01

REPLACE CRACKED BRICK (TYP.)

COORDINATE REMOVAL AND/OR MODIFICATION OF EXISTING PIPING AND CONDUIT WITH NEW DOORS (TYP. OF 2). NEW DOOR OPENING THIS LOCATION. COORDINATE WITH OTHER DISCIPLINES.



PHOTO 02

REPLACE CRACKED BRICK (TYP.)

EXTERIOR EXISTING DETERIORATED MORTAR TO BE REPOINTED - REFER TO SPECS (TYP.)

PREP. AND REPAINT LINTEL PER MANUF. RECOMMENDATIONS.



PHOTO 03

EXTERIOR EXISTING DETERIORATED MORTAR TO BE REPOINTED - REFER TO SPECS (TYP.)

PREP. AND REPAINT LINTEL PER MANUF. RECOMMENDATIONS.



PHOTO 04

PATCH/SEAL REMAINING HOLES AFTER REMOVAL OF CONDUIT. COLOR TO BE DETERMINED BY OWNER.

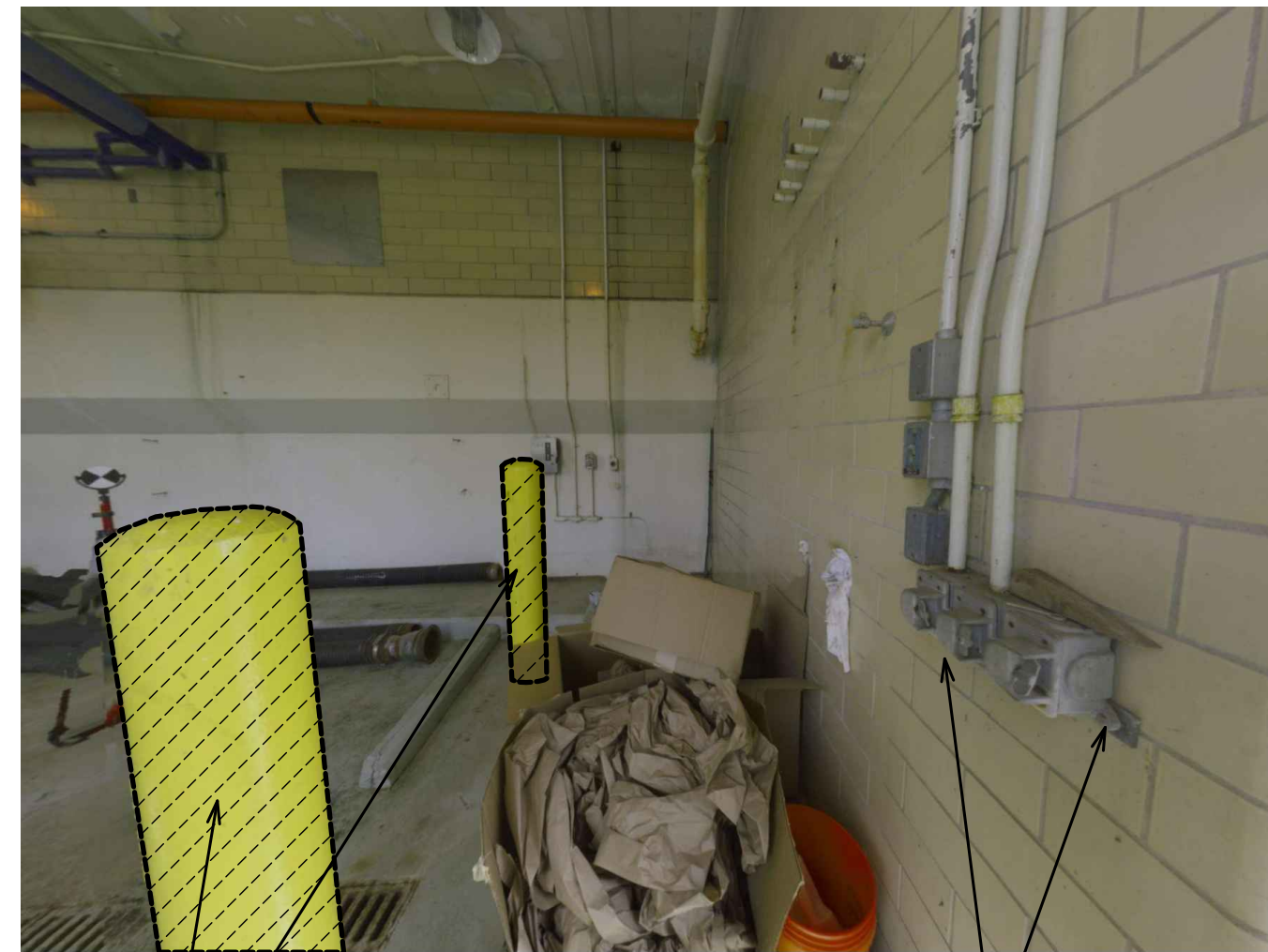


PHOTO 05

REMOVE BOLLARDS. PATCH CONCRETE FLOOR FLUSH PER DETAIL SHEET S-2. (TYP. OF 2).

SEE ELEC. SHEETS FOR REMOVALS. PATCH ANCHOR HOLES WITH SEALANT. COLOR TO BE SELECTED BY OWNER.



PHOTO 06

REPAINT LINTELS (TYP. OF 4)



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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS MODIFICATIONS REFERENCE PHOTOS

SCALE AS SHOWN
DRAWING No. 411

SHEET No. A-11

CMMS ID	VALVE I.D.	DESCRIPTION	SIZE (1)	TYPE		OPERATOR TYPE	ACTUATOR TYPE	LOCATION	SERVICE	NOTES
				(2)						
HEADWORKS:										
		ORGANIC RETURN LINE, GRIT WASHER NO.1	4	BV	TYPE B-3		E	NORTH GARAGE AREA	GRIT WASHING PROCESS	
		PEW FLUSH WATER, GRIT WASHER NO. 1	3	BV	TYPE B-3		E	NORTH GARAGE AREA	GRIT WASHING PROCESS	
		ORGANIC RETURN LINE, GRIT WASHER NO. 2	4	BV	TYPE B-3		E	NORTH GARAGE AREA	GRIT WASHING PROCESS	
		PEW FLUSH WATER, GRIT WASHER NO. 2	3	BV	TYPE B-3		E	NORTH GARAGE AREA	GRIT WASHING PROCESS	
		(A) PEW TRANSPORT WATER, NORTH SCREEN SLUICE	0.5	SV	TYPE GL-3	L	PI	NORTH SCREENING CHANNEL AREA	SCREENING TRANSPORT	OPTION A (DUPERON)
		(A) PEW TRANSPORT WATER, SOUTH SCREEN SLUICE	0.5	SV	TYPE GL-3	L	PI	SOUTH SCREENING CHANNEL AREA	SCREENING TRANSPORT	OPTION A (DUPERON)
		(A) PEW WASH WATER, NORTH SCREENING WASHER COMPACTOR NO. 1	0.5	SV	TYPE GL-3	HW	E	NORTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION A (DUPERON)
		(A) PEW WASH WATER, NORTH SCREENING WASHER COMPACTOR NO. 2	0.5	SV	TYPE GL-3	HW	E	NORTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION A (DUPERON)
		(A) PEW WASH WATER, SOUTH SCREENING WASHER COMPACTOR	0.5	SV	TYPE GL-3	HW	E	SOUTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION A (DUPERON)
		(B) PEW SCREEN SPRAY BAR, NORTH SCREEN NO. 1	1.5	SV	TYPE GL-3	L	E	NORTH SCREENING AREA	SCREEN DEBRIS REMOVAL	OPTION B (HYDRO-DYNE)
		(B) PEW SCREEN SPRAY BAR, NORTH SCREEN NO. 2	1.5	SV	TYPE GL-3	L	E	NORTH SCREENING AREA	SCREEN DEBRIS REMOVAL	OPTION B (HYDRO-DYNE)
		(B) PEW SCREEN SPRAY BAR, SOUTH SCREEN	1.5	SV	TYPE GL-3	L	E	SOUTH SCREENING AREA	SCREEN DEBRIS REMOVAL	OPTION B (HYDRO-DYNE)
		(B) PEW TRANSPORT WATER, NORTH SCREEN SLUICE	1.5	SV	TYPE GL-3	L	PI	NORTH SCREENING CHANNEL AREA	SCREENING TRANSPORT	OPTION B (HYDRO-DYNE)
		(B) PEW TRANSPORT WATER, SOUTH SCREEN SLUICE	1.5	SV	TYPE GL-3	L	PI	SOUTH SCREENING CHANNEL AREA	SCREENING TRANSPORT	OPTION B (HYDRO-DYNE)
		(B) PEW WASH WATER, NORTH SCREENING WASHER COMPACTOR NO. 1	1.5	SV	TYPE GL-3	HW	E	NORTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION B (HYDRO-DYNE)
		(B) PEW WASH WATER, NORTH SCREENING WASHER COMPACTOR NO. 2	1.5	SV	TYPE GL-3	HW	E	NORTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION B (HYDRO-DYNE)
		(B) PEW WASH WATER, SOUTH SCREENING WASHER COMPACTOR	1.5	SV	TYPE GL-3	HW	E	SOUTH GARAGE AREA	SCREENINGS WASHING PROCESS	OPTION B (HYDRO-DYNE)

1. MECHANICAL VALVES 3 INCHES AND SMALLER ARE NOT SHOWN ON THIS VALVE SCHEDULE, UNLESS ELECTRICALLY ACTUATED VALVE OR PROCESS SIGNIFICANT.
2. SEE SPECIFICATION 15100.
3. CHECK VALVES AND PLUG VALVES FOR GRIT PIPING SHALL BE TYPE C-2 AND TYPE P-1F, RESPECTIVELY, AS SPECIFIED IN SECTION 15100.

VALVE ABBREVIATIONS			
VALVE TYPES		OPERATOR TYPES	
KGV	KNIFE GATE VALVE	HW	HANDWHEEL
MV	MUD VALVE	CW	CHAINWHEEL
BV	BALL VALVE	L	LEVER
CV	CHECK VALVE	OLWS	OUTSIDE LEVER AND WEIGHT/SPRING
GV	GATE VALVE	L	LEVER
PV	PLUG VALVE	N	(OPERATING) NUT
PLV	PLATE VALVE	ACTUATOR TYPES	
ARV	AIR RELEASE VALVE	E	ELECTRIC ACTUATOR
BFV	BUTTERFLY VALVE	EM	ELECTRIC ACT. - MODULATING SERVICE
GBV	GLOBE VALVE	HYD	HYDRAULIC ACTUATOR
SV	SOLENOID VALVE	PNU	PNEUMATIC ACTUATOR
VALVE ENDS		PI	POSITION INDICATING
FLG	FLANGE	FS	FLOORSTAND
MJ	MECHANICAL JOINT	ES	EXTENSION STEM
NPT	NATIONAL PIPE THREAD	FB	FLOOR BOX
W	WAFER		

PIPE SCHEDULE						
SERVICE	Location	SIZE	MATERIAL	JOINT	TEST PRESSURE	SPECIFICATION SECTION
WASTEWATER, PROCESS DRAIN (PD)	EXPOSED	<4"	PVC, SCHEDULE 80	SOLVENT WELD	SEE SPECIFICATION 15060	15060
WASTEWATER, OVERFLOW (OF) PIPING	EXPOSED	ALL	DIP	GROOVED JOINT / FLANGED AT VALVES & EQUIPMENT	25-PSI	15060
WASTEWATER, ORGANIC RETURN (OR) PIPING	EXPOSED	ALL	DIP	GROOVED JOINT / FLANGED AT VALVES & EQUIPMENT	25-PSI	15060
WASTEWATER, GRIT PIPING	EXPOSED	ALL	DIP, GLASS-LINED	GROOVED JOINT / FLANGED AT VALVES & EQUIPMENT	50-PSI	15060
WASTEWATER, GRIT PIPING	BURIED	ALL	DIP, GLASS-LINED	MJ	50-PSI	02699
SUMP PUMP DISCHARGE (SPD)	EXPOSED	<4"	PVC, SCHEDULE 80	SOLVENT WELD	20-PSI	15060
SUMP PUMP DISCHARGE (SPD)	EXPOSED	> 4", = 4"	DIP	FLANGED	20-PSI	15060
PEW, POTABLE WATER	BURIED	< 3"	COPPER, TYPE K	SEE SPECIFICATION	100-PSI	15060
PEW, POTABLE WATER	BURIED	> 3", = 3"	DIP	MJ	100-PSI	02699
PEW, POTABLE WATER	EXPOSED	< 3"	COPPER, TYPE L	SWEATED	100-PSI	15060
PEW, POTABLE WATER	EXPOSED	> 3", = 3"	DIP	FLANGED	100-PSI	15060
STORM SEWER	BURIED	< 12"	PVC	B&S	SEE SPECIFICATION 15060	02731
STORM SEWER	BURIED	≥ 12"	RCP	B&S	SEE SPECIFICATION 15060	02731
BUILDING INTERIOR AND BURIED STORM DRAINS	EXPOSED	ALL	CI, PVC	B&S, SOLVENT WELD	SEE SPECIFICATION 15060	15060
NATURAL GAS	EXPOSED	12" - 2"	STEEL, PAINTED	SCREWED	SEE SPECIFICATION 15060	15060
BUILDING UNDER DRAIN	EXPOSED	ALL	SEE SPECIFICATION	SEE SPECIFICATION	SEE SPECIFICATION 15060	15060
EXPOSED OUTDOOR DUCT FOR ODOROUS AIR	EXPOSED	ALL	FRP (INSULATED OUTDOORS)	SEE SPECIFICATION	SEE SPECIFICATION 15596	15596, 15599

LEGEND:				NOTES:
B&S	BELL AND SPIGOT	MJ	MECHANICAL JOINT	1. 50% OVER MAX SYSTEM PRESSURE
CI	CAST IRON	NA	NOT APPLICABLE	
CL	CLASS	POJ	PUSH ON JOINT	
DIP	DUCTILE IRON PIPE	PVC	POLY VINYL CHLORIDE	
DWV	DRAIN/WASTE/VENT	RCP	REINFORCED CONCRETE PIPE	
HDD	HORIZONTAL DIRECTIONAL DRILLING	RCS	REINFORCED CONCRETE SEWER PIPE	
HDPE	HIGH DENSITY POLYETHYLENE	SCH	SCHEDULE	
MDPE	MEDIUM DENSITY POLYETHYLENE	SDR	STANDARD DIMENSIONAL RATIO	



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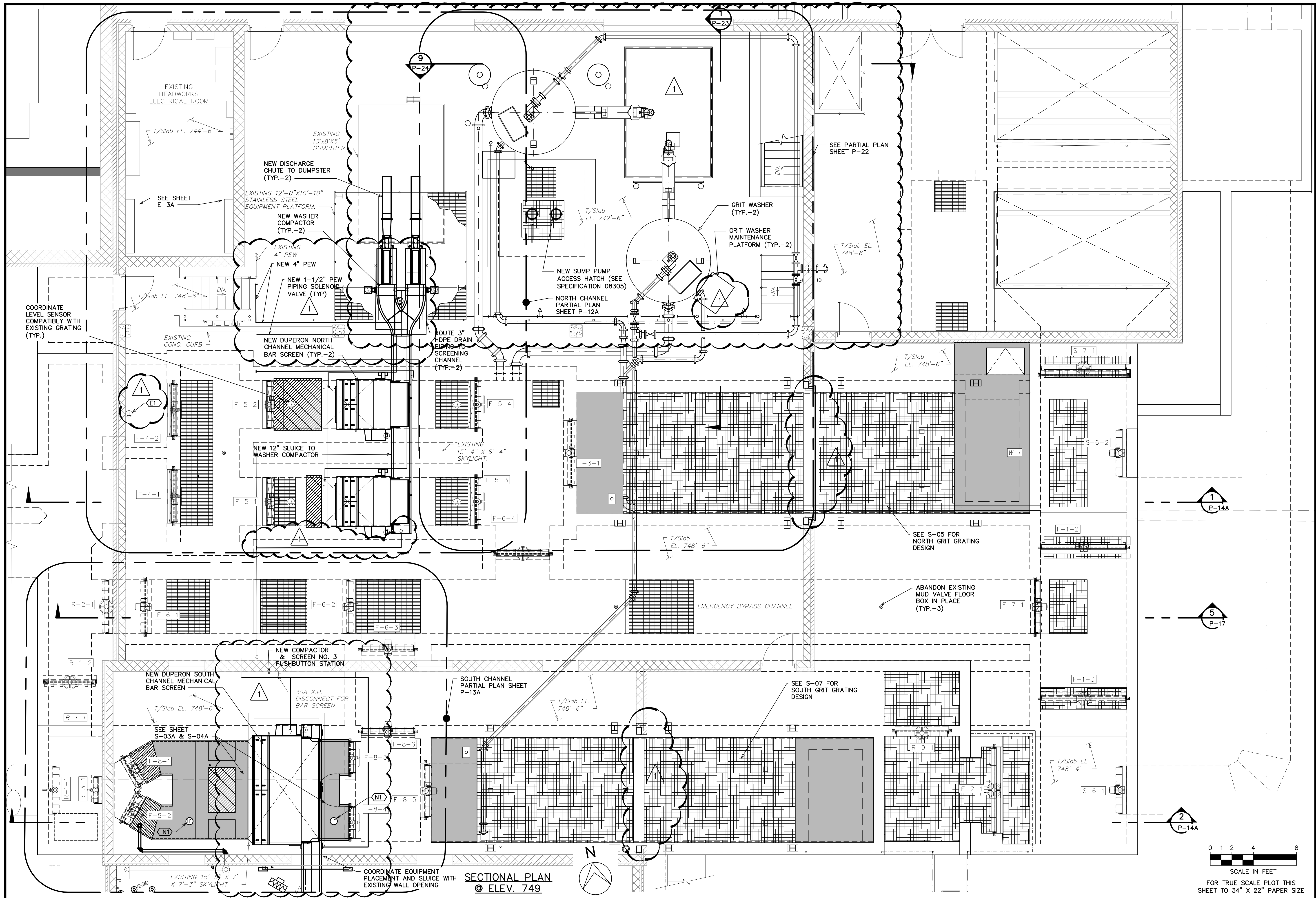
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
PUMP, VALVE, AND PIPE SCHEDULES

SCALE
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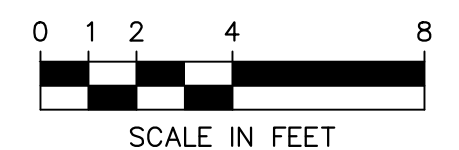
DRAWING No.
506

SHEET No.
P-04

506



**SECTIONAL PLAN
@ ELEV. 749**



FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

811
Know what's below. Call before you dig.

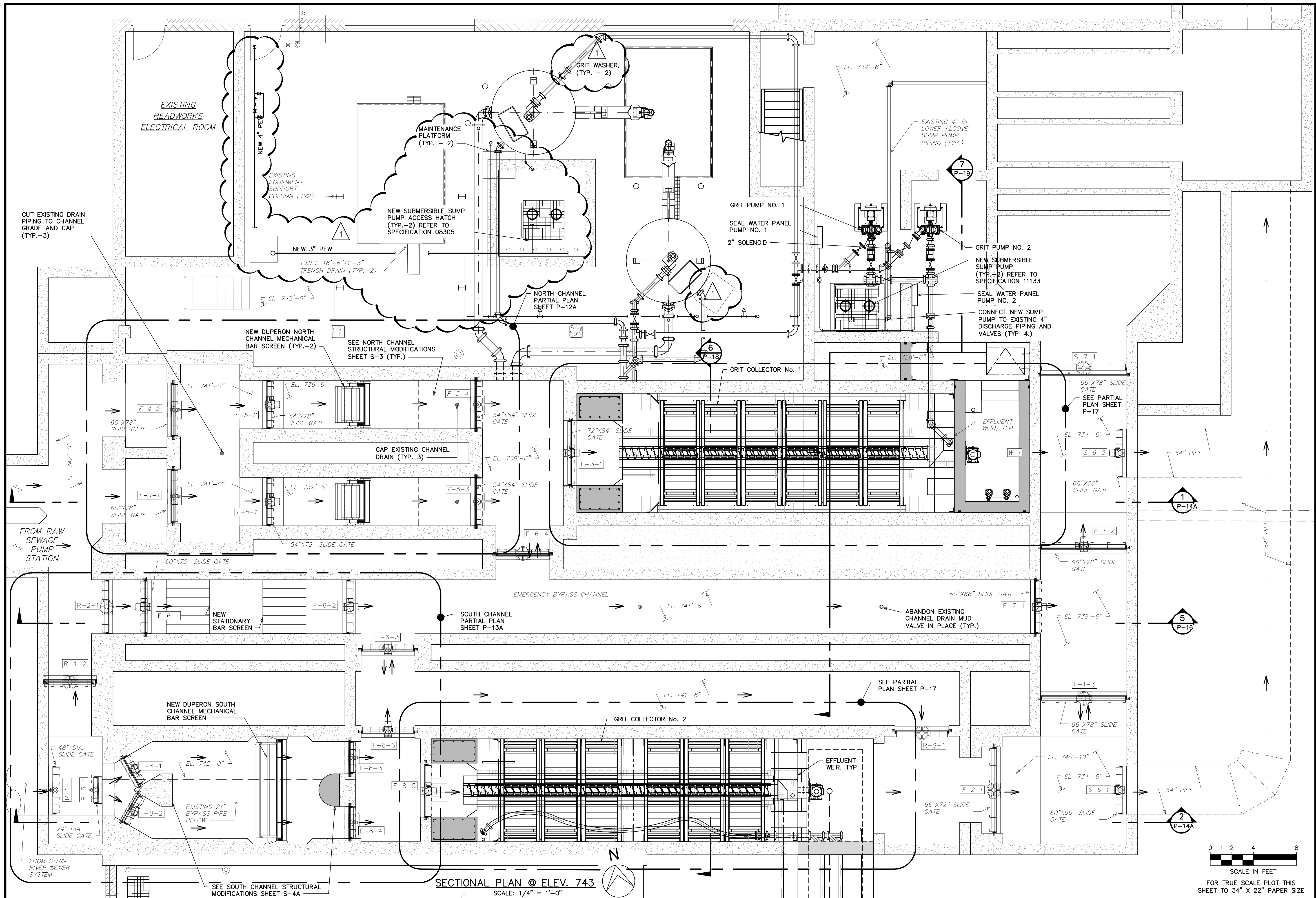
ISSUED FOR ADDENDUM NO. 1
 1-19-2022
 ISSUED FOR BIDS SET
 12-13-2021
 90% DESIGN SUBMITTAL
 11-22-2021
 70% DESIGN SUBMITTAL
 10-29-2021
 50% DESIGN SUBMITTAL
 10-01-2021

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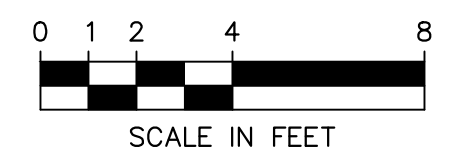
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 HEADWORKS BUILDING
 PLAN ELEV. 749 (DUPERON)

SCALE AS NOTED
 DRAWING No. 518

SHEET No. **P-10A**



SECTIONAL PLAN @ ELEV. 743
SCALE: 1/4" = 1'-0"



FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

811
Know what's below. Call before you dig.

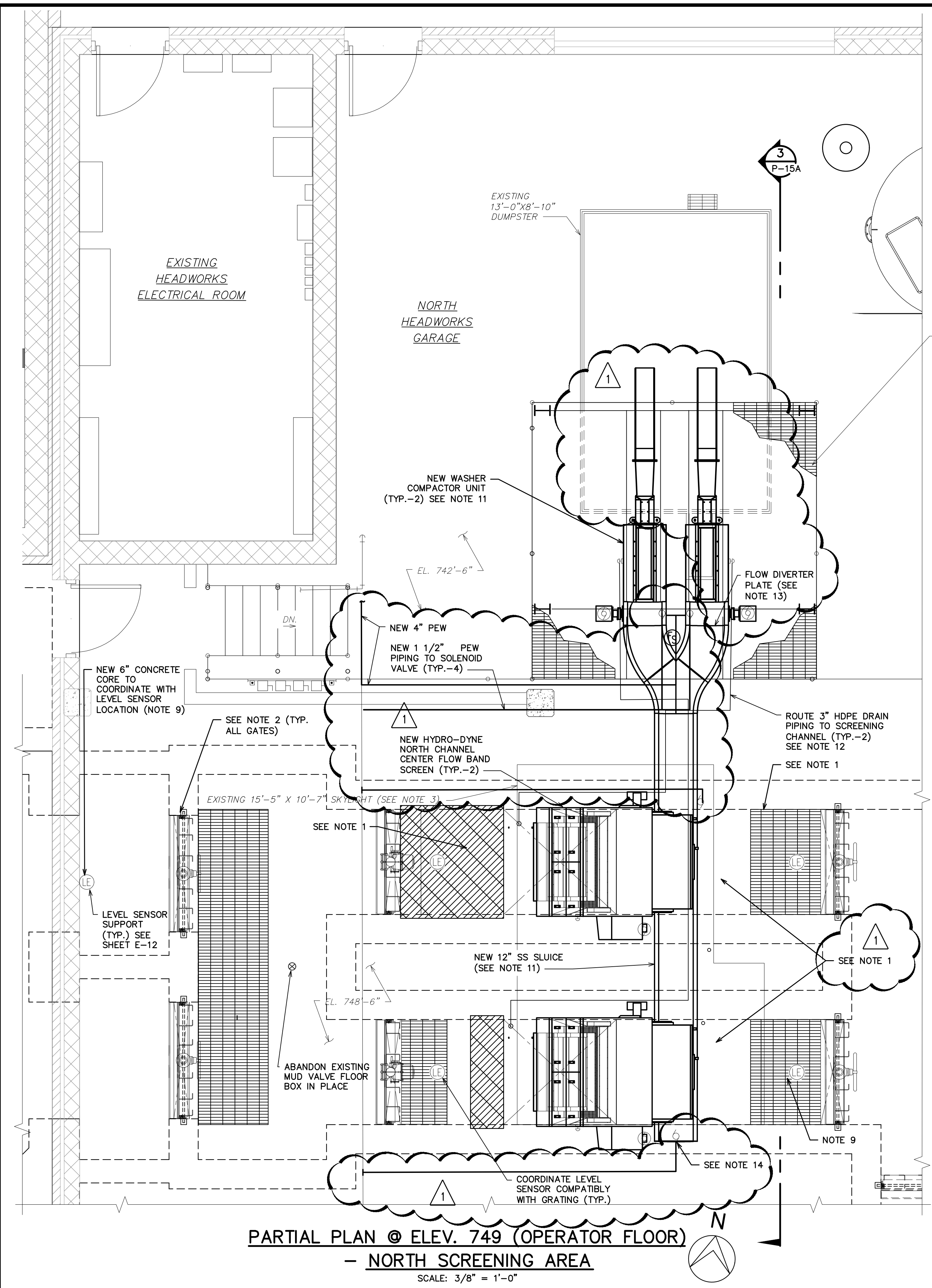
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ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

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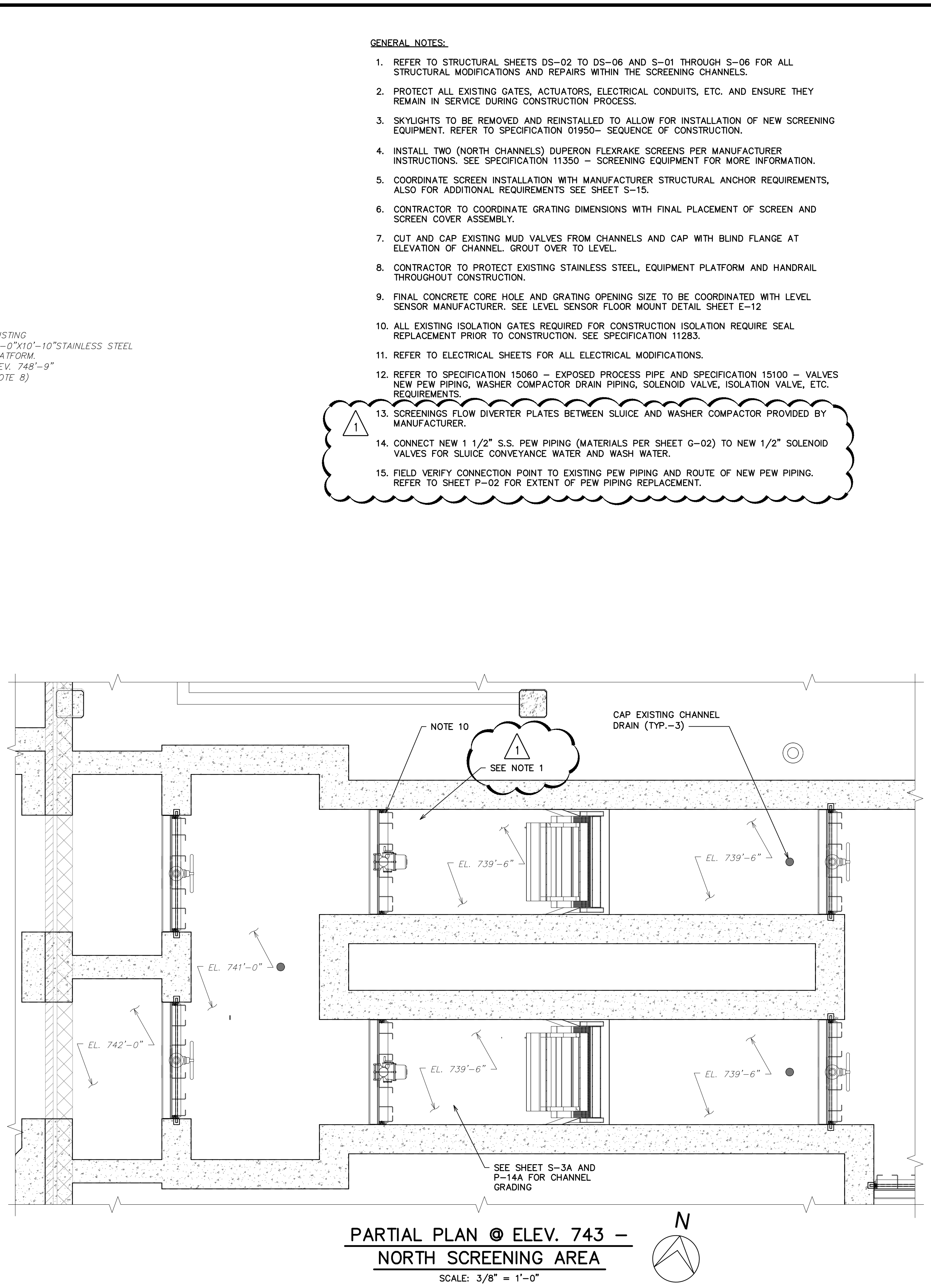
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
PLAN ELEV. 743 (DUPERON)

SCALE AS NOTED
DRAWING No. 520
SHEET No. P-11A

ANN ARBOR MI CITY



PARTIAL PLAN @ ELEV. 749 (OPERATOR FLOOR)
- NORTH SCREENING AREA
 SCALE: 3/8" = 1'-0"



PARTIAL PLAN @ ELEV. 743 -
NORTH SCREENING AREA
 SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. REFER TO STRUCTURAL SHEETS DS-02 TO DS-06 AND S-01 THROUGH S-06 FOR ALL STRUCTURAL MODIFICATIONS AND REPAIRS WITHIN THE SCREENING CHANNELS.
2. PROTECT ALL EXISTING GATES, ACTUATORS, ELECTRICAL CONDUITS, ETC. AND ENSURE THEY REMAIN IN SERVICE DURING CONSTRUCTION PROCESS.
3. SKYLIGHTS TO BE REMOVED AND REINSTALLED TO ALLOW FOR INSTALLATION OF NEW SCREENING EQUIPMENT. REFER TO SPECIFICATION 01950 - SEQUENCE OF CONSTRUCTION.
4. INSTALL TWO (NORTH CHANNELS) DUPERON FLEXRAKE SCREENS PER MANUFACTURER INSTRUCTIONS. SEE SPECIFICATION 11350 - SCREENING EQUIPMENT FOR MORE INFORMATION.
5. COORDINATE SCREEN INSTALLATION WITH MANUFACTURER STRUCTURAL ANCHOR REQUIREMENTS, ALSO FOR ADDITIONAL REQUIREMENTS SEE SHEET S-15.
6. CONTRACTOR TO COORDINATE GRATING DIMENSIONS WITH FINAL PLACEMENT OF SCREEN AND SCREEN COVER ASSEMBLY.
7. CUT AND CAP EXISTING MUD VALVES FROM CHANNELS AND CAP WITH BLIND FLANGE AT ELEVATION OF CHANNEL. GROUT OVER TO LEVEL.
8. CONTRACTOR TO PROTECT EXISTING STAINLESS STEEL, EQUIPMENT PLATFORM AND HANDRAIL THROUGHOUT CONSTRUCTION.
9. FINAL CONCRETE CORE HOLE AND GRATING OPENING SIZE TO BE COORDINATED WITH LEVEL SENSOR MANUFACTURER. SEE LEVEL SENSOR FLOOR MOUNT DETAIL SHEET E-12
10. ALL EXISTING ISOLATION GATES REQUIRED FOR CONSTRUCTION ISOLATION REQUIRE SEAL REPLACEMENT PRIOR TO CONSTRUCTION. SEE SPECIFICATION 11283.
11. REFER TO ELECTRICAL SHEETS FOR ALL ELECTRICAL MODIFICATIONS.
12. REFER TO SPECIFICATION 15060 - EXPOSED PROCESS PIPE AND SPECIFICATION 15100 - VALVES NEW PEW PIPING, WASHER COMPACTOR DRAIN PIPING, SOLENOID VALVE, ISOLATION VALVE, ETC. REQUIREMENTS.
13. SCREENINGS FLOW DIVERTER PLATES BETWEEN SLUICE AND WASHER COMPACTOR PROVIDED BY MANUFACTURER.
14. CONNECT NEW 1 1/2" S.S. PEW PIPING (MATERIALS PER SHEET G-02) TO NEW 1/2" SOLENOID VALVES FOR SLUICE CONVEYANCE WATER AND WASH WATER.
15. FIELD VERIFY CONNECTION POINT TO EXISTING PEW PIPING AND ROUTE OF NEW PEW PIPING. REFER TO SHEET P-02 FOR EXTENT OF PEW PIPING REPLACEMENT.

811
Know what's below. Call before you dig.

ISSUED FOR ADDENDUM NO. 1

REV.	DATE	DESCRIPTION
1-19-2022	12-13-2021	ISSUED FOR BIDS SET
	11-22-2021	90% DESIGN SUBMITTAL
	10-29-2021	70% DESIGN SUBMITTAL
	10-01-2021	50% DESIGN SUBMITTAL

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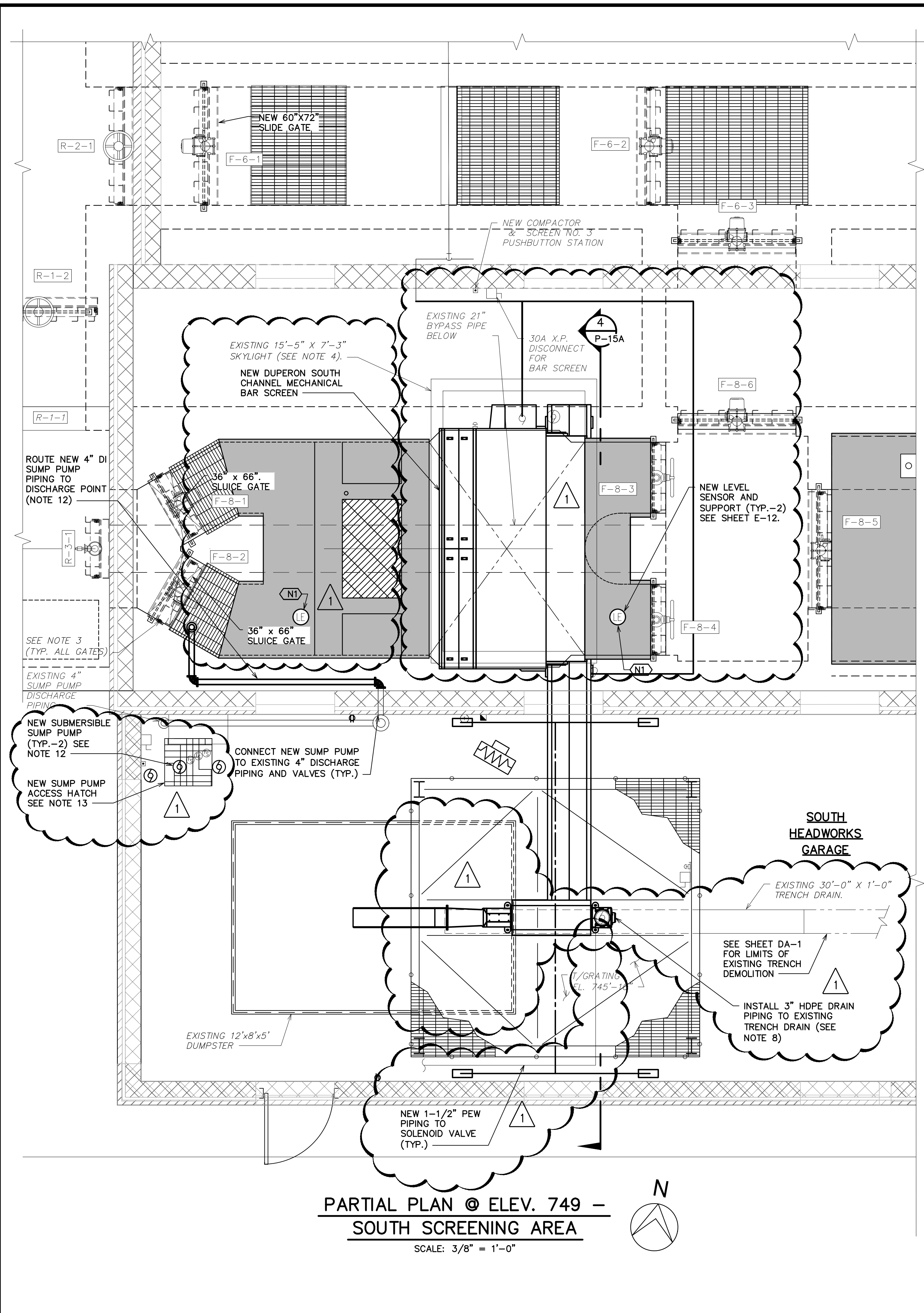
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 HEADWORKS BUILDING
 NORTH SCREENING AREA PARTIAL PLANS
 (DUPERON)

SCALE AS NOTED

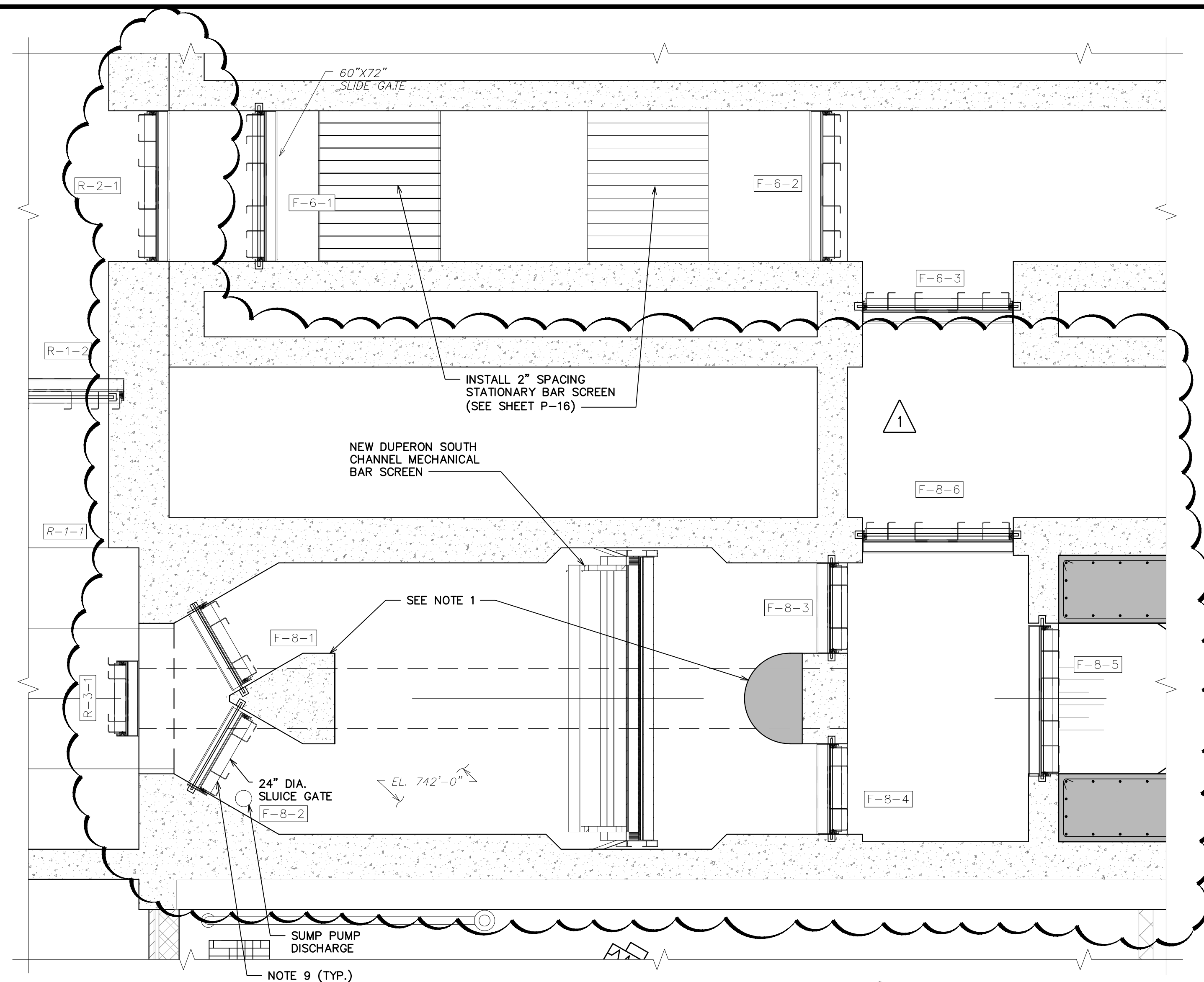
DRAWING No. 522

SHEET No. **P-12A**

1-19-2022



**PARTIAL PLAN @ ELEV. 749 -
SOUTH SCREENING AREA**
SCALE: 3/8" = 1'-0"



**PARTIAL PLAN @ ELEV. 743 -
SOUTH SCREENING AREA**
SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. REFER TO STRUCTURAL DEMO SHEETS AND STRUCTURAL SHEETS S-02 THROUGH S-06 FOR ALL STRUCTURAL MODIFICATIONS AND REPAIRS WITHIN THE SCREENING CHANNELS.
2. COORDINATE WALL OPENING TO ACCOMMODATE SOUTH CHANNEL SCREEN 3 WITH EXISTING WALL OPENING ON SHEET DP-02, DP-03 AND ARCHITECTURAL SHEETS.
3. PROTECT ALL EXISTING GATES, ACTUATORS, ELECTRICAL CONDUITS, ETC. AND ENSURE THEY REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
4. SKYLIGHTS SHALL BE REMOVED AND REINSTALLED TO ALLOW FOR INSTALLATION OF NEW SCREENING EQUIPMENT.
5. INSTALL ONE (SOUTH CHANNEL) DUPERON FLEXRAKE SCREEN PER MANUFACTURER INSTRUCTIONS. SEE SPECIFICATION 11350A - SCREENING EQUIPMENT FOR MORE INFORMATION.
6. COORDINATE SCREEN INSTALLATION WITH STRUCTURAL ANCHOR REQUIREMENTS, SEE SHEET S-15.
7. REFER TO SPECIFICATION 15060 - EXPOSED PROCESS PIPE AND SPECIFICATION 15100 - VALVES NEW PEW PIPING, WASHER COMPACTOR DRAIN PIPING, SOLENOID VALVE, ISOLATION VALVE, ETC. REQUIREMENTS.
8. FINAL CONCRETE CORE HOLE AND GRATING OPENING SIZE TO BE COORDINATED WITH LEVEL SENSOR MANUFACTURER.
9. ALL EXISTING ISOLATION GATES REQUIRED FOR CONSTRUCTION ISOLATION REQUIRE SEAL REPLACEMENT PRIOR TO CONSTRUCTION. SEE SPECIFICATION 11283
10. REFER TO SPECIFICATION 11133 - SUBMERSIBLE SUMP PUMP FOR DETAILED INFORMATION ON SUMP PUMP REQUIREMENTS.
11. REFER TO ELECTRICAL SHEETS FOR ALL ELECTRICAL MODIFICATIONS.
12. COORDINATE OPENING WITHIN EXISTING GRATING WITH NEW SUMP PUMP DISCHARGE PIPING
13. REFER TO SPECIFICATION 08305 - ACCESS HATCHES FOR SUMP PUMP ACCESS HATCH REQUIREMENTS. FIELD VERIFY REQUIRED HATCH DIMENSIONS.
14. COORDINATE LOCATION OF GRATING OPENING WITH THE DISCHARGE LOCATION OF SUMP PUMP DISCHARGE PIPING. FIELD VERIFY FINAL DISCHARGE LOCATION.
15. FIELD VERIFY CONNECTION POINT TO EXISTING PEW PIPING AND ROUTE OF NEW PEW PIPING. REFER TO SHEET P-02 FOR EXTENT OF PEW PIPING REPLACEMENT.

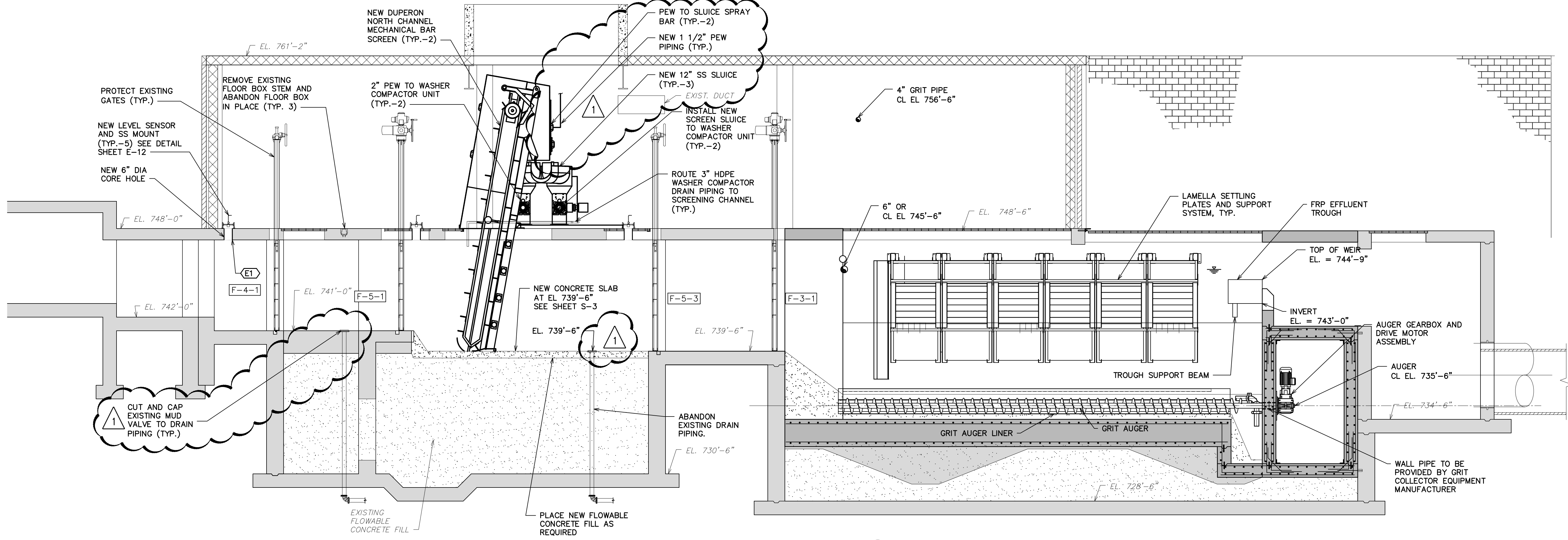
Know what's below.
Call before you dig.

ISSUED FOR	ADDENDUM NO.	DATE	DESCRIPTION	REV.	CHECKED
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90% DESIGN SUBMITTAL		11-22-2021			
70% DESIGN SUBMITTAL		10-29-2021			
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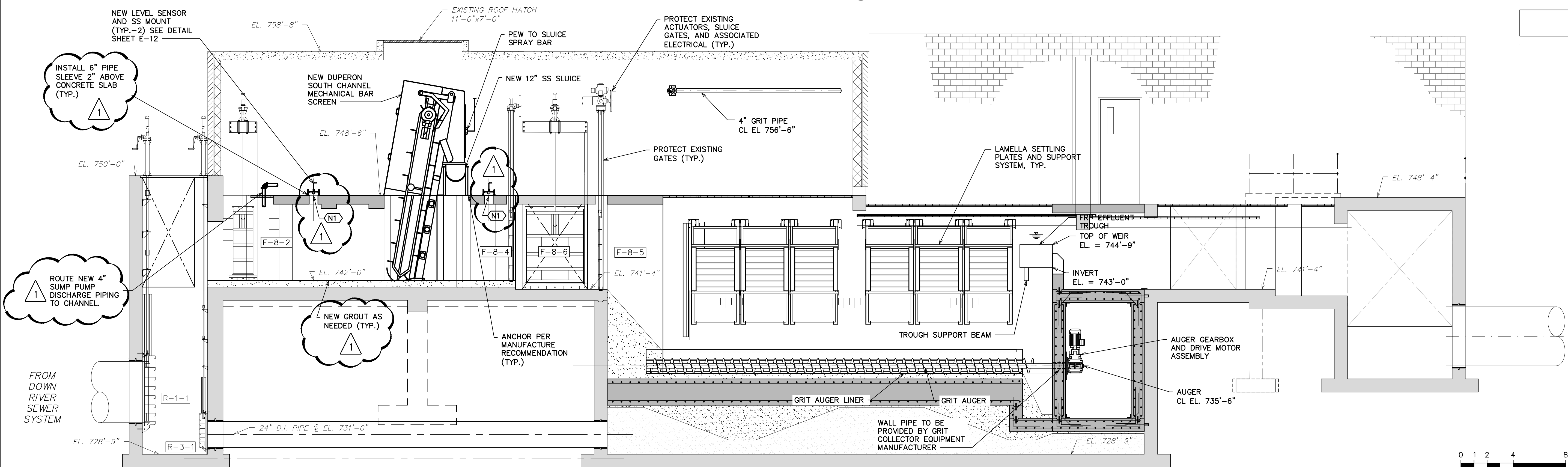
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
SOUTH SCREENING AREA
PARTIAL PLANS (DUPERON)

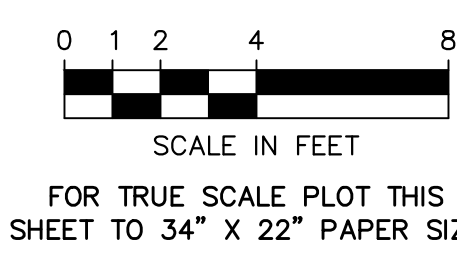
SCALE AS NOTED
DRAWING No. 524
SHEET No. P-13A




HEADWORKS NORTH CHANNEL SECTION 1
SCALE: 1/4" = 1'-0" P-10A



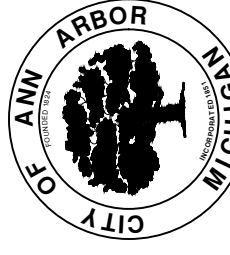
HEADWORKS SOUTH CHANNEL SECTION 2
SCALE: 1/4" = 1'-0" P-10A





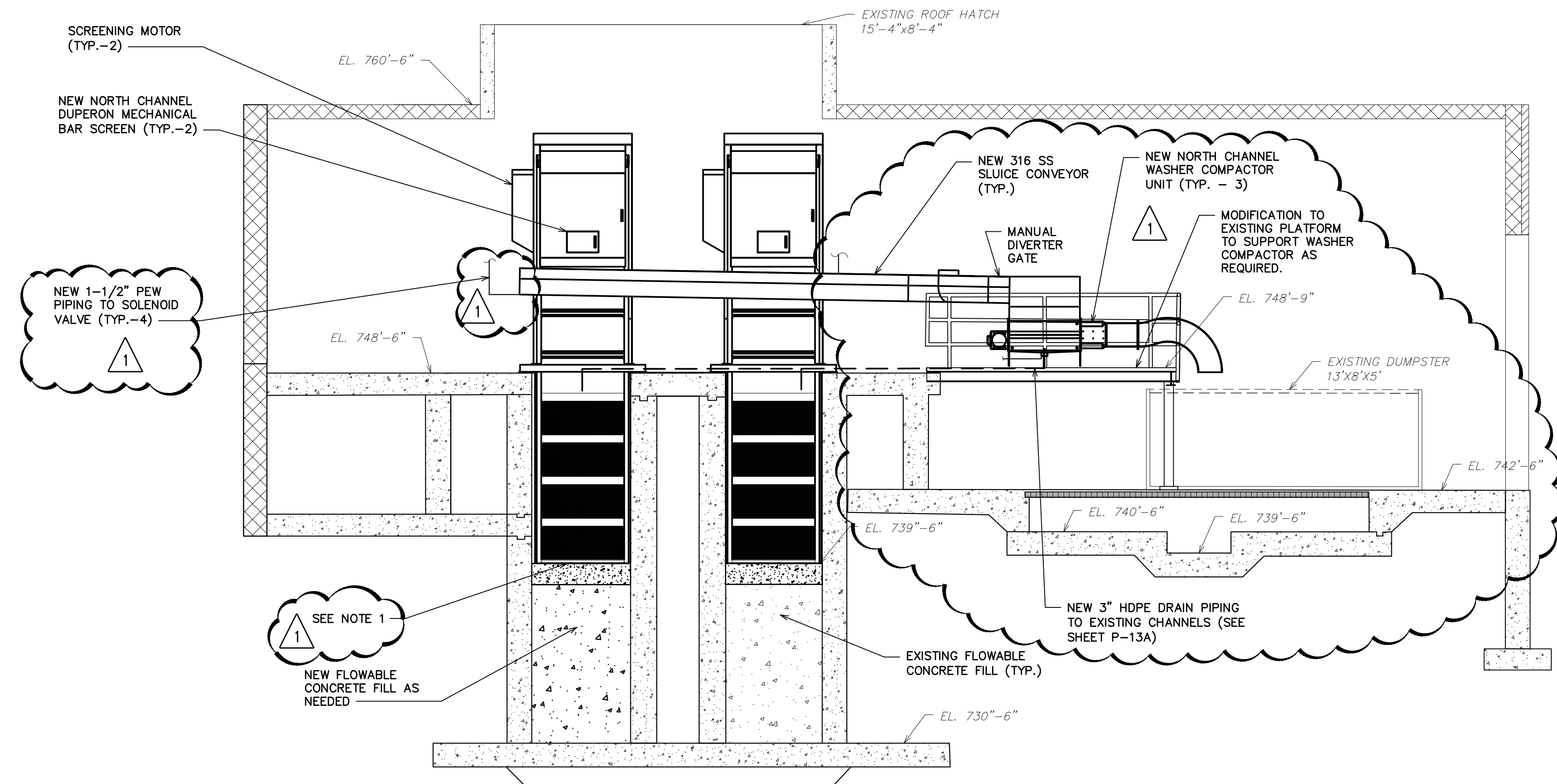
Know what's below. Call before you dig.

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ISSUED FOR BIDS SET	12-13-2021				
90% DESIGN SUBMITTAL	11-22-2021				
70% DESIGN SUBMITTAL	10-29-2021				
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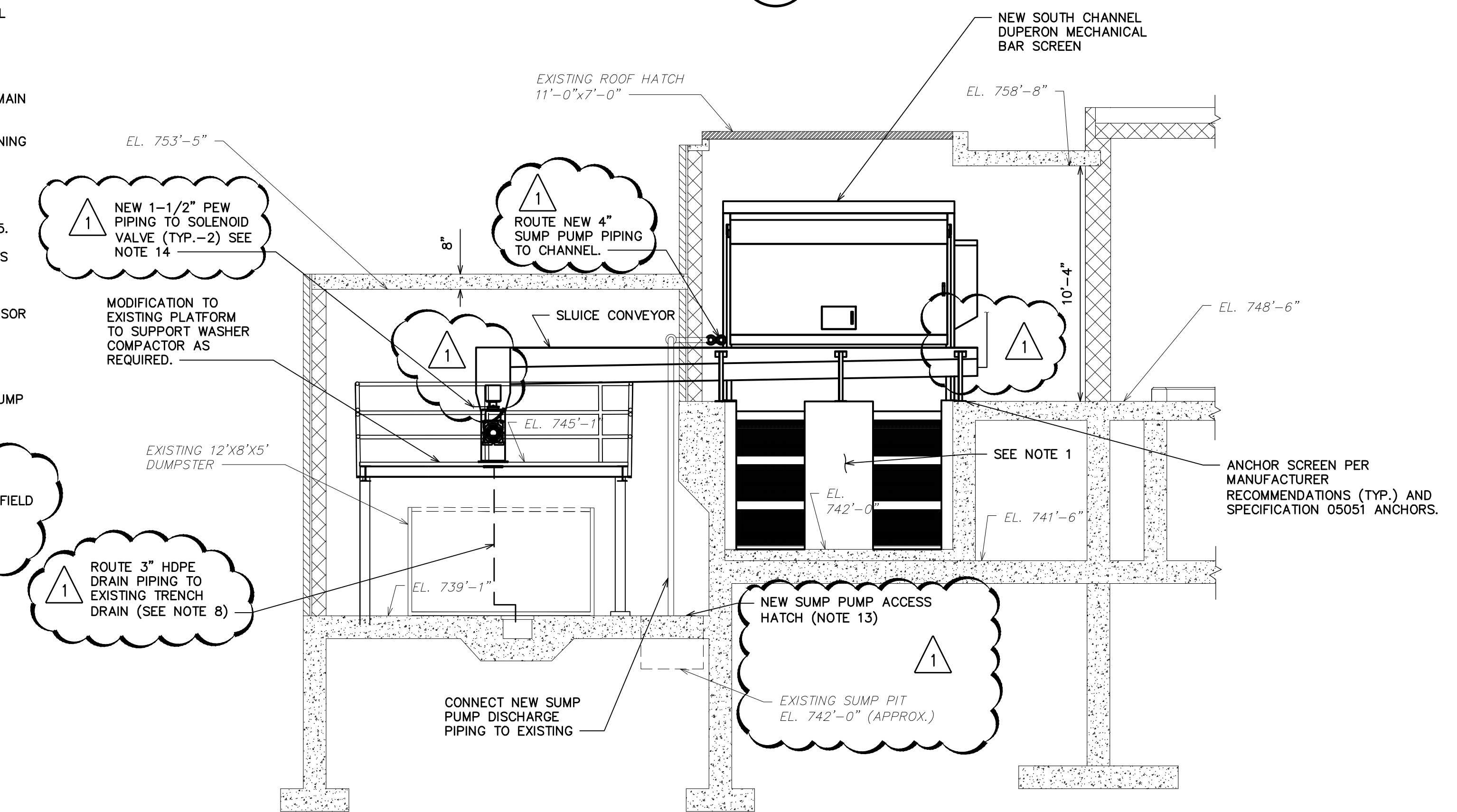
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
NORTH AND SOUTH TRAIN
SECTIONS (DUPERON)

SHEET No. **P-14A**

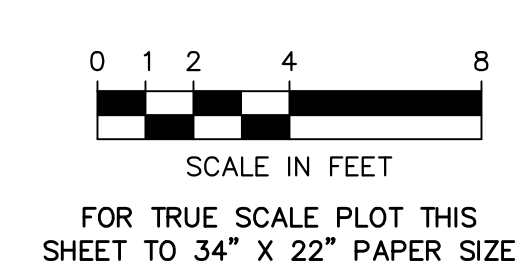



NORTH SCREENING SECTION 3
SCALE: 3/8" = 1'-0" P-12A

- GENERAL NOTES**
- REFER TO STRUCTURAL DEMO SHEETS AND STRUCTURAL SHEETS S-02 THROUGH S-06 FOR ALL STRUCTURAL MODIFICATIONS AND REPAIRS WITHIN THE SCREENING CHANNELS.
 - COORDINATE WALL OPENING TO ACCOMMODATE SOUTH CHANNEL SCREEN 3 WITH EXISTING WALL OPENING ON SHEET DP-02, DP-03 AND ARCHITECTURAL SHEETS.
 - PROTECT ALL EXISTING GATES, ACTUATORS, ELECTRICAL CONDUITS, ETC. AND ENSURE THEY REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
 - SKYLIGHTS SHALL BE REMOVED AND REINSTALLED TO ALLOW FOR INSTALLATION OF NEW SCREENING EQUIPMENT.
 - INSTALL ONE 4.5' WIDE (SOUTH CHANNEL) DUPERON FLEXRAKE SCREEN PER MANUFACTURER INSTRUCTIONS. SEE SPECIFICATION 11350A - SCREENING EQUIPMENT FOR MORE INFORMATION.
 - COORDINATE SCREEN INSTALLATION WITH STRUCTURAL ANCHOR REQUIREMENTS, SEE SHEET S-15.
 - REFER TO SPECIFICATION 15060 - EXPOSED PROCESS PIPE AND SPECIFICATION 15100 - VALVES NEW PEW PIPING, WASHER COMPACTOR DRAIN PIPING, SOLENOID VALVE, ISOLATION VALVE, ETC. REQUIREMENTS.
 - FINAL CONCRETE CORE HOLE AND GRATING OPENING SIZE TO BE COORDINATED WITH LEVEL SENSOR MANUFACTURER.
 - ALL EXISTING ISOLATION GATES REQUIRED FOR CONSTRUCTION ISOLATION REQUIRE SEAL REPLACEMENT PRIOR TO CONSTRUCTION. SEE SPECIFICATION 11283.
 - REFER TO SPECIFICATION 11133 - SUBMERSIBLE SUMP PUMP FOR DETAILED INFORMATION ON SUMP PUMP REQUIREMENTS.
 - REFER TO ELECTRICAL SHEETS FOR ALL ELECTRICAL MODIFICATIONS.
 - INSTALL SLUICE SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS.
 - REFER TO SPECIFICATION SECTION 08375 - HATCHES FOR SUMP PUMP HATCH REQUIREMENTS. FIELD VERIFY REQUIRED HATCH DIMENSIONS.
 - FIELD VERIFY CONNECTION POINT TO EXISTING PEW PIPING AND ROUTE OF NEW PEW PIPING. REFER TO SHEET P-02 FOR EXTENT OF PEW PIPING REPLACEMENT.




SOUTH SCREENING SECTION 4
SCALE: 1/4" = 1'-0" P-13A





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Call before you dig.

ISSUED FOR	ADDENDUM NO.	DATE	REV.
1-19-2022	NO. 1		
ISSUED FOR BIDS SET		12-13-2021	
90% DESIGN SUBMITTAL		11-22-2021	
70% DESIGN SUBMITTAL		10-29-2021	
50% DESIGN SUBMITTAL		10-01-2021	

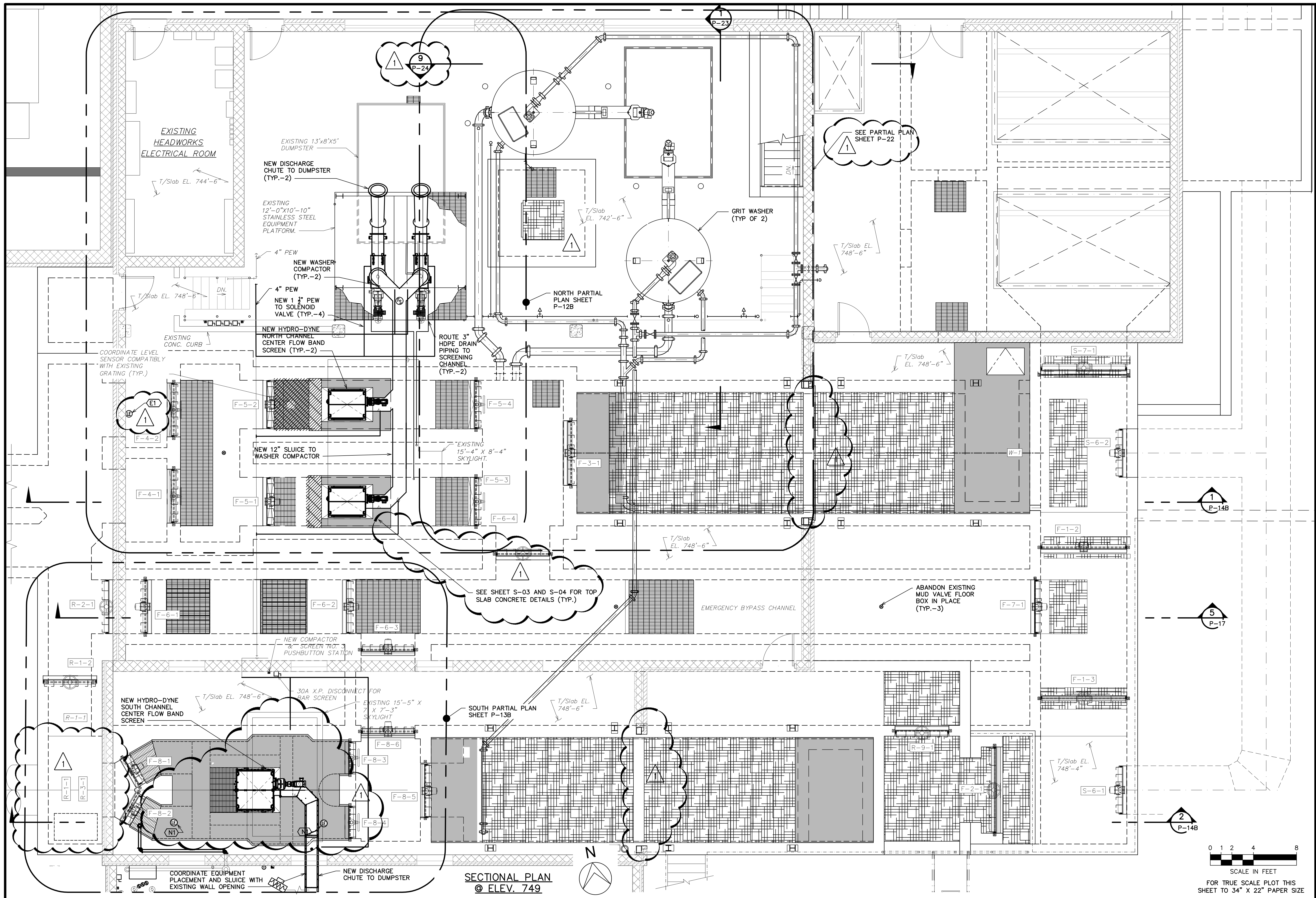

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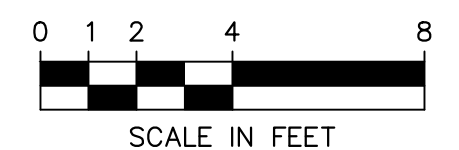
HEADWORKS IMPROVEMENTS PROJECT

HEADWORKS BUILDING
NORTH AND SOUTH
SCREENING SECTIONS (DUPERON)

SCALE AS SHOWN
 DRAWING No. 528
 SHEET No. **P-15A**



SECTIONAL PLAN
@ ELEV. 749



SCALE IN FEET
FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

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HEADWORKS IMPROVEMENTS PROJECT

HEADWORKS BUILDING

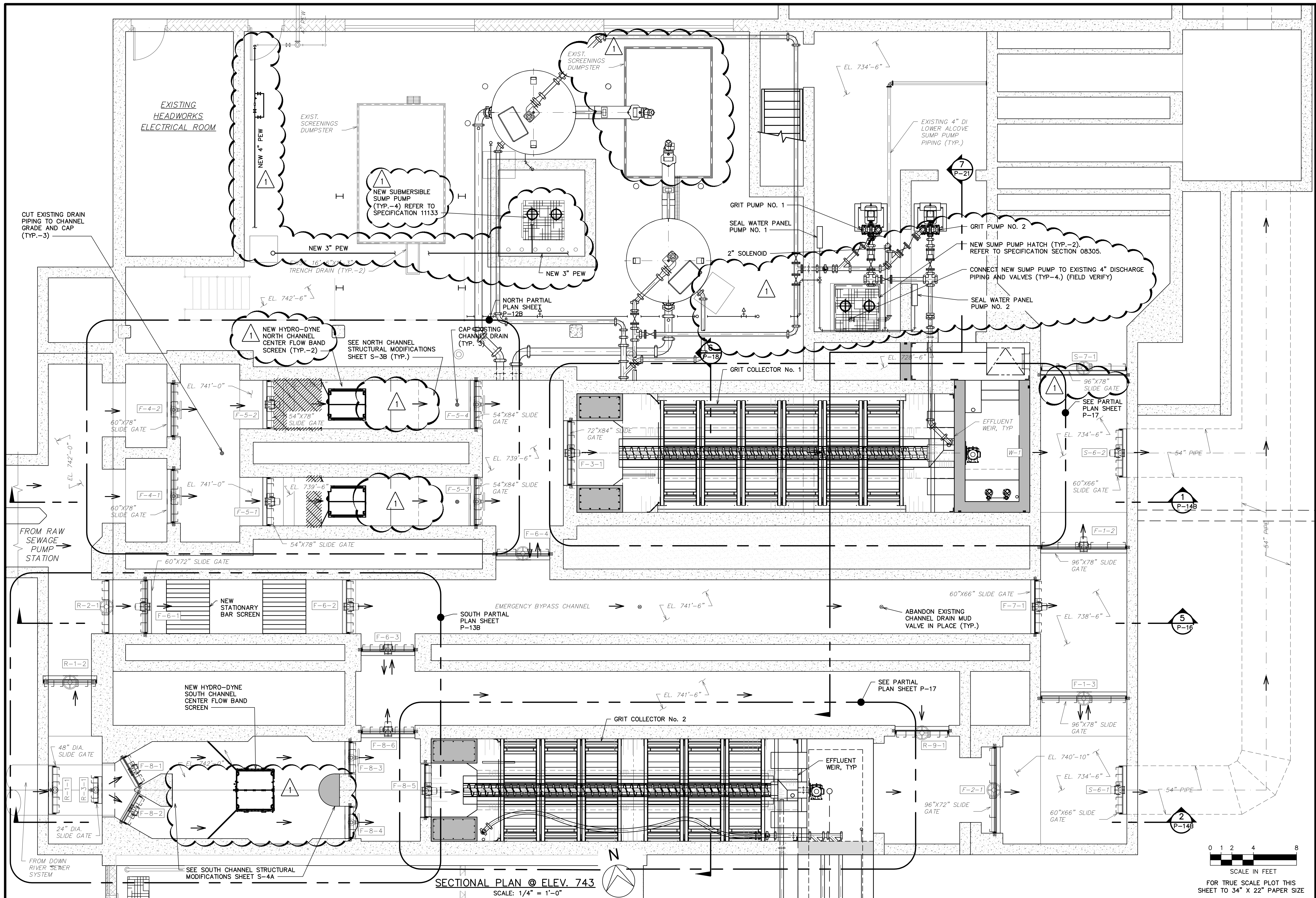
PLAN ELEV. 749 (HYDRO-DYNE)

REV.	DATE	DRAWN	CHECKED	DESCRIPTION
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10-29-2021				70% DESIGN SUBMITTAL
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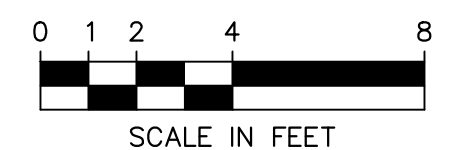
SCALE AS NOTED

DRAWING No. 530


SHEET No. P-10B



SECTIONAL PLAN @ ELEV. 743
SCALE: 1/4" = 1'-0"

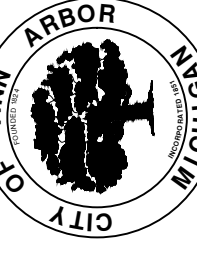


FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE



Know what's below.
Call before you dig.

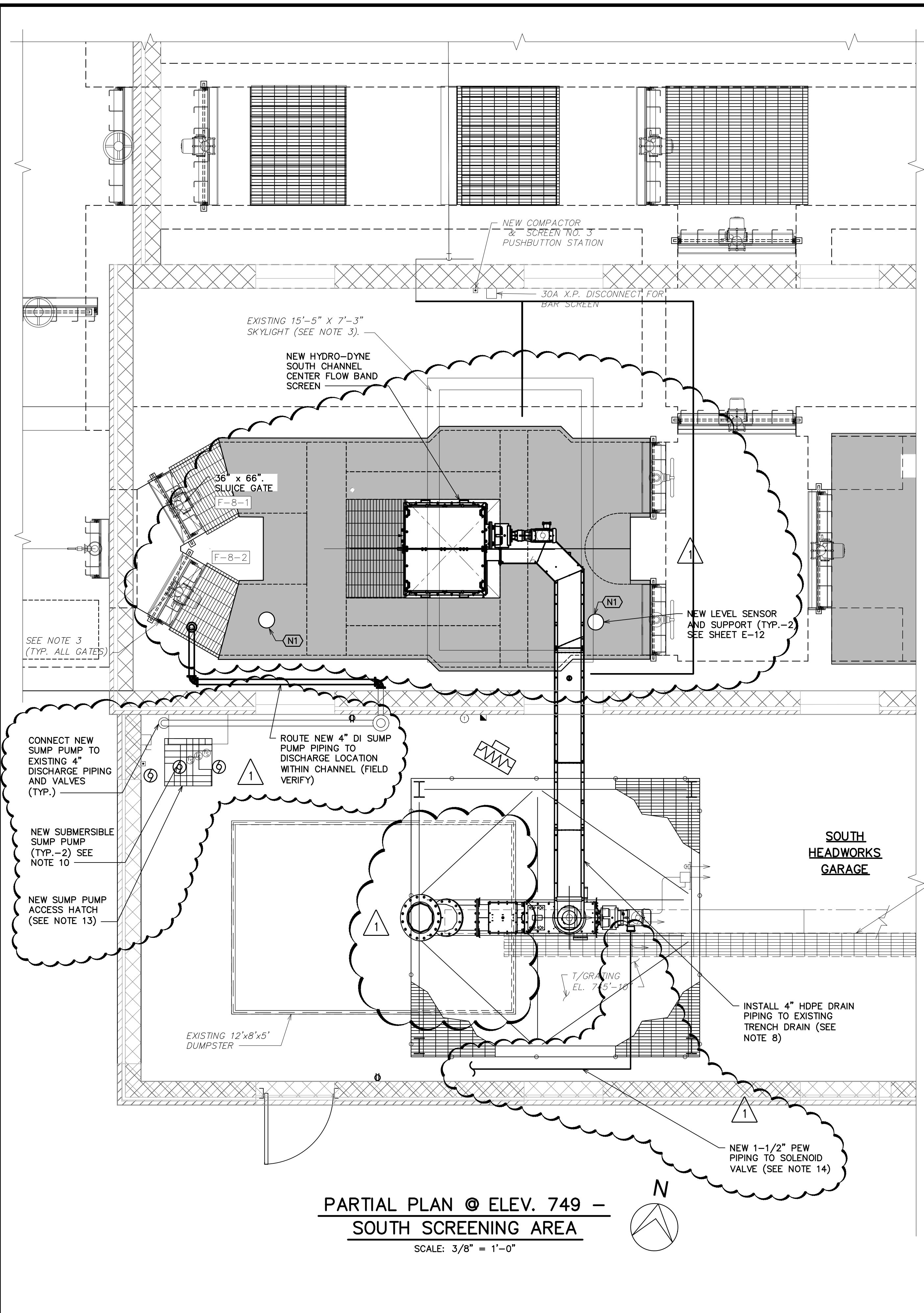
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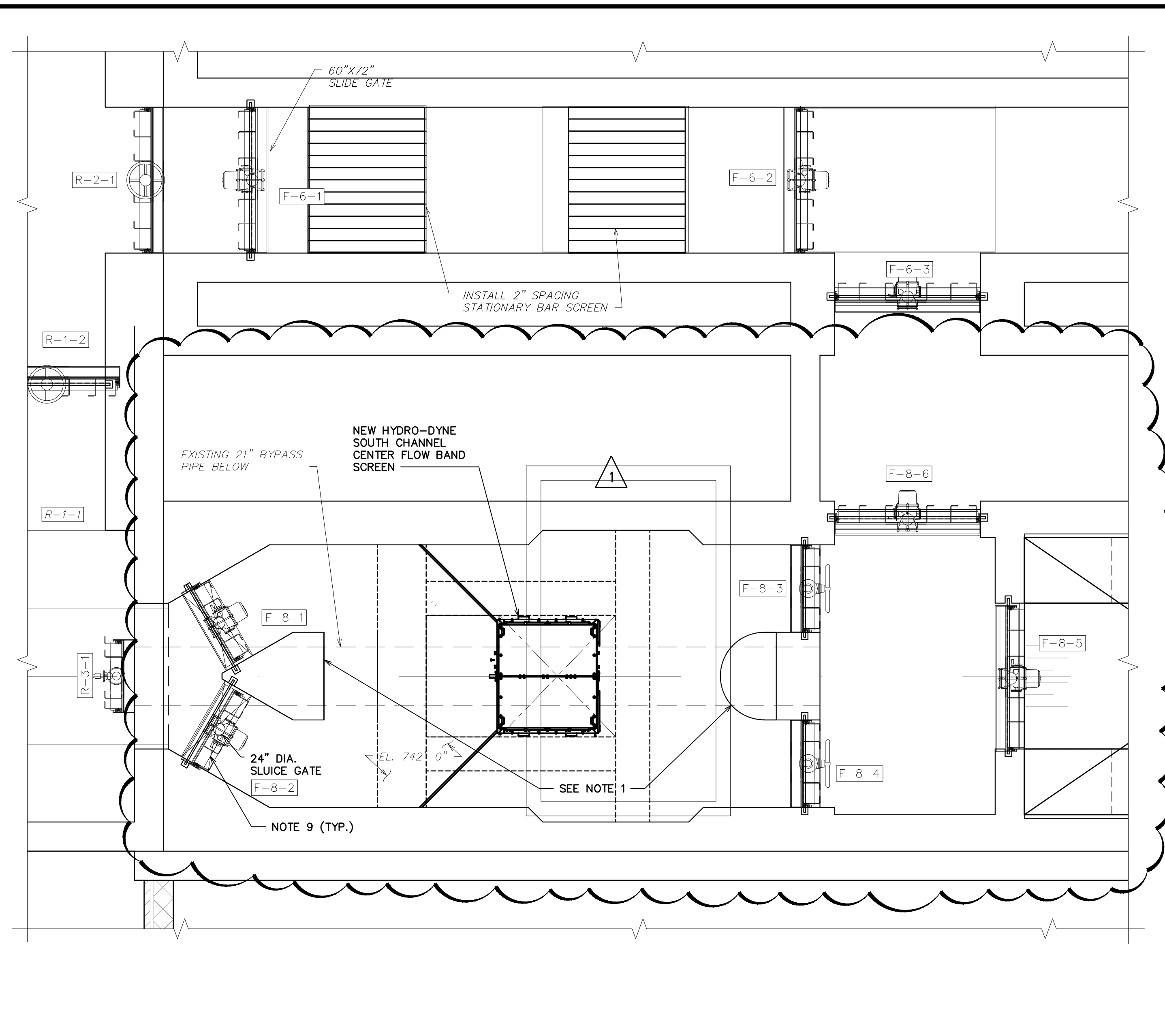
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HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
PLAN ELEV. 743 (HYDRO-DYNE)

SCALE	AS NOTED
DRAWING No.	532
SHEET No.	P-11B



**PARTIAL PLAN @ ELEV. 749 -
SOUTH SCREENING AREA**
SCALE: 3/8" = 1'-0"



**PARTIAL PLAN @ ELEV. 743 -
SOUTH SCREENING AREA**
SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. REFER TO STRUCTURAL DEMO SHEETS AND STRUCTURAL SHEETS S-02 THROUGH S-06 FOR ALL STRUCTURAL MODIFICATIONS AND REPAIRS WITHIN THE SCREENING CHANNELS.
2. COORDINATE WALL OPENING TO ACCOMMODATE SOUTH CHANNEL SCREEN 3 WITH EXISTING WALL OPENING ON SHEET DP-02, DP-03 AND ARCHITECTURAL SHEETS.
3. PROTECT ALL EXISTING GATES, ACTUATORS, ELECTRICAL CONDUITS, ETC. AND ENSURE THEY REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
4. SKYLIGHTS SHALL BE REMOVED AND REINSTALLED TO ALLOW FOR INSTALLATION OF NEW SCREENING EQUIPMENT.
5. INSTALL ONE 4.5' WIDE (SOUTH CHANNEL) HYDRO-DYNE FLEXRAKE SCREEN PER MANUFACTURER INSTRUCTIONS. SEE SPECIFICATION 11350A - SCREENING EQUIPMENT FOR MORE INFORMATION.
6. COORDINATE SCREEN INSTALLATION WITH STRUCTURAL ANCHOR REQUIREMENTS, SEE SHEET S-XX.
7. REFER TO SPECIFICATION 15060 - EXPOSED PROCESS PIPE AND SPECIFICATION 15100 - VALVES NEW PEW PIPING, WASHER COMPACTOR DRAIN PIPING, SOLENOID VALVE, ISOLATION VALVE, ETC. REQUIREMENTS.
8. FINAL CONCRETE CORE HOLE AND GRATING OPENING SIZE TO BE COORDINATED WITH LEVEL SENSOR MANUFACTURER.
9. ALL EXISTING ISOLATION GATES REQUIRED FOR CONSTRUCTION ISOLATION REQUIRE SEAL REPLACEMENT PRIOR TO CONSTRUCTION.
10. REFER TO SPECIFICATION 11133 - SUBMERSIBLE SUMP PUMP FOR DETAILED INFORMATION ON SUMP PUMP REQUIREMENTS.
11. REFER TO ELECTRICAL SHEETS FOR ALL ELECTRICAL MODIFICATIONS.
12. CONNECT NEW SUMP PUMP DISCHARGE PIPING TO EXISTING SUMP PUMP PIPING AND VALVES.

13. COORDINATE LOCATION OF GRATING OPENING WITH THE DISCHARGE LOCATION OF SUMP PUMP DISCHARGE PIPING. FIELD VERIFY FINAL DISCHARGE LOCATION.
14. REFER TO SPECIFICATION 08305 - ACCESS HATCHES FOR SUMP PUMP ACCESS HATCH REQUIREMENTS. FIELD VERIFY REQUIRED HATCH DIMENSIONS
15. FIELD VERIFY CONNECTION POINT TO EXISTING PEW PIPING AND ROUTE OF NEW PEW PIPING. REFER TO SHEET P-02 FOR EXTENT OF PEW PIPING REPLACEMENT.

811
Know what's below.
Call before you dig.

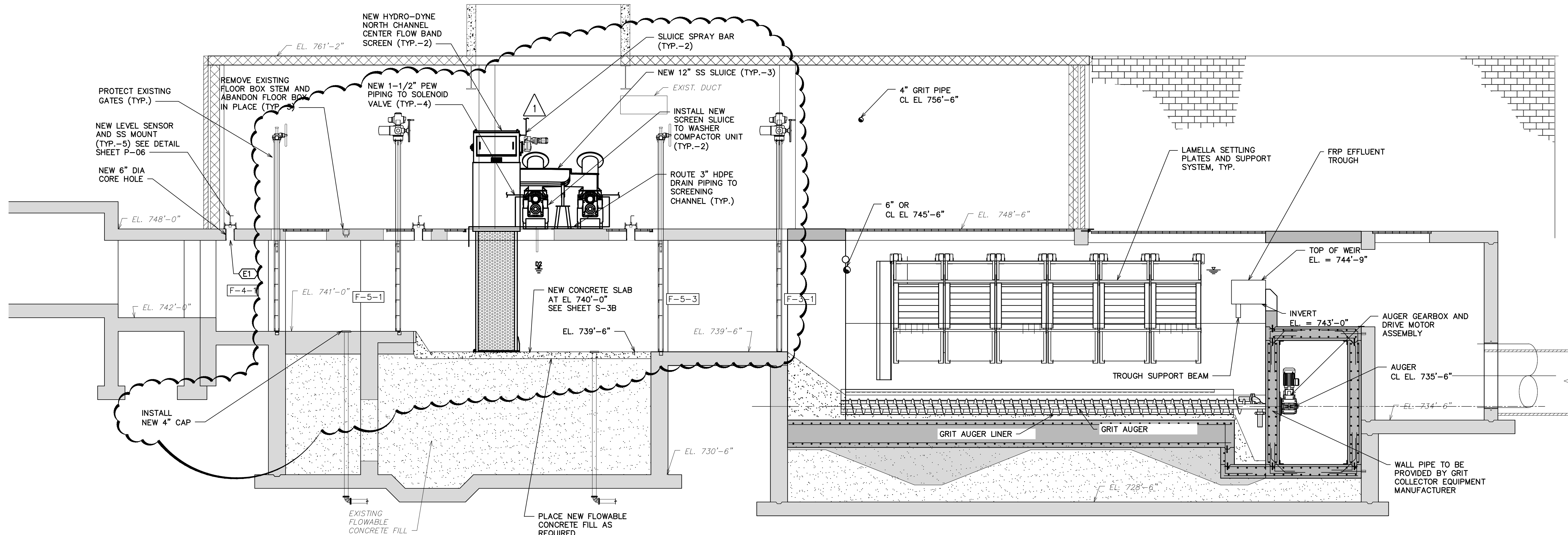
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	10-29-2021	70% DESIGN SUBMITTAL		
	10-01-2021	50% DESIGN SUBMITTAL		

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
SOUTH SCREENING AREA
PARTIAL PLANS (HYDRO-DYNE)

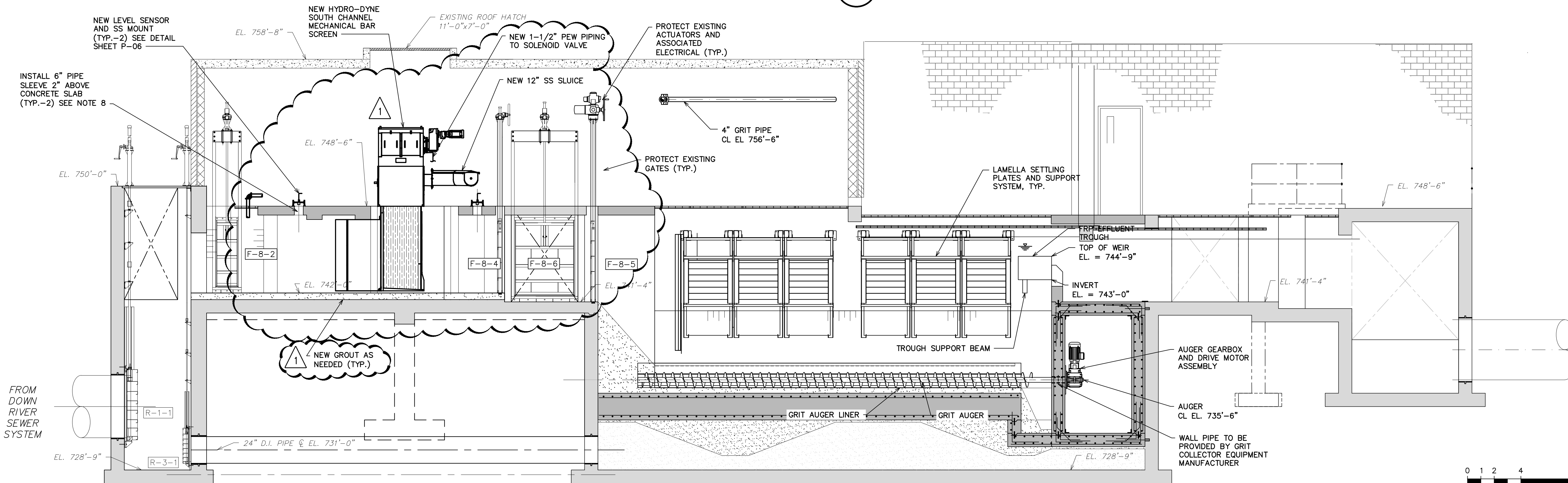
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DRAWING No. 536
SHEET No. P-13B

ANN ARBOR MI CITY



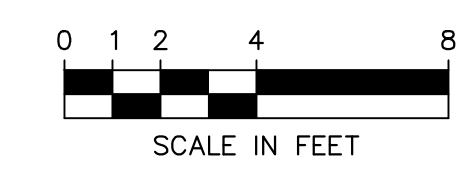
HEADWORKS NORTH CHANNEL SECTION 1

SCALE: 1/4" = 1'-0" P-10B



HEADWORKS SOUTH CHANNEL SECTION 2

SCALE: 1/4" = 1'-0" P-10B



SCALE IN FEET
FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

Know what's below.
Call before you dig.

ISSUED FOR ADDENDUM NO. 1	DATE	DRAWN	CHECKED
1-19-2022	10-01-2021		
ISSUED FOR BIDS SET	11-22-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

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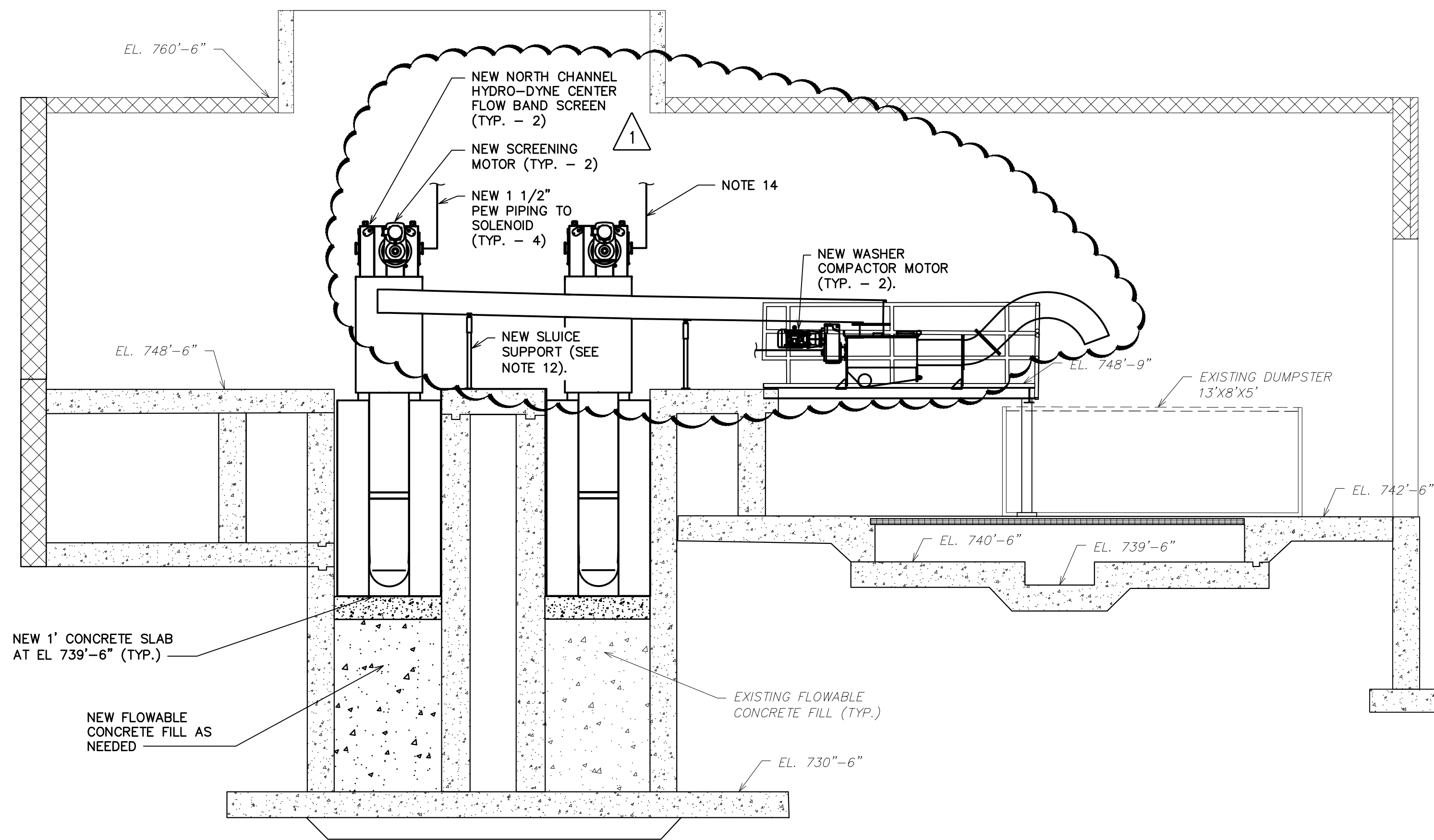
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

HEADWORKS IMPROVEMENTS PROJECT

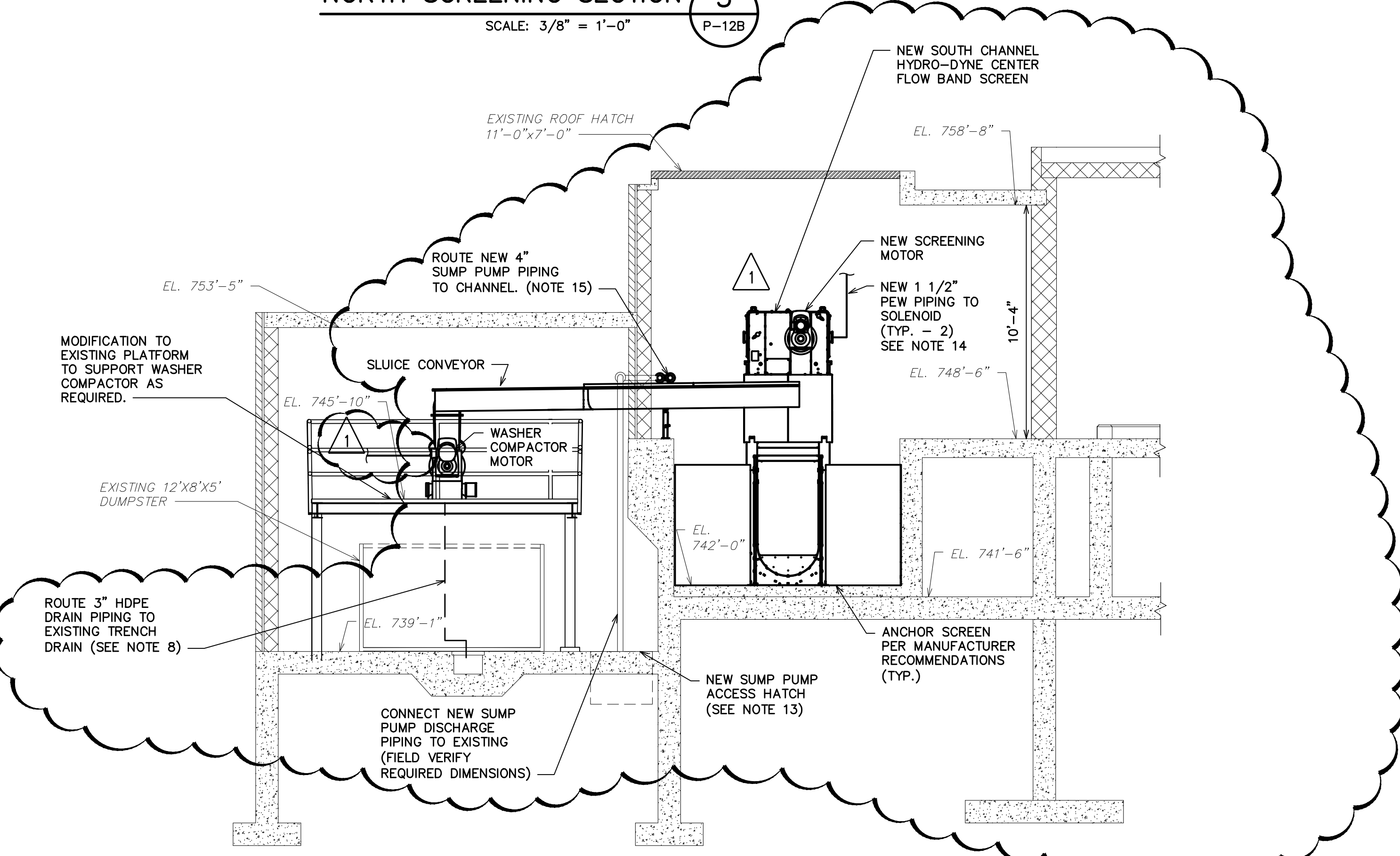
HEADWORKS BUILDING
NORTH AND SOUTH TRAIN
SECTIONS (HYDRO-DYNE)

SCALE AS SHOWN
DRAWING No. 538

SHEET No. **P-14B**



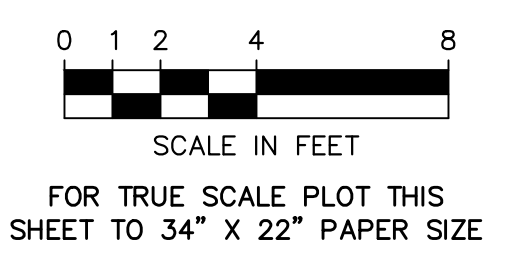
NORTH SCREENING SECTION 3
SCALE: 3/8" = 1'-0" P-12B




SOUTH SCREENING SECTION 4
SCALE: 1/4" = 1'-0" P-13B

GENERAL NOTES


1. REFER TO STRUCTURAL DEMO SHEETS AND STRUCTURAL SHEETS S-02 THROUGH S-06 FOR ALL STRUCTURAL MODIFICATIONS AND REPAIRS WITHIN THE SCREENING CHANNELS.
2. COORDINATE WALL OPENING TO ACCOMMODATE SOUTH CHANNEL SCREEN 3 WITH EXISTING WALL OPENING ON SHEET DP--02, DP--03 AND ARCHITECTURAL SHEETS.
3. PROTECT ALL EXISTING GATES, ACTUATORS, ELECTRICAL CONDUITS, ETC. AND ENSURE THEY REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
4. SKYLIGHTS SHALL BE REMOVED AND REINSTALLED TO ALLOW FOR INSTALLATION OF NEW SCREENING EQUIPMENT.
5. INSTALL ONE 4.5' WIDE (SOUTH CHANNEL) DUPERON FLEXRAKE SCREEN PER MANUFACTURER INSTRUCTIONS. SEE SPECIFICATION 11350A - SCREENING EQUIPMENT FOR MORE INFORMATION.
6. COORDINATE SCREEN INSTALLATION WITH STRUCTURAL ANCHOR REQUIREMENTS, SEE SHEET SPECIFICATION SECTION 05051 - ANCHORS.
7. REFER TO SPECIFICATION 13060 - EXPOSED PROCESS PIPE AND SPECIFICATION 15100 - VALVES NEW PEW PIPING, WASHER COMPACTOR DRAIN PIPING, SOLENOID VALVE, ISOLATION VALVE, ETC. REQUIREMENTS.
8. FINAL CONCRETE CORE HOLE AND GRATING OPENING SIZE TO BE COORDINATED WITH LEVEL SENSOR MANUFACTURER.
9. ALL EXISTING ISOLATION GATES REQUIRED FOR CONSTRUCTION ISOLATION REQUIRE SEAL REPLACEMENT PRIOR TO CONSTRUCTION.
10. REFER TO SPECIFICATION 11133 - SUBMERSIBLE SUMP PUMP FOR DETAILED INFORMATION ON SUMP PUMP REQUIREMENTS.
11. REFER TO ELECTRICAL SHEETS FOR ALL ELECTRICAL MODIFICATIONS.
12. INSTALL SLUICE SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS.
13. REFER TO SPECIFICATION SECTION 08375 - HATCHES FOR SUMP PUMP HATCH REQUIREMENTS. FIELD VERIFY REQUIRED HATCH DIMENSIONS.
14. FIELD VERIFY CONNECTION POINT TO EXISTING PEW PIPING AND ROUTE OF NEW PEW PIPING. REFER TO SHEET P-02 FOR EXTENT OF PEW PIPING REPLACEMENT.
15. COORDINATE LOCATION OF HATCH OPENING WITH THE DISCHARGE LOCATION OF SUMP PUMP DISCHARGE PIPING. FIELD VERIFY FINAL DISCHARGE LOCATION.





Know what's below.
Call Before you dig.

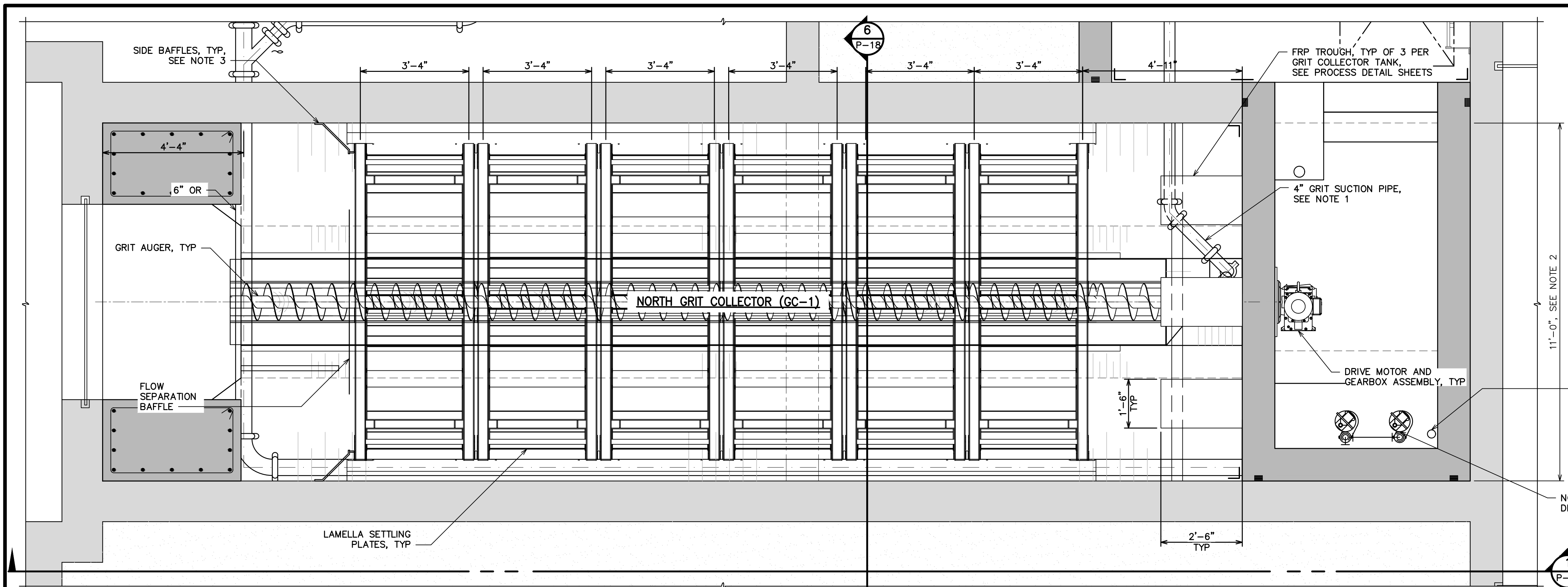
ISSUED FOR ADDENDUM NO. 1	DATE	DESCRIPTION	REV.
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	12-13-2021	90% DESIGN SUBMITTAL	CHECKED
	11-22-2021	70% DESIGN SUBMITTAL	
	10-29-2021		



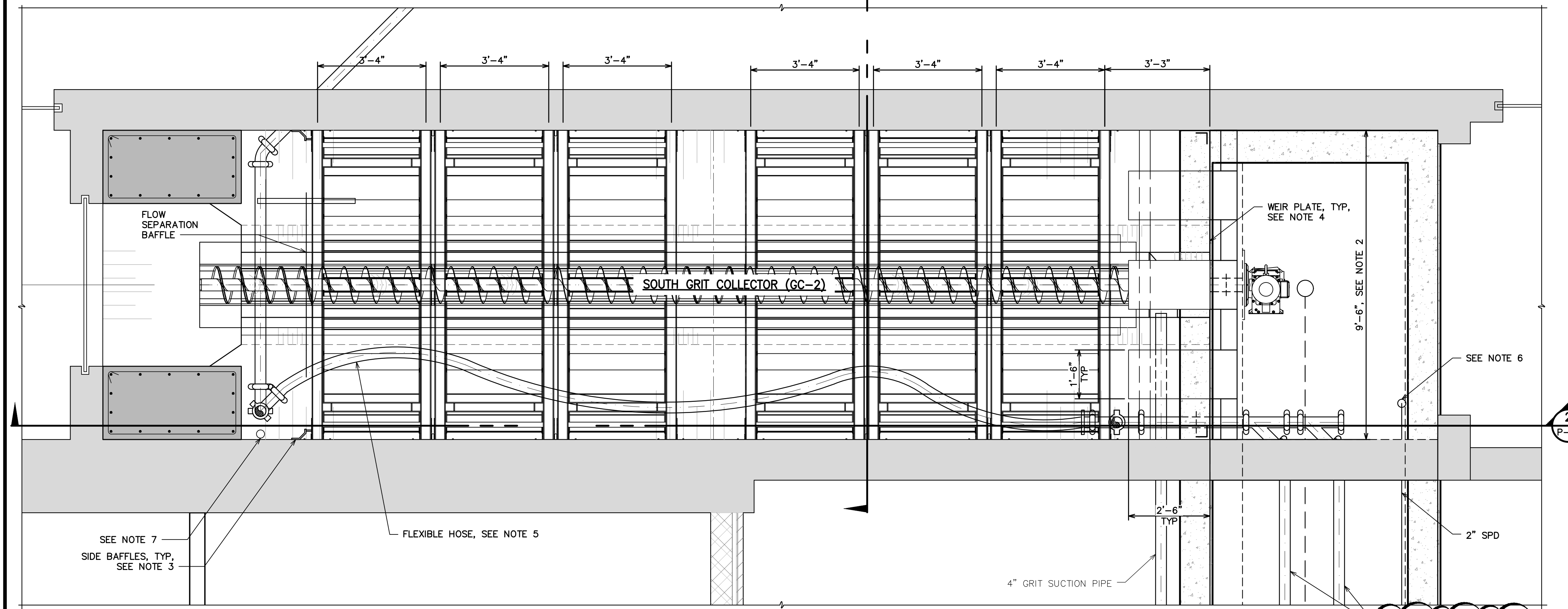
CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
ANN ARBOR, MI 48106-1000
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
HEADWORKS BUILDING
NORTH AND SOUTH
SCREENING SECTIONS (HYDRO-DYNE)

SCALE AS SHOWN
DRAWING No. 540
SHEET No. **P-15B**

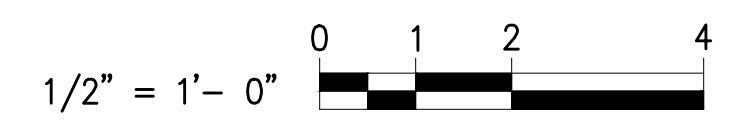



- GENERAL NOTES:**
1. ROLL 45-DEGREE FITTINGS TO DIRECT SUCTION PIPING INTO CENTER OF SUMP.
 2. FIELD MEASURE AND CONFIRM EXISTING TANK DIMENSIONS PRIOR TO ORDERING THE GRIT REMOVAL EQUIPMENT. NOTIFY ENGINEER OF ANY INCONSISTENCIES.
 3. SIDE BAFFLES SHALL BE FABRICATED BY THE CONTRACTOR WITH DIRECTION FROM GRIT REMOVAL MANUFACTURER AND ENGINEER. BAFFLES SHALL BE CONSTRUCTED OF 12 GA (MIN.) 304SST MATERIAL AND SUPPORTED INDEPENDENTLY FROM GRIT REMOVAL EQUIPMENT. ANCHOR BAFFLES TO WALL WITH SOLID ANGLE AND 3/8" (MIN.) DIAMETER BOLTS WITH 12" SPACING (MAX.). TOP OF SIDE BAFFLE SHALL MATCH TOP OF LAMELLA PLATES AND EXTEND TO TANK INVERT. MANUFACTURER REQUIRES A FEW INCHES OF SEPARATION BETWEEN THE EDGE OF BAFFLE AND LAMELLAS. FURNISH NEOPRENE STRIP ALONG THE EDGE OF THE BAFFLE TO FILL THIS SPACE. ATTACH NEOPRENE TO BAFFLE WITH 316 SST BOLTS AND WASHERS.
 4. INSTALL WEIR PLATES ALONG TANK EFFLUENT WALL. COORDINATE LOCATION WITH TROUGHS. SEE PROCESS DETAIL SHEETS FOR WEIR PLATE AND TROUGH DETAILS.
 5. PROVIDE 4-INCH FLEXIBLE HOSE WITH STAINLESS STEEL CAM-LOCK FITTINGS ON EACH END. LOCATE CAM-LOCKS WITHIN 1-FT OF TANK TOP OF WALL, FOR ACCESS. HOSE SHALL BE MANUFACTURED BY ALFA GOMMA, OR EQUAL.
 6. INSTALL WALL PIPE IN TOP SLAB OF ROOM TO ROUTE SUMP PUMP DISCHARGE PIPE THROUGH. PROVIDE INCREASER FITTINGS AS REQUIRED. TERMINATION DISCHARGE AT ELEV 746.50 WITH 90 DEGREE BEND FACING EAST.
 7. CONTRACTOR SHALL MODIFY EXISTING ROOF DRAIN TO AVOID CONFLICT WITH MONORAIL.



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

GRIT DISCHARGE PIPE REFER TO P-20 FOR CONTINUATION






Know what's below.
Call before you dig.

ISSUED FOR	ADDENDUM NO.	DATE	DESCRIPTION	REV.	DATE	DRAWN	CHECKED
11-19-2022	1	11-19-2022	ISSUED FOR BIDS SET				
		12-13-2021	90% DESIGN SUBMITTAL				
		11-22-2021	70% DESIGN SUBMITTAL				
		10-29-2021	50% DESIGN SUBMITTAL				
		10-01-2021					

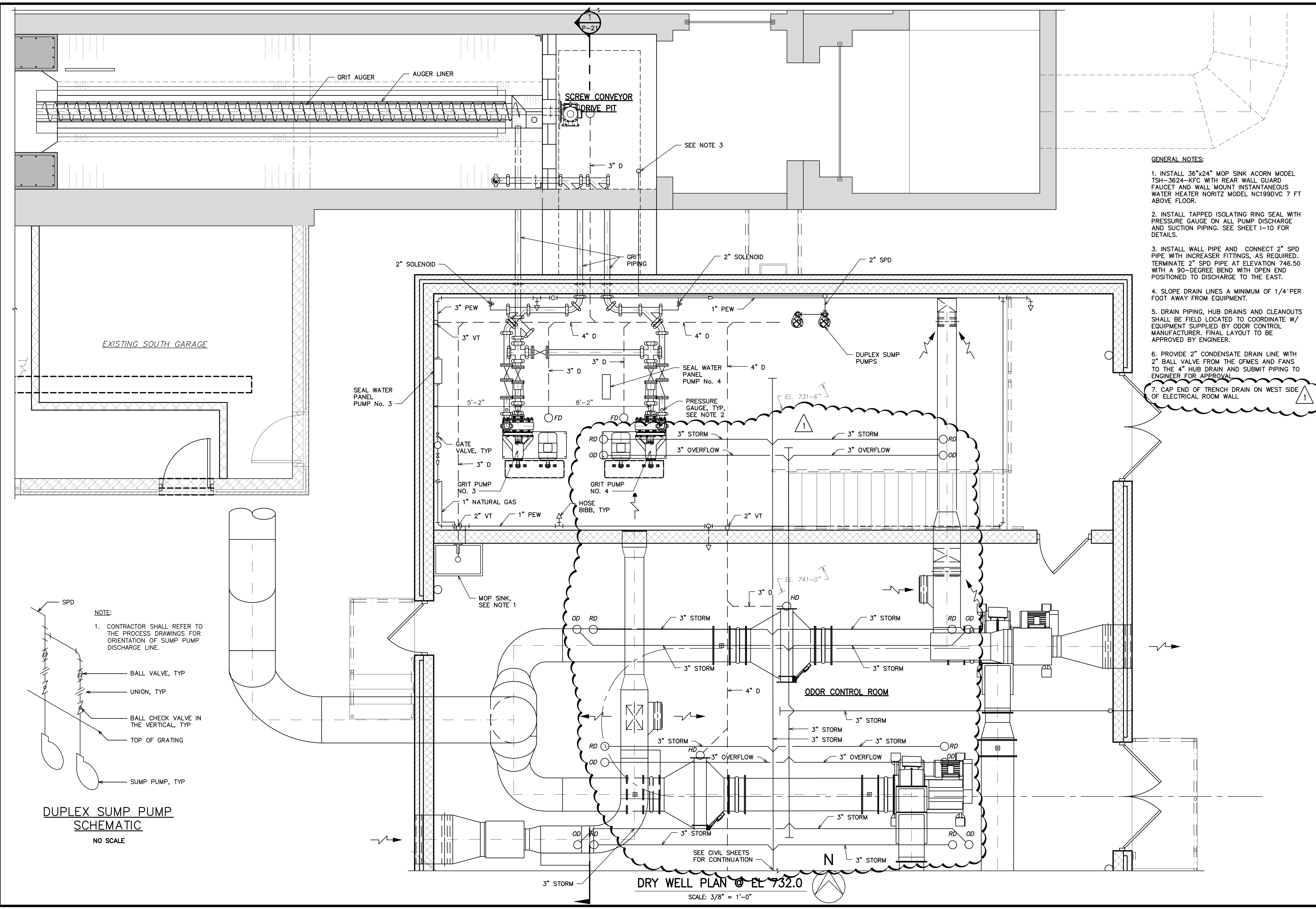
CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
ANN ARBOR, MI 48106-1000
734.794.4410
www.aagov.org



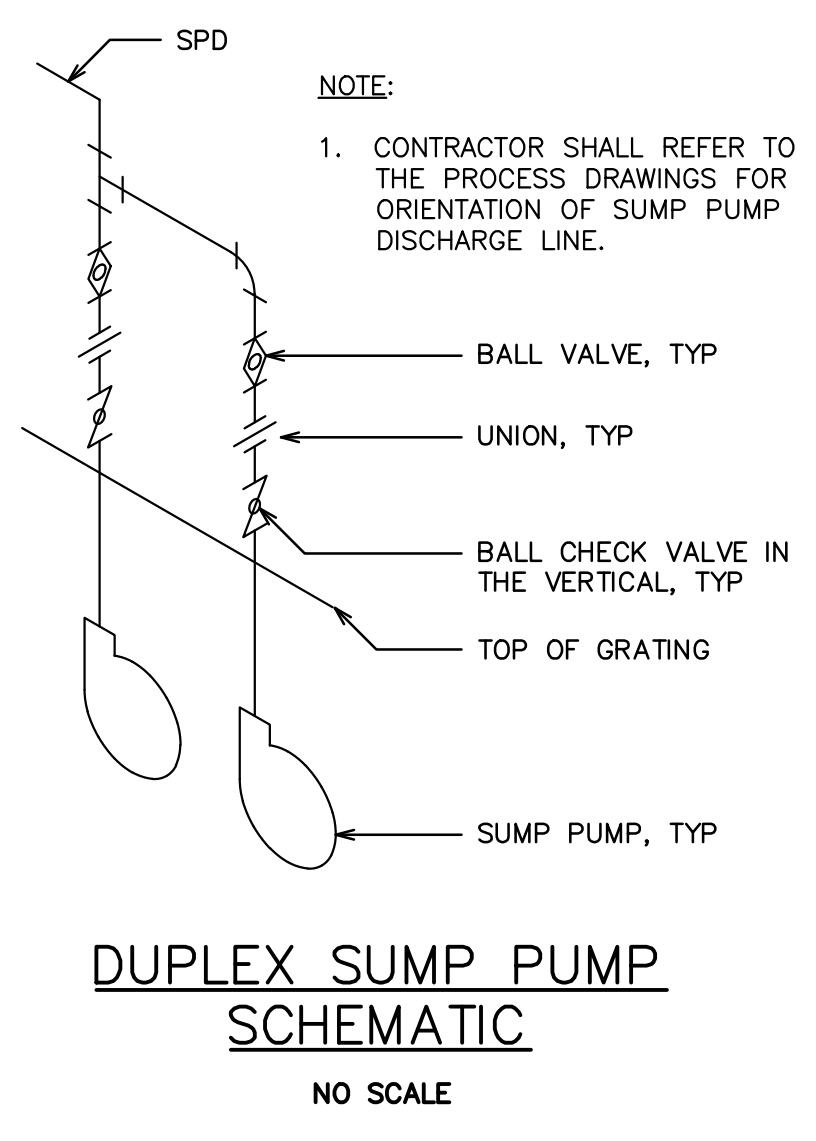
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
PARTIAL PLAN OF GRIT CHAMBERS AT EL 742.0

SCALE: 1/2" = 1'-0"
DRAWING No. 550

SHEET No. **P-17**



- GENERAL NOTES:**
1. INSTALL 36"x24" MOP SINK ACORN MODEL TSH-3624-KFC WITH REAR WALL GUARD FAUCET AND WALL MOUNT INSTANTANEOUS WATER HEATER NORITZ MODEL NC199DVC 7 FT ABOVE FLOOR.
 2. INSTALL TAPPED ISOLATING RING SEAL WITH PRESSURE GAUGE ON ALL PUMP DISCHARGE AND SUCTION PIPING. SEE SHEET I-10 FOR DETAILS.
 3. INSTALL WALL PIPE AND CONNECT 2" SPD PIPE WITH INCREASER FITTINGS, AS REQUIRED. TERMINATE 2" SPD PIPE AT ELEVATION 746.50 WITH A 90-DEGREE BEND WITH OPEN END POSITIONED TO DISCHARGE TO THE EAST.
 4. SLOPE DRAIN LINES A MINIMUM OF 1/4" PER FOOT AWAY FROM EQUIPMENT.
 5. DRAIN PIPING, HUB DRAINS AND CLEANOUTS SHALL BE FIELD LOCATED TO COORDINATE W/ EQUIPMENT SUPPLIED BY ODOR CONTROL MANUFACTURER. FINAL LAYOUT TO BE APPROVED BY ENGINEER.
 6. PROVIDE 2" CONDENSATE DRAIN LINE WITH 2" BALL VALVE FROM THE GFMS AND FANS TO THE 4" HUB DRAIN AND SUBMIT PIPING TO ENGINEER FOR APPROVAL.
 7. CAP END OF TRENCH DRAIN ON WEST SIDE OF ELECTRICAL ROOM WALL.



811
Know what's below. Call before you dig.

ISSUED FOR ADDENDUM NO. 1	1-19-2022	ISSUED FOR BIDS SET	12-13-2021	90% DESIGN SUBMITTAL	11-22-2021	70% DESIGN SUBMITTAL	10-29-2021	50% DESIGN SUBMITTAL	10-01-2021	DATE	DRAWN	CHECKED
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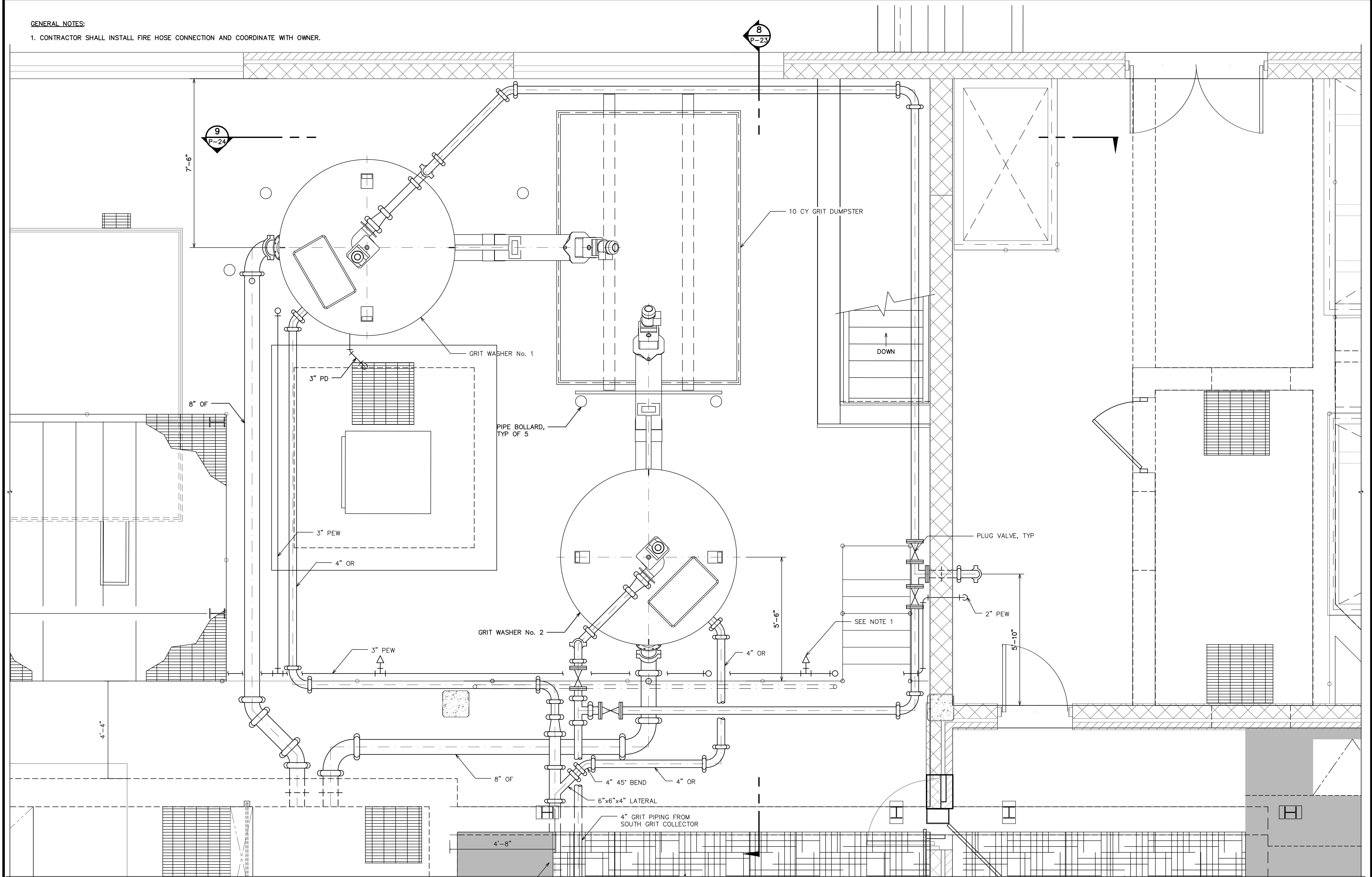
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301 EAST HURON STREET
ANN ARBOR, MI 48106-1667
www.aagov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
PLAN OF ODOR CONTROL AND GRIT PUMP BUILDING

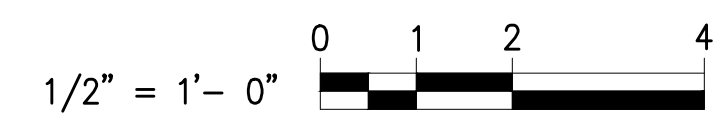
SCALE: N.T.S.
DRAWING No.: 562
SHEET No.: P-20

GENERAL NOTES:

1. CONTRACTOR SHALL INSTALL FIRE HOSE CONNECTION AND COORDINATE WITH OWNER.



PARTIAL PLAN AT 732.0
SCALE: 1/2" = 1'-0"



811
Know what's below.
Call before you dig.

ISSUED FOR ADDENDUM NO. 1	1-19-2022	12-13-2021	11-22-2021	10-29-2021	10-01-2021
ISSUED FOR BIDS SET					
90% DESIGN SUBMITTAL					
70% DESIGN SUBMITTAL					
50% DESIGN SUBMITTAL					
REV.	DATE	DRAWN	CHECKED		

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
PARTIAL PLAN OF GRIT WASHERS

SCALE: 1/2" = 1'-0"
DRAWING No. 570

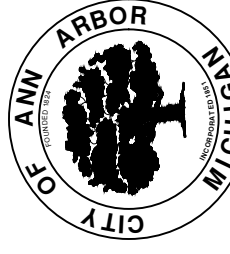
SHEET No. **P-22**



Know what's below. Call before you dig.

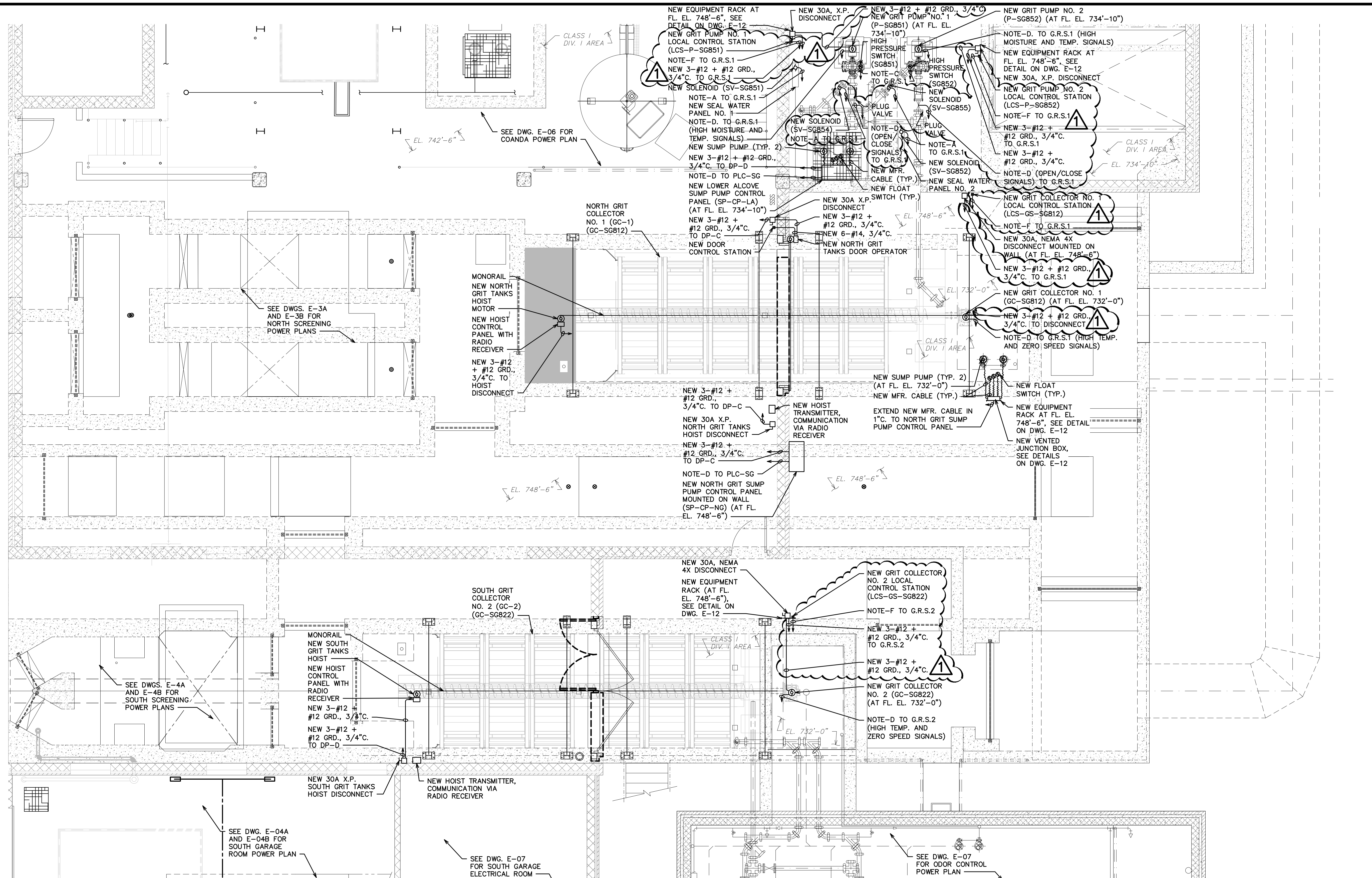
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ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		
REV.	DATE	DRAWN	CHECKED

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
NORTH HEADWORKS BUILDING
GRIT WOLF & PUMP POWER PLAN

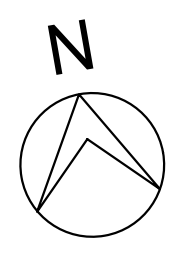
SCALE 1/4" = 1'-0"
DRAWING NO. 712
SHEET NO. E-05



CONDUIT CLASSIFICATION

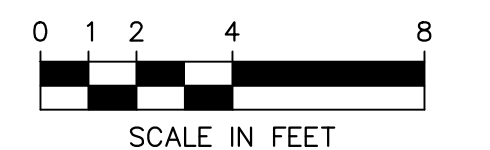
- CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS I DIV. I AREAS.
- EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.
- CONDUIT MAY BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.
- CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.
- CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.

**NORTH HEADWORKS BUILDING
GRIT WOLF & PUMP POWER PLAN**

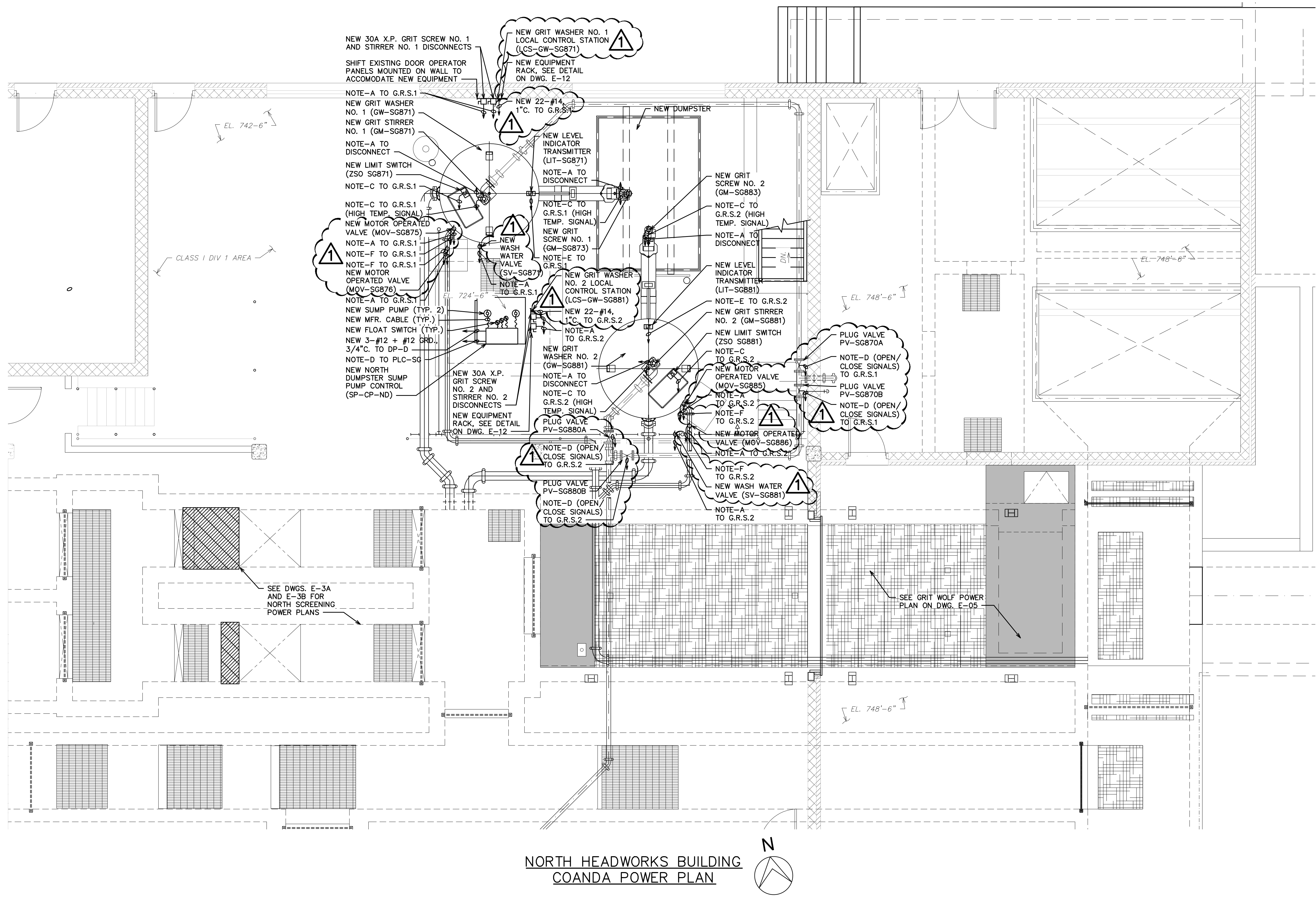


PLAN NOTES:

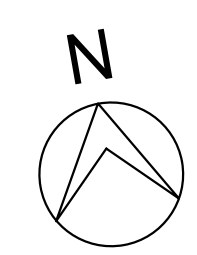
- NEW 2-#12 + #12 GRD., 3/4\"C.
- NEW 3-#12 + #12 GRD., 1\"C. (SHIELDED VFD CABLE)
- NEW 2-#14, 3/4\"C.
- NEW 4-#14, 3/4\"C.
- NEW 1PR. #18 SHLD., 3/4\"C.
- NEW 11-#14, 3/4\"C.
- NEW CAT6 CABLE, 3/4\"C.
- NEW 3PR. #18 SHLD., 3/4\"C.
- NEW 13-#14, 3/4\"C.
- NEW 3-#8 + #10 GRD., 1 1/2\"C. (SHIELDED VFD CABLE)



SCALE IN FEET
FOR TRUE SCALE PLOT THIS SHEET TO 34\" X 22\" PAPER SIZE



**NORTH HEADWORKS BUILDING
COANDA POWER PLAN**



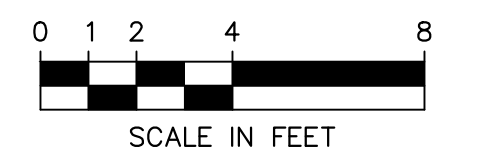
ALL EQUIPMENT SHALL BE EXPLOSIONPROOF, RATED CLASS 1 DIVISION 1 ON THIS DRAWING, EXCEPT FOR IN THE ELECTRICAL ROOM. INSTALL EQUIPMENT, WIRE, CONDUIT, AND SEAL-OFF FITTINGS PER NEC REQUIREMENTS FOR CLASSIFIED AREAS.

CONDUIT CLASSIFICATION

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS 1 DIV. 1 AREAS.</p> <p>2. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.</p> <p>3. CONDUIT MAY BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.</p> | <p>4. CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.</p> <p>5. CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.</p> |
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PLAN NOTES:

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A. NEW 2-#12 + #12 GRD., 3/4\"C.</p> <p>B. NEW 3-#12 + #12 GRD., 1\"C. (SHIELDED VFD CABLE)</p> <p>C. NEW 2-#14, 3/4\"C.</p> <p>D. NEW 4-#14, 3/4\"C.</p> <p>E. NEW 1PR. #18 SHLD., 3/4\"C.</p> | <p>F. NEW 11-#14, 3/4\"C.</p> <p>G. NEW CAT6 CABLE, 3/4\"C.</p> <p>H. NEW 3PR. #18 SHLD., 3/4\"C.</p> <p>I. NEW 13-#14, 3/4\"C.</p> <p>J. NEW 3-#8 + #10 GRD., 1 1/2\"C. (SHIELDED VFD CABLE)</p> |
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FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

811 Know what's below. Call before you dig.																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>ISSUED FOR</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>FOR ADDENDUM NO. 1</td> <td>1-19-2022</td> <td></td> </tr> <tr> <td>ISSUED FOR BIDS SET</td> <td>12-13-2021</td> <td></td> </tr> <tr> <td>90% DESIGN SUBMITTAL</td> <td>11-22-2021</td> <td></td> </tr> <tr> <td>70% DESIGN SUBMITTAL</td> <td>10-29-2021</td> <td></td> </tr> <tr> <td>50% DESIGN SUBMITTAL</td> <td>10-01-2021</td> <td></td> </tr> <tr> <td>REV.</td> <td>DATE</td> <td>DESCRIPTION</td> </tr> </table>	ISSUED FOR	DATE	DESCRIPTION	FOR ADDENDUM NO. 1	1-19-2022		ISSUED FOR BIDS SET	12-13-2021		90% DESIGN SUBMITTAL	11-22-2021		70% DESIGN SUBMITTAL	10-29-2021		50% DESIGN SUBMITTAL	10-01-2021		REV.	DATE	DESCRIPTION
ISSUED FOR	DATE	DESCRIPTION																			
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REV.	DATE	DESCRIPTION																			
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<p>CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET ANN ARBOR MI 48106-6647 www.a2gov.org</p>																					
<p>PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT NORTH HEADWORKS BUILDING COANDA POWER PLAN</p>																					
<p>SCALE 1/4" = 1'-0" DRAWING No. 714</p>																					
<p>SHEET No. E-06</p>																					



Know what's below. Call before you dig.

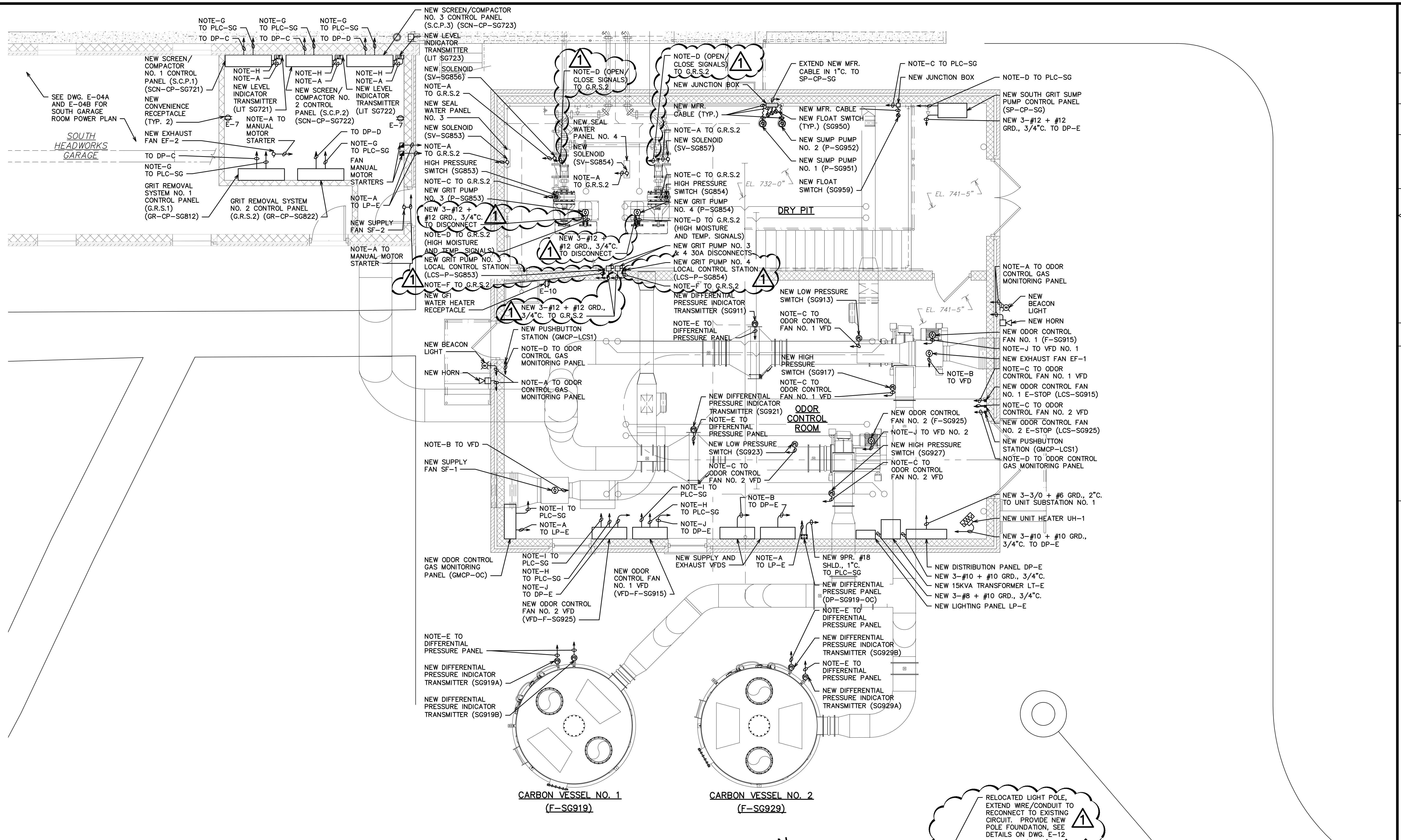
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ISSUED FOR BIDS SET								
90% DESIGN SUBMITTAL								
70% DESIGN SUBMITTAL								
50% DESIGN SUBMITTAL								
REV.								

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ODOR CONTROL BUILDING
POWER PLAN

SCALE 1/4" = 1'-0"
DRAWING NO. 716
SHEET NO. E-07



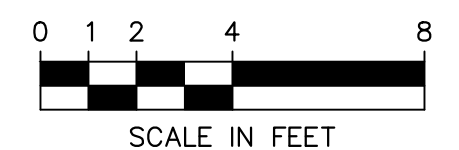
CONDUIT CLASSIFICATION	
1. CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS 1 DIV. 1 AREAS.	4. CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.
2. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.	5. CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.
3. CONDUIT MAY BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.	

ODOR CONTROL BUILDING
POWER PLAN

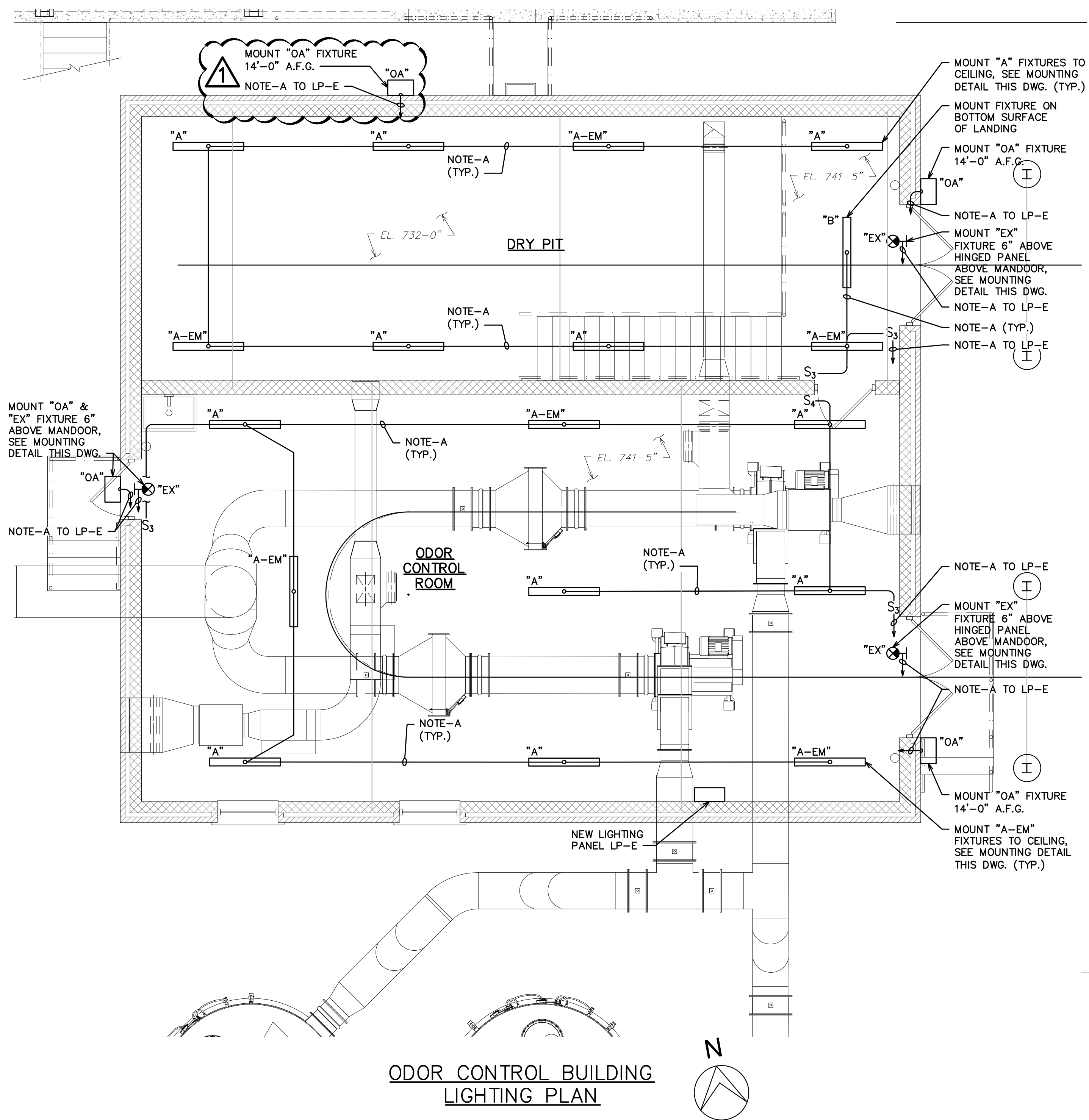
RELOCATED LIGHT POLE, EXTEND WIRE/CONDUIT TO RECONNECT TO EXISTING CIRCUIT. PROVIDE NEW POLE FOUNDATION, SEE DETAILS ON DWG. E-12

PLAN NOTES:

- A. NEW 2-#12 + #12 GRD., 3/4"C.
- B. NEW 3-#12 + #12 GRD., 1"C. (SHIELDED VFD CABLE)
- C. NEW 2-#14, 3/4"C.
- D. NEW 4-#14, 3/4"C.
- E. NEW 1PR. #18 SHLD., 3/4"C.
- F. NEW 11-#14, 3/4"C.
- G. NEW CAT6 CABLE, 3/4"C.
- H. NEW 3PR. #18 SHLD., 3/4"C.
- I. NEW 13-#14, 3/4"C.
- J. NEW 3-#8 + #10 GRD., 1 1/2"C. (SHIELDED VFD CABLE)



FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE



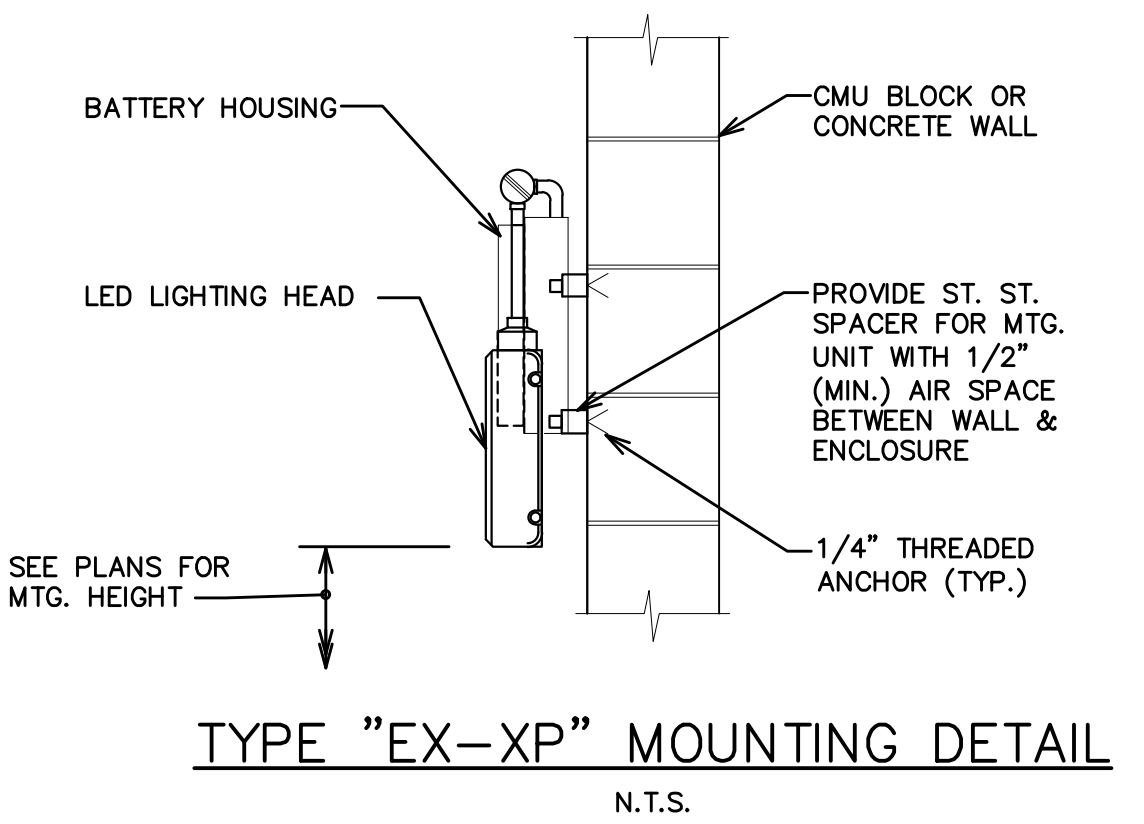
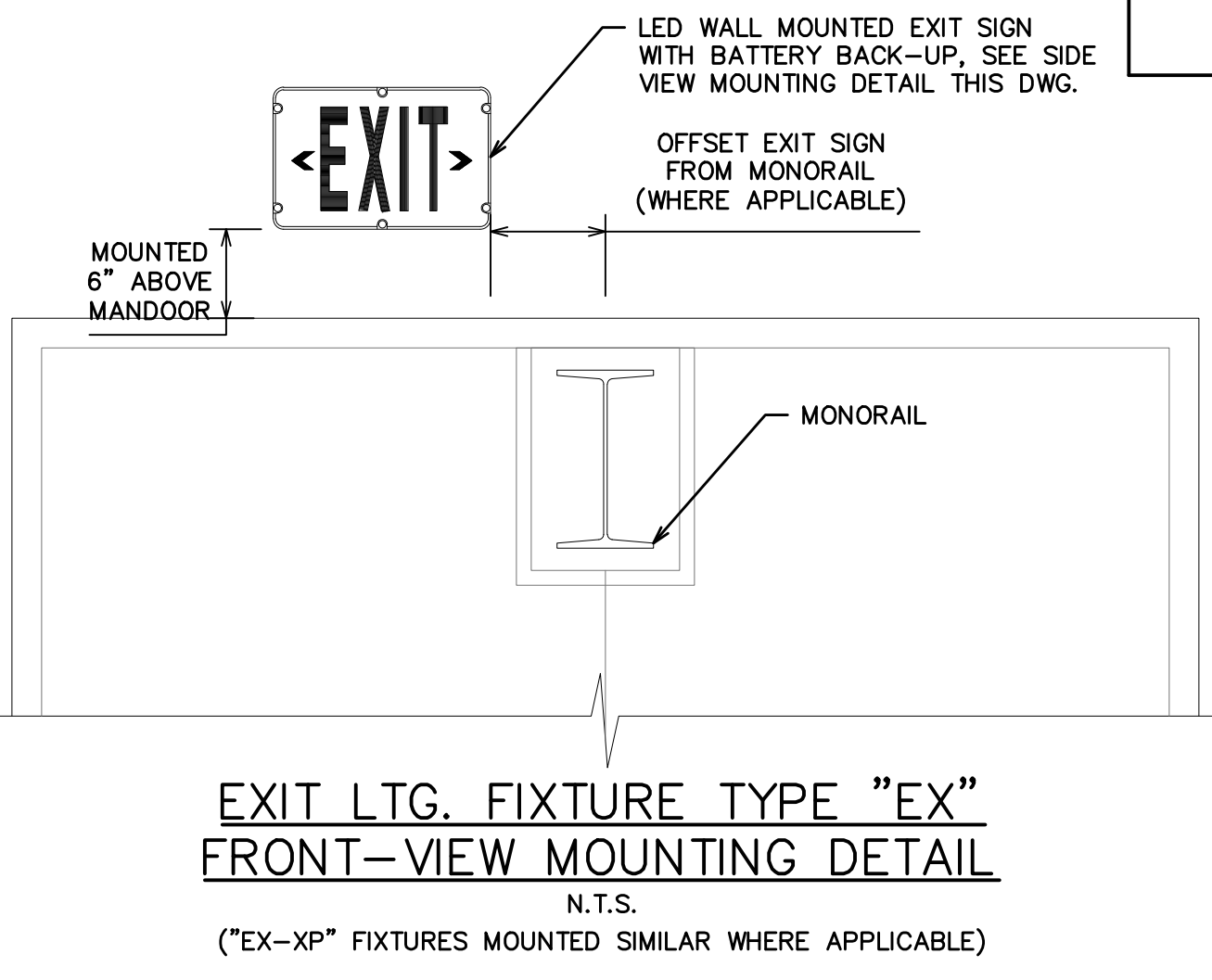
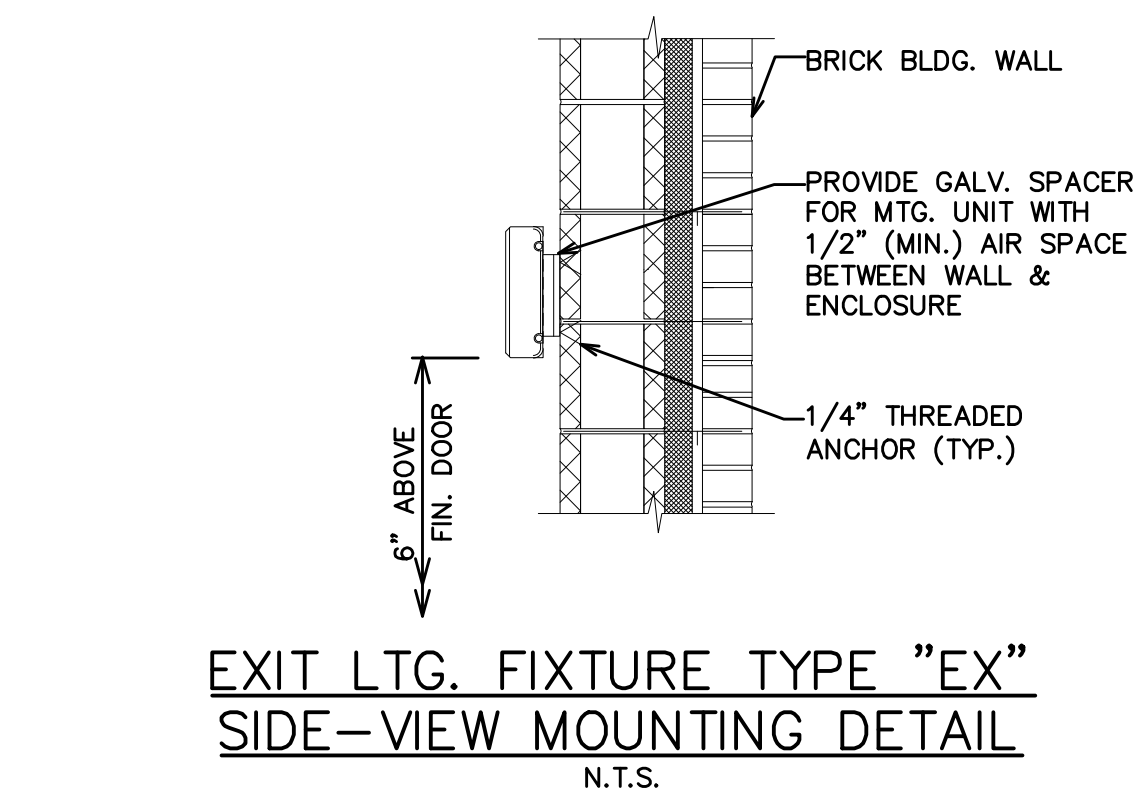
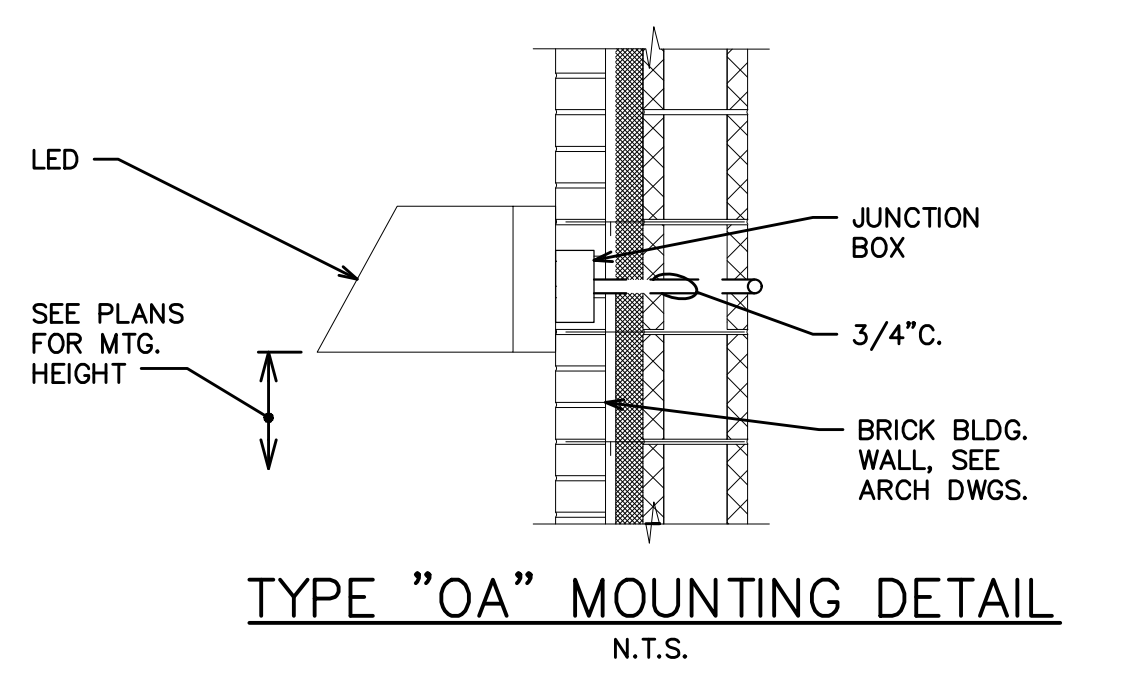
ODOR CONTROL BUILDING LIGHTING PLAN

BASIS OF DESIGN

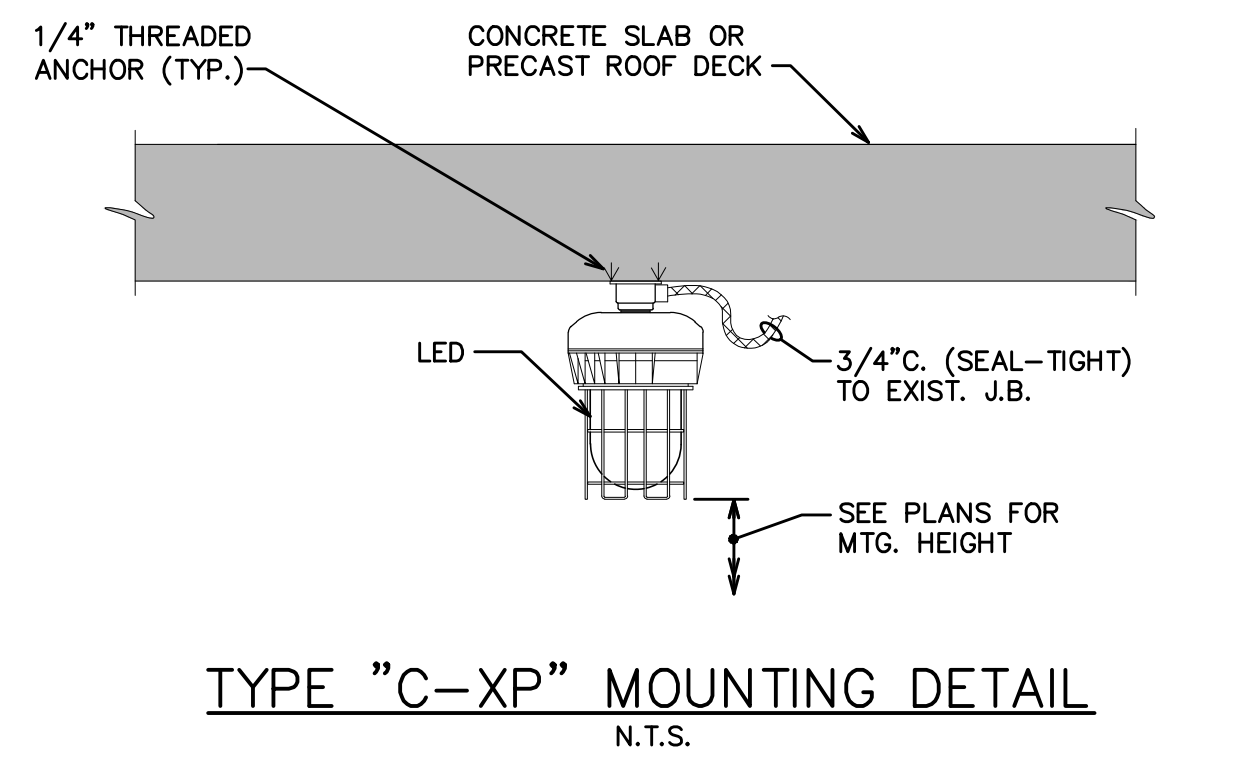
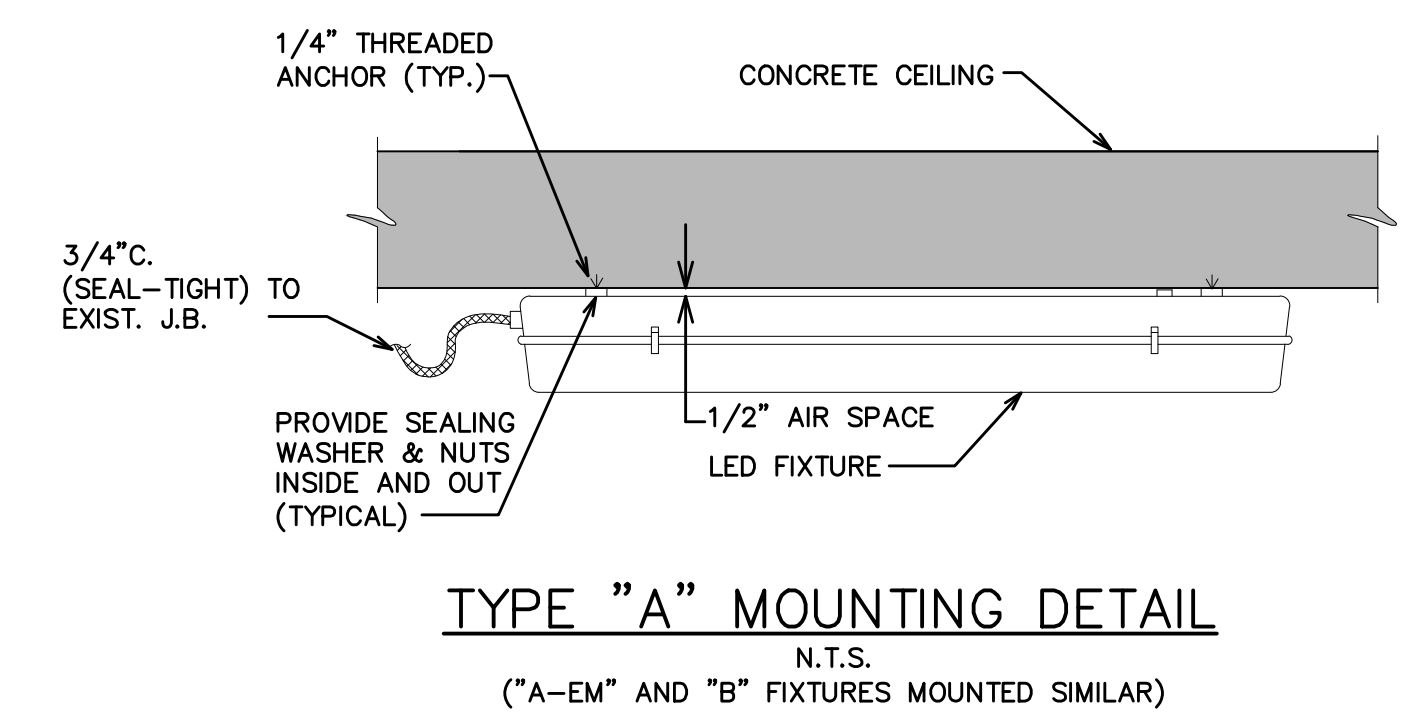
THIS LIGHTING PLAN WAS DESIGNED USING AGI32 VERSION 19.15.2. LIGHTING LEVELS HAVE BEEN DETERMINED FROM IES RECOMMENDATIONS. LIGHTING LEVELS AT FINISHED FLOOR LEVEL FOR THE DRY PIT AND ODOR CONTROL ROOM SHALL BE 30.0 FOOTCANDLES AVERAGE ±3.0 FOOTCANDLES. THIS LIGHTING PLAN IS BASED UPON THE SPECIFIED LIGHT FIXTURES ON THIS DRAWING. OTHER FIXTURES ARE ACCEPTABLE UPON SUBMITTAL OF A PHOTOMETRIC PLAN MATCHING THE LIGHTING LEVELS SPECIFIED ABOVE, MEETING SPECIFICATION REQUIREMENTS AS SHOWN ON THIS DRAWING, AND ENGINEER'S APPROVAL.

CONDUIT CLASSIFICATION

1. CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS 1 DIV. 1 AREAS.
2. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.
3. CONDUIT MAY BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.
4. CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.
5. CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.

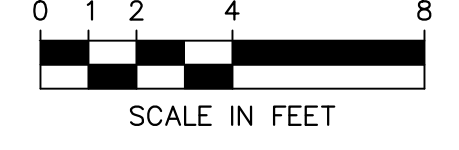



LIGHTING FIXTURE SCHEDULE				
TYPE	LAMP	OPERATING VOLTAGE	DESCRIPTION	MFR. CAT. NO.
"A"	75 WATT 8000 LUMENS LED 4000K	120-277V. 1PH.	LED LOW BAY 4' LINEAR LIGHT FIXTURE WITH 20-GAUGE STEEL FULL-BODY HOUSING. FINISH IS HIGH-GLOSS, BAKED WHITE ENAMEL FINISH. LIGHT DISTRIBUTION HAS 0-60° ZONE WITH DIFFUSE ACRYLIC LENS. DRIVER HAS 0-10V DIMMABLE CONTROLS. LISTED FOR DAMP AND DRY LOCATIONS WITH 5-YEAR LIMITED WARRANTY.	LITHONIA: MSL 8000LM SBL MVOLT GZ10 40K 80CRI WH OR APPROVED EQUAL
"A-EM"	75 WATT 8000 LUMENS LED 4000K	120-277V. 1PH.	SAME AS TYPE "A" EXCEPT PROVIDE 7W EMERGENCY BATTERY PACK.	LITHONIA: MSL 8000LM SBL MVOLT GZ10 40K 80CRI E7W WH OR APPROVED EQUAL
"B"	29 WATT 4000 LUMENS LED 4000K	120-277V. 1PH.	SAME AS FIXTURE "A" EXCEPT 4000 LUMEN LED OUTPUT.	LITHONIA: MSL 4000LM SBL MVOLT GZ10 40K 80CRI WH OR APPROVED EQUAL
"C-XP"	55 WATT 5600 LUMENS LED 5000K	120-277V. 1PH.	LED JELLY JAR SHAPED, BAKED POWER EPOXY/POLYESTER FINISH, STAINLESS STEEL, CEILING-MOUNTED LIGHT FIXTURE. RATED EXPLOSIONPROOF FOR CLASS 1, DIV. 1 LOCATIONS. FIXTURE HAS LENS GUARD.	HUBBELL-KILLARK: EZL5530X2GAN OR APPROVED EQUAL
"OA"	12 WATT 1500 LUMENS LED 4000K	120V-277V. 1PH.	ARCHITECTURAL WALL SCONCE LUMINAIRE, SINGLE-PIECE, DIE CAST ALUMINUM HOUSING, POWDER COAT FINISH, DARK BRONZE, WITH MOUNTING PLATE, IP65 RATED, EMERGENCY 7W BATTERY BACKUP AND 5-YEAR LIMITED WARRANTY INCLUDED.	LITHONIA: WST LED P1 VW 40K MVOLT E7WC DDBXD OR APPROVED EQUAL
"EX"	2.5 WATT	120V. 1PH.	LED WALL MOUNTED EXIT SIGN, MOLDED THERMOPLASTIC HOUSING, RED LETTERING, SNAP IN/OUT CHEVRONS, LONG-LIFE LEDS, ADVANCED DIAGNOSTICS, NICKEL-CADMIUM BATTERY, UL LISTED FOR DAMP LOCATIONS, ROHS COMPLIANT, SURGE SUPPRESSOR, 5 YEAR WARRANTY ON ALL COMPONENTS.	EMERGI-LITE: PREMIER SERIES WPREMSXNDNR OR APPROVED EQUAL
"EX-XP"	3W. LED 6VDC	120V. 1PH.	LED SURFACE MOUNTED, SINGLE SIDED EXIT SIGN, CLASS 1, DIVISION 1 RATED, HEAVY CAST ALUMINUM HOUSING, HEAVY DUTY 20 GAUGE STEEL FACEPLATE WITH BAKED ENAMEL GRAY FINISH FOR EXIT SIGN, 6 INCH RED LETTERING, FIELD SELECTABLE CHEVRONS, LONG-LIFE LEDS, ROHS COMPLIANT, UL LISTED, SUITABLE FOR WET LOCATIONS, ALL STAINLESS STEEL HARDWARE, SURGE SUPPRESSOR, 5 YEAR WARRANTY ON ALL COMPONENTS.	EMERGI-LITE: 6EXC1-TS-T1LR; RIG-A-LITE OR APPROVED EQUAL



PLAN NOTES:

- NEW 2-#12 + #12 GRD., 3/4" C.
- NEW 3-#12 + #12 GRD., 1" C. (SHIELDED VFD CABLE)
- NEW 2-#14, 3/4" C.
- NEW 4-#14, 3/4" C.
- NEW 1PR. #18 SHLD., 3/4" C.
- NEW 11-#14, 3/4" C.
- NEW CAT6 CABLE, 3/4" C.
- NEW 3PR. #18 SHLD., 3/4" C.
- NEW 13-#14, 3/4" C.
- NEW 3-#8 + #10 GRD., 1 1/2" C. (SHIELDED VFD CABLE)





Know what's below.
Call before you dig.

ISSUED FOR ADDENDUM NO. 1

12-13-2021	ISSUED FOR BIDS SET
11-22-2021	90% DESIGN SUBMITTAL
10-29-2021	70% DESIGN SUBMITTAL
10-01-2021	50% DESIGN SUBMITTAL

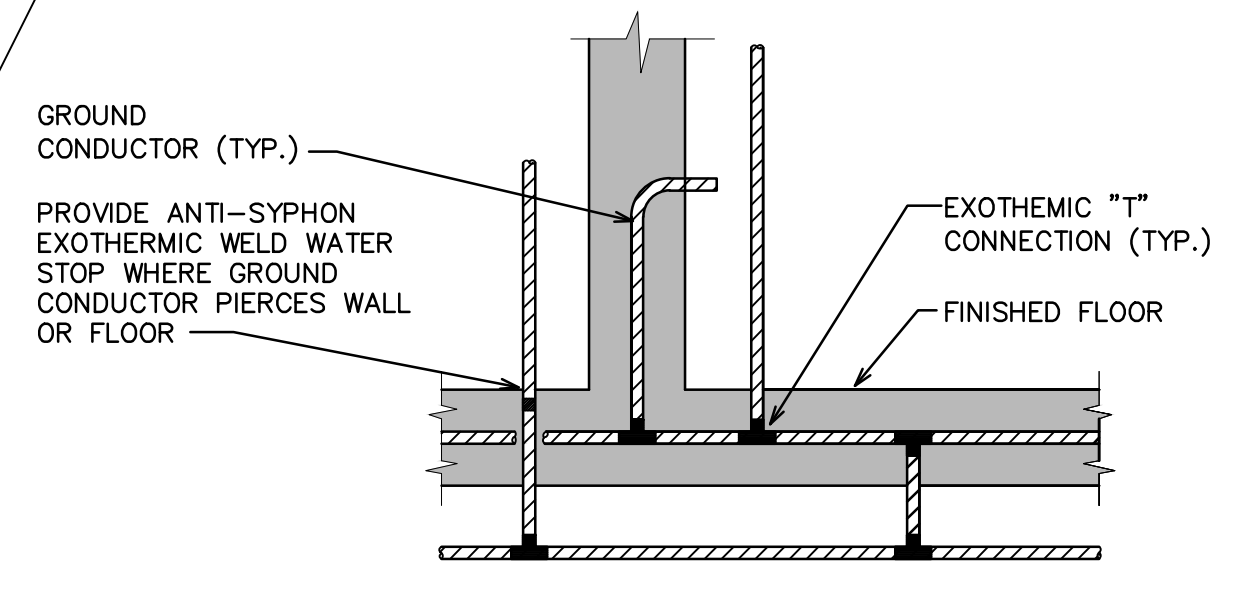
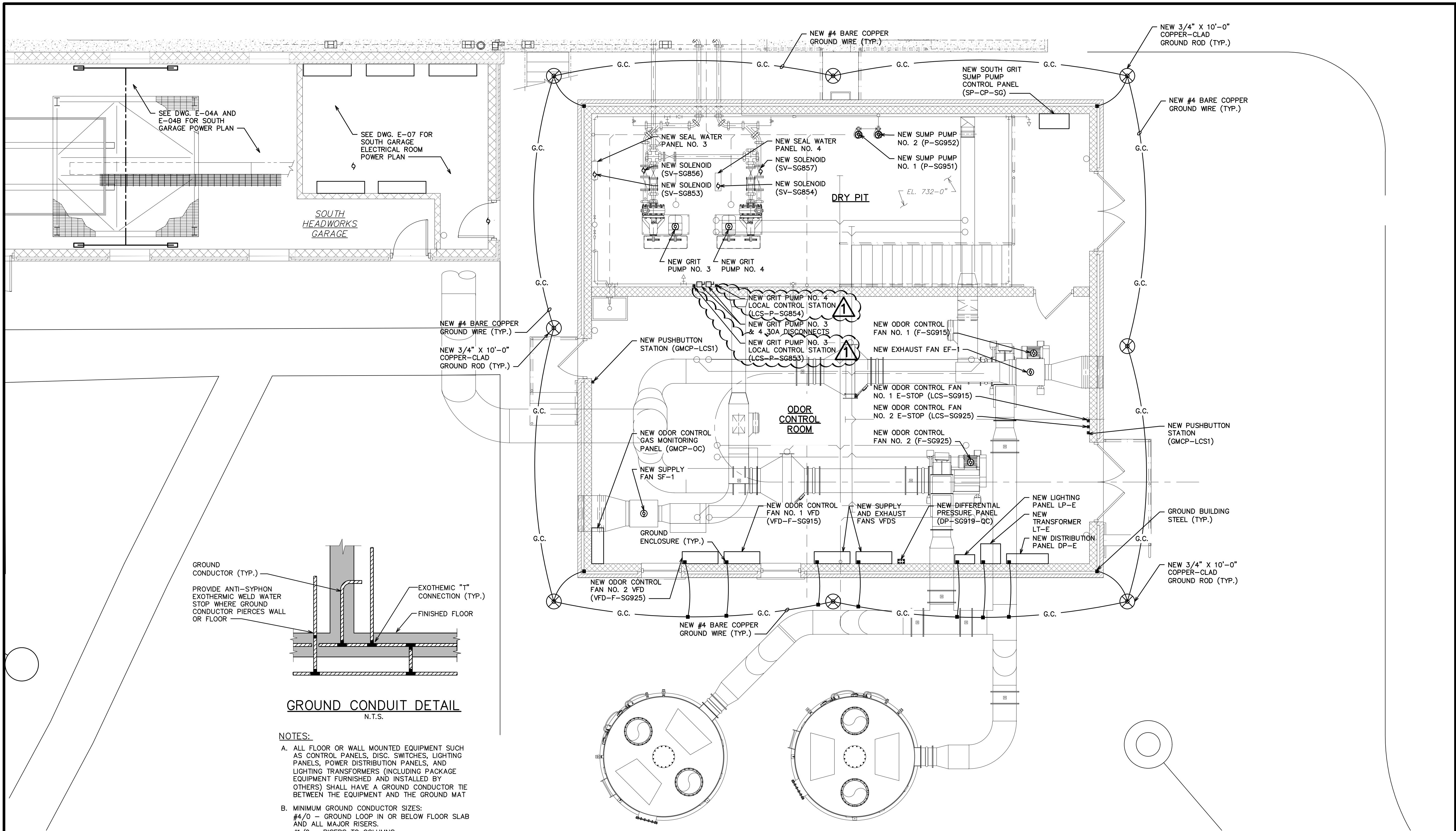
DATE DESCRIPTION

REV.

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ODOR CONTROL BUILDING LIGHTING PLAN

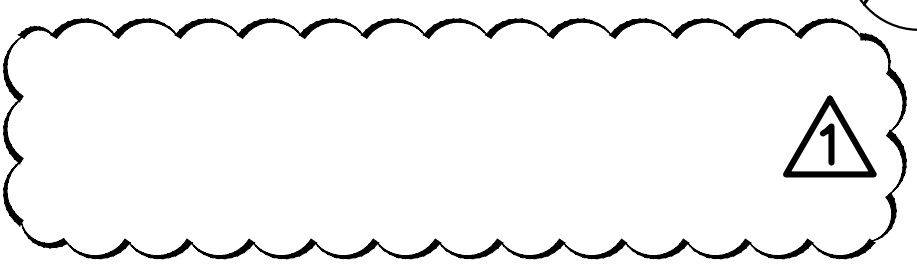
SCALE 1/4" = 1'-0"
DRAWING No. 718
SHEET No. E-08



GROUND CONDUIT DETAIL
N.T.S.

- NOTES:**
- A. ALL FLOOR OR WALL MOUNTED EQUIPMENT SUCH AS CONTROL PANELS, DISC. SWITCHES, LIGHTING PANELS, POWER DISTRIBUTION PANELS, AND LIGHTING TRANSFORMERS (INCLUDING PACKAGE EQUIPMENT FURNISHED AND INSTALLED BY OTHERS) SHALL HAVE A GROUND CONDUCTOR TIE BETWEEN THE EQUIPMENT AND THE GROUND MAT
 - B. MINIMUM GROUND CONDUCTOR SIZES:
 #4/0 - GROUND LOOP IN OR BELOW FLOOR SLAB AND ALL MAJOR RISERS.
 #1/0 - RISERS TO COLUMNS
 #2 - 480 VOLT EQUIPMENT
 #6 - 120 VOLT EQUIPMENT

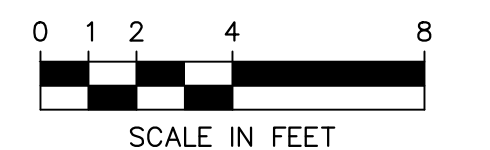
**ODOR CONTROL BUILDING
GROUNDING PLAN**



CONDUIT CLASSIFICATION	
1. CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS 1 DIV. 1 AREAS.	4. CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.
2. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.	5. CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.
3. CONDUIT MAY BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.	

PLAN NOTES:

- A. NEW 2-#12 + #12 GRD., 3/4" C.
- B. NEW 3-#12 + #12 GRD., 1" C. (SHIELDED VFD CABLE)
- C. NEW 2-#14, 3/4" C.
- D. NEW 4-#14, 3/4" C.
- E. NEW 1PR. #18 SHLD., 3/4" C.
- F. NEW 11-#14, 3/4" C.
- G. NEW CAT6 CABLE, 3/4" C.
- H. NEW 3PR. #18 SHLD., 3/4" C.
- I. NEW 13-#14, 3/4" C.
- J. NEW 3-#8 + #10 GRD., 1 1/2" C. (SHIELDED VFD CABLE)

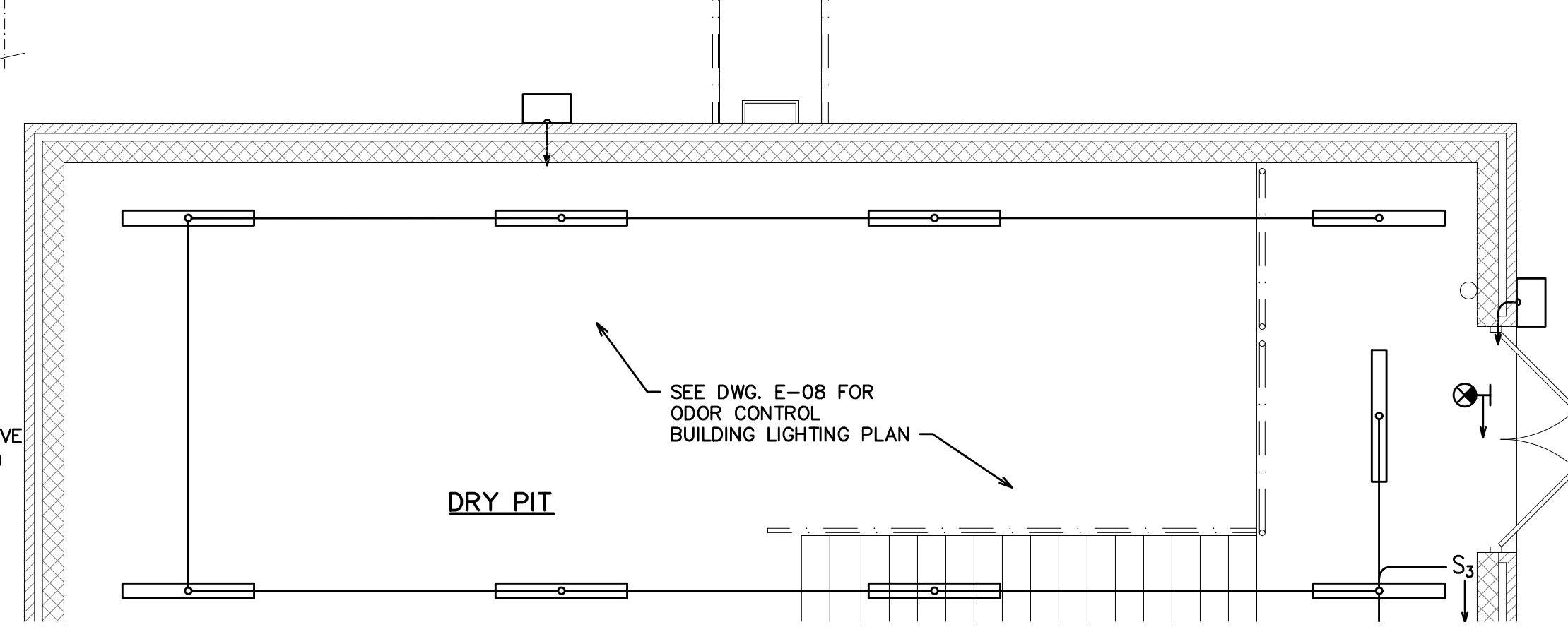
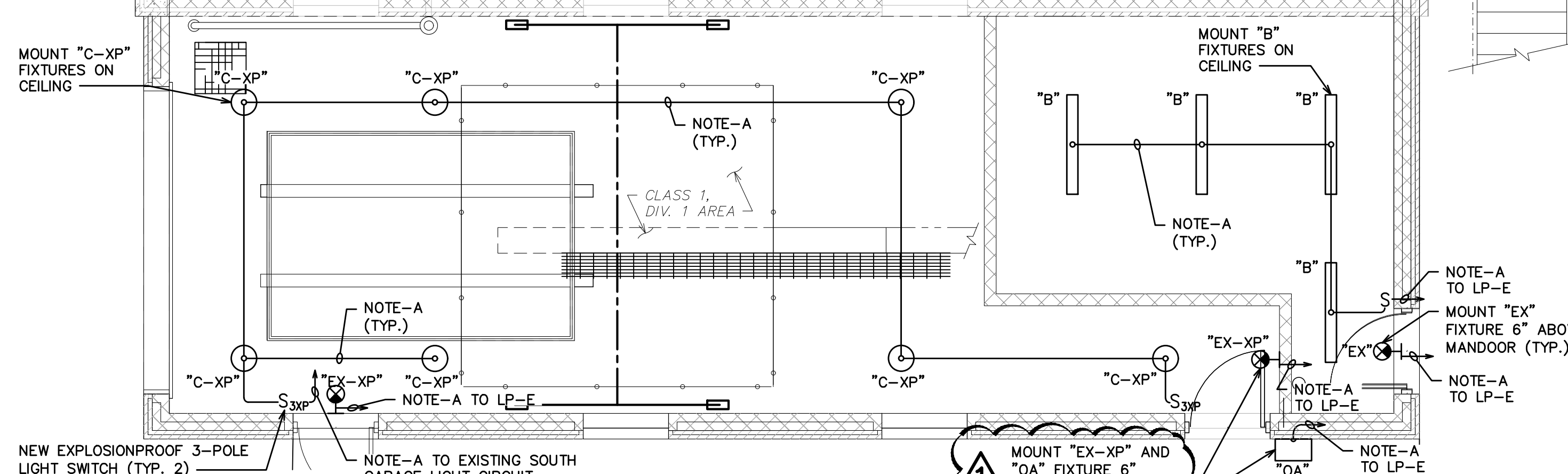
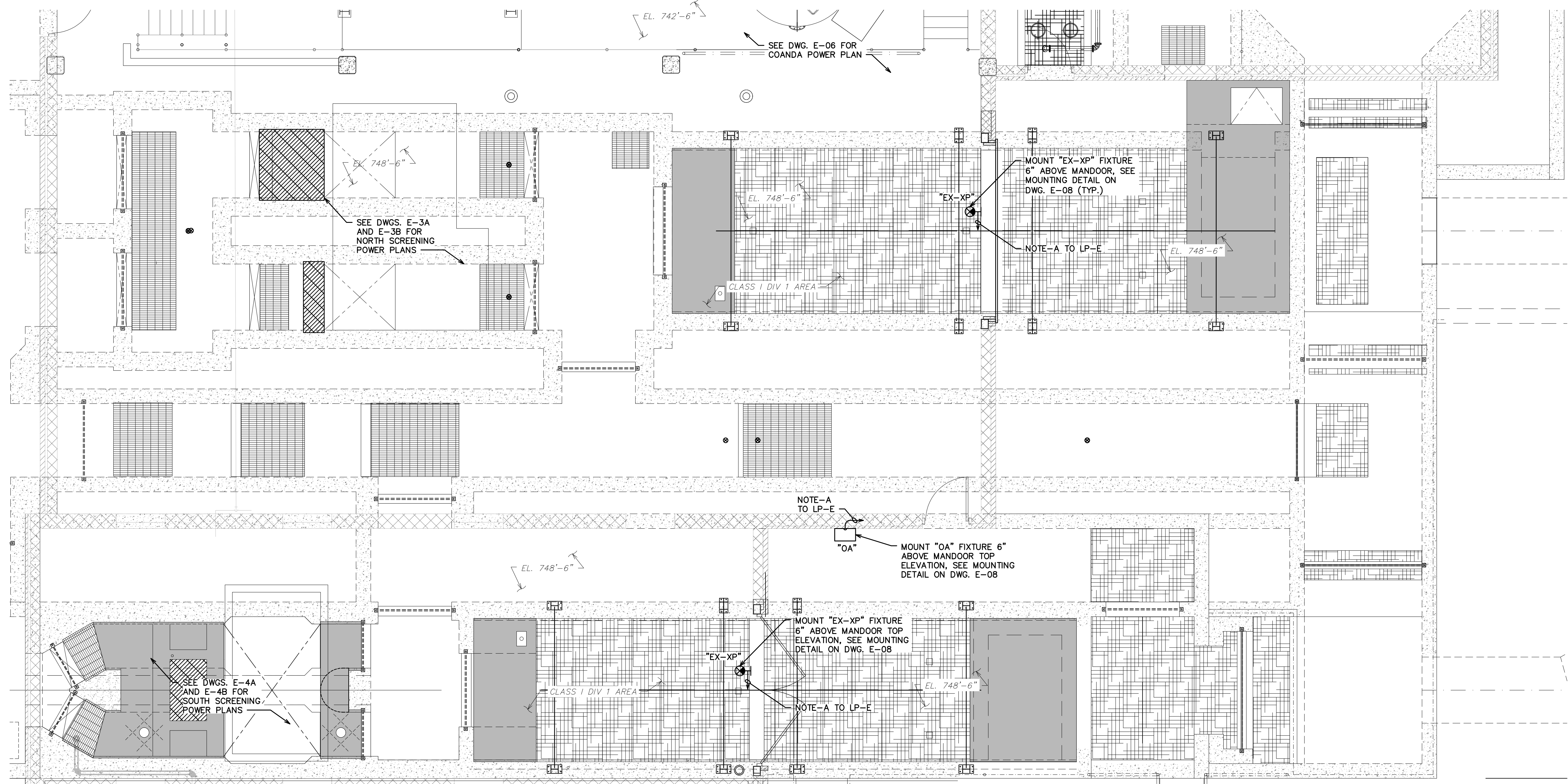


FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 ODOR CONTROL BUILDING
 GROUNDING PLAN

ISSUED FOR	DATE	REV.	DESCRIPTION
ISSUED FOR ADDENDUM NO. 1	1-19-2022		
ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

SCALE: 1/4" = 1'-0"
 DRAWING No. 720
 SHEET No. **E-09**



CONDUIT CLASSIFICATION

- CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL FOR CLASS 1 DIV. 1 AREAS.
- EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL FOR UNCLASSIFIED AREAS.
- CONDUIT MAY BE LIQUDTIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO EQUIPMENT WITHIN 3' AND UP TO EQUIPMENT IN UNCLASSIFIED AREAS.
- CONDUIT SHALL BE PVC SCHEDULE 40 WHERE RUN UNDERGROUND.
- CONDUIT MAY BE EXPLOSIONPROOF FLEXIBLE CONDUIT WITHIN 3' AND UP TO EQUIPMENT IN CLASSIFIED AREAS. CONNECTIONS SHALL BE MADE WITH EXPLOSIONPROOF FLEXIBLE CONDUIT COUPLINGS.

BASIS OF DESIGN

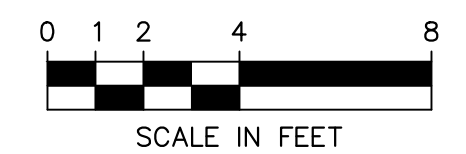
THIS LIGHTING PLAN WAS DESIGNED USING AGI32 VERSION 19.15.2. LIGHTING LEVELS HAVE BEEN DETERMINED FROM IES RECOMMENDATIONS. LIGHTING LEVELS AT FINISHED FLOOR LEVEL FOR THE SOUTH GARAGE AND ELECTRICAL ROOM SHALL BE 30.0 FOOTCANDLES AVERAGE ±3.0 FOOTCANDLES. THIS LIGHTING PLAN IS BASED UPON THE SPECIFIED LIGHT FIXTURES ON DRAWING E-08. OTHER FIXTURES ARE ACCEPTABLE UPON SUBMITTAL OF A PHOTOMETRIC PLAN MATCHING THE LIGHTING LEVELS SPECIFIED ABOVE, MEETING SPECIFICATION REQUIREMENTS AS SHOWN ON DRAWING E-08, AND ENGINEER'S APPROVAL.

NORTH HEADWORKS BUILDING LIGHTING PLAN

ALL EQUIPMENT SHALL BE EXPLOSIONPROOF, RATED CLASS 1 DIVISION 1 ON THIS DRAWING, EXCEPT FOR IN THE ELECTRICAL ROOM AND EQUIPMENT MOUNTED OUTSIDE. INSTALL EQUIPMENT, WIRE, CONDUIT, AND SEAL-OFF FITTINGS PER NEC REQUIREMENTS FOR CLASSIFIED AREAS.

PLAN NOTES:

- A. NEW 2-#12 + #12 GRD., 3/4"C.
- B. NEW 3-#12 + #12 GRD., 1"C. (SHIELDED VFD CABLE)
- C. NEW 2-#14, 3/4"C.
- D. NEW 4-#14, 3/4"C.
- E. NEW 1PR. #18 SHLD., 3/4"C.
- F. NEW 11-#14, 3/4"C.
- G. NEW CAT6 CABLE, 3/4"C.
- H. NEW 3PR. #18 SHLD., 3/4"C.
- I. NEW 13-#14, 3/4"C.
- J. NEW 3-#8 + #10 GRD., 1 1/2"C. (SHIELDED VFD CABLE)

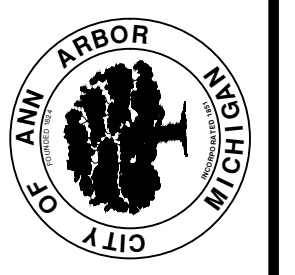


SCALE IN FEET
FOR TRUE SCALE PLOT THIS SHEET TO 34" X 22" PAPER SIZE

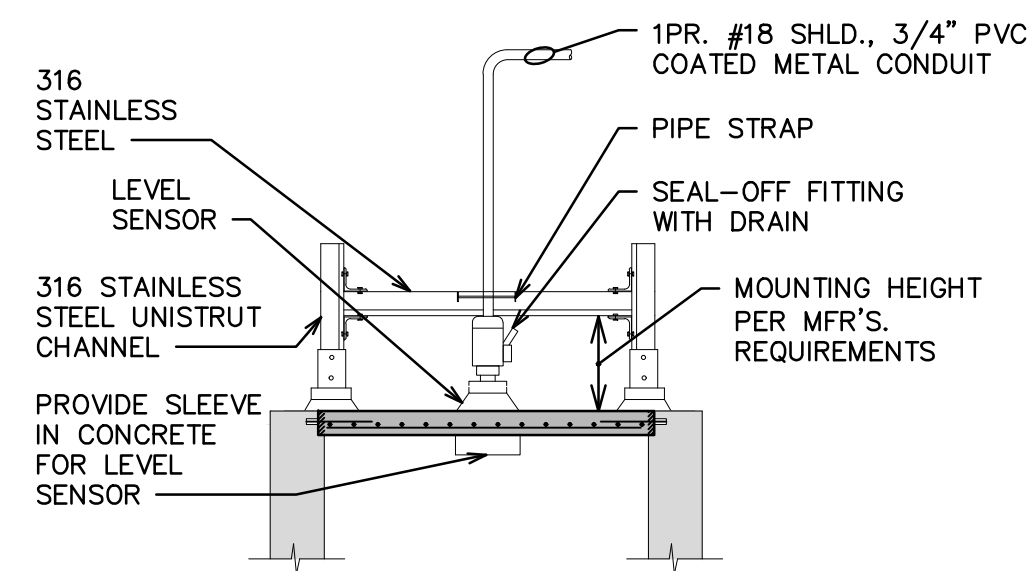


ISSUED FOR ADDENDUM NO. 1	DATE	DESCRIPTION
ISSUED FOR BIDS SET	1-19-2022	
90% DESIGN SUBMITTAL	12-13-2021	
70% DESIGN SUBMITTAL	11-22-2021	
50% DESIGN SUBMITTAL	10-29-2021	
	10-01-2021	

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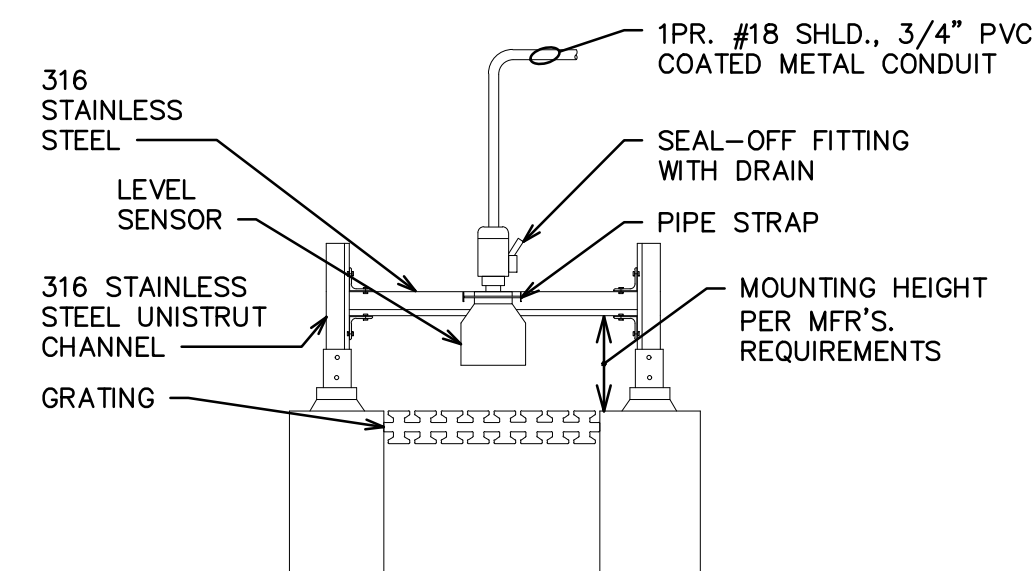


PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
NORTH HEADWORKS BUILDING
LIGHTING PLAN



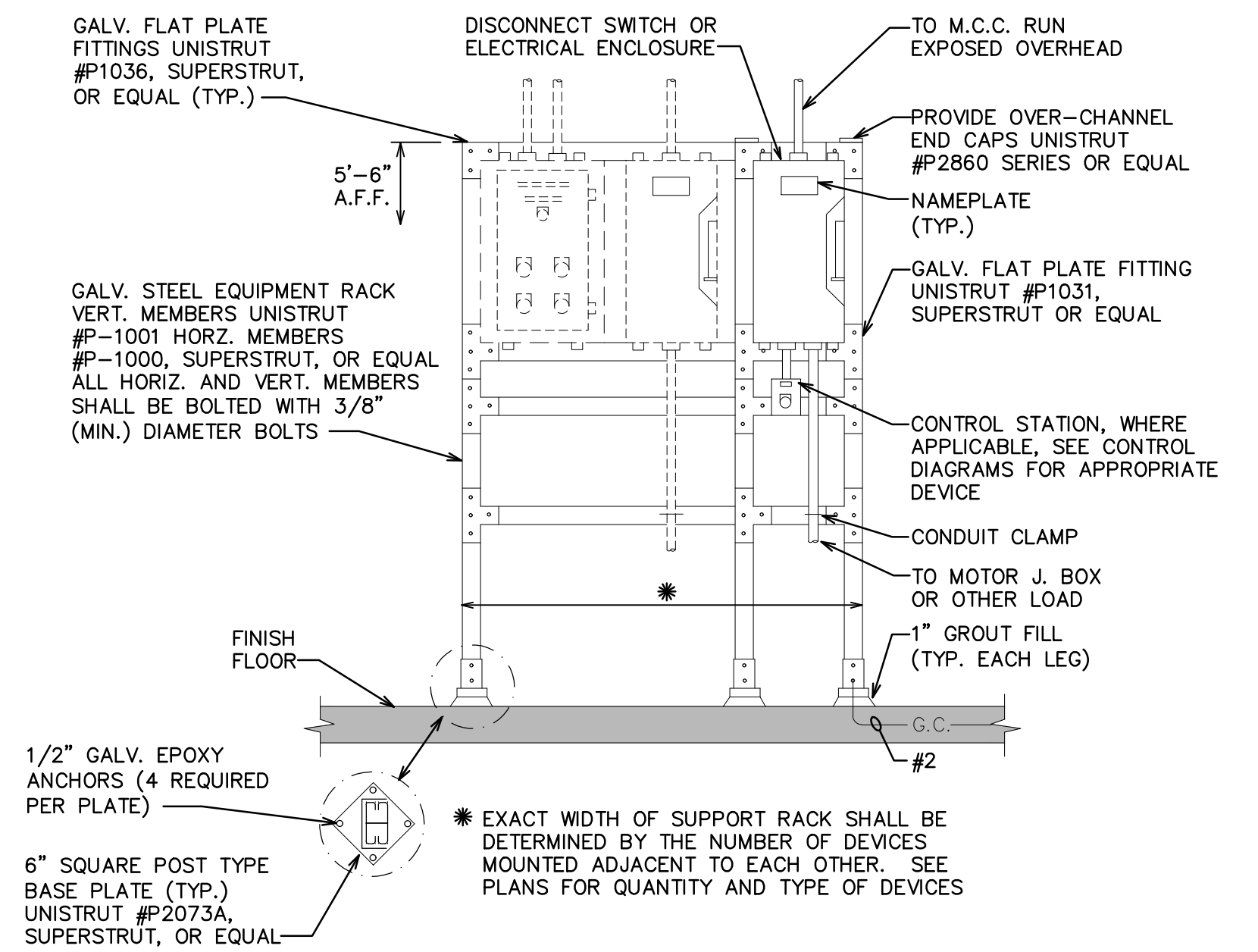
TYPICAL LEVEL SENSOR ABOVE CONCRETE MOUNTING DETAIL
N.T.S.

1. ALL MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
2. INSTALL SENSORS PER MANUFACTURER'S REQUIREMENT.



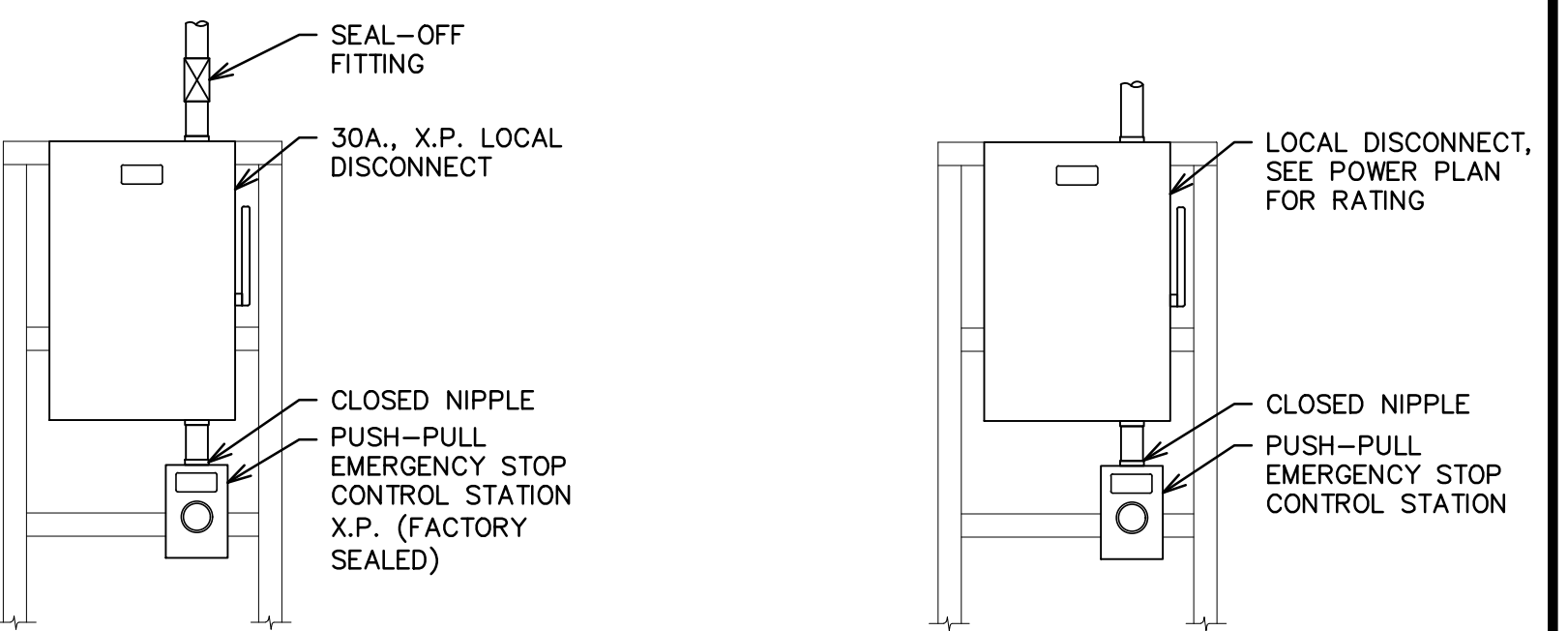
TYPICAL LEVEL SENSOR ABOVE GRATING MOUNTING DETAIL
N.T.S.

1. ALL MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
2. INSTALL SENSORS PER MANUFACTURER'S REQUIREMENT.



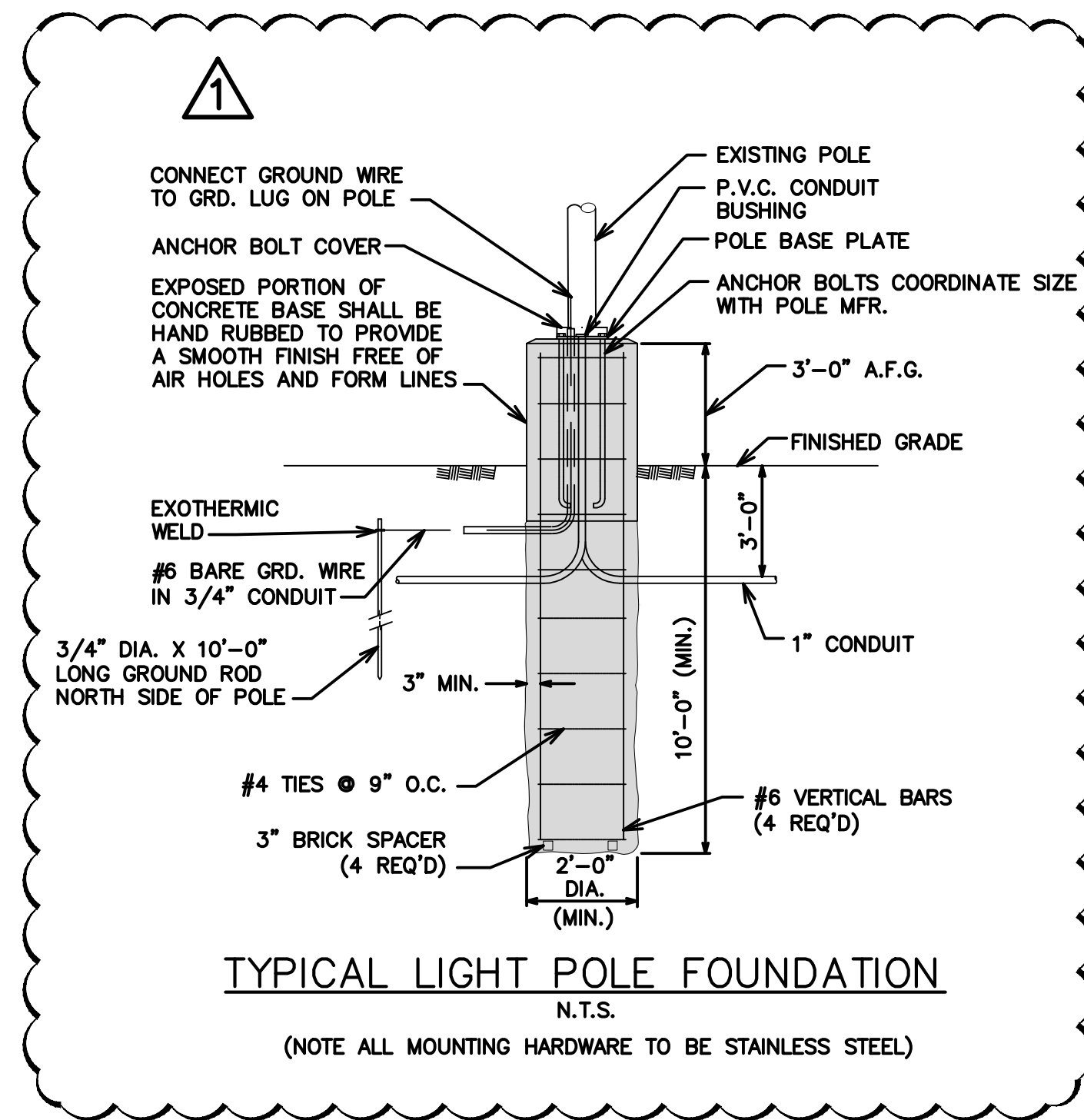
TYPICAL EQUIPMENT SUPPORT RACK ON CONCRETE SLAB DETAIL
N.T.S.

NAMEPLATE DETAIL
FULL SCALE



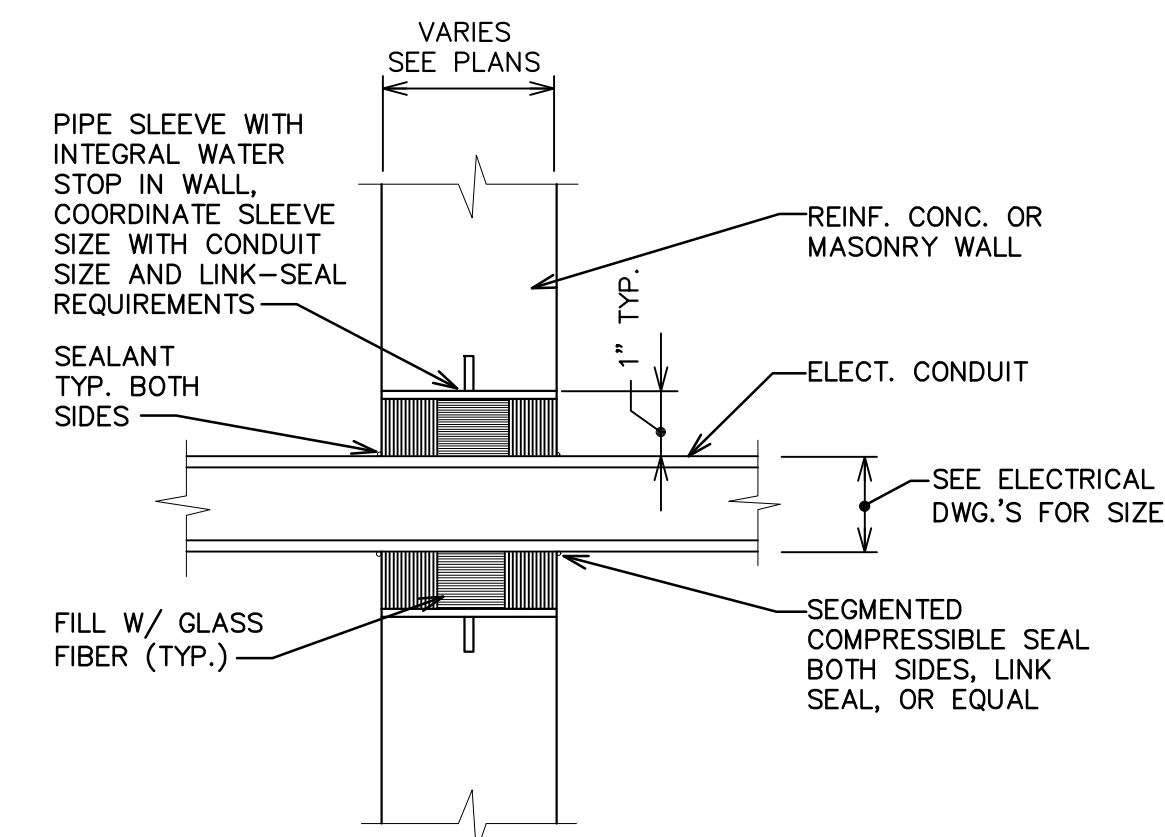
LOCAL DISCONNECT INSTALLATION DETAIL "A"
N.T.S.

LOCAL DISCONNECT INSTALLATION DETAIL "B"
N.T.S.

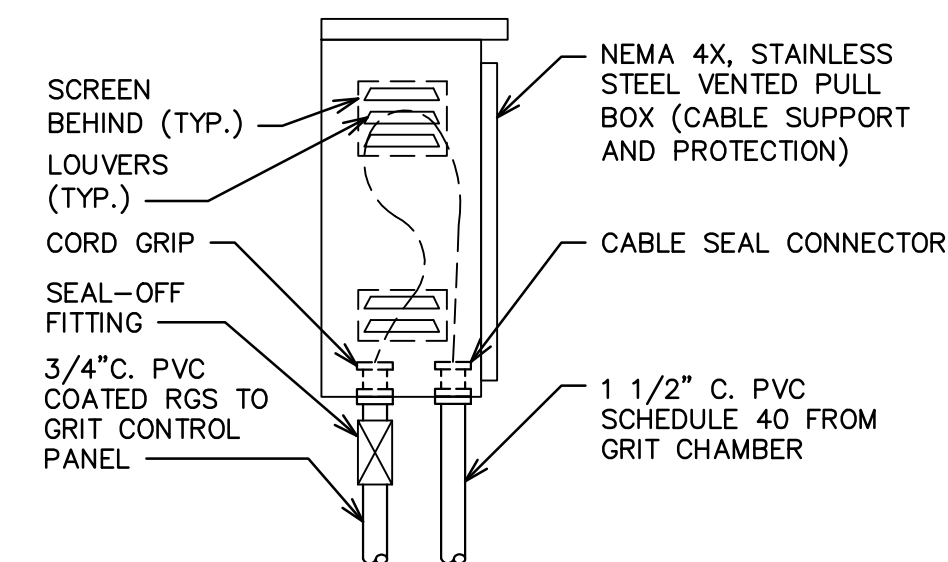


TYPICAL LIGHT POLE FOUNDATION
N.T.S.

(NOTE ALL MOUNTING HARDWARE TO BE STAINLESS STEEL)



TYPICAL CONDUIT PENETRATION THRU NEW WALL ABOVE & BELOW GRADE
N.T.S.

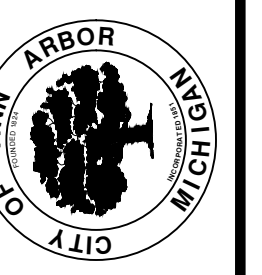


VENTED PULL BOX DETAIL
N.T.S.



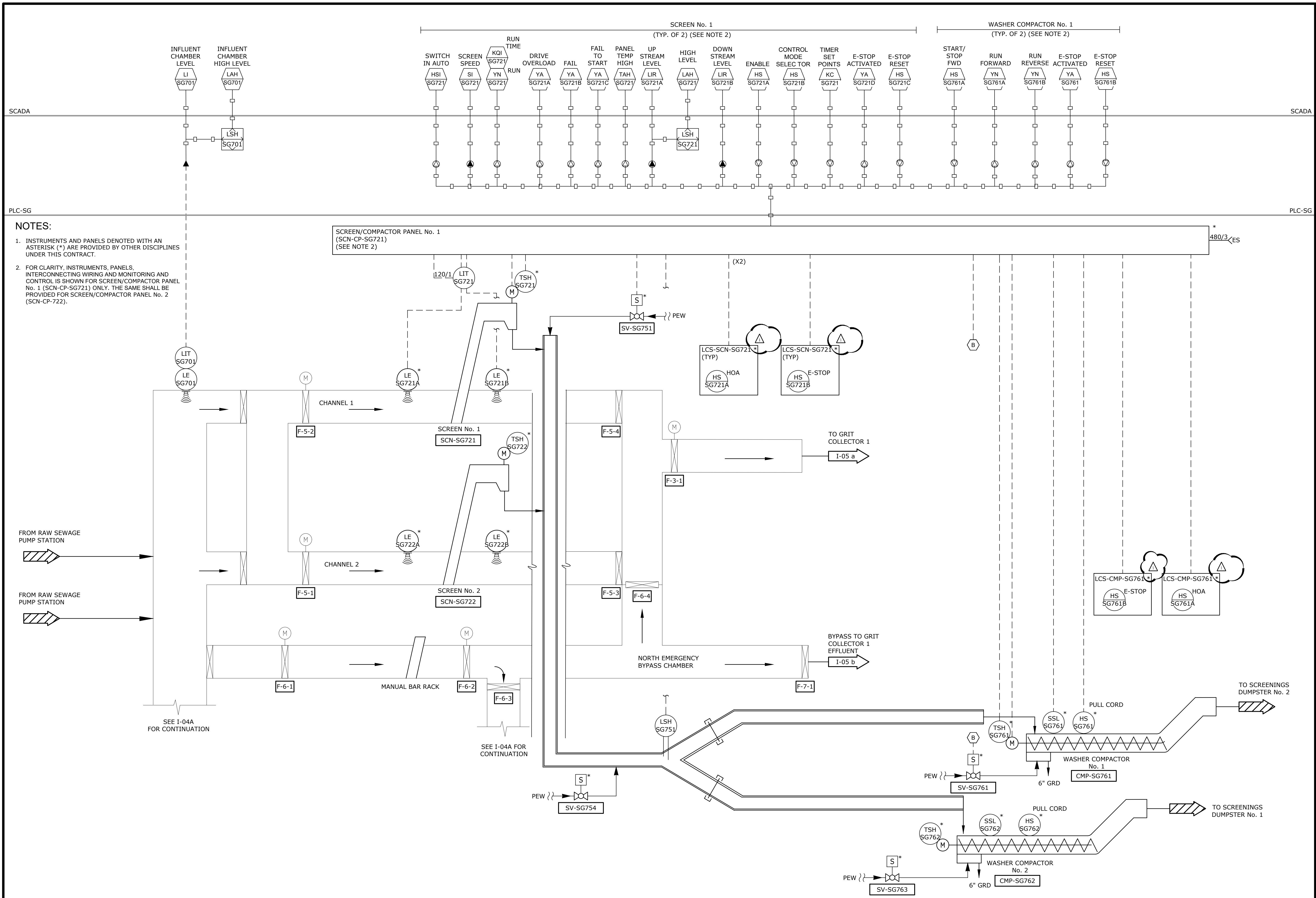
ISSUED FOR ADDENDUM NO. 1	1-19-2022	12-13-2021	11-22-2021	10-29-2021	10-01-2021	DATE	CHECKED
ISSUED FOR BIDS SET							
90% DESIGN SUBMITTAL							
70% DESIGN SUBMITTAL							
50% DESIGN SUBMITTAL							
REV.							

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
ELECTRICAL DETAILS

SCALE
N.T.S.
DRAWING No.
726



SCADA

SCADA

PLC-SG

PLC-SG

- NOTES:**
- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
 - FOR CLARITY, INSTRUMENTS, PANELS, INTERCONNECTING WIRING AND MONITORING AND CONTROL IS SHOWN FOR SCREEN/COMPACTOR PANEL No. 1 (SCN-CP-SG721) ONLY. THE SAME SHALL BE PROVIDED FOR SCREEN/COMPACTOR PANEL No. 2 (SCN-CP-722).

SCREEN/COMPACTOR PANEL No. 1 (SCN-CP-SG721) (SEE NOTE 2)

811
Know what's below. Call before you dig.

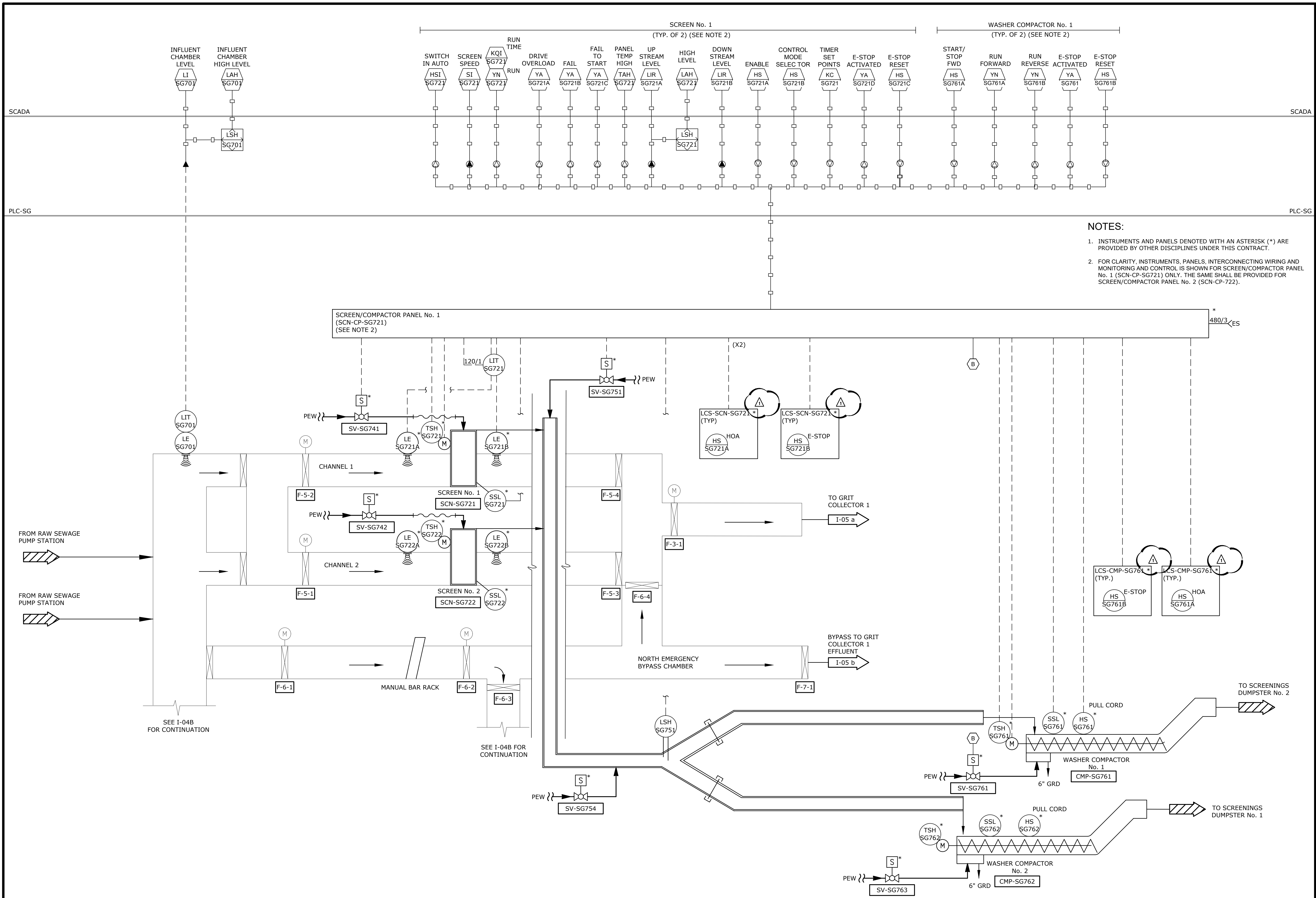
ISSUED FOR ADDENDUM NO. 1

REV.	DATE	DESCRIPTION
1-19-2022	12-13-2021	ISSUED FOR BIDS SET
	11-22-2021	90% DESIGN SUBMITTAL
	10-29-2021	70% DESIGN SUBMITTAL
	10-01-2021	50% DESIGN SUBMITTAL

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PROJECT MANAGEMENT - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
INSTRUMENTATION AND CONTROL
NORTH SCREENINGS - OPTION A
PROCESS AND INSTRUMENTATION DIAGRAM

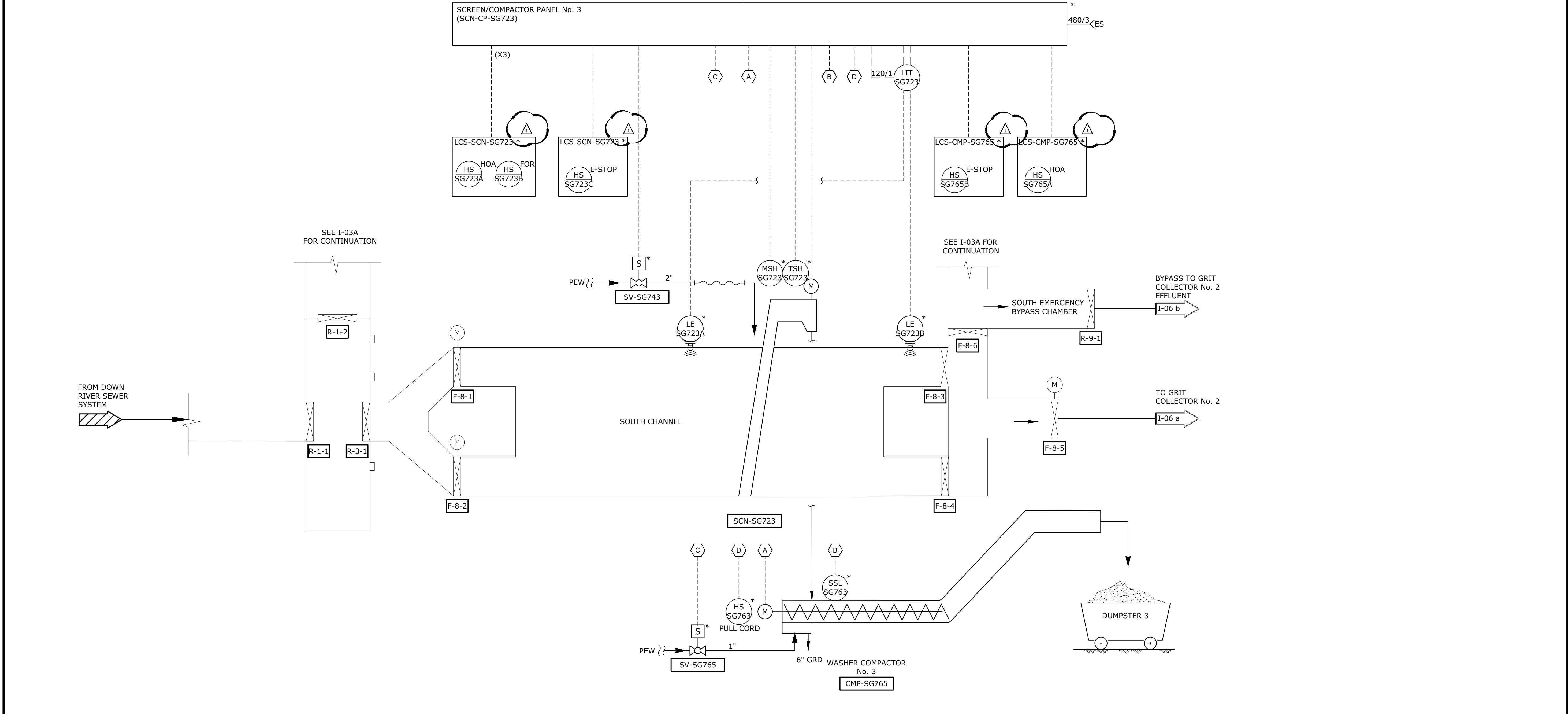
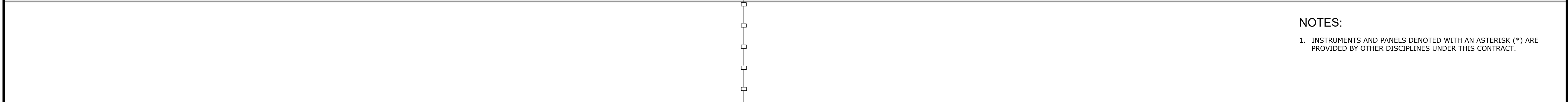
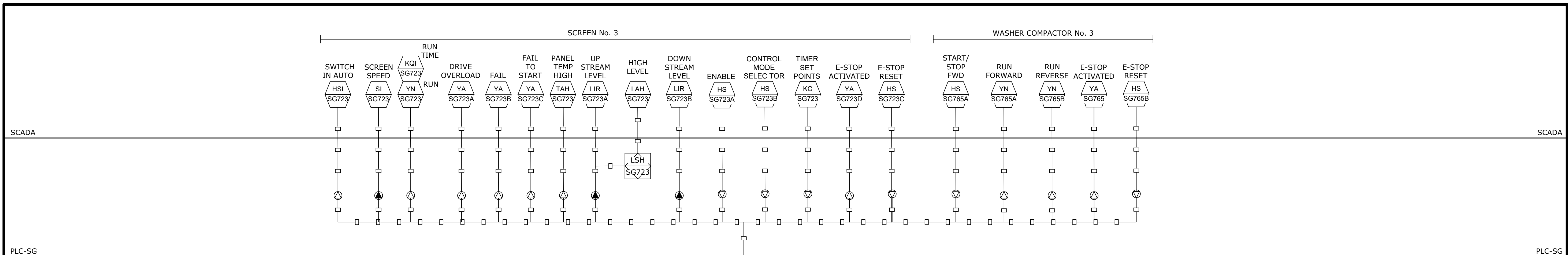
SCALE: NTS
DRAWING No.: 804
SHEET No.: I-03A




NOTES:

- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
- FOR CLARITY, INSTRUMENTS, PANELS, INTERCONNECTING WIRING AND MONITORING AND CONTROL IS SHOWN FOR SCREEN/COMPACTOR PANEL No. 1 (SCN-CP-SG721) ONLY. THE SAME SHALL BE PROVIDED FOR SCREEN/COMPACTOR PANEL No. 2 (SCN-CP-722).

ISSUED FOR ADDENDUM NO. 1 1-19-2022	CHECKED
ISSUED FOR BIDS SET 12-13-2021	DRAWN
90% DESIGN SUBMITTAL 11-22-2021	DATE
70% DESIGN SUBMITTAL 10-29-2021	REV.
50% DESIGN SUBMITTAL 10-01-2021	DESCRIPTION
CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET ANN ARBOR, MI 48106-0647 ANN ARBOR 734.794.6410 www.aagov.org	
PROJECT MANAGEMENT - CITY OF ANN ARBOR HEADWORKS IMPROVEMENTS PROJECT INSTRUMENTATION AND CONTROL NORTH SCREENINGS - OPTION B PROCESS AND INSTRUMENTATION DIAGRAM	
SCALE NTS	DRAWING No. 805
SHEET No. I-03B	




NOTES:
 1. INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.



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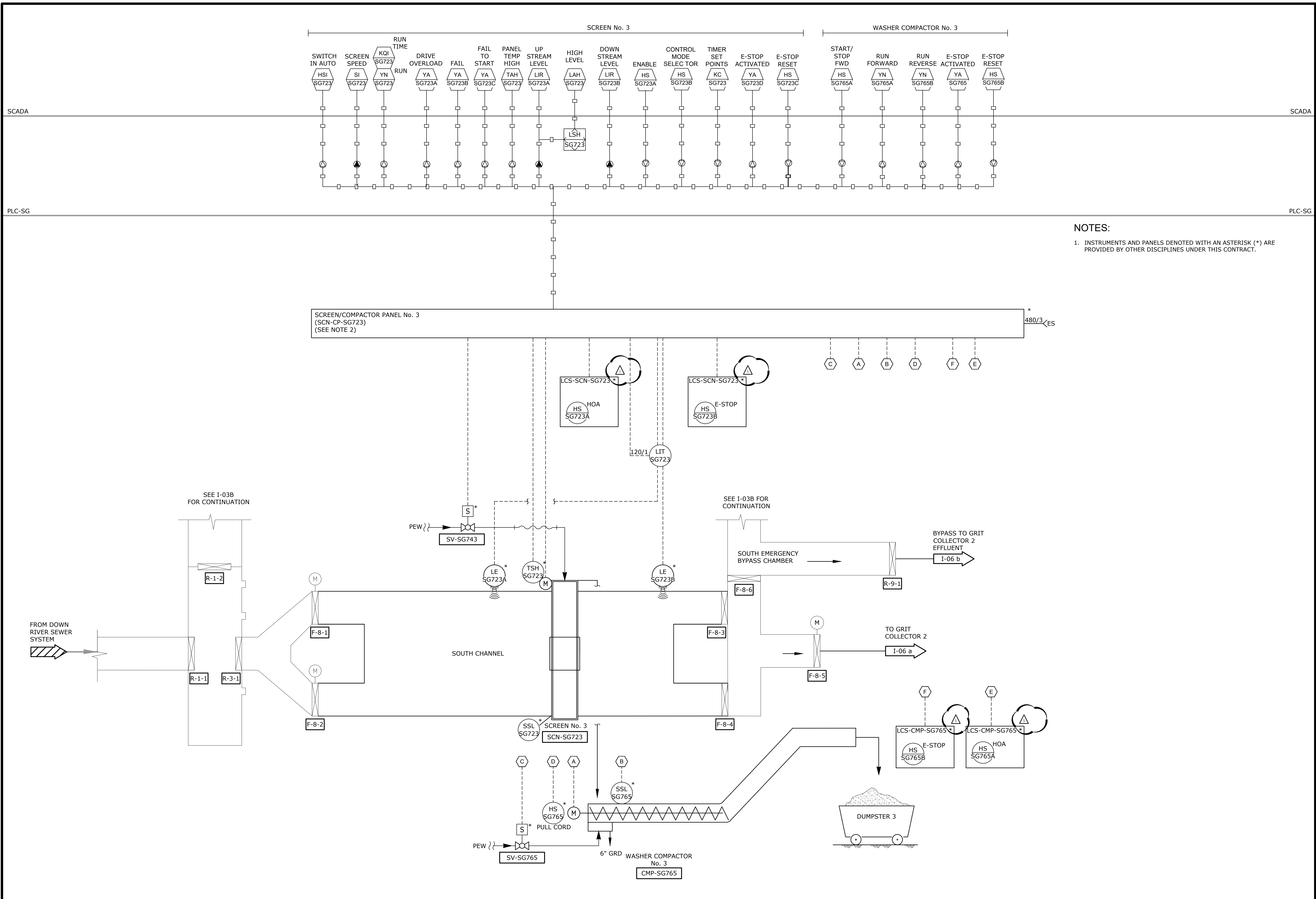
ISSUED FOR ADDENDUM NO. 1	1-19-2022	ISSUED FOR BIDS SET	12-13-2021	90% DESIGN SUBMITTAL	11-22-2021	70% DESIGN SUBMITTAL	10-29-2021	50% DESIGN SUBMITTAL	10-01-2021	DATE	DRAWN	CHECKED
REV.		DESCRIPTION										

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 ANN ARBOR: 734.794.4410
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 INSTRUMENTATION AND CONTROL
 SOUTH SCREENINGS - OPTION A
 PROCESS AND INSTRUMENTATION DIAGRAM

SCALE: NTS
 DRAWING No.: 806
 SHEET No.: I-04A



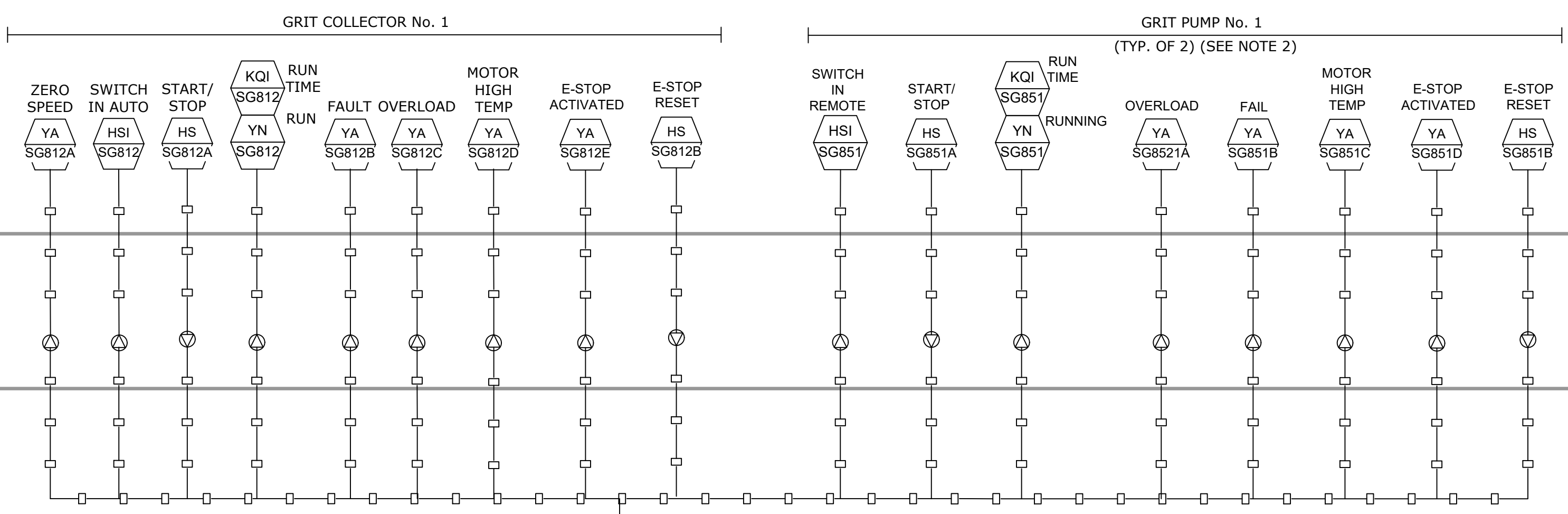
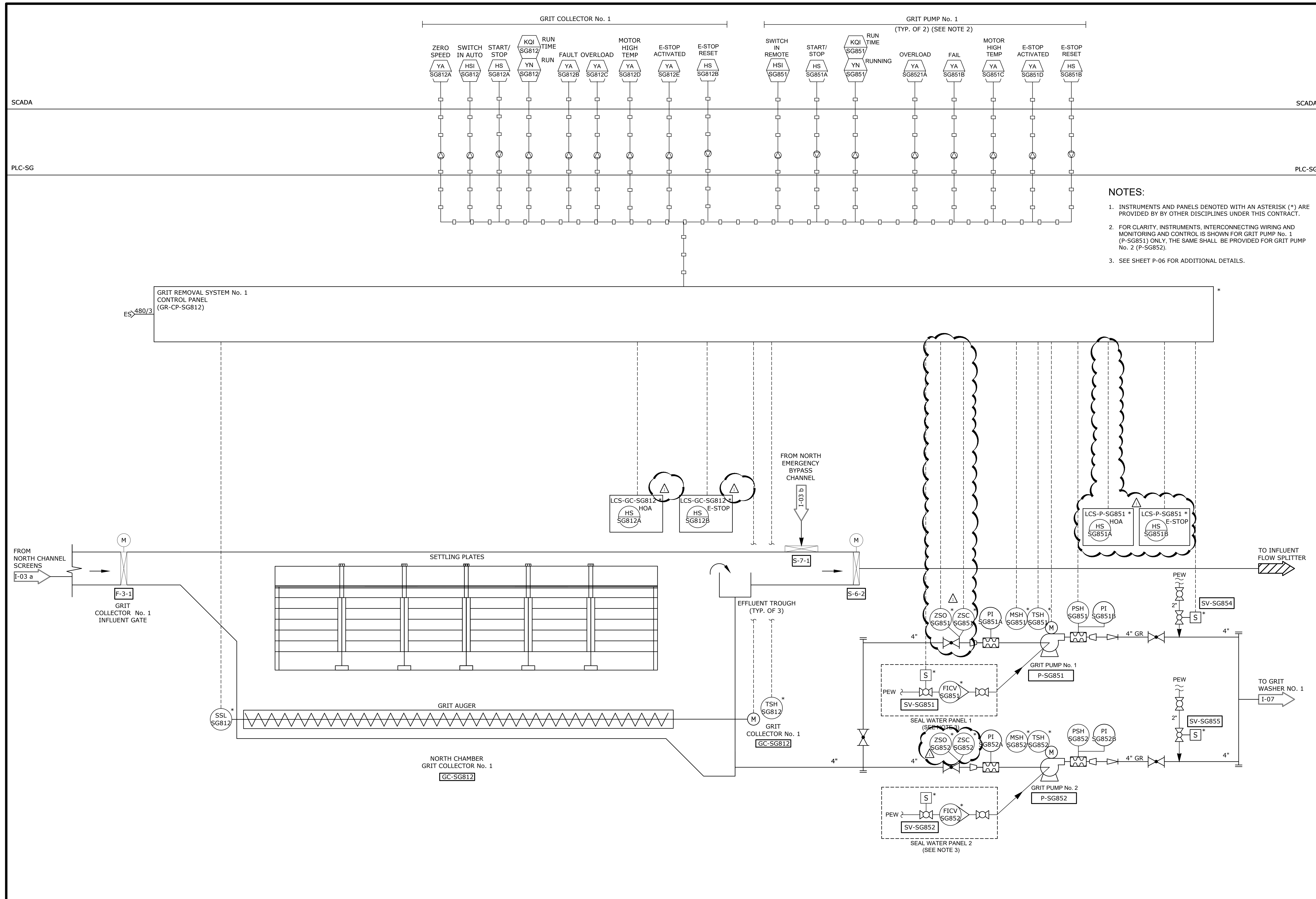
NOTES:
 1. INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.

811 Know what's below. Call before you dig.	
ISSUED FOR ADDENDUM NO. 1	1-19-2022
ISSUED FOR BIDS SET	12-13-2021
90% DESIGN SUBMITTAL	11-22-2021
70% DESIGN SUBMITTAL	10-29-2021
50% DESIGN SUBMITTAL	10-01-2021
REV.	DATE
DESCRPTION	DRAWN
CHECKED	CHECKED

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 PUBLIC SERVICES
 301 EAST HURON STREET
 ANN ARBOR, MI 48106-0647
 ANN ARBOR: 734.794.4410
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 INSTRUMENTATION AND CONTROL
 SOUTH SCREENINGS - OPTION B
 PROCESS AND INSTRUMENTATION DIAGRAM

SCALE: NTS
 DRAWING No.: 807
 SHEET No.: I-04B



- NOTES:**
1. INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
 2. FOR CLARITY, INSTRUMENTS, INTERCONNECTING WIRING AND MONITORING AND CONTROL IS SHOWN FOR GRIT PUMP No. 1 (P-SG851) ONLY, THE SAME SHALL BE PROVIDED FOR GRIT PUMP No. 2 (P-SG852).
 3. SEE SHEET P-06 FOR ADDITIONAL DETAILS.


GRIT REMOVAL SYSTEM No. 1
CONTROL PANEL
(GR-CP-SG812)



Know what's below.
Call before you dig.

REV.	DATE	DESCRIPTION
1	10-01-2021	50% DESIGN SUBMITTAL
2	10-29-2021	70% DESIGN SUBMITTAL
3	11-22-2021	90% DESIGN SUBMITTAL
4	12-13-2021	ISSUED FOR BIDS SET
5	1-19-2022	ISSUED FOR ADDENDUM NO. 1

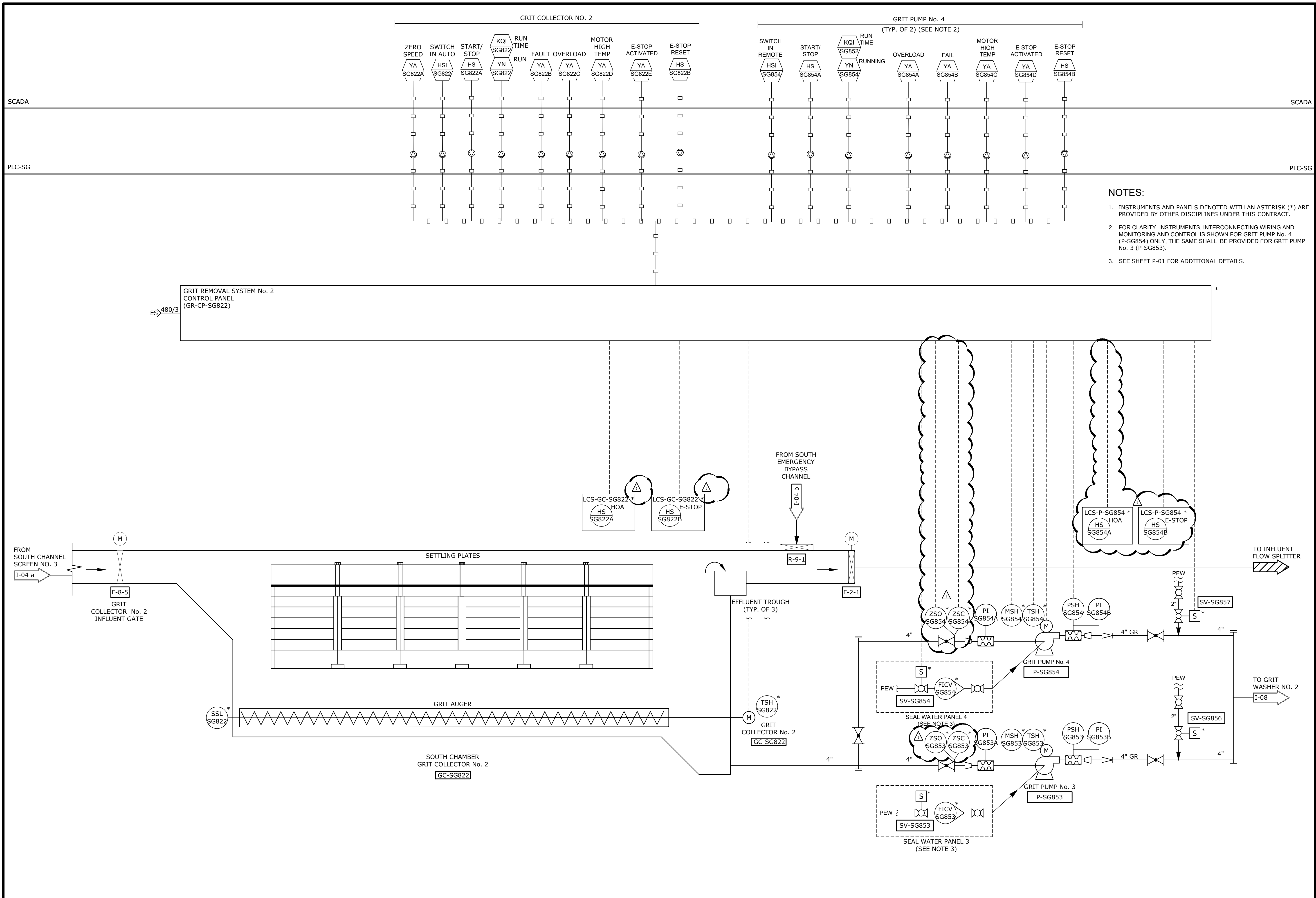
DRAWN: []
CHECKED: []




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PROJECT MANAGEMENT - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
INSTRUMENTATION AND CONTROL
NORTH GRIT COLLECTOR
PROCESS AND INSTRUMENTATION DIAGRAM

SCALE: NTS
DRAWING No.: 808
SHEET No.: I-05

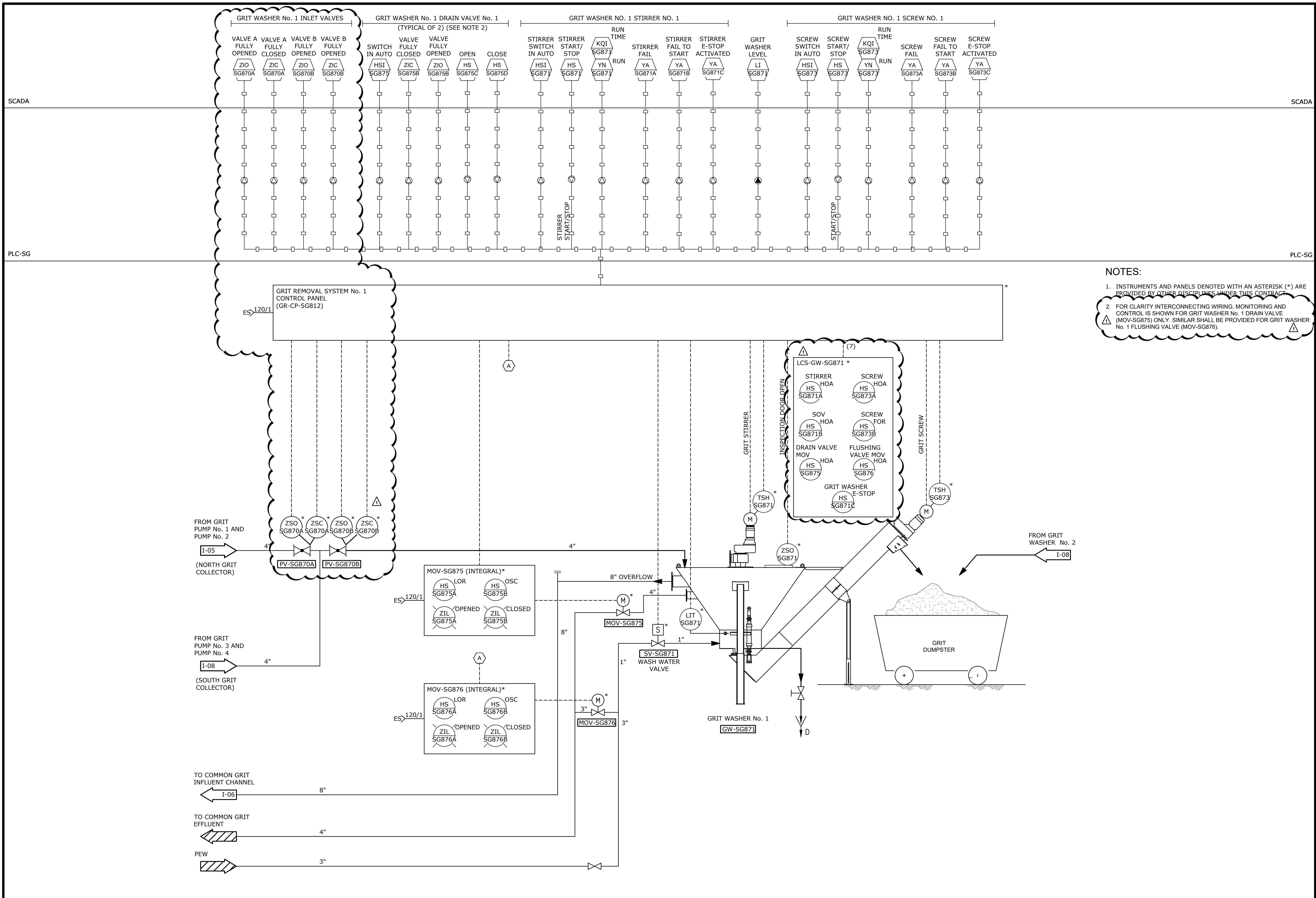


- NOTES:**
- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
 - FOR CLARITY, INSTRUMENTS, INTERCONNECTING WIRING AND MONITORING AND CONTROL IS SHOWN FOR GRIT PUMP No. 4 (P-SG854) ONLY, THE SAME SHALL BE PROVIDED FOR GRIT PUMP No. 3 (P-SG853).
 - SEE SHEET P-01 FOR ADDITIONAL DETAILS.




Know what's below.
Call before you dig.

ISSUED FOR ADDENDUM NO. 1	1-19-2022	ISSUED FOR BIDS SET	12-13-2021	90% DESIGN SUBMITTAL	11-22-2021	70% DESIGN SUBMITTAL	10-29-2021	50% DESIGN SUBMITTAL	10-01-2021	DATE	DRAWN	CHECKED
<p>PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR</p> <p>HEADWORKS IMPROVEMENTS PROJECT</p> <p>INSTRUMENTATION AND CONTROL</p> <p>SOUTH GRIT COLLECTOR</p> <p>PROCESS AND INSTRUMENTATION DIAGRAM</p>												
<p>CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET ANN ARBOR, MI 48106-1067 ANN ARBOR: 734.794.4110 WWW.A2gov.org</p>												
<p>SCALE: NTS DRAWING No.: 810 SHEET No.: I-06</p>												



NOTES:


- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
- FOR CLARITY INTERCONNECTING WIRING, MONITORING AND CONTROL IS SHOWN FOR GRIT WASHER No. 1 DRAIN VALVE (MOV-SG875) ONLY. SIMILAR SHALL BE PROVIDED FOR GRIT WASHER No. 1 FLUSHING VALVE (MOV-SG876).



Know what's below. Call before you dig.

ISSUED FOR	DATE	DESCRIPTION	REV.
ADDENDUM NO. 1	1-19-2022		
ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

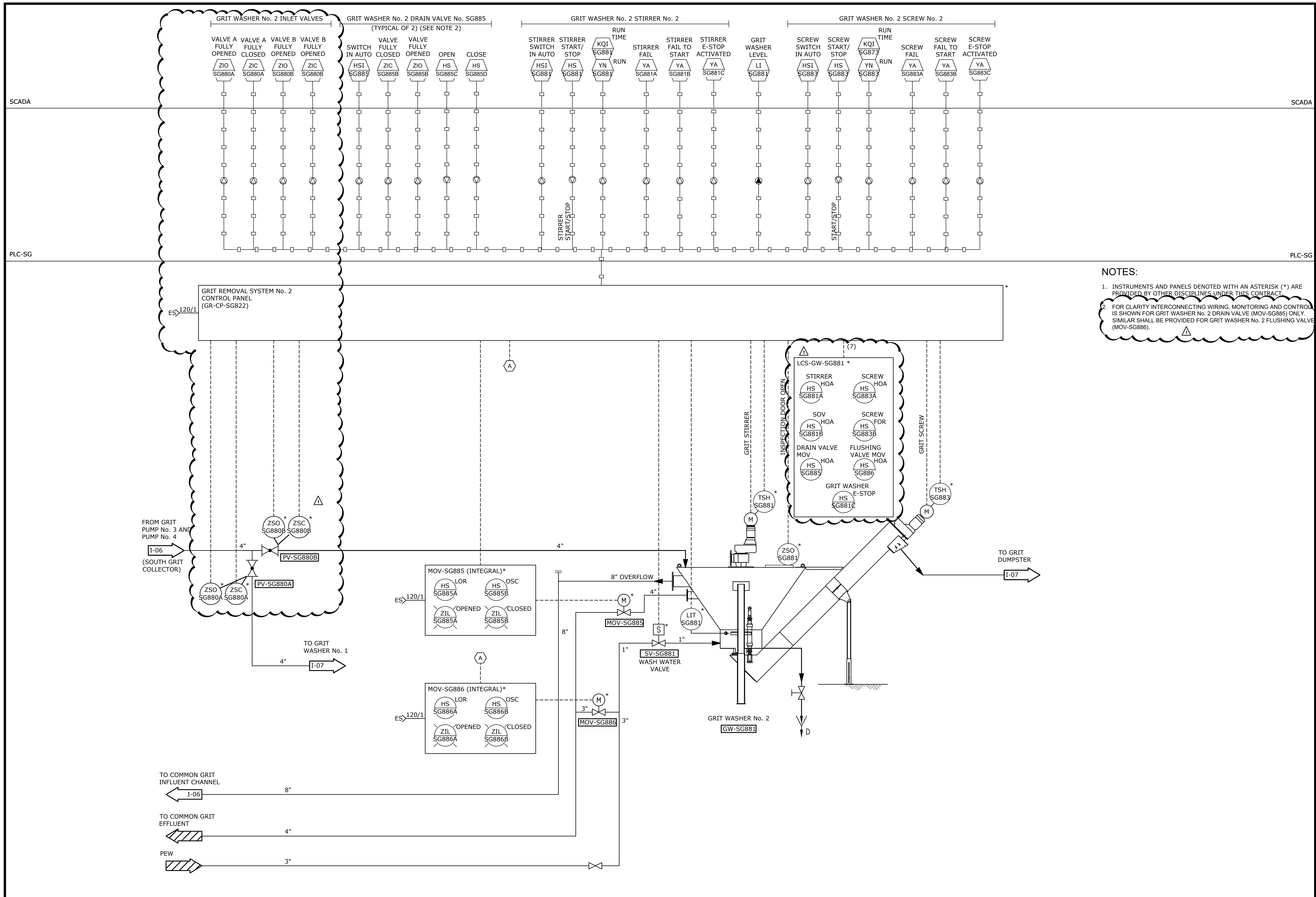
CITY OF ANN ARBOR PUBLIC SERVICES
 301 EAST HURON STREET
 ANN ARBOR, MI 48106-6647
 www.aagov.org



PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
 HEADWORKS IMPROVEMENTS PROJECT
 INSTRUMENTATION AND CONTROL
 NORTH GRIT WASHER
 PROCESS AND INSTRUMENTATION DIAGRAM


SHEET No. 1-07

SCALE: NTS
DRAWING No. 812




NOTES:

- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
- FOR CLARITY INTERCONNECTING WIRING, MONITORING AND CONTROL IS SHOWN FOR GRIT WASHER No. 2 DRAIN VALVE (MOV-SG885) ONLY. SIMILAR SHALL BE PROVIDED FOR GRIT WASHER No. 2 FLUSHING VALVE (MOV-SG886).



Know what's below.
Call before you dig.

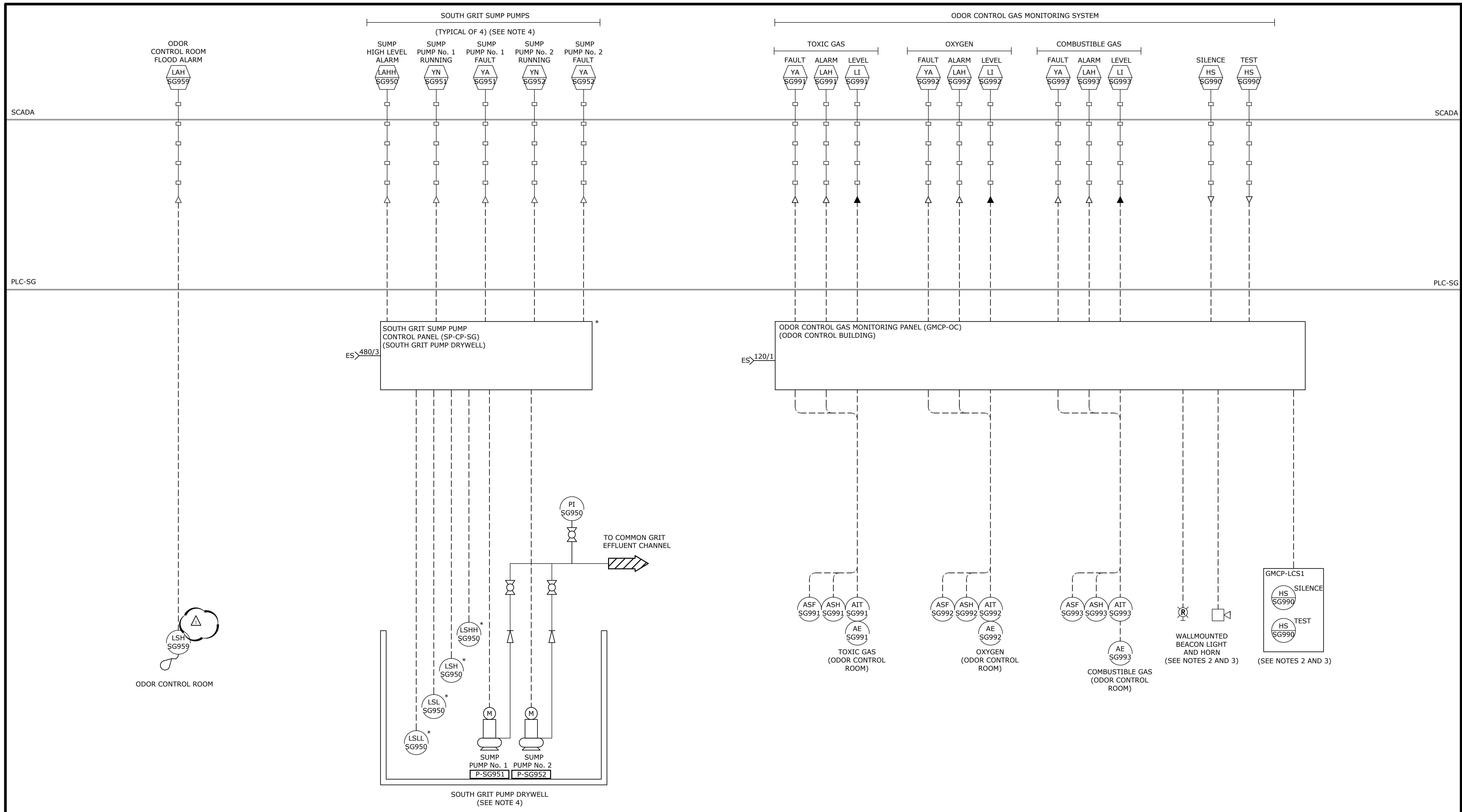
ISSUED FOR	DATE	DESCRIPTION	REV.
ADDENDUM NO. 1	1-19-2022		
ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		



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PROJECT MANAGEMENT - CITY OF ANN ARBOR
HEADWORKS IMPROVEMENTS PROJECT
 INSTRUMENTATION AND CONTROL
 SOUTH GRIT WASHER
 PROCESS AND INSTRUMENTATION DIAGRAM

SCALE	NTS
DRAWING No.	814
SHEET No.	I-08



SUMP PUMP STATIONS	SOUTH GRIT PUMP DRYWELL	NORTH GRIT AUGER DRYWELL	NORTH DUMPSTER ROOM	LOWER ALCOVE AREA	SOUTH GARAGE
PUMP No. 1	P-SG951	P-SG961	P-SG971	P-SG981	P-SG991
PUMP No. 2	P-SG952	P-SG962	P-SG972	P-SG982	P-SG992
CONTROL PANEL	SP-CP-SG	SP-CP-NG	SP-CP-ND	SP-CP-LA	SP-CP-SGA
LEVEL SWITCHES					
LEVEL	LSHH-SG950	LSHH-SG960	LSHH-SG970	LSHH-SG980	LSHH-SG990
LEVEL	LSH-SG950	LSH-SG960	LSH-SG970	LSH-SG980	LSH-SG990
LEVEL	LSL-SG950	LSL-SG960	LSL-SG970	LSL-SG980	LSL-SG990


- NOTES:**
- INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES UNDER THIS CONTRACT.
 - QUANTITIES AND LOCATION SHALL BE PER ELECTRICAL DRAWINGS. NEAR THE EAST AND WEST WALL ENTRANCE DOORS. ADD A LETTER SUFFIX AFTER THE LOOP NUMBER FOR EACH LOCAL CONTROL STATION (SG990A, SG990B, ETC.).
 - PLACE RED NAME PLATE WITH 1" HIGH LETTERS READING "DANGER GAS DETECTED DO NOT ENTER" ADJACENT TO EACH STROBE AT BUILDING ENTRANCES.
 - FOR CLARITY, EQUIPMENT, PANELS, INTERCONNECTING WIRING AND MONITORING AND CONTROL IS SHOWN FOR SOUTH GRIT PUMP DRYWELL SUMP PUMPS (P-SG951 AND P-SG952) ONLY. SEE TABLE FOR OTHER TYPICAL SUMP PUMP LOOP NUMBERS.



Know what's below. Call before you dig.

ISSUED FOR	DATE	REV.	DESCRIPTION
ADDENDUM NO. 1	1-19-2022		
ISSUED FOR BIDS SET	12-13-2021		
90% DESIGN SUBMITTAL	11-22-2021		
70% DESIGN SUBMITTAL	10-29-2021		
50% DESIGN SUBMITTAL	10-01-2021		

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

HEADWORKS IMPROVEMENTS PROJECT

INSTRUMENTATION AND CONTROL
 ODOR CONTROL SYSTEM GAS MONITORING
 PROCESS AND INSTRUMENTATION DIAGRAM

SCALE	NTS
DRAWING No.	818

SHEET No. **I-10**