



**Biko Taylor**  
Chief Procurement Officer

**Michelle R. Kirby, CPA**  
Chief Financial Officer

**Tom Rinehart**  
Chief Administrative Officer

**Ted Wheeler**  
Mayor

**CITY OF PORTLAND**  
**Office of Management and Finance**  
1120 SW 5<sup>th</sup> Avenue  
Portland, OR 97204

P: (503) 823-1095  
F: (503) 823-3455  
TTY: (503) 823-6868  
portland.gov/brfs

November 4, 2021

**ADDENDUM NUMBER 3**

**Bid Number 00001736**

**CBWTP Headworks Screening Improvements**

**Bids Due: November 30, 2021 by 2:00 P.M.**

This addendum provides changes to the plans and specifications for the above-entitled project to be considered by each bidder. This addendum shall be included in the bid and, when closing the contract, will be a part thereof. Any changes made by this addendum to said plans and specifications offset only the portion of the plans, words or paragraphs specifically mentioned herein, and the balance of the plans and/or specifications remain in full force. It is the responsibility of all bidders to conform to this addendum.

Item No.	Location	Change
3.01	Bid Book Specifications Cover Page	<b>Modify</b> Bids Due date as follows:  BIDS DUE: <del>November 16</del> November 30, 2021
3.02	Site Inspection Visit	The City will offer the chance for Bidders to attend a 3rd Site Inspection Visit:  1. Monday, November 15th from 9:00 am to 11:00 am
3.03	TOC	<b>ADD</b> the following Sections to DIVISION 08 - OPENINGS:  08 11 13 Hollow Metal Doors and Frames 08 71 00 Door Hardware
3.04	03 30 00	Subparagraph 2.10.A.1.:  <b>DELETE</b> the following: 1. <del>“Minimum Compressive Strength: 5000 psi at 28 days.”</del>



**BRFS** BUREAU OF REVENUE AND FINANCIAL SERVICES

*An Equal Opportunity Employer*

*To help ensure equal access to programs, services and activities, the Office of Management & Finance will reasonably modify policies/procedures and provide auxiliary aids/services to persons with disabilities upon request.*

		<p><b>REPLACE</b> with:</p> <ol style="list-style-type: none"> <li>1. <u>“Minimum Compressive Strength: 4500 psi at 28 days.”</u></li> </ol>										
3.05	03 30 00	<p>Subparagraph 2.10.A.8.:</p> <p><b>DELETE</b> 03 30 00 Subparagraph 2.10.A.8. in its entirety</p> <p><del>8. Steel Fiber Reinforcement: Add to concrete mixture, according to manufacturer’s written instructions, at a rate of 50 lb/cu. Yd.</del></p>										
3.06	05 53 13	<p>Subparagraph 2.3.B.1:</p> <p><b>DELETE</b> the following</p> <ol style="list-style-type: none"> <li>1. <del>Bearing Bar Spacing: 7/16 or 1/2 inch o.c.</del></li> </ol> <p><b>REPLACE</b> with:</p> <ol style="list-style-type: none"> <li>1. <u>Bearing Bar Spacing: 1 3/16 inch o.c.</u></li> </ol>										
3.07	08 11 13	<b>ADD</b> new attached Specification Section 08 11 13 Hollow Metal Doors and Frames										
3.08	08 71 00	<b>ADD</b> new attached Specification Section 08 71 00 Door Hardware										
3.09	40 05 51	<p>Subparagraph 2.3.C.:</p> <p><b>DELETE</b> the following:</p> <p><del>C. Exposed Valves: As specified in Section 09 90 00 "Painting."</del></p> <p><b>REPLACE</b> with:</p> <p>C. <u>Exposed Valves: As specified in Section 09 91 00 "Painting"</u></p>										
3.10	40 05 57	<p><b>DELETE</b> 40 05 57, 2.5.E. design criteria table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Make/Model</td> <td>Fontaine Series 25</td> </tr> <tr> <td>Tag Numbers</td> <td>HEAD-BS03G02A HEAD-BS03G02B (Originally HEAD CC01G01 and HEAD CC02-G02)</td> </tr> <tr> <td>Width</td> <td>96 inches</td> </tr> <tr> <td>Height</td> <td>127 inches</td> </tr> <tr> <td>Travel</td> <td>127.25</td> </tr> </table>	Make/Model	Fontaine Series 25	Tag Numbers	HEAD-BS03G02A HEAD-BS03G02B (Originally HEAD CC01G01 and HEAD CC02-G02)	Width	96 inches	Height	127 inches	Travel	127.25
Make/Model	Fontaine Series 25											
Tag Numbers	HEAD-BS03G02A HEAD-BS03G02B (Originally HEAD CC01G01 and HEAD CC02-G02)											
Width	96 inches											
Height	127 inches											
Travel	127.25											

Opening Direction	Upward
Maximum	11,800 lbs
Max	43 ft-lbs
Stall	1090 ft-lbs
Rising/Non-Rising	Rising
Existing Gearbox Ratio	12
Diameter	3.5 in
TPI	2
Leads per Turn	1 in
Number of turns at actuator	1,527

**REPLACE** 40 05 57, 2.5.E design criteria table with:  
Size to meet existing slide gate design criteria as specified in table:

Make/Model	Fontaine Series 25
Tag Numbers	HEAD-BS03G02A HEAD-BS03G02B (Originally HEAD CC01G01 and HEAD CC02-G02)
<b>Serial Numbers</b>	<b>25-956</b> <b>25-957</b>
Channel Width	96 inches
<b>Channel Depth</b>	<b>157 inches</b>
Slide Height	127 inches
<b>Gate Travel</b>	<b>133 inches</b>
Opening Direction	Upward
Maximum Gate Thrust	11,800 lbs
Maximum Admissible Stem Stall Torque	1090 ft-lbs
Stem Rising/ Non-Rising	Rising
Stem Diameter	3.5 inch
Stem Threads per Inch (TPI)	2
Stem Leads per Turn	1

3.11	40 05 57	<p>Subparagraph 2.5.J.:</p> <p><b>ADD</b> the following:  <u>6. Actuator Horsepower: 1.5 HP maximum</u></p>
3.12	40 05 57	<p>Subparagraph 2.5.M.2.:</p> <p><b>DELETE</b> the following:  2. <del>Provide gear box, gear enclosure, and extension stem as necessary.</del></p> <p><b>REPLACE</b> with:  <u>2. Provide gear box (where required by manufacturer), gear enclosure, extension stem, and stem cover.</u></p>
3.13	40 05 62	<p>Subparagraph 2.1.D.1:</p> <p><b>DELETE</b> the following  a. <del>Ductile iron, ASTM A536</del>  b. <del>Lining: Rubber lined, as recommended by valve manufacturer for service conditions.</del></p> <p><b>REPLACE</b> with:  a. <u>Cast Iron ASTM A126 Class B</u>  b. <u>Interior Lining of valve body: none</u></p>
3.14	40 61 00	<p><b>DELETE</b> paragraph 1.2.F. in it's entirely.</p>
3.15	41 14 36	<p>Subparagraph 2.4.A.1.b.3.:</p> <p><b>ADD</b> the following:  3) <u>316 stainless steel hardware on all surfaces not susceptible to dumpster bin wheel contact. Provide manufacturer's recommended material for hardware susceptible to dumpster bin wheel contact.</u></p> <p>Subparagraph 2.4.A.1.d.:</p> <p><b>DELETE</b> the following:  d. <del>Guiderails to be welded to the platform decking as shown on drawings. Guide rail design per manufacturer.</del></p> <p><b>REPLACE</b> with:  <u>d. Guiderails to be welded to the platform decking as shown on drawings. Guide rail design per manufacturer. 6-inch minimum guiderail height.</u></p>

		<p>Subparagraph 2.4.A.1.e.:</p> <p><b>DELETE</b> the following:  <del>e. Weld "gap plate" to cover gap between scale platform and existing curb.</del></p> <p><b>REPLACE</b> with:  <u>e. Weld 1/4-inch thick steel "gap plate" along length of each side of the scale to cover the gap between scale platform guiderails and the existing curb.</u></p> <p>Subparagraph 2.4.A.8.:</p> <p><b>DELETE</b> the following:  <del>8. Sealing: Provide T-Grip Molding to seal the gaps between scale platforms and the adjacent concrete curb/floor and concrete ramps to prevent water and debris from falling underneath the scales.</del></p> <p><b>REPLACE</b> with:  <u>8. Sealing: Provide T-Grip Molding to seal the gaps between the gap plate and the existing adjacent concrete curb and between the front of the scale platform and the concrete ramps to prevent water and debris from falling underneath the scales.</u></p>
3.16	46 21 13	<p>Subparagraph 2.3.A.9.:</p> <p><b>DELETE</b> the following:  <del>9. All the mechanical bar screening equipment shall be assembled in the manufacturer's shop to ensure proper fitting of parts, the control panel shall be pre-wired, tested and then match-marked for erection, and disassembled for shipment.</del></p> <p><b>REPLACE</b> with:  <u>9. All the mechanical bar screening equipment shall be assembled in the manufacturer's shop to ensure proper fitting of parts.</u></p>
3.17	G Drawings	<p><b>DELETE</b> Drawings G01 and G09</p> <p><b>REPLACE</b> with the attached Revised Drawings G01 and G09.</p> <p><b>ADD</b> the following Sheet Numbers and Sheet Titles to the Structural Drawings Sheet Index:</p> <p style="padding-left: 40px;">S26 UPPER LEVEL ELECTRICAL ROOM ULER  DOORWAY ENLARGED PLAN &amp; SECTIONS</p> <p style="padding-left: 40px;">S27 UPPER LEVEL ELECTRICAL ROOM ULER</p>

DOORWAY SECTIONS AND DETAILS		
3.18	A Drawings	<b>DELETE</b> Drawings A01, A02 and A03. <b>REPLACE</b> with the attached Revised Drawings A01, A02 and A03.
3.19	S Drawings	<b>DELETE</b> Drawings S01, S02, S06, S07, S08, S09, S10, S12, S13, S14, S16, S21, S22, S23, S24, S26, and S27. <b>REPLACE</b> with the attached Revised Drawings: S01, S02, S06, S07, S08, S09, S10, S12, S13, S14, S16, S21, S22, S23, S24, S26, and S27.
3.20	M Drawings	<b>DELETE</b> Drawing M28 <b>REPLACE</b> with the attached Revised Drawing: M28.
3.21	H Drawings	<b>DELETE</b> Drawings H02, H06 and H07 <b>REPLACE</b> with the attached Revised Drawings: H02, H06 and H07.
3.22	F Drawings	<b>DELETE</b> Drawing F01 <b>REPLACE</b> with the attached Revised Drawing F01.

**Bidders Questions and Answers: The following questions and responses are provided for information only. The responses shown below do not modify requirements of the Bid Documents.**

Item No.	Location	Response
3.23	Site Inspections	Per Addendum One, Owner hosted two separate sessions for interested parties to view/inspect specific items included in the Scope of Work inside the Headworks Building. Bidders were invited to inspect make, model, and installation at site inspection sessions. See attached attendees lists for the two Site Inspection sessions.
3.24	00 72 00	<b>Question:</b> Please confirm the Contractor may provide a single-instrument Warranty Bond in this amount and if so, please provide a copy of the approved Warranty Bond form. <b>Answer:</b> Contractor can work with their preferred Performance and Payment Bond Surety Agent. The Owner

		will provide the Bond forms for Contractor's Surety after contract award.
3.25	00 72 00	<p><b>Question:</b> Section 007200 General Conditions, Article 7.12.B gives the Contractor the responsibility for any loss or damage to the Work however caused yet Owner is responsible for purchasing and maintaining Builders' All Risk Insurance. Very few details are provided about the limits, sub-limits, and coverage extensions to be provided by Owner's policy. It is not equitable to give the Contractor the financial risk of loss for loss or damage to the Work for which it is not able to insure. Please consider the following revision to address this issue:</p> <p>“B. Until the Work is completed and accepted by Owner, the contractor is responsible for any damage caused to either permanent or temporary work, utilities, materials, plants and equipment, up to the first \$10,000, all of which shall be repaired to the satisfaction of the Owner's Representative at the Contractor's expense.”</p> <p><b>Answer:</b> Additional coverage information is outlined in Specification Section 00 73 16 and the OCIP manual. Contractors wishing to view any policies may do so at the Owner's Representative's office, in accordance with Specification Section 00 73 16, 1.1(D). Contractor shall provide any additional coverages in accordance with Specification Section 00 73 16 1.1(B)(2).</p>
3.26	00 73 16	<p><b>Question:</b> Section 0073 16 Insurance Requirements (OCIP), Article 1.1.B.1.e, outlines the Owner-provided Builders' Risk coverage, but very few details are provided about the limits, sublimits, and coverage extensions. Please provide the policy limit, all sublimits, including but not limited to flood, earthquake, LEG 3, off-site storage, in-transit, extra expense, debris removal, pollution cleanup, and contractors continuing expenses.</p> <p><b>Answer:</b> Additional coverage information is outlined in Specification Section 00 73 16 and the OCIP manual. Contractors wishing to view any policies may do so at the Owner's Representative's office, in accordance with Specification Section 00 73 16, 1.1(D). Contractor shall provide any additional coverages in accordance with Specification Section 00 73 16 1.1(B)(2).</p>

3.27	00 73 16	<p><b>Question:</b> Section 00 73 16 Insurance Requirements (OCIP), Subparagraph 1.1.B.1.f. outlines the Contractor's Pollution Liability coverage. Please advise of the applicable deductible amount that the Contractor will be responsible for.</p> <p><b>Answer:</b> No deductible.</p>
3.28	00 73 16	<p><b>Question:</b> Section 00 73 16 Insurance Requirements (OCIP), 1.1.B.2.c. outlines the Contractor's Commercial General Liability insurance requirements for off-site coverage, including the applicable limit of \$1 million per occurrence. As this coverage is written on an "aggregate" limit basis, please confirm the aggregate limit is also \$1 million.</p> <p><b>Answer:</b> Yes, the minimum limit is \$1 million.</p>
3.29	05 53 13	<p><b>Question:</b> The project specifications 05 53 13 Subparagraph 2.3 B., dimensions on bar grating are in conflict with the dimension in the typical details as shown on Sheet S23 detail 1. Please clarify the proper spacing. The attached detail is standard for fabrication and installation of clips.</p> <p><b>Answer:</b> The bearing bar spacing of 1 3/16" o.c. as shown on Detail 1/S23 is correct. See revised Specification language issued as Addendum 3 Item 3.06 above.</p>
3.30	40 05 62	<p><b>Question:</b> The specified plug valve lining in Spec section 40 05 62 Subpart 2.1.D.1.b is no longer manufactured. Please advise if another lining such as glass would be acceptable or indicate another manufacturer that can offer the rubber lining.</p> <p><b>Answer:</b> Rubber lining on plug valves is no longer being required. Please see revised Addendum 3 item 3.13 above.</p>
3.31	40 05 57	<p><b>Question:</b> Please confirm if the following equipment is to be supplied by Contractor:</p> <ul style="list-style-type: none"> <li>A. New Actuator Assembly</li> <li>B. Stainless Steel Floor Stand/Pedestal for Actuator Mounting</li> <li>C. Stem Extension – appears to be required, but no details.</li> <li>D. Stem Covers</li> </ul> <p><b>Answer:</b></p> <ul style="list-style-type: none"> <li>A. Provide new electric motor actuator as shown on Section B / Sheet M14 and Section 40 05 57. See revised specification language issued per Addendum 3 Item 3.11 above.</li> </ul>

		<p>B. Provide new pedestal for actuator per Section B/ Sheet M14; 316 stainless materials per Section 40 05 57, 2.5.M.1.</p> <p>C. Per Section B/Sheet M14, install new gear enclosure at top of gate, new extension stem down to a new gear box (if required by manufacturer) and new electric motor actuator. Actuator to be mounted at 42" above the floor.</p> <p>D. Provide new stem covers for extension stem. See revised specification language issued per Addendum 3 item 3.12 above.</p>
3.32	40 05 57	<p><b>Question:</b> Clarify calculations in Specification 40 05 57 Subparagraph 2.5.</p> <p><b>Answer:</b> See revised table and specification language issued in Addendum 3 item 3.10.</p>
3.33	41 14 36	<p><b>Question 1:</b> What are the specifications for the gap plate mentioned here?</p> <p><b>Answer:</b> Gap plate shall be 1/4" thick steel plate. See revised specification language issued per Addendum 3 item 3.15 above.</p> <p><b>Question 2:</b> What gap is this covering and how does the interface between gap plate and T-grip?</p> <p><b>Answer:</b> Install T-grip molding between gap plate and existing curb. See revised specification language issued per Addendum 3 item 3.15 above.</p>
3.34	46 21 13	<p><b>Question:</b> Specification 46 21 13 Subparagraph 1.8.D seems to indicate that the control panels for the specified equipment will be provided by the PCSS. Please confirm that the controls for equipment specified in Sections 46 21 13 and 44 43 35 are by the PCSS. If so, Paragraph 2.3.A.9 requires that the screening equipment and control panels be tested and match marked for erection. Is it acceptable to factory test the equipment and the control panels separately?</p> <p><b>Answer:</b> All control panels for all equipment are provided by the Contractor's PCSS. The process mechanical equipment and the control panels are to be factory tested separately. See revised specification language issued above in Addendum 3 item 3.16.</p>

3.35	M04, Photo 2	<p><b>Question 1:</b> What is the loading rating for the existing lifting eyes on the second and third floor around the bar screens?</p> <p><b>Question 2:</b> Can you provide an estimated weight of the lifting capacities of the existing eye bolts?</p> <p><b>Answer 1 and 2:</b> The existing lifting rings/eyes installed in the ceiling of the screening room and solids off-loading room were originally designed for a maximum vertical load of 2,000 pounds. It is the Contractor's responsibility to verify the structural integrity and adequacy of the existing lifting rings/eyes and adjoining structure to ensure that there is no overloading or damage during construction activities.</p>
3.36	M08	<p><b>Question 1:</b> Who is responsible for draining the High Pressure Oil systems to allow for demo?</p> <p><b>Question 2:</b> Please clarify if the current HPO piping system is in use and can be demolished without any constraints other than what is listed in Section 01 12 16 Work Sequence. Is the intent for the contractor to only demolish the piping identified on M08 and leave the rest of the HPO piping not shown, including the HPU intact?</p> <p><b>Question 3:</b> Or is the intent to demolish all of the HPO piping from the hydraulic actuators to the HPU, including the HPU? If so, please provide quantities or a marked up drawing, and/or pictures, of the complete existing HPO System, including location of the HPU and all of the equipment that is fed from the HPO system, in order to quantify the limits of piping and equipment that is to be demolished.</p> <p><b>Answer 1 and 2:</b> See sheet M08 for extent of HPO piping removal. Contractor will submit an Outage Request and gain approval during construction prior to proceeding with the work. Owner will work with Contractor to isolate and drain HPO to allow for demo. Contractor to dispose of any residual oil. Refer to Section 02 41 19 Selective Demolition.</p> <p><b>Answer 3:</b> See sheet M08 for extent of HPO piping removal. Contractor is not to remove entire HPO system. Contractor to remove only what is called out in plans and specifications</p>
3.37	S01	<p><b>Question:</b> Note 4, under Concrete, on Drawing S01 says, "Concrete shall have the following 28 day strengths, F'c - 4,500 PSI. All concrete shall be normal weight except as noted." Mix design parameters indicated in Specification 03</p>

		<p>30 00, Cast-In-Place Concrete, are limited to paragraph 2.10 A for Slabs-on-Grade: Normal-weight concrete, which states a minimum compressive strength of 5,000 PSI and includes Steel-Fiber Reinforcement. Please clarify the minimum F'c for concrete on the project, and/or provide additional concrete mixture requirements for building elements other than slabs-on-grade.</p> <p><b>Answer:</b> Use 4,500 psi concrete. Do not include steel-fiber reinforcement. See revised specification language issued per Addendum 3 item 3.04.</p>
3.38	S05	<p><b>Question:</b> This sheet shows an area 25sqft demoed but S11 doesn't show it pouring back? Please advise</p> <p><b>Answer:</b> The contractor shall pour the concrete back. S05 shows the demolition of concrete. See revised sheet S12, issued in this addendum for new concrete placement.</p>
3.39	S07	<p><b>Question:</b> Note 2 says infill should use Sikaquick FNP 3000psi. Would structural concrete be acceptable?</p> <p><b>Answer:</b> Any approved equal substitution for Sikaquick FNP must have minimum 3,000 PSI strength at 24 hours. Refer to Section 00 72 00 for substitution requirements.</p>
3.40	S09	<p><b>Question:</b> Per Note 3 / S09 for SS Lifting Ring of 2,000 lbs capacity, Note 3 shows Typ of 6 ea. However, we counted 12 ea on Dwg S09. Which Qty is true?</p> <p><b>Answer:</b> 12 is the correct answer.</p>
3.41	S09	<p><b>Question:</b> Per Note 4 / S09 for SS Lifting Ring of 1,000 lbs capacity, Note 4 shows Typ of 6 ea. However, we counted 17 ea on Dwg S09. Which Qty is true?</p> <p><b>Answer:</b> 17 is the correct answer.</p>
3.42	S12	<p><b>Question:</b> At Solids Loading Tipping Trough Framing plan, AL Stair Landing Grating has a call out 1 / S22. However, 1 / S22 is not a Grating detail. Should the actual call out be 1 / S23?</p> <p><b>Answer:</b> The correct detail reference should be Detail 1/S23. Callout is corrected on new revised sheet S12, see Addendum 3 item 3.19.</p>

3.43	S13	<p><b>Question:</b> Per Note 1 / S13 for SS Lifting Ring of 300 lbs capacity, Note 1 shows Typ of 16 ea. However, our count is 21 ea on Dwg S13. Which Qty is true?</p> <p><b>Answer:</b> 21 is the correct number.</p>
3.44	S16	<p><b>Question:</b> Detail A shows what appears to be a suspended concrete slab with no top elevation given, but just below the screen infill. What is this?</p> <p><b>Answer:</b> The suspended concrete slab shown in Section A is an existing slab and is the floor of the overflow channel between the existing bar screen channels.</p>
3.45	S23	<p><b>Question:</b> Detail 4 / S23 shows a Stud / Machine Bolt config for Grating attachment. In our past projects, this config has been difficult to shop weld to ensure the studs will be centered between the Grating Bars. They often need to be cut off in the field for re-welding or shipped loose for field welding. Is it acceptable to use Self-drilling screws? If not, other manufacturers offer alternative types of grating clips that eliminate the need for field welding. If either of these alternative config is acceptable, it will save the cost for field welding of studs in between bearing bars.</p> <p><b>Answer:</b> Detail 4 / S23 has the grating clips held down by a stud with a hex nut, the stud is tapped into the grating support and no welding is required. Structfast's catalogue doesn't appear to include an aluminum grating to aluminum beam clip option, however, alternative grating clip designs will be considered. Contractor to submit requested grating attachments for approval during submittal approval process when under construction.</p>
3.46	E12, E13, E16	<p><b>Question:</b> The 12 inch tray on E12, and the 30 inch tray on E12, E13, &amp; E16 seem like they are drawn with light lines and are existing unlike the new trays as shown on E39.</p> <p>Are these trays on E12, E13 and E16 new and to be furnished by the EC?</p> <p><b>Answer:</b> There is currently no existing cable tray in the Headworks processing building. All cable tray shown are new and will need to be furnished and installed by the Contractor as shown on the Contract Drawings E12, E13, and E16. This applies to both the 12 inch and the 30 inch tray. Tray shown on all sheets (including E38 and E39) is new.</p>

		Lighter lines on plan drawings for cable tray should not be interpreted as existing cable tray.
3.47	General	<p><b>Question 1:</b> Can as built drawings and/or installation details be provided for the existing bar screens and/or grit chambers be provided?</p> <p><b>Question 2:</b> Can you provide an estimated weight of the current bar screens?</p> <p><b>Answer 1 and 2:</b> The accuracy of original As-Builts or Submittals cannot be guaranteed to accurately represent existing conditions. The City provided two Site Inspection Visits to allow interested parties to view, inspect and photograph existing equipment and facilities to respond to this request. An additional Site Inspection visit is authorized per Addendum 3 item 3.02.</p>
3.48	Materials Substitution	<p><b>We received the following Substitution requests from Goble Sampson and Huber Technology Inc.:</b></p> <p>SECTION 41 12 13 BELT BULK MATERIAL CONVEYORS</p> <p>SECTION 43 25 13 SUBMERSIBLE SOLIDS HANDLING PUMPS</p> <p>SECTION 46 21 13 MULTIRAKE BAR SCREENS</p> <p>SECTION 46 21 73 SCREENINGS WASHING AND COMPACTING EQUIPMENT</p> <p>SECTION 46 24 33 GRINDERS</p> <p><b>Owner is not able to evaluate substitution requests properly during Bid. Contractor is to bid on named products, or an approved equal, as detailed in the project documents. Full submittals and evaluation for an “approved equal” basis will occur during construction.</b></p>

Other questions have been received and noted by City. Future addenda will respond to questions already received.

**END OF ADDENDUM**

Please direct all questions and concerns to Valentine Hellman, at  
valentine.hellman@portlandoregon.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathleen Brenes-Morúa". The signature is fluid and cursive, with the first name "Kathleen" being more prominent.

Kathleen Brenes-Morúa  
Procurement Manager  
kbm:veh

## **SECTION 081113**

### **HOLLOW METAL DOORS AND FRAMES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 BASIS OF DESIGN**

- A. Design is based on first named manufacturers shown in this section. Contractor is responsible for all changes and their associated costs with selecting manufacturers other than the first named manufacturer of products.

##### **1.3 SUMMARY**

- A. Section includes:
  - 1. Exterior aluminum standard steel doors and frames.
  - 2. Exterior custom aluminum hollow-metal doors and frames.
- B. Related Requirements:
  - 1. Section 01 33 00 "Submittal Procedures": Requirements for Submittals.
  - 2.
  - 3. Section 087100 "Door Hardware (Descriptive Specification)" for door hardware for hollow-metal doors.

##### **1.4 DEFINITIONS**

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

##### **1.5 COORDINATION**

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, , and access control and security systems.

## **1.6 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

## **1.7 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.
- B. Shop Drawings: Include the following:
  - 1. Elevations of each door type.
  - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 4. Locations of reinforcement and preparations for hardware.
  - 5. Details of each different wall opening condition.
  - 6. Details of anchorages, joints, field splices, and connections.
  - 7. Details of accessories.
  - 8. Details of moldings, removable stops.
- C. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.
- D. Samples for Verification:
  - 1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
  - 2. Fabrication: Prepare Samples approximately 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:
    - a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
    - b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.
- E. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

## **1.8 CLOSEOUT SUBMITTALS**

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

## **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.
  - 1. Temperature-Rise Limit: and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 90 minutes of standard fire-test exposure.

### **2.2 EXTERIOR STANDARD ALUMINUM DOORS AND FRAMES**

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
  - 1. Doors:
    - a. Type: As indicated in the Door Schedule.
    - b. Thickness: 1-3/4 inches.
    - c. Face: Metallic-coated aluminum sheet, minimum thickness of 0.042 inch, with minimum A60 coating.
    - d. Edge Construction: Model 1, Full Flush ANSI/SDI A250.8 allows the edge bevel to be determined by manufacturer unless otherwise indicated.
    - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
    - f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
    - g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
    - h. Fire-Rated Core: Manufacturer's core for fire-rated doors.

2. Frames:
  - a. Materials: Metallic-coated aluminum sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
  - b. Construction: Full profile welded.
3. Exposed Finish: Prime.

## 2.3 FRAME ANCHORS

- A. Jamb Anchors:
  1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet
  3. Postinstalled Expansion Anchor: Minimum 3/8-inch diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Zcoating designation; mill phosphatized.
  1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

## 2.4 MATERIALS

- A. Weatherstripping: Continuous wool pile, silicone treated, or type recommended by door manufacturer
- B. Aluminum Alloy for Doors and Frames: ASTM B221 , alloy 6063-T5 for extrusions; ASTM B209 , alloy and temper best suited for aluminum sheets and strips.
- C. Fasteners: Hard aluminum or stainless steel.
- D. Structural Steel: ASTM A 36/A 36M.
- E. Aluminum Paint: Aluminum door manufacturer's standard aluminum paint.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

## **2.5 FABRICATION**

- A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
  - 1. Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
  - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
- C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
  - 1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
  - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

## **2.6 ALUMINUM FINISHES**

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with ANSI/SDI A250.3.
  - 1. Color and Gloss: Match building standard for color and gloss.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

### 3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
  - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
    - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    - b. Install frames with removable stops located on secure side of opening.
  - 2. Fire-Rated Openings: Install frames according to NFPA 80.
  - 3. Floor Anchors: Secure with post installed expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
  - 4. Solidly pack mineral-fiber insulation inside frames.
  - 5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
  - 6. In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  - 7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
  - 1. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

### 3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Engineer.
- B. Inspections:

1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
  2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, and each door equipped with special locking arrangements according to NFPA 101, Section 7.2.1.15.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

### **3.4 REPAIR**

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

**END OF SECTION**

## **SECTION 087100**

### **DOOR HARDWARE**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 BASIS OF DESIGN**

- A. Design is based on first named manufacturers shown in this section. Contractor is responsible for all changes and their associated costs with selecting manufacturers other than the first named manufacturer of products.

##### **1.3 SUMMARY**

- A. Section Includes:
  - 1. Mechanical door hardware for the following:
    - a. Swinging doors.
  - 2. Cylinders for door hardware specified in other Sections.
- B. Related Requirements:
  - 1. Section 081113 "Hollow Metal Doors and Frames" for astragals provided as part of labeled fire-rated assemblies

##### **1.4 ALLOWANCES**

- A. Door hardware is part of Door Hardware Allowance.

##### **1.5 SUBMITTALS**

- A. See Section 01 33 00 "Submittal Procedures" for submittal requirements and other submittals to be provided by the Contractor.
- B. Within these technical specification sections, the following submittal requirements relate to Section 01 33 00 submittal categories as follows:
  - 1. Action Submittals and Information Submittals shall follow requirements for Shop Drawings under Section 01 33 00 though not all submittals may require the Owner to take responsive action.

2. Operations and Maintenance Data Submittals, and Close Out Submittals shall follow requirements for Documentary Submittals under Section 01 33 00.
3. Maintenance Material Submittals shall follow requirements for Shop Drawings under Section 01 33 00. After favorable submittal review, the spare parts, tools and other items listed shall be furnished according to submittal review comments.
4. Provide additional information as necessary to show compliance with Contract Documents at no additional cost to the Owner

## **1.6 COORDINATION**

- A. Floor-Recessed Door Hardware: Coordinate layout and installation with floor construction.
  1. Cast or epoxy anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

## **1.7 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  1. Conference participants shall include Installer's Architectural Hardware Consultant.
- B. Keying Conference: Conduct conference at Project site.
  1. Conference participants shall include Installer's Architectural Hardware Consultant and Owner's security consultant.
  2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:
    - a. Flow of traffic and degree of security required.
    - b. Preliminary key system schematic diagram.
    - c. Requirements for key control system.
    - d. Requirements for access control.
    - e. Address for delivery of keys.

## 1.8 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples: For each exposed product in each finish specified, in manufacturer's standard size.
  - 1. Tag Samples with full product description to coordinate Samples with door hardware schedule.
- C. Samples for Initial Selection: For each type of exposed finish.
- D. Samples for Verification: For each type of exposed product, in each finish specified.
  - 1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch Samples for other products.
    - a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.
  - 2. Tag Samples with full product description to coordinate Samples with door hardware schedule.
- E. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
  - 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
  - 3. Content: Include the following information:
    - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
    - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
    - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    - d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
    - e. Fastenings and other installation information.
    - f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
    - g. Mounting locations for door hardware.

- h. List of related door devices specified in other Sections for each door and frame.
- F. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

## **1.9 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and Architectural Hardware Consultant.
- B. Product Certificates: For each type of door hardware.
  - 1. Certify that door hardware for use on each type and size of labeled fire-rated doors complies with listed fire-rated door assemblies.
- C. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- D. Field quality-control reports.
- E. Sample Warranty: For special warranty.

## **1.10 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- B. Schedules: Final door hardware and keying schedule.

## **1.11 QUALITY ASSURANCE**

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Engineer, and Owner about door hardware and keying.
  - 1. Warehousing Facilities: In Project's vicinity.
  - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
  - 3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

### **1.12 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.
- D. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

### **1.13 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including excessive deflection, cracking, or breakage.
    - b. Faulty operation of doors and door hardware.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
  - 2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
    - a. Manual Closers: 10 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  - 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
- B. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

- C. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the ADA standards of the agency having jurisdiction.
  - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
  - 2. Comply with the following maximum opening-force requirements:
    - a. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
  - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
  - 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

### **2.3 MECHANICAL LOCKS AND LATCHES**

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  - 1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.

### **2.4 FABRICATION**

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Engineer.
  - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
  - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  - 2. Fire-Rated Applications:

- a. Machine Screws: For the following:
  - 1) Hinges mortised to doors or frames.
  - 2) Strike plates to frames.
  - 3) Closers to doors and frames.
- b. Steel Through Bolts: For the following unless door blocking is provided:
  - 1) Surface hinges to doors.
  - 2) Closers to doors and frames.
  - 3) Surface-mounted exit devices.
3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

## **2.5 FINISHES**

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

### 3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
  - 1. Standard Aluminum Doors and Frames: ANSI/SDI A250.8.
  - 2. Custom Aluminum Doors and Frames: HMMA 831.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
  - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
  - 1. Replace construction cores with permanent cores as directed by Owner.
  - 2. Permanent cores to be furnished by Owner for installation by contractor.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
  - 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

### **3.4 FIELD QUALITY CONTROL**

- A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
  - 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

### **3.5 ADJUSTING**

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
  - 2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

### **3.6 CLEANING AND PROTECTION**

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

### **3.7 MAINTENANCE SERVICE**

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

### 3.8 DEMONSTRATION

- A. Engage Installer to train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

### 3.9 DOOR HARDWARE SCHEDULE

- A. Hardware Set 1: Each door to have the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR	NOTES
4	EA	HINGE	5BB1HW 5 X 4.5 NRP	630	IVE	OR APPROVED EQUAL
1	EA	FIRE EXIT HARDWARE	98-NL-F	626	VON	OR APPROVED EQUAL
1	EA	RIM CYLINDER	20-057-T	626	SCH	OR APPROVED EQUAL
1	EA	FINAL CORE	OWNER FURNISHED	-	-	OR APPROVED EQUAL
1	EA	SURFACE CLOSER	4111 EDA	689	LCN	OR APPROVED EQUAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE	OR APPROVED EQUAL
1	EA	WALL STOP	WS406/407CVX	630	IVE	OR APPROVED EQUAL
1	EA	GASKETING	488SBK PSA	BK	ZER	OR APPROVED EQUAL
1	EA	DOOR SWEEP	8198AA	AA	ZER	OR APPROVED EQUAL
1	EA	THRESHOLD	655A-V3-223	A	ZER	OR APPROVED EQUAL

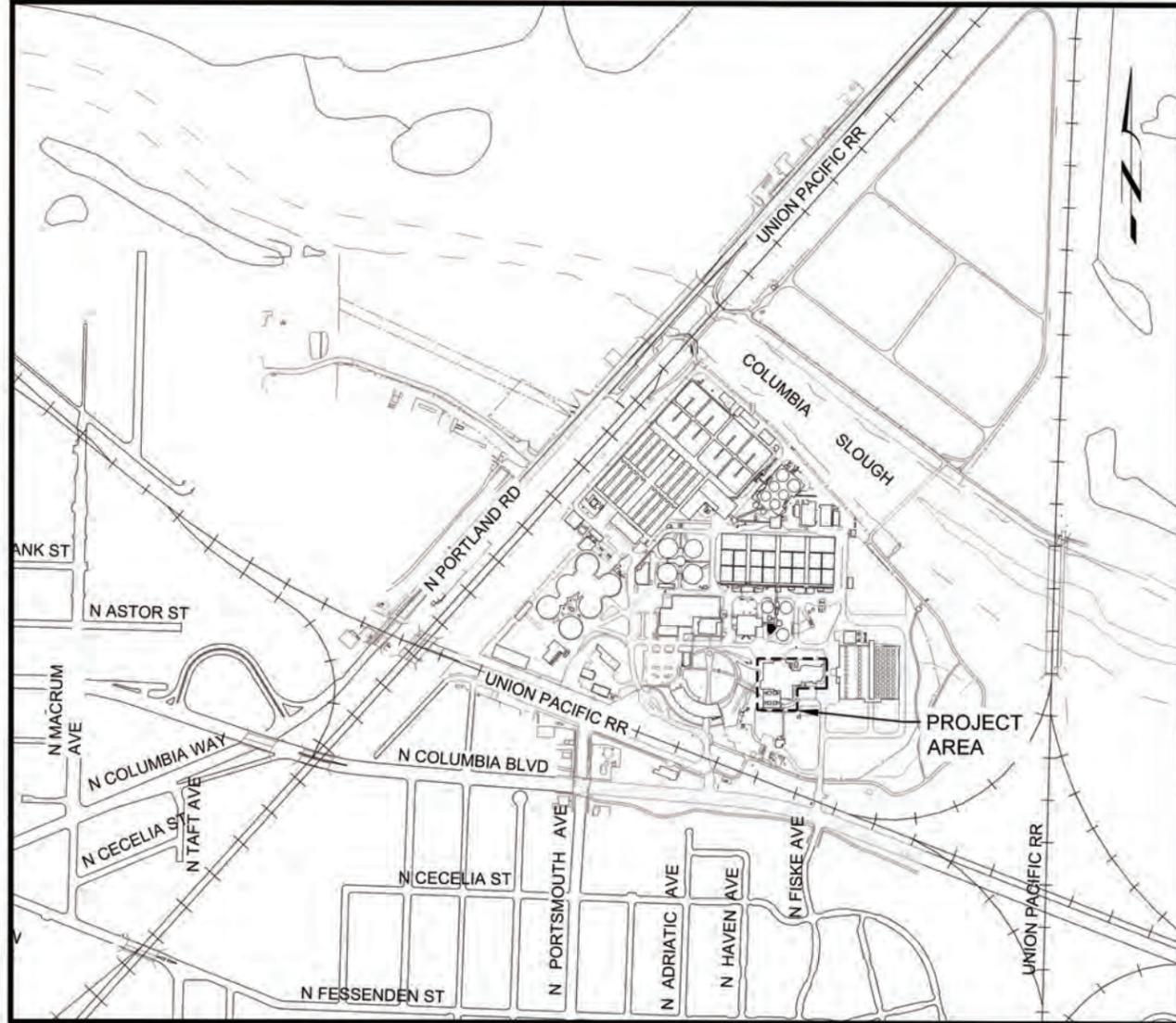
- B. Hardware Set 2: Each door to have the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR	NOTES
3	EA	SPRING HINGE	3SP1 4.5 X 4.5	652	IVE	OR APPROVED EQUAL
1	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE	OR APPROVED EQUAL
4	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE	OR APPROVED EQUAL
1	SET	CONST LATCHING BOLT	FB51 24"	630	IVE	OR APPROVED EQUAL
1	EA	DUST PROOF STRIKE	DP2	626	IVE	OR APPROVED EQUAL
1	EA	FIRE EXIT HARDWARE	9875-L-F-06	626	VON	OR APPROVED EQUAL
1	EA	MORTISE CYLINDER	20-061-T X K510-730 36- 083 36-082-037	626	SCH	OR APPROVED EQUAL
1	EA	FINAL CORE	OWNER FURNISHED	-	-	OR APPROVED EQUAL
1	EA	COORDINATOR	COR X FL	628	IVE	OR APPROVED EQUAL

1	EA	MOUNTING BRACKET	MB	689	IVE	OR APPROVED EQUAL
1	EA	SURFACE CLOSER	4111 SCUSH TBWMS	689	LCN	OR APPROVED EQUAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE	OR APPROVED EQUAL
1	EA	FLOOR STOP	FS436	626	IVE	OR APPROVED EQUAL
1	EA	GASKETING	488SBK PSA	BK	ZER	OR APPROVED EQUAL
1	EA	ASTRAGAL	43STST	STST	ZER	OR APPROVED EQUAL

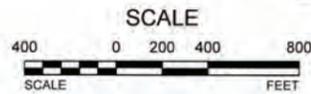
**END OF SECTION**

# CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES CBWTP HEADWORKS SCREENING IMPROVEMENTS PROJECT NO. E10805

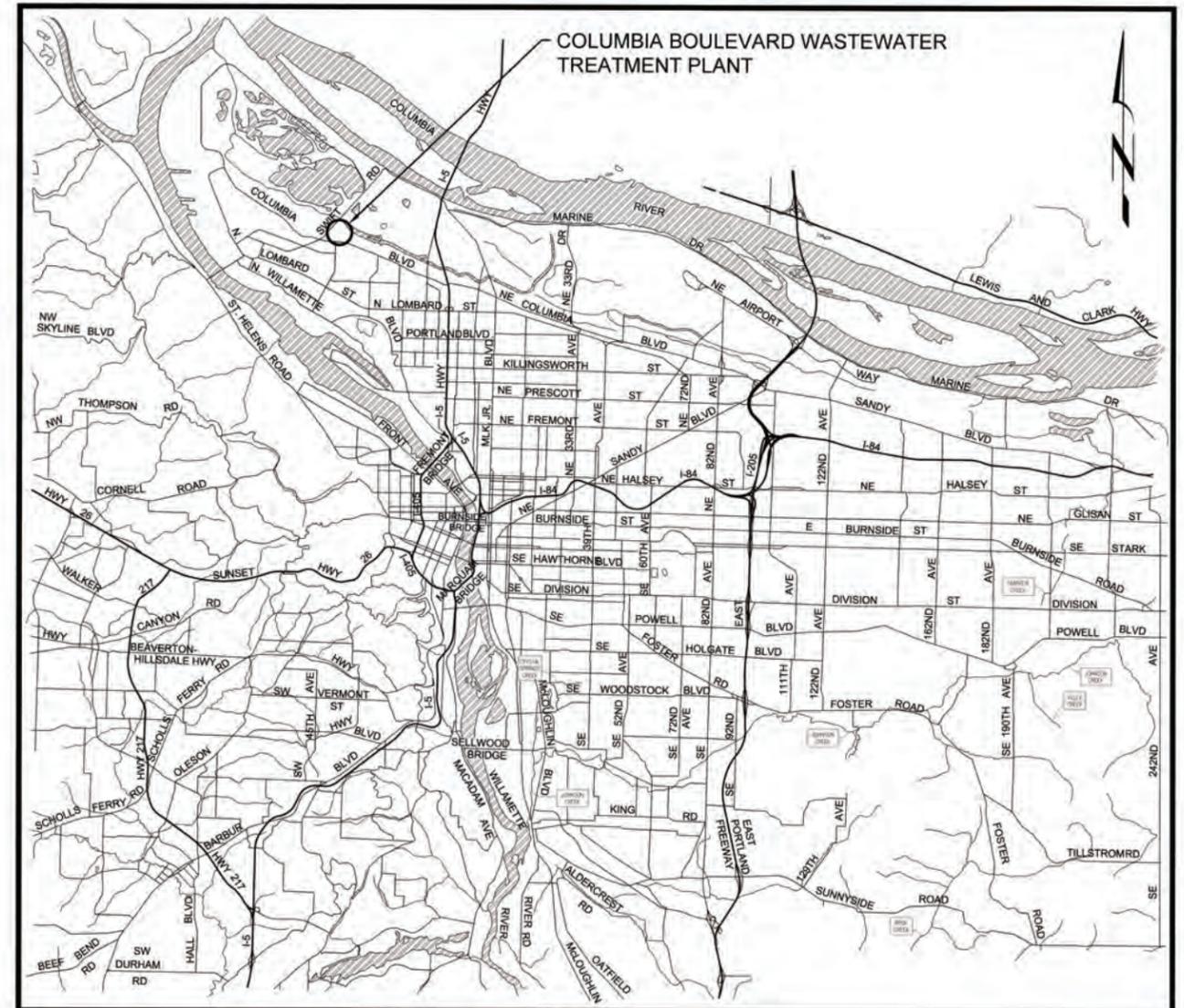


**LOCATION MAP**

NOTE:  
SEE DRAWING C01 FOR CBWTP ROADWAYS.



SCALE: 1" = 400'



**PORTLAND, OREGON  
VICINITY MAP**

NOT TO SCALE



**620 SW 5th Ave., Suite 1115, Portland, OR 97204**

Water

Environment

Transportation

Energy

Facilities

**GENERAL NOTES:**

THE GENERAL CONTRACTOR SHALL SCHEDULE A FIRESTOPPING MEETING WITH THE BUILDING INSPECTOR AND ALL SUBCONTRACTORS THAT WILL BE INSTALLING FIRESTOPPING MATERIALS. EACH SUBCONTRACTOR WILL PROVIDE A LIST OF FIRESTOP MATERIALS/ASSEMBLIES WHICH WILL BE USED, THE TYPE OF PENETRATIONS WHERE EACH MATERIAL/ASSEMBLY WILL BE USED; AND THE LISTING AND APPROVAL INFORMATION (I.E. UL, ICC OR OTHER APPROVED REPORT/LISTING NUMBERS.) THIS INFORMATION MUST BE SUBMITTED TO, AND APPROVED BY, THE BUILDING INSPECTOR PRIOR TO ANY INSTALLATION.

VERIFY SCALE  
BAR EQUALS ONE INCH ON FULL SIZE (D) SHEET  
IF NOT ONE INCH SCALE ACCORDINGLY

NO.	DATE	DESCRIPTION	APPROVED
1	10/12/21	ADDENDUM 3	MPH
REVISION			

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

MINGUS MAPPS  
COMMISSIONER

APPROVAL

PAUL SUTO, P.E.  
CHIEF ENGINEER

ENVIRONMENTAL SERVICES CHIEF ENGINEER  
REG. PROF. ENGR. NO. 82,245



**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

TITLE SHEET

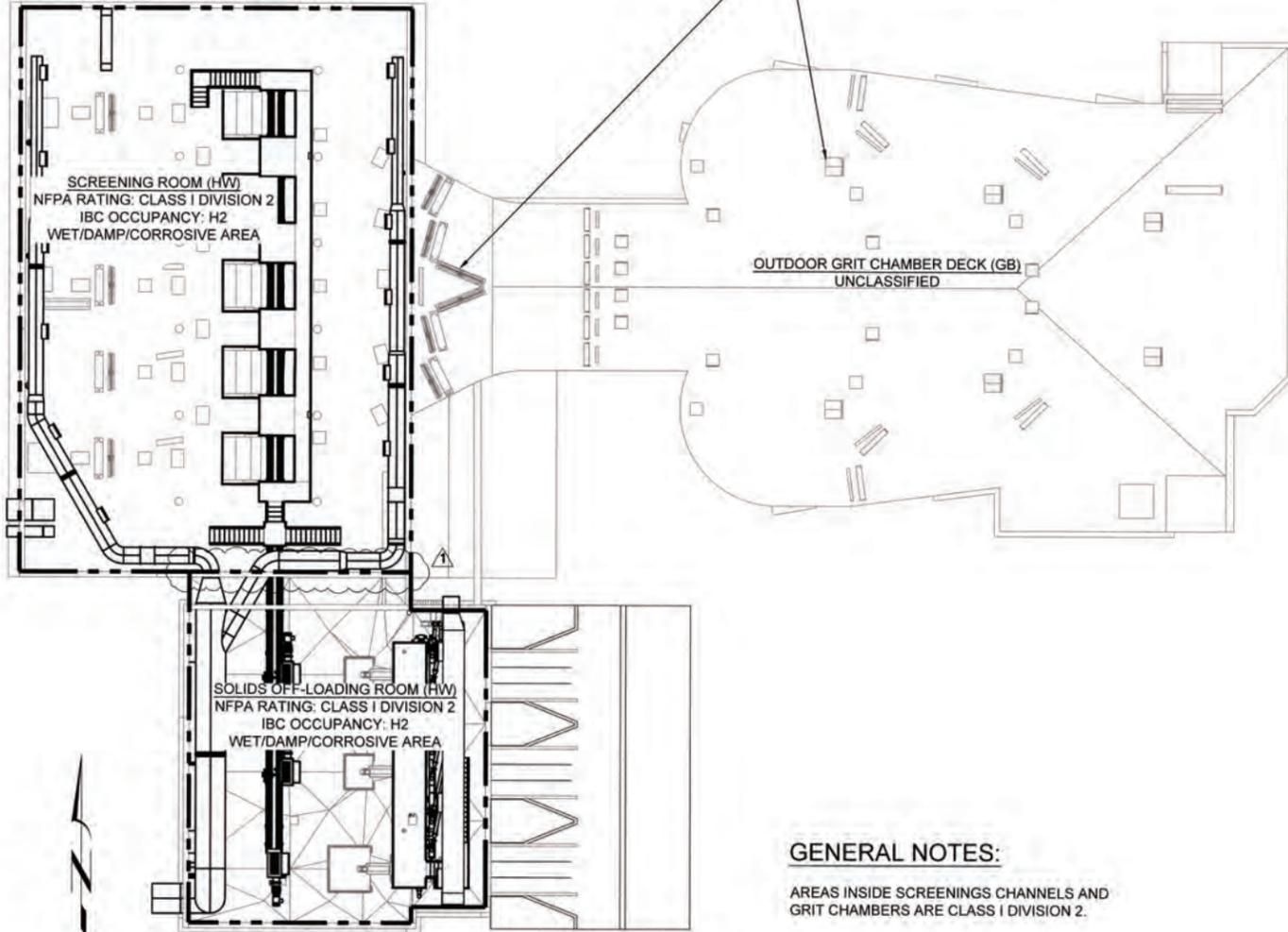
JOB NO.  
E10805

SHEET NO.  
G01

1 OF X

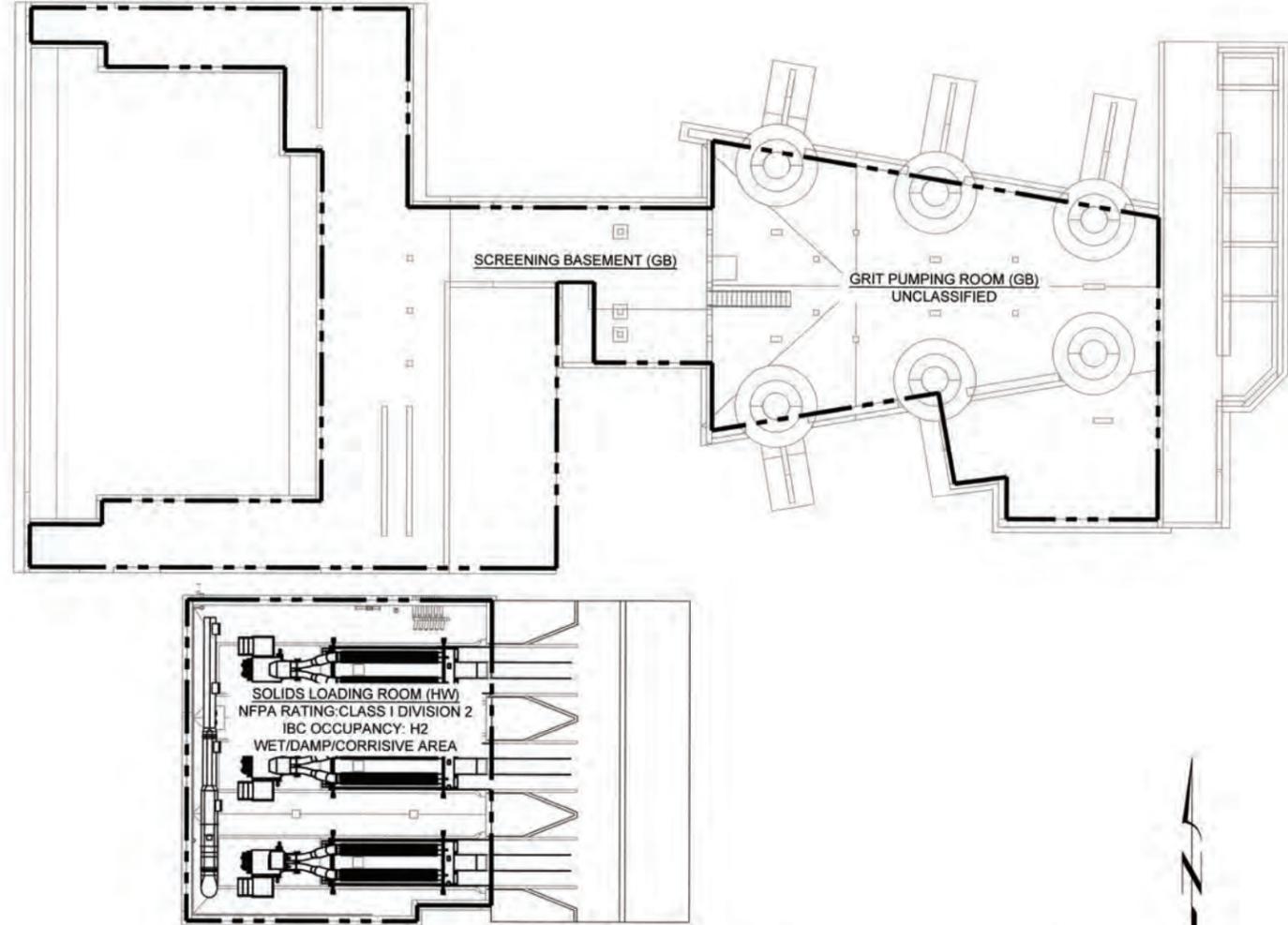
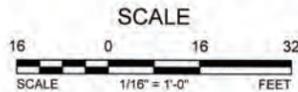
C:\COMEXT\TALBOT\K\0312533\E10805\_G01.DWG 10/14/2021 3:22 PM TALBOT, WAHKEAN

WITHIN 3' OF OUTDOOR DECK OPENINGS (TYP)  
 NFPA RATING: CLASS 1 DIVISION 2  
 WET/DAMP/CORROSIVE AREA



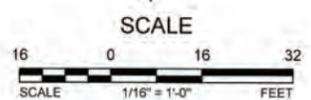
**LEVEL TWO PLAN**

SCALE: 1/16" = 1'-0"



**LEVEL ONE/LOWER LEVEL PLAN**

SCALE: 1/16" = 1'-0"



**GENERAL NOTES:**

AREAS INSIDE SCREENINGS CHANNELS AND GRIT CHAMBERS ARE CLASS 1 DIVISION 2.

**LEGEND**

ROOM DELINEATION BOUNDARY



SCREENING ROOM MEZZANINE  
 CONSTRUCTION TYPE: 1  
 SPRINKLERS: YES  
 NFPA RATING: CLASS 1, DIVISION 2  
 IBC OCCUPANCY: H2  
 DAMP/CORROSIVE AREA

MEZZANINE AREA (HW) - BEFORE MODIFICATIONS  
 CONSTRUCTION TYPE: 1  
 SPRINKLERS: YES  
 NFPA RATING: CLASS 1 DIVISION 2  
 IBC OCCUPANCY: H2  
 DAMP/CORROSIVE AREA

MECHANICAL ROOM  
 CONSTRUCTION TYPE: 1  
 SPRINKLERS: YES  
 NFPA RATING: UNCLASSIFIED  
 IBC OCCUPANCY: F2  
 DRY AREA

OUTSIDE DECK (HW)  
 SPRINKLERS: NO  
 NFPA RATING: UNCLASSIFIED  
 WET/DAMP AREA

4-HR RATED WALL

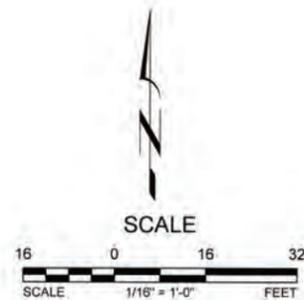
UPPER LEVEL ELECTRICAL ROOM (HW) - AFTER MODIFICATIONS  
 CONSTRUCTION TYPE: 1  
 SPRINKLERS: NO (PER 707.3.10 AND 903.2.4)  
 NFPA RATING: UNCLASSIFIED  
 IBC OCCUPANCY: F1  
 DRY AREA

CEILING BELOW  
 MODIFY 2-HR CEILING  
 TO 4-HR RATING BELOW  
 ELECTRICAL ROOM

AREA OF OCCUPANCY CHANGE (SPRINKLERS  
 TO BE REMOVED AND AUTOMATIC FIRE  
 DETECTION SYSTEM TO BE ADDED)

**LEVEL THREE PLAN**

SCALE: 1/16" = 1'-0"



NO.	DATE	DESCRIPTION	APPD.
10/12/21		ADDENDUM 3	MPH
		REVISION	

XREF(S) USED:	DESIGNED BY	DATE APPD.
ROTATION ANGLE: #####	DRAWN BY	PROGRAM MGR.
CONSTRUCTED BY	CHECKED BY	CONST. MGR.
PROJECT COMPLETED	DESIGN MGR.	
MAP CORRECTED BY		
CHECKED BY		
FINAL MAP DATA		
DRAWING NAME:		
E10805_G09.dwg		

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

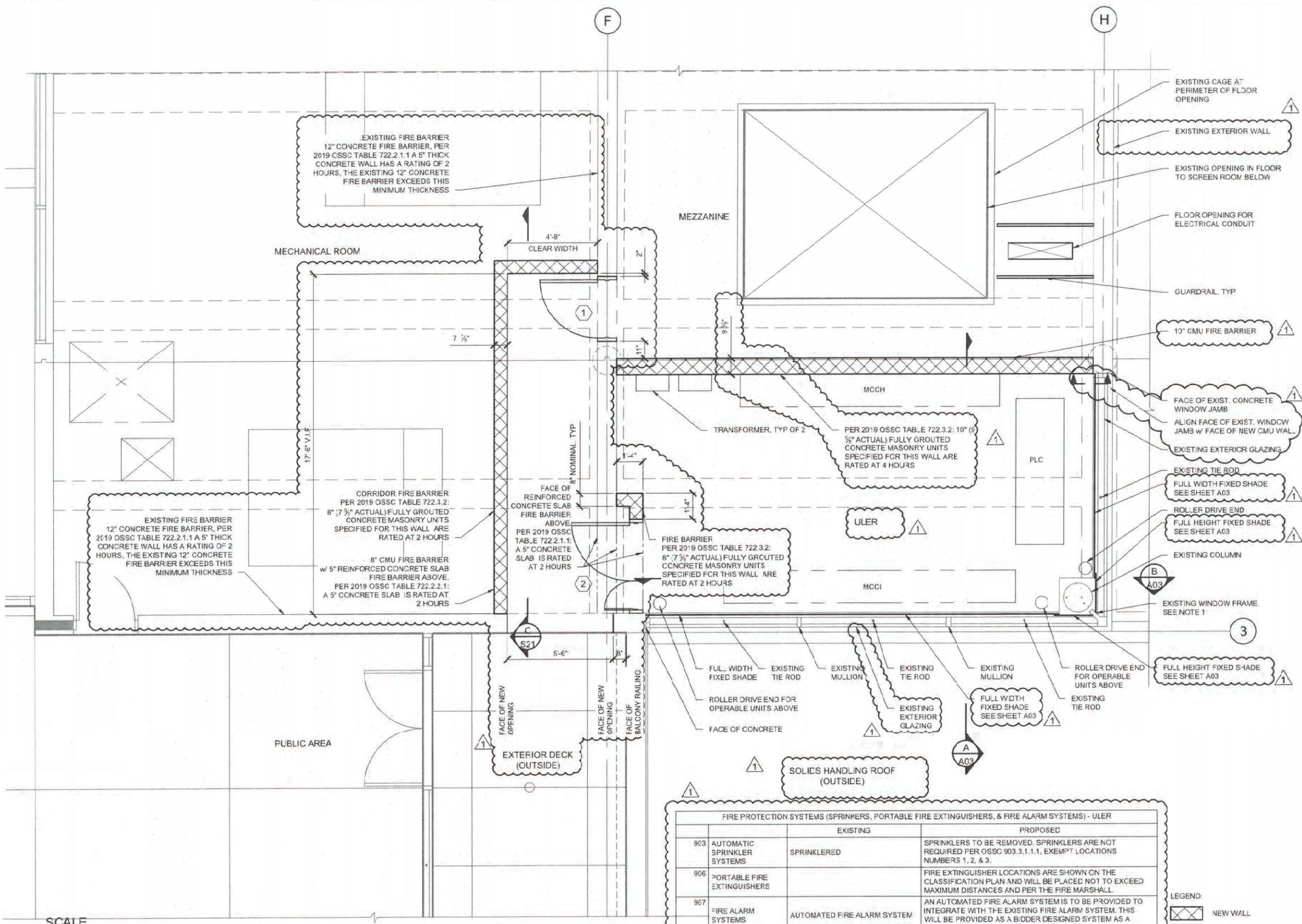
CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
 1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 232-1800



CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS  
 CLASSIFICATION PLAN AND NOTES

1/4 SECTION  
 JOB NO. E10805  
 SHEET NO. G09  
 X OF X

P:\PROJECTS\2019\19-013 CDMSMITH-CBWTP HEADWORKS\CAD\2-SHEETS\ULER ARCHITECTURAL\110805\_A01.DWG 10/29/2021 1:54 PM JADE MODANIEL



**GENERAL NOTES**

- OPERABLE SHADES NOT SHOWN IN PLAN VIEW.
- COORDINATE ALL SHADE CONNECTIONS, INCLUDING AT 45 DEG. CORNER WINDOW FRAME, WITH SHADE MANUFACTURER.
- APPLY WINDOW FILM TO INTERIOR FACE OF ALL GLAZING ON SOUTH & EAST WALLS.

**BUILDING CODE PROJECT SUMMARY:**

STREET ADDRESS: 5001 N COLUMBIA BLVD PORTLAND, OR 97203

**PROJECT DESCRIPTION:** THE PROJECT CONSISTS OF IMPROVEMENTS TO THE COLUMBIA BOULEVARD WASTEWATER TREATMENT PLANT HEADWORKS. IMPROVEMENTS INCLUDE REPLACEMENT AND INSTALLATION OF HEADWORKS PROCESS EQUIPMENT, INSTALLATION OF EQUIPMENT ACCESS PLATFORMS, PROCESS PIPING IMPROVEMENTS, AND CONSTRUCTION OF A NEW UPPER LEVEL ELECTRICAL ROOM (ULER).

**APPLICABLE CODES:**

- 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC)
- 2021 OREGON PLUMBING SPECIALTY CODE (OPSC)
- 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC)
- 2021 OREGON ELECTRICAL SPECIALTY CODE (DESC)
- 2019 OREGON FIRE CODE (OFC)
- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

**CONSTRUCTION TYPE:** TYPE 1A (NON-COMBUSTIBLE)

**OCCUPANCY GROUPS:** F-1, F-2, H-2, H-3, H-4 AND A-3

**OCCUPANCY SEPARATION:** MIXED OCCUPANCY BUILDING PROVIDES SEPARATED OCCUPANCIES (508.4)

**ZONE:** IH - HEAVY INDUSTRIAL

**SEPARATE PERMITS REQUIRED:**

- ELECTRICAL
- MECHANICAL
- PLUMBING
- AUTOMATIC FIRE ALARM SYSTEMS
- FIRE SPRINKLERS

FIRE PROTECTION SYSTEMS - DOORS			
DOOR NO.	DOOR SIZE	FRAME	DOOR TYPE
1	36W x 96H	0'-2"	EXTERIOR - 60 MIN. FIRE RATED
2	MAIN LEAF = 36W x 96H SIDE LEAF = 18W x 96H	0'-2"	EXTERIOR - 90 MIN. FIRE RATED

DOOR HARDWARE						
QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR	NOTES	
4 EA	HINGE	58B1HW 5 X 4.5 NRP	630	IVE	OR APPROVED EQUAL	
1 EA	FIRE EXT HARDWARE	96-NLF	636	VON	OR APPROVED EQUAL	
1 EA	RIM CYLINDER	20-057-1	636	SCH	OR APPROVED EQUAL	
1 EA	FINAL CORE	OWNER FURNISHED	-	-	OR APPROVED EQUAL	
1 EA	SURFACE CLOSER	4111 ECA	649	LCN	OR APPROVED EQUAL	
1 EA	KICK PLATE	8400 10' X 2' LDW B-C/S	630	IVE	OR APPROVED EQUAL	
1 EA	WALL STOP	WS405/407CVX	630	IVE	OR APPROVED EQUAL	
1 EA	GASKETING	4888BK PSA	BK	ZER	OR APPROVED EQUAL	
1 EA	DOOR SWEEP	6198AA	AA	ZER	OR APPROVED EQUAL	
1 EA	THRESHOLD	655A-V3223	A	ZER	OR APPROVED EQUAL	

HARDWARE SL 2: EACH DOOR TO HAVE THE FOLLOWING:						
QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR	NOTES	
3 EA	SPRING HINGE	3SP1 4.5 X 4.5	632	IVE	OR APPROVED EQUAL	
1 EA	HINGE	58B1 4.5 X 4.5 NRP	632	IVE	OR APPROVED EQUAL	
4 EA	HINGE	58B1HW 4.5 X 4.5 NRP	632	IVE	OR APPROVED EQUAL	
1 SET	CONST LATCHING BCLT	FB51 24'	630	IVE	OR APPROVED EQUAL	
1 EA	DUST PROOF STRIKE	DP2	636	IVE	OR APPROVED EQUAL	
1 EA	FIRE EXT HARDWARE	9675-L-F-05	636	VON	OR APPROVED EQUAL	
1 EA	MORTISE CYLINDER	20-061-TXK510-730 36	633	36-02-037	OR APPROVED EQUAL	
1 EA	FINAL CORE	OWNER FURNISHED	-	-	OR APPROVED EQUAL	
1 EA	COORDINATOR	COR X FL	638	IVE	OR APPROVED EQUAL	
1 EA	MOUNTING BRACKET	MB	649	IVE	OR APPROVED EQUAL	
1 EA	SURFACE CLOSER	4111 SCJSH TBWMS	649	LCN	OR APPROVED EQUAL	
2 EA	KICK PLATE	8400 10' X 1' LDW B-C/S	630	IVE	OR APPROVED EQUAL	
1 EA	FLOOR STOP	FS436	636	IVE	OR APPROVED EQUAL	
1 EA	GASKETING	4888BK PSA	BK	ZER	OR APPROVED EQUAL	
1 EA	ASTRAGAL	43STST	STST	ZER	OR APPROVED EQUAL	

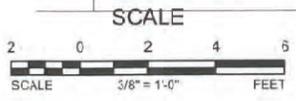
**DOOR HARDWARE NOTES:**

- DOOR HARDWARE SCHEDULE IS PROVIDED FOR INFORMATION ONLY. IN THE CASE OF CONFLICT WITH THE DOOR HARDWARE SPECIFICATIONS, THE SPECIFICATIONS SHALL PREVAIL.

FIRE PROTECTION SYSTEMS (SPRINKLERS, PORTABLE FIRE EXTINGUISHERS, & FIRE ALARM SYSTEMS) - ULER		
	EXISTING	PROPOSED
903	AUTOMATIC SPRINKLER SYSTEMS	SPRINKLERS TO BE REMOVED. SPRINKLERS ARE NOT REQUIRED PER OSSC 903.3.1.1.1, EXEMPT LOCATIONS NUMBERS 1, 2, & 3.
906	PORTABLE FIRE EXTINGUISHERS	FIRE EXTINGUISHER LOCATIONS ARE SHOWN ON THE CLASSIFICATION PLAN AND WILL BE PLACED NOT TO EXCEED MAXIMUM DISTANCES AND PER THE FIRE MARSHALL.
907	FIRE ALARM SYSTEMS	AN AUTOMATED FIRE ALARM SYSTEM IS TO BE PROVIDED TO INTEGRATE WITH THE EXISTING FIRE ALARM SYSTEM. THIS WILL BE PROVIDED AS A BIDDER DESIGNED SYSTEM AS A DEFERRED SUBMITTAL AND SEPARATE PERMIT.

**LEGEND:**

- NEW WALL
- EXISTING WALL



**ULER FLOOR PLAN**  
SCALE: 3/8" = 1'-0"

DESIGNED BY	DATE APPD
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

CONSTRUCTED BY: \_\_\_\_\_  
PROJECT COMPLETED: \_\_\_\_\_  
MAP CORRECTED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_  
FINAL MAP DATA

DRAWING NAME: E10805\_A01.dwg

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1300

**AKANA**



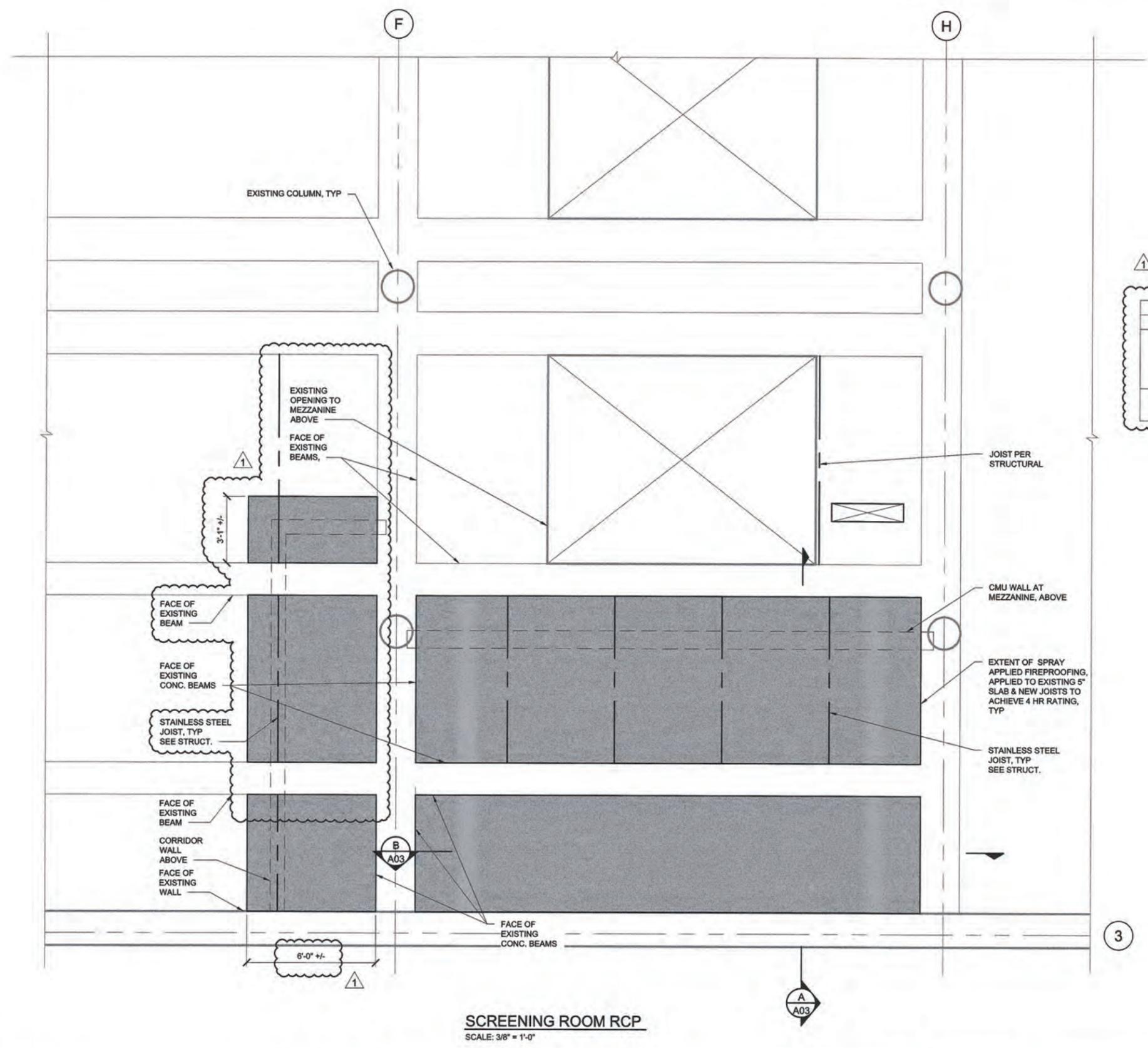
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
ULER FLOOR PLAN

1/4 SECTION

JOB NO: E10805  
SHEET NO: A01  
X OF X

P:\PROJECTS\2019\19-013\_CDMSMITH-CBWP HEADWORKS\CAD\2--SHEETS\ULER\_ARCHITECTURAL\E10805\_A02.DWG 10/15/2021 6:53 AM JADE MCDANIEL



**LEGEND:**  
 INDICATES SPRAY APPLIED FIREPROOFING EXTENTS

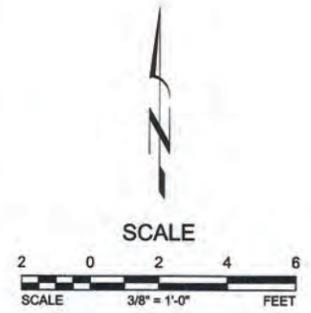
**ARCHITECTURAL DEFERRED SUBMITTALS**

1. CONTRACTOR TO SUBMIT PRODUCT INFORMATION AND SPRAY APPLIED FIRE PROTECTION APPLICATION DIRECTIONS TO OWNER'S REPRESENTATIVE BEFORE SUBMITTING TO JURISDICTION FOR REVIEW AND PERMITTING. CONTRACTOR TO ASSUME 16 WEEKS BUREAU OF DEVELOPMENT (BDS) TURN AROUND ON DEFERRED SUBMITTALS.

- 07 81 00 SPRAY APPLIED FIRE PROTECTION

**TABLE 1**  
 REQUIRED ARCHITECTURAL SPECIAL INSPECTIONS

SYSTEM OR MATERIAL	INSPECTION			
	IBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY	
			CONTINUOUS	PERIODIC
SPRAYED FIRE-RESISTANT MATERIALS	IBC 704.13		X	



**SCREENING ROOM RCP**  
 SCALE: 3/8" = 1'-0"

NO.	DATE	DESCRIPTION	APPD.
1	10/15/21	ADDENDUM 3 - FIRE PROTECTION	PEK
REVISION			

XREF(S) USED: _____	DESIGNED BY: _____	DATE APPD.: _____
ROTATION ANGLE: #####	DRAWN BY: _____	PROGRAM MGR.: _____
CONSTRUCTED BY: _____	CHECKED BY: _____	CONST. MGR.: _____
PROJECT COMPLETED: _____	DESIGN MGR.: _____	
MAP CORRECTED BY: _____	CHECKED BY: _____	
DRAWING NAME: E10805_A02.dwg		

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 232-1800

**AKANA**

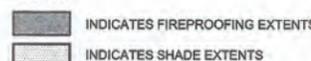


**CBWTP HEADWORKS**  
**SCREENING IMPROVEMENTS**

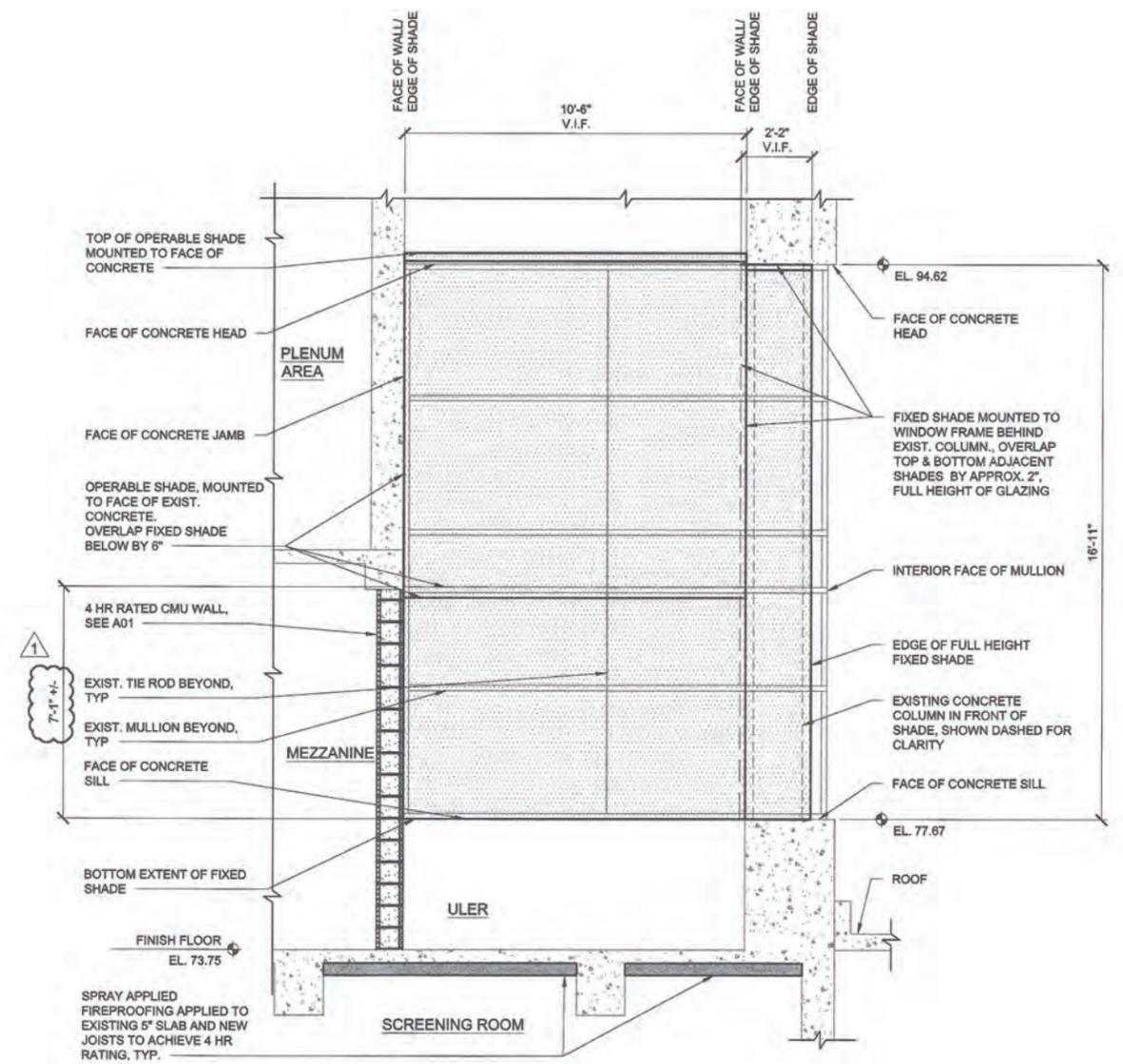
SCREENING ROOM  
 PARTIAL REFLECTED CEILING PLAN

1/4 SECTION  
 JOB NO. E10805  
 SHEET NO. A02  
 X OF X

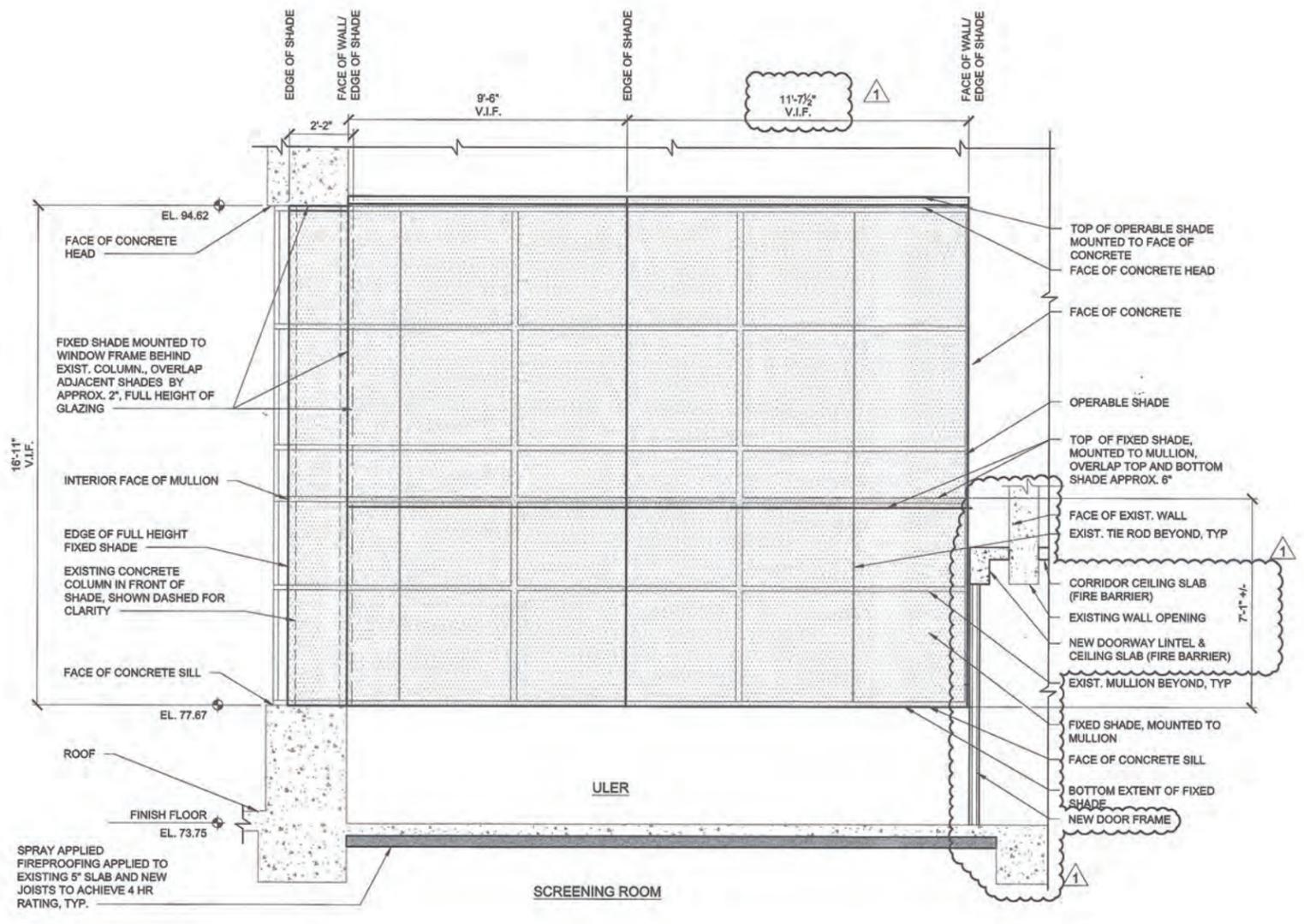
P:\PROJECTS\2019\19-013 CDMSMITH-CBWP-HEADWORKS\CAD\2-SHEETS\ULER ARCHITECTURAL\E10805\_A03.DWG 10/15/2021 6:53 AM JADE MCDANIEL

**LEGEND:**  
  
 INDICATES FIREPROOFING EXTENTS  
 INDICATES SHADE EXTENTS

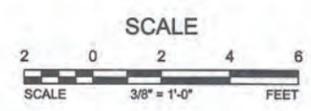
**GENERAL NOTES:**  
 1. COORDINATE SHADE INSTALLATION WITH SHADE MANUFACTURER.  
 2. VERIFY ALL EXISTING CONDITIONS & DIMENSIONS IN FIELD.  
 3. APPLY WINDOW FILM TO INTERIOR FACE OF ALL GLAZING ON SOUTH & EAST WALLS.  
 4. ELECTRICAL EQUIPMENT NOT SHOWN FOR CLARITY.



**SECTION AT EAST WALL**  
 3/8" = 1'-0"  
 A  
 A01



**SECTION AT SOUTH WALL**  
 3/8" = 1'-0"  
 B  
 A01



XREF(S) USED: #####		DESIGNED BY: _____	DATE APPD: _____
ROTATION ANGLE: _____		DRAWN BY: _____	PROGRAM MGR: _____
CONSTRUCTED BY: _____		CHECKED BY: _____	CONST. MGR: _____
PROJECT COMPLETED: _____		DESIGN MGR: _____	
MAP CORRECTED BY: _____			
CHECKED BY: _____			
FINAL MAP DATA			
DRAWING NAME: E10805_A03.dwg			

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 222-1800

**AKANA**



**CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
 SECTIONS - SOUTH & EAST WALLS

1/4 SECTION  
 JOB NO. E10805  
 SHEET NO. A03  
 X of X

C:\Users\jode.mcdaniel\Documents\10805\_X-WS\_1.mcdaniel.rvt 10/15/2021 8:48:26 AM

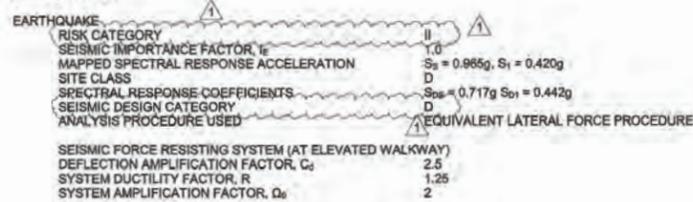
STRUCTURAL NOTES

- 1. THE FOLLOWING NOTES APPLY U.O.N. ON PLANS OR SPECIFICATIONS, IN THE CASE OF CONFLICT WITH PLANS OR SPECIFICATIONS, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY.
GENERAL
1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS AND THE 2019 OREGON STRUCTURAL SPECIALTY CODE, (2018 INTERNATIONAL BUILDING CODE AS AMENDED BY THE STATE OF OREGON.)
2. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURE. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING, BRACING AND GUYS IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCES. ANY DEVIATIONS MUST BE APPROVED BY THE GOVERNING AGENCY PRIOR TO ERECTION.
3. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA PRIOR TO ERECTION.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
6. SHOP DRAWINGS REQUIRED BY THE SPECIFICATIONS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO FABRICATION.
7. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED SUBJECT TO REVIEW BY THE OWNER'S REPRESENTATIVE.
8. ALL DETAILS DESIGNATED AS STANDARD OR TYPICAL SHALL OCCUR IN ADDITION TO ANY OTHER SPECIFIC DETAIL CALLED OUT.
9. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCTS, PIPES AND PIPE SLEEVES, ELECTRICAL CONDUITS AND OTHER ITEMS TO BE EMBEDDED IN CONCRETE OR OTHERWISE INCORPORATED IN STRUCTURAL WORK.
10. PROVIDE OPENINGS AND SUPPORTS AS REQUIRED FOR MECHANICAL EQUIPMENT, VENTS, DUCTS, PIPING, ETC. ALL SUSPENDED MECHANICAL EQUIPMENT SHALL BE SWAY OR LATERALLY BRACED IN CONFORMANCE WITH THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA), OR AS DETAILED ON THE MECHANICAL ENGINEERS DRAWINGS. ALL OTHER BRACING SHALL BE DESIGNED BY AN ENGINEER REGISTERED IN THE STATE OF OREGON AND SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
11. ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE ENGINEER SO THAT THE PROPER REVISIONS MAY BE MADE. MODIFICATIONS OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
12. MECHANICAL EQUIPMENT MUST BE FIRMLY ATTACHED TO THE STRUCTURE. ISOLATORS, FASTENERS AND ANY OTHER ELEMENTS PROVIDING STABILITY FOR MECHANICAL EQUIPMENT MUST BE CAPABLE OF TRANSMITTING REQUIRED CODE LOADS.
13. THE EXISTING BUILDING STRUCTURE AT THE SCREENING FLOOR, SCREENING MEZZANINE, AND LEVEL 3 PUBLIC AREA (BETWEEN GRIDS 3-4 AND D-G) WAS ORIGINALLY DESIGNED FOR A MINIMUM OF 100 PSF LIVE LOAD OR A 2,000 POINT LOAD. THE EXISTING STRUCTURE AT THE SOLIDS OFF LOADING FLOOR WAS ORIGINALLY DESIGNED FOR A MINIMUM OF 100 PSF LIVE LOAD OR A 4,500 POUND POINT LOAD. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE SO AS TO NOT OVERLOAD OR DAMAGE THE STRUCTURE AND/OR ELEVATOR DURING CONSTRUCTION ACTIVITIES.

DESIGN LOADS

- 1. DEAD LOADS
MECHANICAL EQUIPMENT\*
SEE SHEET G08
2. LIVE LOADS
ROOF FLOOR MECHANICAL EQUIPMENT\* GRINDER
PICK POINTS WASTEWATER - PER PROCESS MECHANICAL
\* MECHANICAL EQUIPMENT LOADS TO BE VERIFIED BY MANUFACTURER
20 PSF
100 PSF
6,100 LBS
13,500 LBS (MAX. LOADING)

LATERAL LOADS:



FOUNDATION

- 1. FOUNDATION DESIGN IS BASED ON ALLOWABLES AS SET FORTH IN IBC TABLE 1806.2.
2. DESIGN ALLOWABLES:
A. SOIL BEARING: 1,500 PSF (DL+LL), 2,000 PSF (DL+LL+WIND/EQ).
B. LATERAL BEARING: 100 PSF/FT.
3. ALL FOOTINGS SHALL BEAR ON FIRM UNDISTURBED SOIL. THE TOP OF FOOTING ELEVATIONS SHOWN ON THE DRAWINGS ARE A MINIMUM AND SHALL BE LOWERED AS REQUIRED TO REMOVE SOFT OR LOOSE SOILS AS APPROVED BY THE STRUCTURAL ENGINEER. THE SIDES OF FOUNDATIONS SHOWN STRAIGHT ARE FORMED. FOUNDATIONS POURED AGAINST THE EARTH AT CONTRACTOR'S OPTION REQUIRE THE FOLLOWING PRECAUTIONS:
A. SIDES OF EXCAVATION MUST BE VERTICAL (OVER POURING AND MUSHROOMING NOT ALLOWED).
B. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP OF SOIL SLOUGHING BEFORE, DURING, AND AFTER POUR.
4. CONTRACTOR TO PROVIDE FOR DE-WATERING OF EXCAVATION FOR EITHER SURFACE WATER, GROUND WATER OR SEEPAGE IF REQUIRED.
5. BACK FILL OVER EXCAVATED FOOTINGS WITH CONCRETE OF SAME DESIGN STRENGTH AS FOOTING CONCRETE OR COMPACTED STRUCTURAL FILL, AS DIRECTED OTHERWISE BY THE SOILS ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTING ALL EXISTING UTILITIES, EXISTING STRUCTURES, ETC., WHETHER INDICATED OR NOT, WHICH MAY BE AFFECTED BY THE CONSTRUCTION PROCESS.
7. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT THE STRUCTURAL ENGINEER'S APPROVAL.
8. THE SLOPE BETWEEN THE LOWER EDGES OF ADJACENT FOUNDATIONS SHALL NOT EXCEED 45 DEGREES WITH THE HORIZONTAL, UNLESS INDICATED OTHERWISE IN THE DRAWINGS. MAINTAIN A 1:1 SLOPE FROM BOTTOM EDGE OF ANY EXCAVATION.

STRUCTURAL AND STAINLESS STEEL:

- 1. ALL STRUCTURAL STEEL TO BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS.
2. STEEL GRADES
A. PLATES, OTHER SHAPES AND RODS: ASTM A36
B. BOLTS: ASTM A307
C. ANCHOR BOLTS: ASTM F1554 GR 36
D. PIPE: ASTM A-53
STAINLESS STEEL GRADES
A. W SHAPES, CHANNELS, ANGLES, TUBES: ASTM A316 GR 316
B. BOLTS: ASTM GR F593
3. ALL WELDING ELECTRODES SHALL BE E70XX, UNLESS OTHERWISE NOTED.
A. ALL GROOVE WELDS SHALL BE COMPLETE PENETRATION, UNO.
B. ALL FILLET WELDS SHALL BE PER AISC. MINIMUM SIZES ARE BASED ON THICKNESS OF MATERIALS JOINED, UNO.
4. HEADED STUD ANCHORS (HSA) / WELDED STUDS (WS): ASTM A108. WELDED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND PROCEDURES. REFER TO DETAILS FOR STUD DIAMETER AND LENGTH.
5. DEFORMED BAR ANCHORS (DBA): ASTM A496. WELDED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND PROCEDURES. REFER TO DETAILS FOR BAR DIAMETER AND LENGTH.
6. ALL DETAILS ARE TYPICAL. FOR CONDITIONS NOT SPECIFICALLY SHOWN, CONTRACTOR SHALL APPLY SIMILAR CONCEPT OR INTENT TO DETAIL THOSE CONDITIONS AND SUBMIT FOR REVIEW AND APPROVAL.
7. ALL STEEL EXPOSED TO THE WEATHER SHALL BE GALVANIZED, UNLESS OTHERWISE NOTED.
8. BEAMS SHALL BE CAMBERED AS NOTED ON DRAWINGS. CAMBER SHALL APPROXIMATE A CIRCULAR ARC. CAMBER ACCOMPLISHED BY INSTALLING A SINGLE KING AT MID SPAN OF BEAMS IS NOT ACCEPTABLE.
9. NON-SHRINK GROUT IS REQUIRED UNDER ALL BASE PLATES. GROUT SHALL COMPLY WITH ASTM C1107 GRADE A AND ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS.

ALUMINUM

- 1. APPLICABLE CODES
ALUMINUM CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE ALUMINUM DESIGN MANUAL OF THE ALUMINUM ASSOCIATION.
2. MATERIAL
UNLESS OTHERWISE INDICATED, STRUCTURAL ALUMINUM SHALL BE ALLOY 6061-T6 AS SPECIFIED IN ASTM B-221.
3. ALL WELDING ELECTRODES SHALL BE GR 5356, UNLESS OTHERWISE NOTED.
4. ALUMINUM IN CONTACT WITH CONCRETE
WHERE ALUMINUM IS IN CONTACT WITH CONCRETE, GROUT, OR MASONRY SURFACES, CONTACT SURFACE SHALL BE COATED WITH HEAVY ALKALI-RESISTANT BITUMINOUS PAINT.

CONCRETE

- 1. APPLICABLE CODE AND MIX DESIGN
CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE ACI BUILDING CODE (ACI 318 BUILDINGS). USE MIXES WITH A MAXIMUM AGGREGATE SIZE APPROPRIATE FOR FORM AND REBAR CLEARANCES TO BE ENCOUNTERED IN ACCORDANCE WITH ACI SPECIFICATIONS. MIX DESIGNS SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OREGON.
2. PORTLAND CEMENT SHALL CONFORM TO ASTM C150
3. AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C33 AND PROJECT SPECIFICATIONS.
4. CONCRETE SHALL HAVE THE FOLLOWING 28 DAY STRENGTHS, Fc - 4,500 PSI. ALL CONCRETE SHALL BE NORMAL WEIGHT EXCEPT AS NOTED.
5. CONSTRUCTION JOINTS SHALL BE BONDED WITH EPOXY ADHESIVE AS PER ACI SPEC 548.13-14 AND ASTM C881. LOCATION TO BE APPROVED BY THE STRUCTURAL ENGINEER. SUBMIT LOCATION PLAN OR ALL PROPOSED JOINTS NOT INDICATED ON DRAWINGS FOR APPROVAL PRIOR TO BEGINNING WORK.
6. ALL CONCRETE TO BE REINFORCED, UNLESS SPECIFICALLY NOTED.
7. CONDUIT OR PIPE SIZE (O.D.) SHALL NOT EXCEED 30% OF SLAB THICKNESS, AND SHALL BE PLACED FOUR DIAMETERS MINIMUM APART, UNLESS SPECIFICALLY NOTED.
8. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE PRIOR TO POURING CONCRETE. DO NOT CUT REINFORCING.
9. CORING OF CONCRETE IS NOT PERMITTED UNLESS REVIEWED BY THE STRUCTURAL ENGINEER.
10. PRIOR TO PLACING CONCRETE, THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCING AND EMBEDMENTS ARE PROPERLY LOCATED AND SECURELY TIED IN PLACE.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING CURING CONCRETE FROM FREEZING AND HOT WEATHER PER ACI 308.1 AND ACI 305 RESPECTIVELY.
12. NO LOADS SHALL BE PLACED ON STRUCTURAL CONCRETE SLABS WITHIN 7 DAYS AFTER CONCRETE IS PLACED. AFTER CONCRETE IS PLACED, IN NO CASE SHALL THE SUPERIMPOSED CONSTRUCTION LOADS BE GREATER THAN SPECIFIED DESIGN LIVE LOADS, UNLESS THE WORK IS SHORED.
13. CONTRACTOR SHALL SURVEY ALL CONCRETE WORK WITHIN 48 HOURS OF PLACING CONCRETE TO ENSURE THAT PLACEMENT IS IN ACCORDANCE WITH PROJECT REQUIREMENTS.
14. EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS. RE-ENTRANT CORNERS SHALL NOT HAVE FILLETS.
15. PROVIDE ANCHORAGE INSERTS WHERE SHOWN ON CONCRETE WALLS AND CONCRETE CEILINGS IN GALLERIES, PIPE CHASES, TUNNELS AND AS REQUIRED BY MECHANICAL AND ELECTRICAL INSTALLATIONS. UNISTRUT P-3782 HOT DIP GALVANIZED OR EQUAL.

REINFORCING STEEL

- 1. REINFORCING STEEL DETAILS
ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI-315), LATEST EDITION.
A. REINFORCING STEEL (#6 AND SMALLER) .....ASTM A 615, GRADE 60
DEFORMED BARS UNLESS OTHERWISE NOTED
B. WELDED REINFORCING STEEL..... ASTM A706
C. WELDED WIRE FABRIC..... ASTM A185
2. CONCRETE COVER
CONCRETE COVER FOR REINFORCING BARS SHALL CONFORM TO ACI 350 AND AS FOLLOWS WITH MINIMUM COVER OF ONE BAR DIAMETER.
A. FOOTING AND FOUNDATION MATS CAST ON GROUND.....3"
B. CONCRETE IN CONTACT WITH SEWAGE OR WATER
PRINCIPAL REINFORCEMENT.....2-1/2"
STIRRUPS & TIES.....2"
C. CONCRETE IN CONTACT WITH GROUND OR WEATHER
a. SLAB AND JOISTS
BARS GREATER THAN #6.....2"
BARS #5 OR LESS.....1-1/2"
b. BEAMS AND COLUMNS
STIRRUPS AND TIES.....2"
PRINCIPAL REINFORCEMENT.....2-1/2"
D. CONCRETE NOT TO BE EXPOSED TO GROUND, WEATHER OR LIQUID
a. BEAMS AND COLUMNS.....1 1/2"
b. SLABS, WALLS, AND JOISTS.....1"

- 3. MINIMUM REINFORCING
CONCRETE CONSTRUCTION SHALL BE REINFORCED CONCRETE EXCEPT WHERE PLAIN CONCRETE IS INDICATED ON THE DRAWINGS. UNLESS OTHERWISE NOTED, MINIMUM REINFORCING STEEL SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING SCHEDULES:

Table with columns: SLAB THICKNESS, SIZE, E.W., SPACING, LOCATION. Rows for 4", 5", 6", 8", 9", 10", 12" slab thicknesses.

Table with columns: WALL THICKNESS, SIZE, SPACING, LOCATION. Rows for 8", 8", 10", 12", 14", 16", 18" wall thicknesses.

MASS CONCRETE SHALL BE REINFORCED WITH #6 @ 12" E.W. MINIMUM IN ALL FACES.

- 4. BAR DEVELOPMENT AND LAP SPLICE LENGTH
ALL DEVELOPMENT AND SPLICE LENGTHS SHALL BE PER ACI 318-08. MINIMUMS FOR fc=4,500 PSI, fy=60,000 PSI. CLEAR SPACING GREATER OR EQUAL TO 3 BAR DIAMETER, MINIMUM COVER PER NOTE 4, NO CLASS B SPLICES. UNCOATED, SHALL BE AS IN TABLE BELOW:

Table with columns: BAR SIZE, DEVELOPMENT LENGTH TOP BARS, OTHER, SPLICE LENGTH TOP BARS, OTHER. Rows for bar sizes #3 through #11.

- 5. IF APPROVED BY THE CONSTRUCTION MANAGER, REINFORCING MAY BE WELDED IN ACCORDANCE WITH ITH AWS SPECIFICATION D1.4 AND DRAWING DETAILS.

- 6. MECHANICAL COUPLERS
SPLICING MAY UTILIZE MECHANICAL SYSTEMS PER DRAWING DETAILS AT CONTRACTOR'S OPTION.

- 7. STANDARD HOOKS
BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF PARAGRAPH 7.1, ACI-318. PROVIDE STANDARD HOOK IN BARS WHICH TERMINATE AT WALL OR SLAB INTERSECTIONS THAT PROVIDE LESS THAN THE SPECIFIED DEVELOPMENT LENGTH.

Table with columns: NO., DATE, DESCRIPTION, REVISION, PEK, APPD., DRAWINGS NAME. Includes revision 1 on 10/15/21 for ADDENDUM 3.

CITY OF PORTLAND ENVIRONMENTAL SERVICES logo and contact information for CDM Smith and AKANA.

Professional Engineer seal for Paul E. Klupfers, State of Oregon, No. 11279, expires 6/30/23.

Project title: CBWTP HEADWORKS SCREENING IMPROVEMENTS. Structural Notes. Job No. E10805. Sheet No. S01 of X.

CONCRETE MASONRY UNIT (CMU)

- SEE ARCHITECTURAL DRAWING FOR TYPE, COLOR AND LAYOUT OF MASONRY UNITS, IF NOT OTHERWISE NOTED PROVIDE PRECISION UNITS IN MANUFACTURER'S STANDARD COLOR PLACED IN A RUNNING BOND PATTERN.
- ALL WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 21 AND ACI 530.
- STRUCTURAL DESIGN IS BASED ON  $F'_m = 1500$ .
- UNITS SHALL BE ASTM C90 GRADE N, NORMAL WEIGHT UNITS,  $F'_m = 1900$  PSI.
- MORTAR SHALL BE ASTM C270 TYPE N
- GROUT SHALL BE ASTM C478 COARSE GROUT,  $F'_c = 2000$  PSI.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60.
- CONSTRUCTION:
  - ALL CELLS SHALL BE FILLED WITH GROUT, UNLESS NOTED OTHERWISE.
  - CELLS SHALL BE IN VERTICAL ALIGNMENT AND PLACED IN A RUNNING BOND PATTERN.
  - DOWELS SHALL BE SET TO ALIGN WITH CELLS CONTAINING WALL REINFORCING.
  - LOW LIFT CONSTRUCTION: MAXIMUM GROUT POUR IS 5'-0".
  - HIGH LIFT CONSTRUCTION: PER ACI 530 SPECIFICATION SECTION 3.5 TABLE 7.
  - PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION.
  - FOLLOW RECOMMENDATIONS OF ACI 530.1, SECTION 1.8 FOR COLD AND HOT WEATHER CONSTRUCTION.
- PROVIDE DOWELS FROM CONCRETE BASE AT ALL VERTICAL REINFORCING OF SAME SIZE AND SPACING. PROVIDE MINIMUM 48 BAR DIAMETER LAP SPLICE TO VERTICAL REINFORCING, UNLESS NOTED OTHERWISE.
- ALL REINFORCING BARS ARE TO BE IN PLACE AND HELD IN PROPER ALIGNMENT BY PREFABRICATED WIRE BAR POSITIONERS BEFORE THE GROUT IS PLACED.
- PLACEMENT OF PLUMBING AND ELECTRICAL LINES IN MASONRY WALLS:
  - MAXIMUM DIAMETER OF EMBEDDED ITEM SHALL BE 1-3/4", EXCEPT MAXIMUM DIAMETER OF ITEM EMBEDDED IN LINTELS SHALL BE 1".
  - VERTICAL EMBEDDED ITEM SHALL NOT BE LOCATED IN THE SAME CELL AS VERTICAL REINFORCING.
  - HORIZONTAL EMBEDDED ITEMS SHALL NOT BE LOCATED IN THE SAME COURSE AS HORIZONTAL REINFORCING.
- BAR DEVELOPMENT AND LAP SPLICE LENGTH. ALL DEVELOPMENT AND SPLICE LENGTHS SHALL BE PER ACI 530.  $f_y = 60,000$  PSI WITH THE EXCEPTION OF #3 BARS WITH  $f_y = 40,000$  PSI. CLEAR SPACING GREATER OR EQUAL TO 3 BAR DIAMETER. REINFORCEMENT LARGER THAN #9 SHALL BE SPLICED USING MECHANICAL CONNECTIONS.

BAR SIZE	SPLICE LENGTH (1,500 PSI)		SPLICE LENGTH (2,000 PSI)	
	SINGLE MAT	DOUBLE MAT	SINGLE MAT	DOUBLE MAT
#3	1'-3"	1'-3"	1'-3"	1'-3"
#4	2'-0"	2'-2"	2'-0"	2'-0"
#5	2'-5"	3'-4"	2'-5"	2'-11"
#6	3'-5"	5'-2"	3'-2"	5'-4"
#7	4'-0"	6'-9"	3'-6"	5'-10"
#8	5'-10"	10'-1"	5'-0"	8'-9"

POST-INSTALLED CONCRETE AND MASONRY ANCHORS

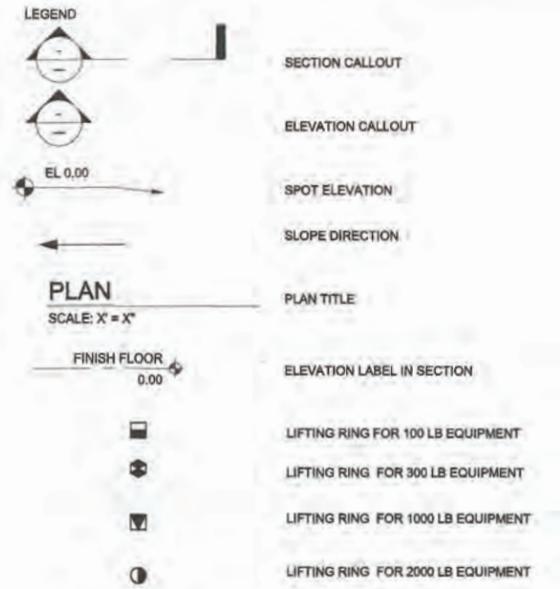
- INSTALLATION HOLES FOR POST-INSTALLED ANCHORS SHALL BE DRILLED WITH A ROTARY HAMMER OR OTHER SUITABLE METHODS TO ENSURE THAT EXISTING REINFORCING IS NOT DAMAGED. ALL MISDRILLED OR UNACCEPTABLE HOLES SHALL NOT BE USED AND GROUTED SOLID.
- SPECIAL INSPECTION AND ANCHOR TESTING:
  - SPECIAL INSPECTION IS REQUIRED UNLESS NOTED OTHERWISE.
    - DRILL-BIT COMPLIANCE WITH ANSI B94 12-1977.
    - CHECK HOLE DEPTH & CLEANLINESS, PRODUCT DESCRIPTION INCLUDING PRODUCT NAME, ROD DIAMETER AND LENGTH.
    - VERIFY EPOXY/ADHESIVE EXPIRATION DATE.
    - VERIFY INSTALLATION AND IN-SERVICE TEMPERATURE REQUIREMENTS MEET MANUFACTURER'S CURRENT ICC REPORT REQUIREMENTS.
    - CHECK ANCHOR INSTALLATION METHOD REQUIREMENTS WITH MANUFACTURER'S PUBLISHED INSTRUCTIONS AND THE CURRENT ICC REPORT.
  - PERFORM PULL-OUT OR TORQUE TEST WHERE SPECIFICALLY NOTED IN DRAWINGS.
- ADHESIVE ANCHORS & REINFORCING STEEL DOWELS: INSTALLATION SHALL BE IN ACCORDANCE WITH CURRENT PRODUCT ICC REPORT. THE FOLLOWING EPOXIES ARE APPROVED:
  - CONCRETE: DIAMETER AS NOTED IN DETAILS. MINIMUM EMBEDMENT = 8 DIAMETERS.
    - SET-XP EPOXY ADHESIVE AS MANUFACTURED BY SIMPSON STRONGTIE, ICC-ES ESR 2508
    - HIT-RE 500 V3 AS MANUFACTURED BY HILTI, INC., ICC-ES ESR 3184.
    - DEWALT AC100+ GOLD AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-2582.
  - SOLID GROUTED MASONRY: DIAMETER AS NOTED IN DETAILS. MINIMUM EMBEDMENT = 8 DIAMETERS.
    - SET-XP EPOXY ADHESIVE AS MANUFACTURED BY SIMPSON STRONGTIE, ICC-ES ESR 2508
    - HY-70 AS MANUFACTURED BY HILTI, INC., ICC-ES ESR 2682.
    - DEWALT AC100+ GOLD AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-2582.
- EXPANSION ANCHORS: INSTALLATION SHALL BE IN ACCORDANCE WITH PRODUCT ICC REPORT. THE FOLLOWING ANCHORS ARE APPROVED:
  - CONCRETE: DIAMETER AS NOTED IN DETAILS. MINIMUM EMBEDMENT = 8 DIAMETERS.
    - STRONG-BOLT 2 AS MANUFACTURED BY SIMPSON STRONG-TIE, ICC-ES ESR 3037.
    - KWIK BOLT 3 AS MANUFACTURED BY HILTI INC., ICC-ES ESR 2302
    - TRUBOLT+ AS MANUFACTURED BY ITW-RAMSET/REDHEAD, ICC-ES ESR 2427
    - POWER-STUD + SD1 AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-2818
    - POWER-STUD + SD2 AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-2502
    - POWER-STUD + SD6 AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-3471
  - SOLID GROUTED MASONRY: DIAMETER AS NOTED IN DETAILS. MINIMUM EMBEDMENT = 8 DIAMETERS.
    - KWIK BOLT TZ AS MANUFACTURED BY HILTI INC, ICC ESR 3785
    - SIMPSON STRONGTIE WEDGE ALL, ICC ESR 1398
    - POWER-STUD + SD1 AS MANUFACTURED BY POWERS FASTENERS, ICC-ES ESR-2988
- SCREW ANCHORS: INSTALLATION SHALL BE IN ACCORDANCE WITH CURRENT PRODUCT ICC REPORT. DIAMETER AS NOTED IN DETAILS. MINIMUM EMBEDMENT = 8 DIAMETERS UNLESS NOTED OTHERWISE.
  - TITEN HD ANCHOR AS MANUFACTURED BY SIMPSON STRONGTIE, ICC-ES ESR-2713.

STRUCTURAL OBSERVATION

COORDINATE STRUCTURES TO RECEIVE STRUCTURAL OBSERVATION WITH SPECIAL INSPECTION COORDINATOR. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE A DESIGNATED WORK IS TO BE COVERED.

STRUCTURAL DEFERRED SUBMITTALS

- CONTRACTOR TO SUBMIT DRAWINGS AND CALCULATIONS BEARING THE SEAL OF A PROFESSIONAL ENGINEER LICENSED IN OREGON TO OWNERS REPRESENTATIVE BEFORE SUBMITTING TO JURISDICTION FOR REVIEW AND PERMITTING. CONTRACTOR TO ASSUME 16 WEEKS BUREAU OF DEVELOPMENT SERVICES (BDS) TURN AROUND ON DEFERRED SUBMITTALS.
    - SECTION 26 22 00 LOW-VOLTAGE TRANSFORMERS ANCHORAGE AND SUPPORT
    - SECTION 26 24 19 MOTOR CONTROL CENTERS ANCHORAGE AND SUPPORT
    - SECTION 40 83 43 PROGRAMMABLE LOGIC CONTROLLERS (PLC) ANCHORAGE AND SUPPORT
    - SECTION 41 12 13 BELT BULK MATERIAL CONVEYORS EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 41 14 36 LOW PROFILE SCALES EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 43 25 13 SUBMERSIBLE SOLIDS HANDLING PUMPS EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 46 21 13 MULTIRAKE BAR SCREENS EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 46 21 73 SCREENINGS WASHING AND COMPACTING EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 46 24 33 GRINDERS EQUIPMENT ANCHORAGE AND SUPPORT
    - SECTION 23 81 26 SPLIT-SYSTEM AIR-CONDITIONERS ANCHORAGE AND SUPPORT
- FOR ARCHITECTURAL DEFERRED SUBMITTALS AND SPECIAL INSPECTION REQUIREMENTS SEE SHEET A02.



ABBREVIATIONS

L	ANGLE
ANCH	ANCHOR
CL	CENTERLINE
DIA.	DIAMETER
E F	EACH FACE
E. W.	EACH WAY
EL	ELEVATION
EXP	EXPANSION
HSE	HOLLOW STRUCTURAL SECTION
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAX.	MAXIMUM
MIN.	MINIMUM
OPP.	OPPOSITE
PL	PLATE
PSF	PER SQUARE FOOT
SIM	SIMILAR
SST	STAINLESS STEEL
THK	THICK
TYP	TYPICAL
T & B	TOP & BOTTOM
UIS	UNDERSIDE
V.I.F.	VERIFY IN FIELD

10/15/2021 8:48:27 AM

C:\Users\jodie.mcdonoghue\Documents\PROJECTS\ET10806\_AHWS\jodie.mcdonoghue.rvt

NO.	DATE	DESCRIPTION	PEK	APPD.
1	10/15/21	ADDENDUM 3		
		REVISION		

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

XREF(S) USED:	*****
ROTATION ANGLE:	*****
CONSTRUCTED BY	
PROJECT COMPLETED	
MAP CORRECTED BY	CHECKED BY
	FINAL MAP DATA
DRAWING NAME:	E10806_S14.dwg

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
 1220 SW Morrison St, Suite 200  
 Portland, OR 97209  
 Tel: (503) 232-1800  
**AKANA**



STRUCTURAL  
 REGISTERED PROFESSIONAL ENGINEER  
 11722  
 JULY 18, 1987  
 PHA. E. KLUIVERS  
 EXPIRES 6/30/23

**CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS**

STRUCTURAL NOTES

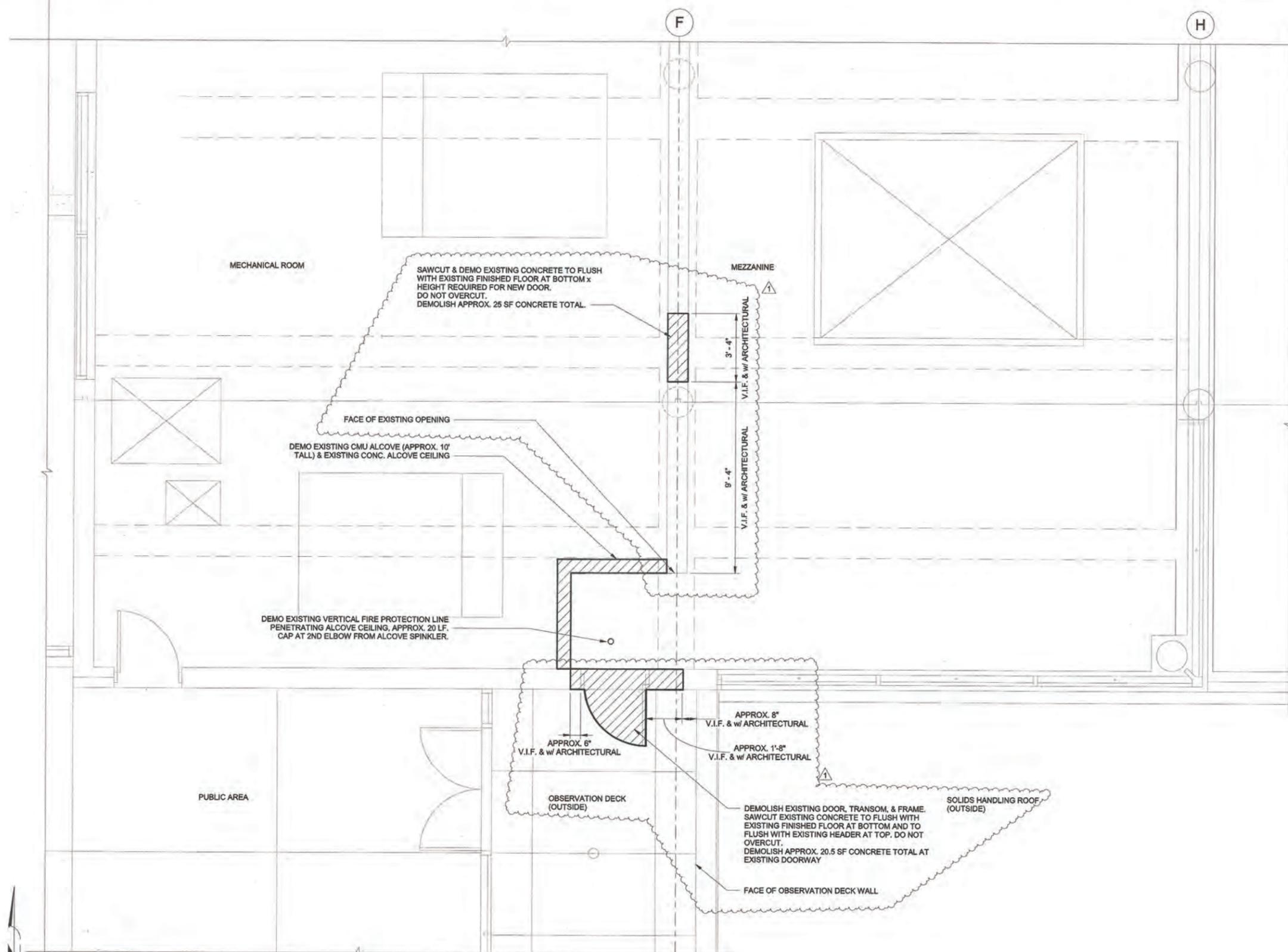
1/4 SECTION

JOB NO.  
E10805

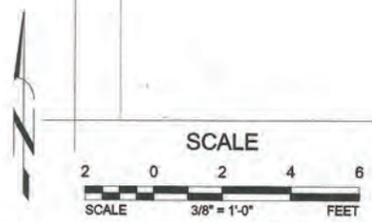
SHEET NO.  
S02  
OF X

10/15/2021 8:48:28 AM

C:\Users\jode.mcdaniel\Documents\PD\\_E10805\_XHWS\_j.mcdaniel.rvt



GENERAL NOTES:  
 1. DEMOLITION OF ALCOVE SHALL NOT TAKE PLACE UNTIL NEW ULER WALL HAS BEEN FULLY CONSTRUCTED.



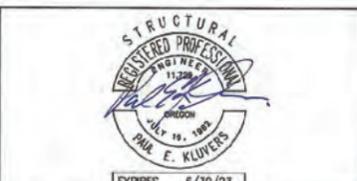
PLAN  
 SCALE: 3/8" = 1'-0"

NO.	DATE	DESCRIPTION	APPD.
1	10/15/21	ADDENDUM 3	PEK
REVISION			

XREF(S) USED:	DESIGNED BY:	DATE APPD.
ROTATION ANGLE: #####	MAW	
CONSTRUCTED BY:	DRAWN BY:	PROGRAM MGR.
PROJECT COMPLETED:	JM	
MAP CORRECTED BY:	CHECKED BY:	CONST. MGR.
	PEK	
	PEK	
DRAWING NAME:	DESIGN MGR.	
E10805_S14.dwg	PEK	

DESIGNED BY:	DATE APPD.
DRAWN BY:	PROGRAM MGR.
CHECKED BY:	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
 1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 232-1800  
**AKANA**



**CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS**  
 MECHANICAL ROOM - DEMO PLAN FF EL 73.75

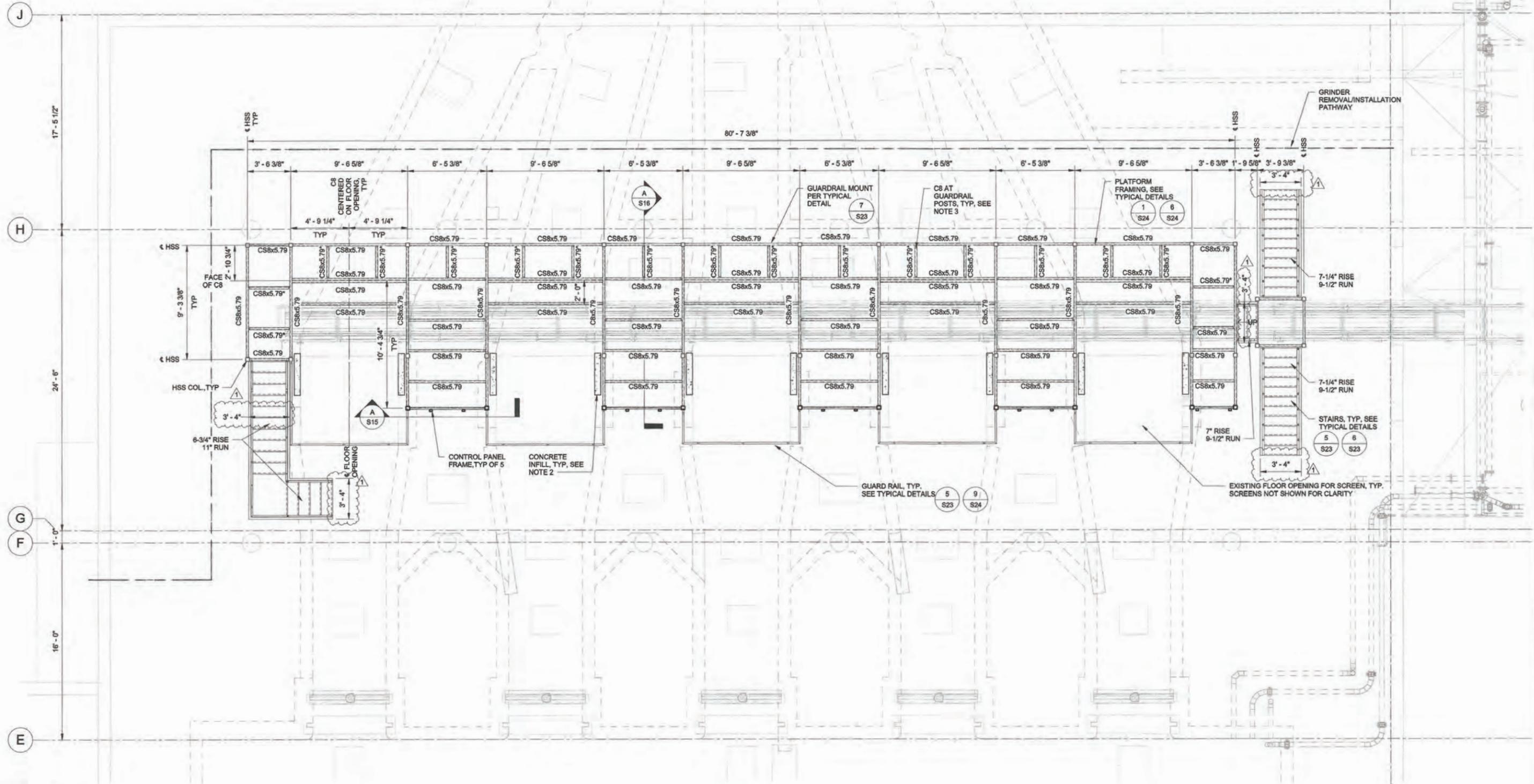
1/4 SECTION
JOB NO. E10805
SHEET NO. S06
X OF X

10/15/2021 8:48:37 AM

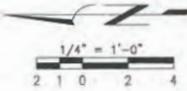
C:\Users\jade.mcdaniel\Documents\PD\...\_X\HWS\_J\_mcdaniel.rvt

- GENERAL NOTES:
1. SCREENS NOT SHOWN FOR CLARITY
  2. INFILL AT SCREEN LOCATIONS SHALL HAVE MIN. 3,000 PSI STRENGTH AT 24 HRS, SIKAGUICK FNP OR APPROVED EQUAL. WHERE MARKED \*, PROVIDE C8 JOISTS AT EACH GUARDRAIL POST, COORDINATE W GUARDRAIL POSTS & FIELD VERIFY LOCATIONS.
  - 3.

3



PLAN  
SCALE: 1/4" = 1'-0"



XREF(S) USED:		DESIGNED BY	DATE APPD.
ROTATION ANGLE: #####		DRAWN BY	PROGRAM MGR.
CONSTRUCTED BY		CHECKED BY	CONST. MGR.
PROJECT COMPLETED		MAP CORRECTED BY	CHECKED BY
PEK APPD.		DESIGN MGR.	
DRAWING NAME: E10805_S14.dwg			

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**

STRUCTURAL  
REGISTERED PROFESSIONAL ENGINEER  
JULY 10, 1982  
JANA E. KLIPPERS

EXPIRES 6/30/23

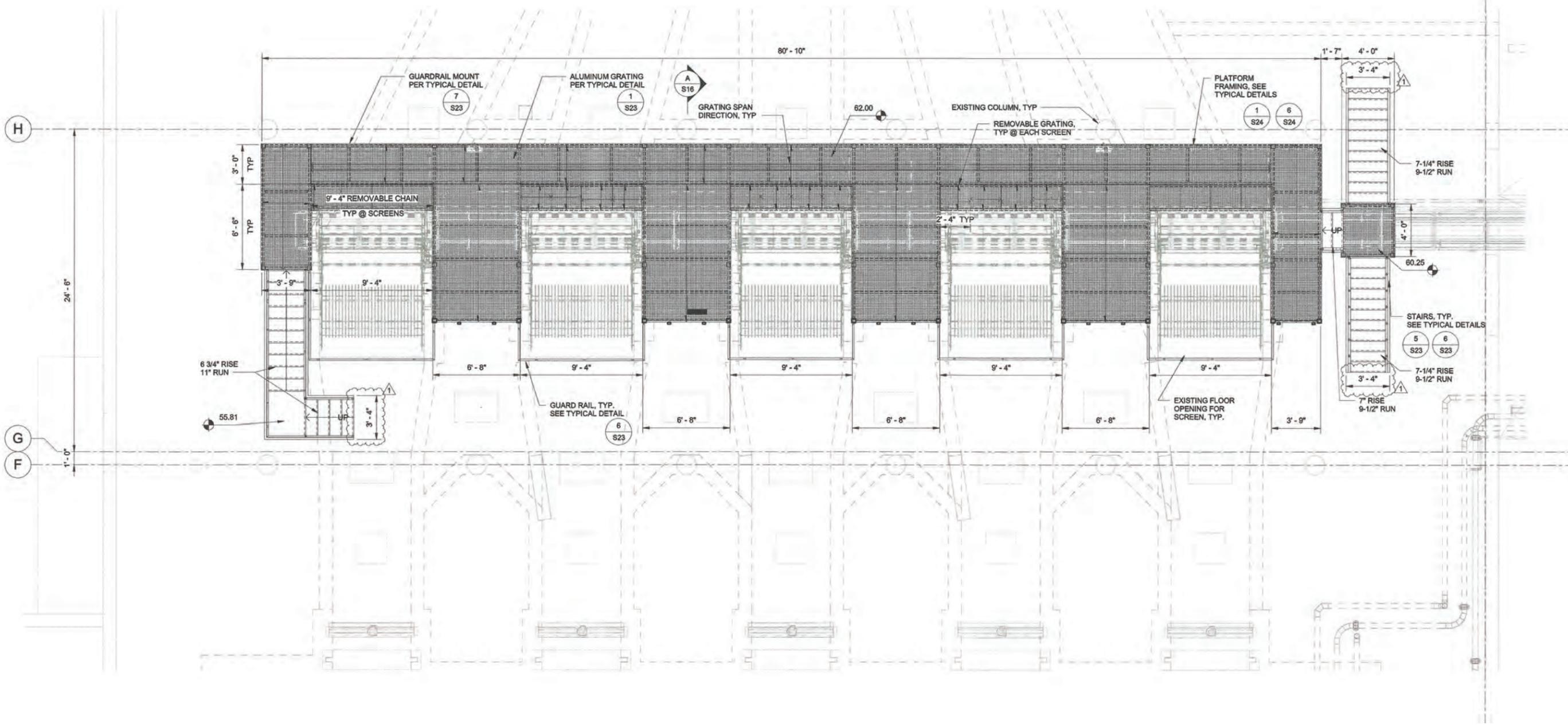
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

SCREENING ROOM GRATING FRAMING PLAN FF EL 53.00

1/4 SECTION
JOB NO. E10805
SHEET NO. S07
X of X

- GENERAL NOTES:
1. LOCATION OF REMOVABLE CHAIN GUARDRAIL, SEE TYPICAL DETAIL 7 S24
  2. COORDINATE ALL GRATING PENETRATIONS WITH MECHANICAL.
  3. ALL DIMENSIONS ARE TO EDGE OF PLATFORM UON.

3



PLAN  
SCALE: 1/4" = 1'-0"



10/15/2021 8:48:44 AM

C:\Users\jode.mcdaniel\Documents\PD\X\_E10805\_XHWS\_jmcdaniel.rvt

NO.	DATE	DESCRIPTION	REVISION
1	10/15/21	ADDENDUM 3	

XREF(S) USED:	
ROTATION ANGLE:	#####
CONSTRUCTED BY:	
PROJECT COMPLETED:	
MAP CORRECTED BY:	CHECKED BY
DRAWING NAME:	FINAL MAP DATA
	E10805_S14.dwg

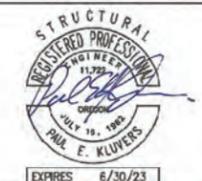
DESIGNED BY:	DATE APPD.
DRAWN BY:	PROGRAM MGR.
CHECKED BY:	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**



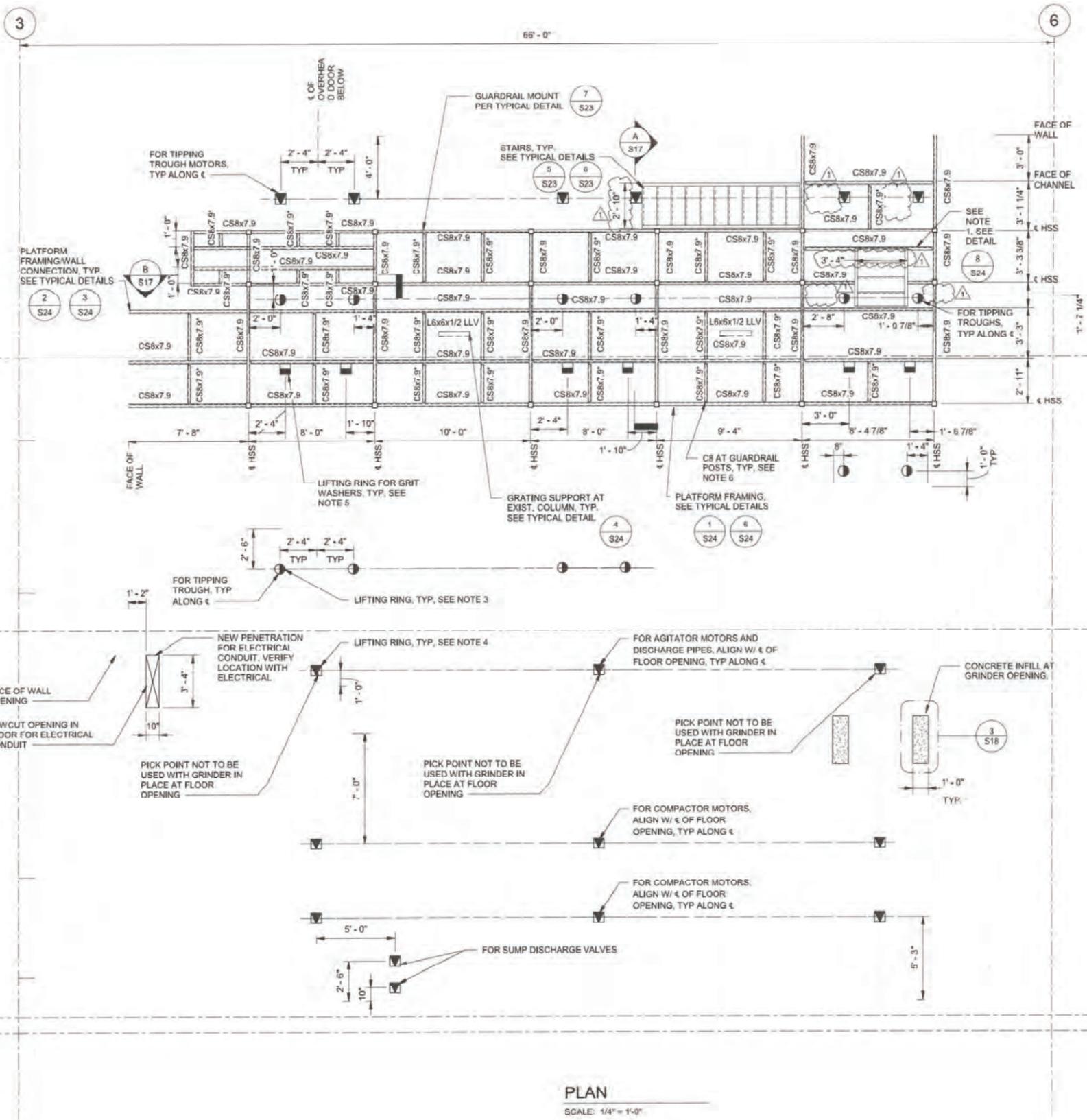
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

SCREENING ROOM GRATING PLAN FF EL 53.00

1/4 SECTION
JOB NO. E10805
SHEET NO. S08
X OF X

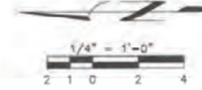
11/2/2021 9:32:02 AM

C:\Users\j.mcdaniel\Documents\pdx\_e10805\_xhws\_j.mcdaniel.rvt



- GENERAL NOTES:**
- COORDINATE CHANNEL LOCATION WITH STAIR LANDING.
  - NOT ALL MECHANICAL SHOWN FOR CLARITY.
  - LIFTING RING AT U/S OF SLAB FOR 2,000 LB EQUIPMENT, COORDINATE W/ MECHANICAL FOR LOCATION, TYP OF 12, PROVIDE CONNECTION PER TYPICAL PICKPOINTS DETAIL 1 / S25
  - LIFTING RING AT U/S OF SLAB FOR 1,000 LB EQUIPMENT, COORDINATE W/ MECHANICAL FOR LOCATION, TYP OF 17, PROVIDE CONNECTION PER TYPICAL PICKPOINTS DETAIL 1 / S25
  - U BAR AT FACE OF PLATFORM CHANNEL FOR GRIT WASHERS (ASSUMED WEIGHT OF 100 LB), COORDINATE W/ MECHANICAL FOR LOCATION, TYP OF 6, PROVIDE CONNECTION PER 2 / S18
  - WHERE MARKED \*, PROVIDE C8 JOISTS AT EACH GUARDRAIL POST, FIELD VERIFY & COORDINATE W/ GUARDRAIL POST LOCATIONS.
  - COORDINATE ALL PICK POINT LOCATIONS WITH EQUIPMENT MANUFACTURER AND OWNER.

- LEGEND**
- LIFTING RING FOR 100 LB EQUIPMENT
  - LIFTING RING FOR 300 LB EQUIPMENT
  - LIFTING RING FOR 1000 LB EQUIPMENT
  - LIFTING RING FOR 2000 LB EQUIPMENT



**PLAN**  
SCALE: 1/4" = 1'-0"

XREF(S) USED: ROTATION ANGLE: ##### CONSTRUCTED BY: PROJECT COMPLETED: MAP CORRECTED BY: _____ CHECKED BY: _____ DRAWING NAME: FINAL MAP DATA		DESIGNED BY: _____ DATE APPD.: _____ DRAWN BY: _____ PROGRAM MGR.: _____ CHECKED BY: _____ CONST. MGR.: _____ DESIGN MGR.: _____	
NO. DATE DESCRIPTION REVISION 1 10/15/21 ADDENDUM 3 PEK APPRO. _____ E10805_S14.dwg		CITY OF PORTLAND <b>ENVIRONMENTAL SERVICES</b>   1220 SW Morrison St, Suite 200 Portland, OR 97205 Tel: (503) 232-1899	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

EXPRES 6/30/23

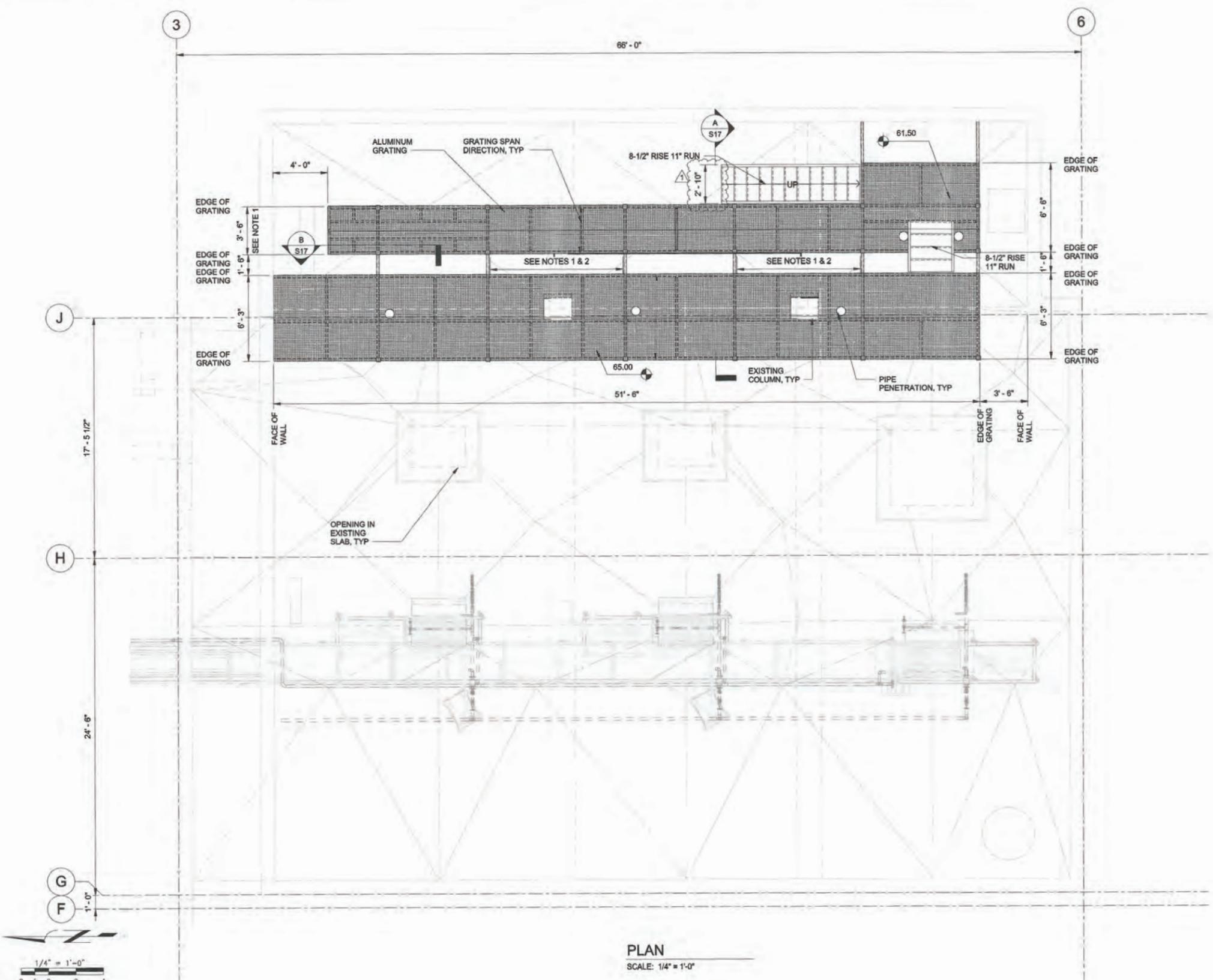
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

SOLIDS OFF-LOADING ROOM GRATING FRAMING PLAN FF EL 53.00

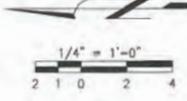
JOB NO. E10805	1/4 SECTION
SHEET NO. S09	
X OF X	

10/15/2021 8:48:55 AM

C:\Users\jcdm\Documents\Documents\PDx\_E10805\_XHWS\_jmcdaniel.rvt



- GENERAL NOTES:
1. LOCATION OF REMOVABLE CHAIN GUARDRAIL. SEE TYPICAL DETAIL **7** S24
  2. COORDINATE ALL GRATING PENETRATIONS AND REMOVABLE CHAIN GUARDRAIL LOCATIONS WITH MECHANICAL.



PLAN  
 SCALE: 1/4" = 1'-0"

NO.	DATE	DESCRIPTION	PEK APPD.
1	10/15/21	ADDENDUM 3	
		REVISION	

XREF(S) USED:	
ROTATION ANGLE:	#####
CONSTRUCTED BY:	
PROJECT COMPLETED:	
MAP CORRECTED BY:	CHECKED BY:
	FINAL MAP DATA
DRAWING NAME:	E10805_S14.dwg

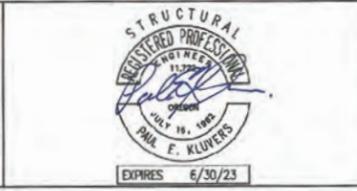
DESIGNED BY:	DATE APPD.:
DRAWN BY:	PROGRAM MGR.:
CHECKED BY:	CONST. MGR.:
DESIGN MGR.:	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 232-1800

**AKANA**



**CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS**

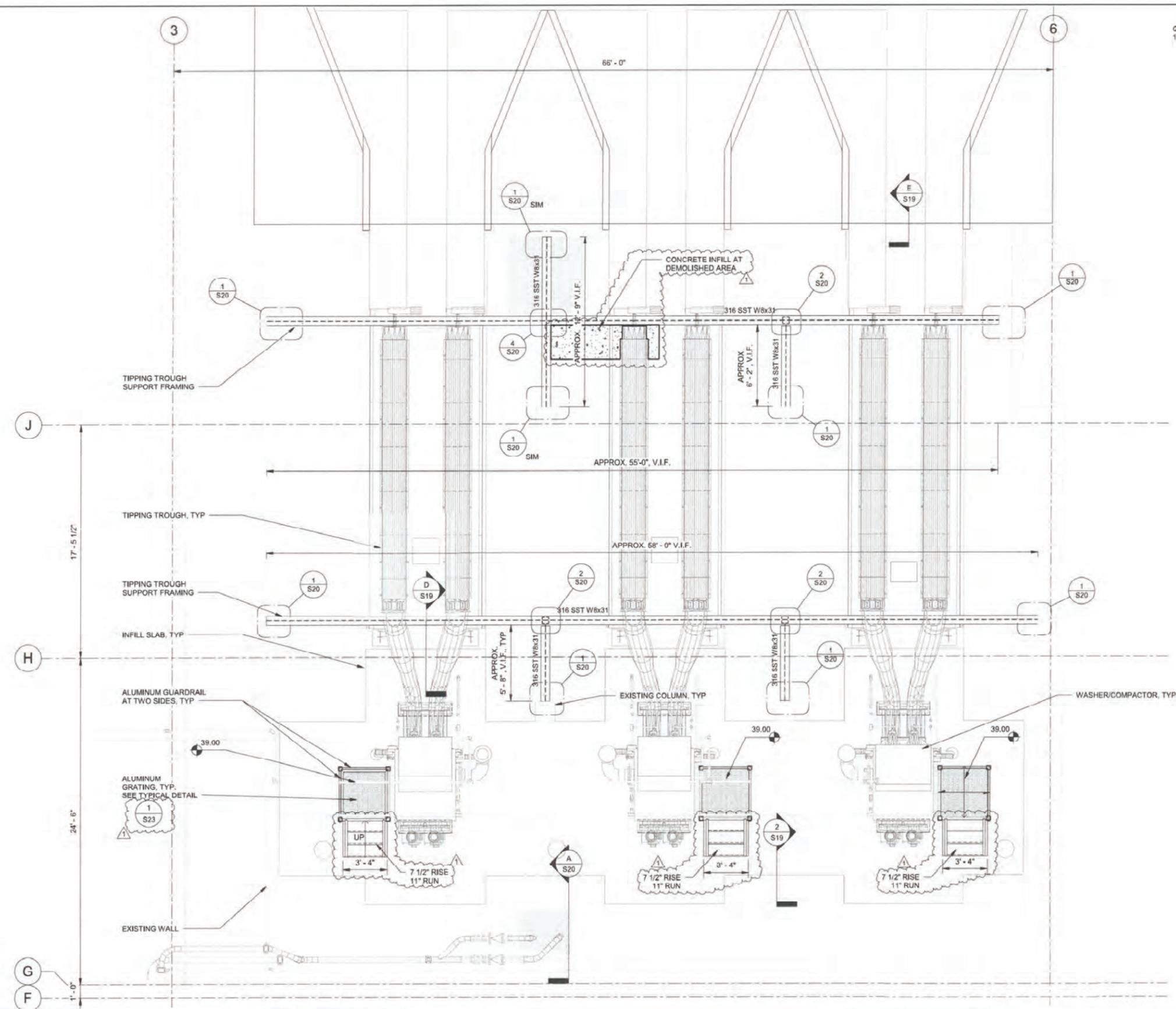
SOLIDS OFF-LOADING GRATING PLAN FF EL 53.00

1/4 SECTION
JOB NO. E10805
SHEET NO. S10
X OF X

11/2/2021 9:41:01 AM

C:\Users\jcdie.mcdaniel\Documents\POD\_E10805\_X1HWS\_mcdaniel.rvt

GENERAL NOTES:  
 1. VERIFY TIPPING TROUGH FRAMING ELEVATIONS AND FRAMING LOCATIONS WITH TIPPING TROUGH MANUFACTURER.



PLAN  
 SCALE: 1/4" = 1'-0"

NO.	DATE	DESCRIPTION	PER.	APPD.
1	10/15/21	ADDENDUM 3		
		REVISION		

XREF(S) USED: ROTATION ANGLE: ***** CONSTRUCTED BY: PROJECT COMPLETED: MAP CORRECTED BY: _____ CHECKED BY: _____ DRAWING NAME: E10805_S14.dwg	DESIGNED BY: _____ DATE APPD.: _____ DRAWN BY: _____ PROGRAM MGR.: _____ CHECKED BY: _____ CONST. MGR.: _____ DESIGH. MGR.: _____
--	--

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
 1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel: (503) 233-1800  
**AKANA**



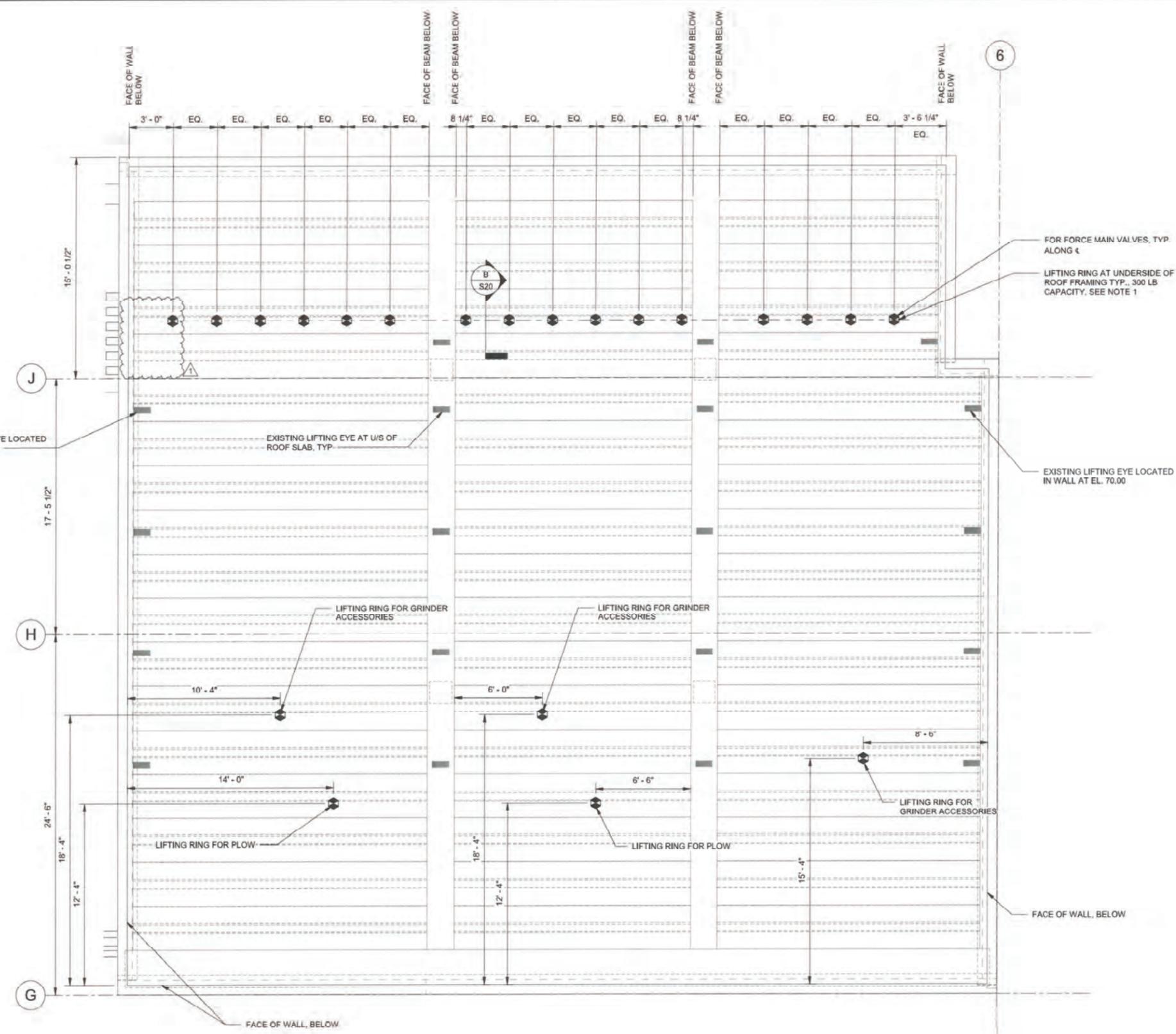
**CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS**

SOLIDS LOADING TIPPING TROUGH FRAMING PLAN FF EL 36.65

1/4 SECTION  
 JOB NO. E10805  
 SHEET NO. S12  
 X OF X

11/2/2021 9:33:54 AM

C:\Users\jcdm\Documents\PROJECTS\E10805\_XHWS\_mcdaniel.rvt



- GENERAL NOTES:**
- LIFTING RING AT U/S OF ROOF FOR 300 LB EQUIPMENT, COORDINATE W/ MECHANICAL FOR LOCATION, TYP OF 21, PROVIDE CONNECTION PER SECTION B / S20
  - COORDINATE ALL PICK POINT LOCATIONS WITH EQUIPMENT MANUFACTURER AND OWNER.

- LEGEND**
- LIFTING RING FOR 100 LB EQUIPMENT
  - LIFTING RING FOR 300 LB EQUIPMENT
  - LIFTING RING FOR 1000 LB EQUIPMENT
  - LIFTING RING FOR 2000 LB EQUIPMENT



**PLAN**  
SCALE: 1/4" = 1'-0"

NO.	DATE	DESCRIPTION	PEK
1	10/15/21	ADDENDUM 3	PEK
REVISION			

XREF(S) USED	ROTATION ANGLE: 0.0000
CONSTRUCTED BY	PROJECT COMPLETED
MAP CORRECTED BY	CHECKED BY
DRAWING NAME	E10805_S14.dwg

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 233-1800



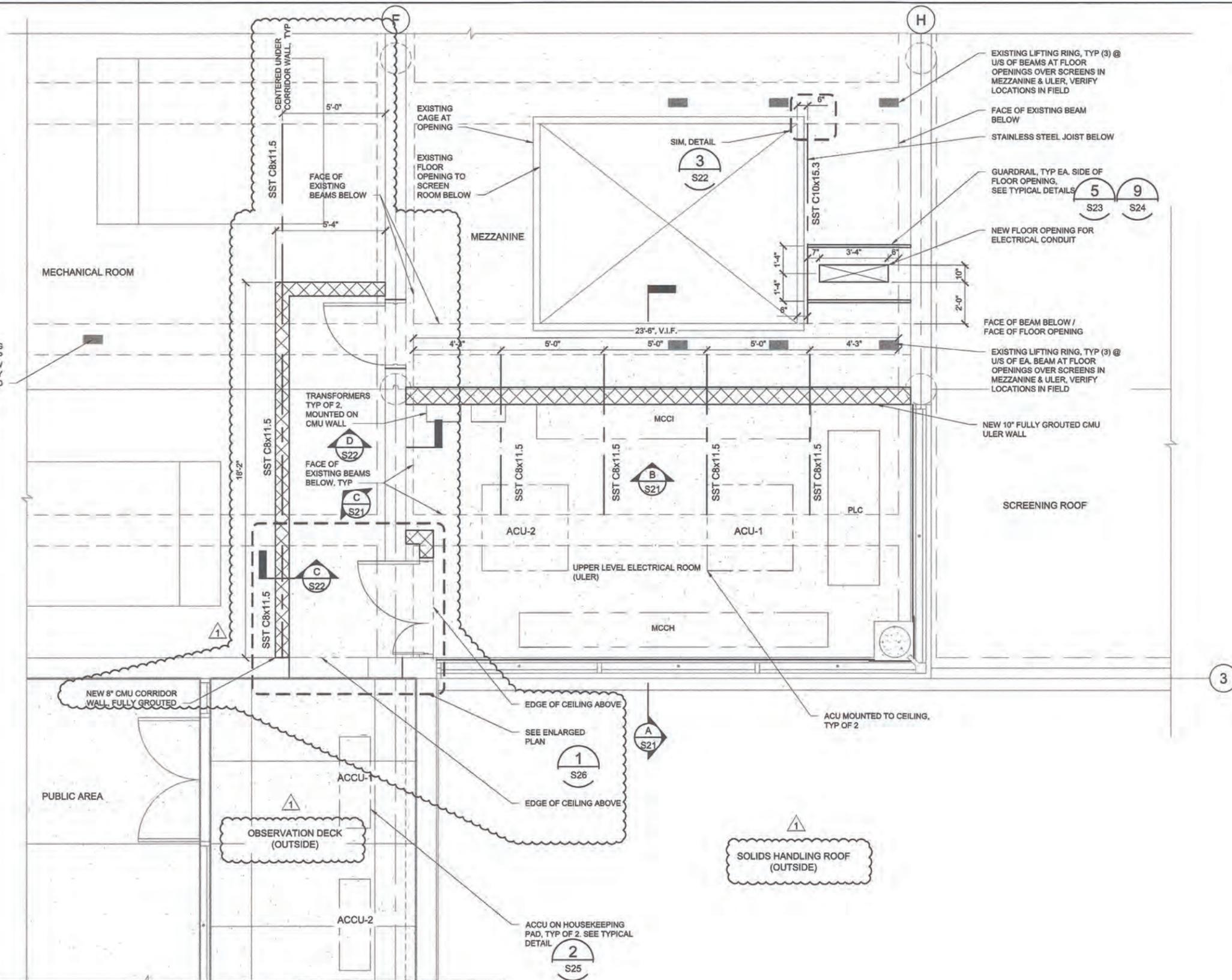
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

SOLIDS HANDLING ROOF PLAN EL 75.00

JOB NO. E10805  
SHEET NO. S13  
X OF X

14 SECTION

P:\PROJECTS\2019\19-013 CDMSMITH-CBOWTP-HEADWORKS\CAD\2-SHEETS\ULER-STRUCTURAL\E10805\_S14.DWG 10/15/2021 6:53 AM JADE MCDANIEL



- GENERAL NOTES:
1. VERIFY ALL EQUIPMENT SIZES, WEIGHTS, & LOCATIONS WITH ELECTRICAL & MECHANICAL.
  2. INSTALL HOUSEKEEPING PAD BELOW ALL EQUIPMENT INSTALLED ON FLOOR.
  3. ACU UNITS TO BE CEILING MOUNTED, SUPPORTS TO BE FULLY DESIGNED BY CONTRACTOR.
  4. ASSUMED OPERATING WEIGHTS, SEE G06 (CONTRACTOR TO VERIFY WITH MAXIMUM EQUIPMENT WEIGHT IN THE SPECIFICATIONS).

EXISTING LIFTING RING @ U/S OF BEAM BELOW, TYP (1) @ EA. BEAM BELOW MECHANICAL ROOM, VERIFY LOCATIONS IN FIELD

EXISTING LIFTING RING, TYP (3) @ U/S OF BEAMS AT FLOOR OPENINGS OVER SCREENS IN MEZZANINE & ULER, VERIFY LOCATIONS IN FIELD

FACE OF EXISTING BEAM BELOW

STAINLESS STEEL JOIST BELOW

GUARDRAIL, TYP EA. SIDE OF FLOOR OPENING, SEE TYPICAL DETAILS

NEW FLOOR OPENING FOR ELECTRICAL CONDUIT

FACE OF BEAM BELOW / FACE OF FLOOR OPENING

EXISTING LIFTING RING, TYP (3) @ U/S OF EA. BEAM AT FLOOR OPENINGS OVER SCREENS IN MEZZANINE & ULER, VERIFY LOCATIONS IN FIELD

NEW 10" FULLY GROUTED CMU ULER WALL

MECHANICAL ROOM

MEZZANINE

MCCI

MCCB

PLC

SCREENING ROOF

ACU-2

ACU-1

UPPER LEVEL ELECTRICAL ROOM (ULER)

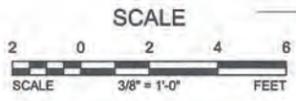
MCCB

PUBLIC AREA

OBSERVATION DECK (OUTSIDE)

SOLIDS HANDLING ROOF (OUTSIDE)

ACCU ON HOUSEKEEPING PAD, TYP OF 2. SEE TYPICAL DETAIL



PLAN  
SCALE: 3/8" = 1'-0"

NO.	DATE	DESCRIPTION	APPR.
1	10/15/21	ADDENDUM 3 - CORRIDOR ADDED	PEK
REVISION			

XREF(S) USED:	DESIGNED BY:	DATE APPD:
ROTATION ANGLE: #####	DRAWN BY:	PROGRAM MGR:
CONSTRUCTED BY:	CHECKED BY:	CONST. MGR:
PROJECT COMPLETED:	DESIGN MGR:	
MAP CORRECTED BY:		
CHECKED BY:		
FINAL MAP DATA		
DRAWING NAME: E10805_S14.dwg		

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**



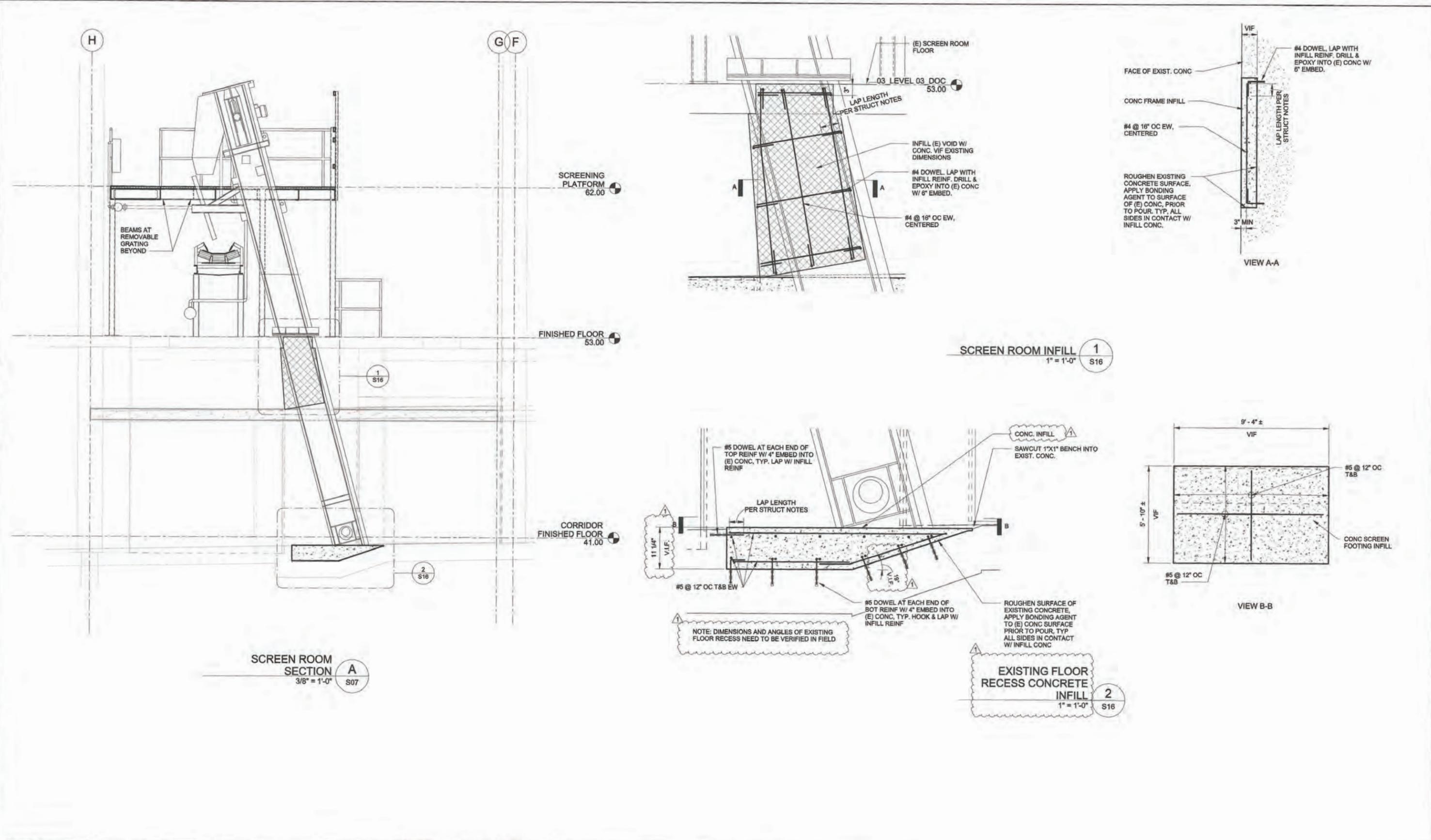
**CBOWTP HEADWORKS  
SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
ULER FLOOR PLAN FF = 73.75

1/4 SECTION
JOB NO. E10805
SHEET NO. S14
X OF X

10/15/2021 8:49:36 AM

C:\Users\joel.mcdaniel\Documents\PD\PD\_E10805\_X\HWS\_J.mcdaniel.rvt



**SCREEN ROOM SECTION A**  
3/8" = 1'-0"  
S07

**SCREEN ROOM INFILL 1**  
1" = 1'-0"  
S16

**EXISTING FLOOR RECESS CONCRETE INFILL 2**  
1" = 1'-0"  
S16

NO.	DATE	DESCRIPTION	PEK APPD.
1	10/15/21	ADDENDUM 3	
		REVISION	

XREF(S) USED:	DESIGNED BY:
ROTATION ANGLE: *****	DATE APPD.:
CONSTRUCTED BY:	DRAWN BY:
PROJECT COMPLETED:	PROGRAM MGR.:
MAP CORRECTED BY:	CHECKED BY:
	CONST. MGR.:
	DESIGN MGR.:
DRAWING NAME:	
E10805_S14.dwg	

DESIGNED BY:	DATE APPD.:
DRAWN BY:	PROGRAM MGR.:
CHECKED BY:	CONST. MGR.:
DESIGN MGR.:	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**



**STRUCTURAL**  
REGISTERED PROFESSIONAL  
ENGINEER  
11225  
JULY 19, 1989  
P.M.A. E. KLUYERS

EXPIRES 6/30/23

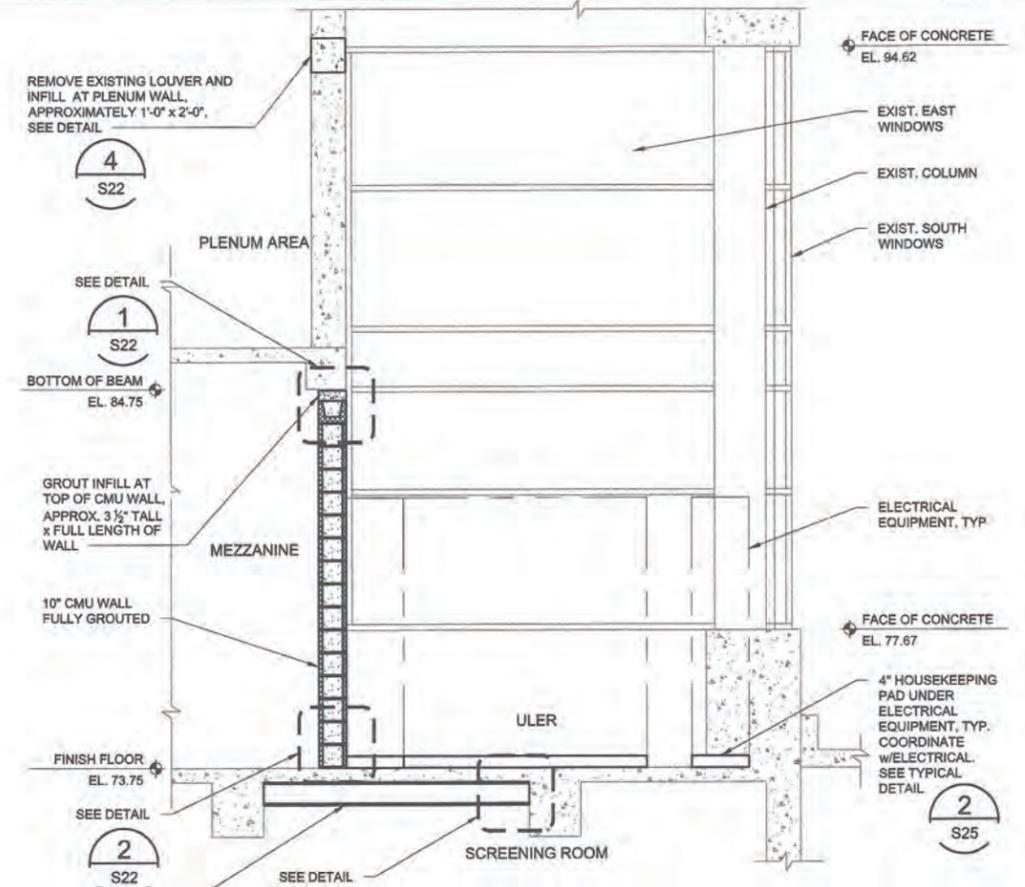
**CBWTP HEADWORKS**  
**SCREENING IMPROVEMENTS**

SCREENING ROOM SECTION AND DETAILS II

JOB NO. E10805  
SHEET NO. S16 OF X

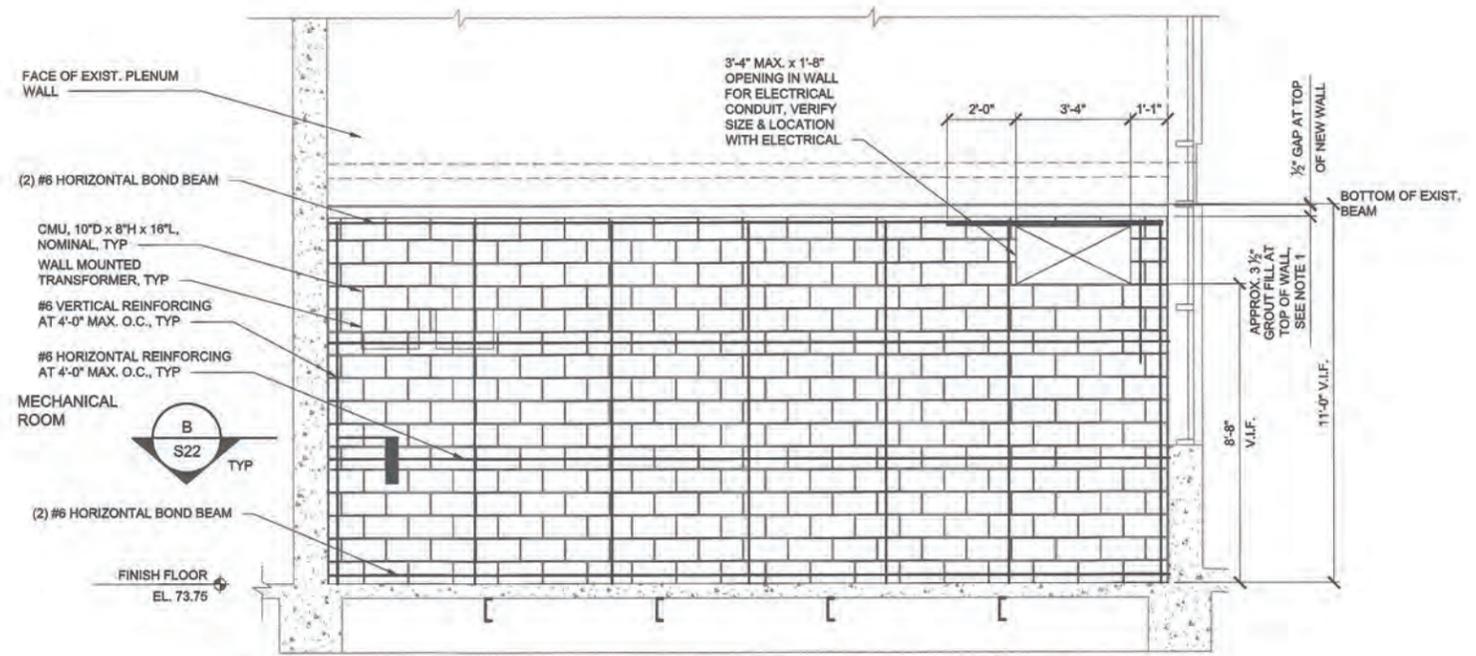
1/4 SECTION
JOB NO. E10805
SHEET NO. S16 OF X

P:\PDX PROJECTS\2019\19-013 CDMSMITH-CBWWTP-HEADWORKS\CAD\2-SHEETS\ULER STRUCTURAL\E10805\_S21.DWG 10/15/2021 8:53 AM JADE MCDANIEL



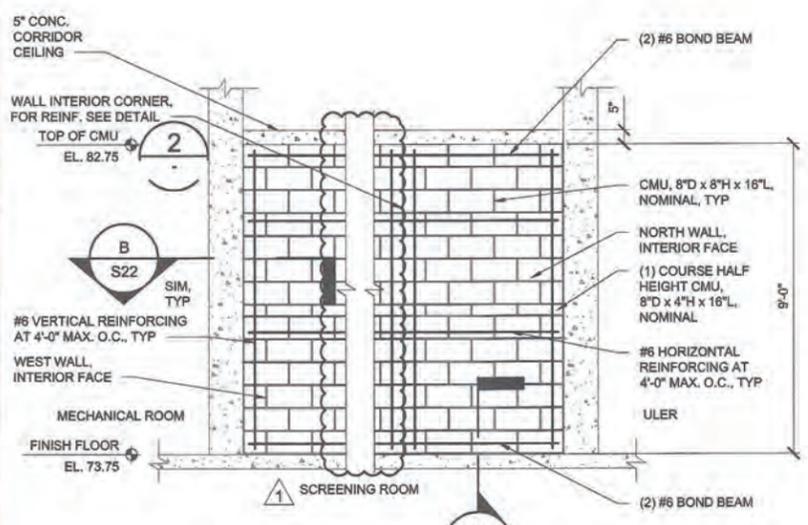
- NOTES:
- FIREPROOFING NOT SHOWN FOR CLARITY
  - WINDOW TREATMENT NOT SHOWN FOR CLARITY

**CMU WALL SECTION A**  
3/8" = 1'-0"  
S14

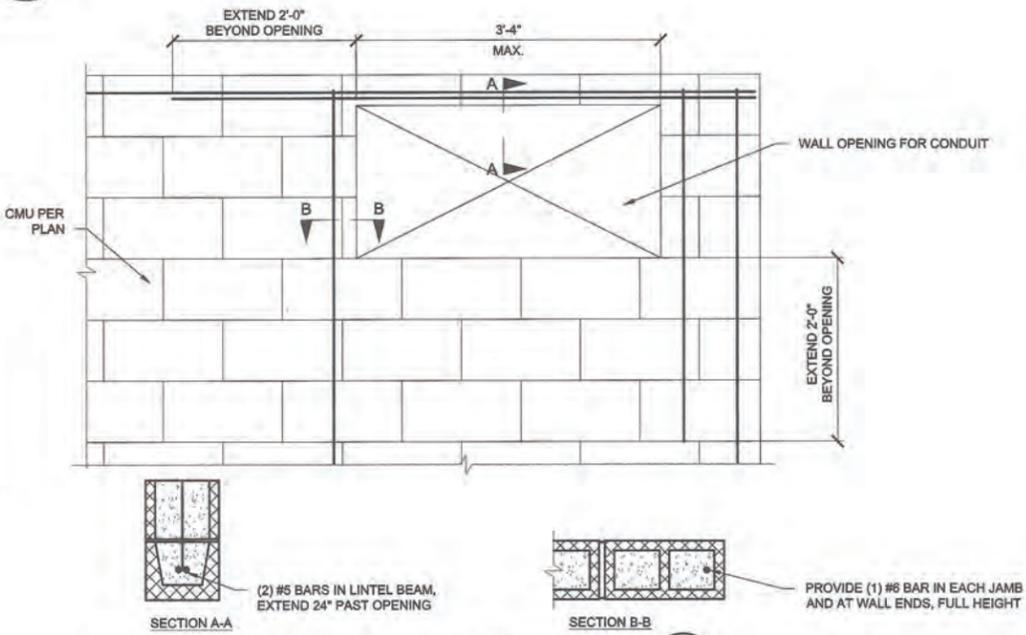


- NOTES:
- ADJUST HEIGHT OF FILL AS NECESSARY TO MAINTAIN 1/2" BETWEEN TOP OF CMU WALL & EXISTING BEAM.
  - FIREPROOFING AT UNDERSIDE OF SLAB NOT SHOWN FOR CLARITY.

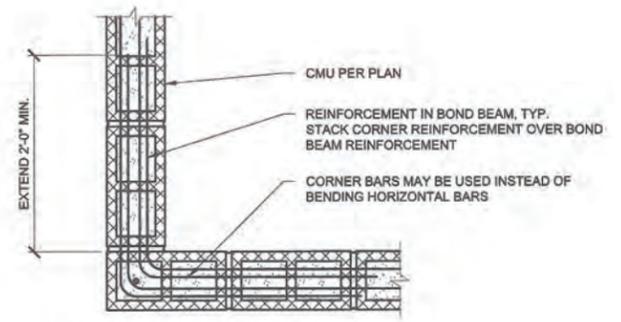
**ULER CMU WALL ELEVATION B**  
3/8" = 1'-0"  
S14



**CORRIDOR CMU WALL ELEVATION C**  
3/8" = 1'-0"  
S14



**ULER CMU WALL OPENING DETAIL 1**  
NTS



**CMU WALL CORNER 2**  
NTS

NO.	DATE	DESCRIPTION	APPD.	REVISION
1	10/15/21	ADDENDUM 3 - CORRIDOR WALL HEIGHT	PEK	

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

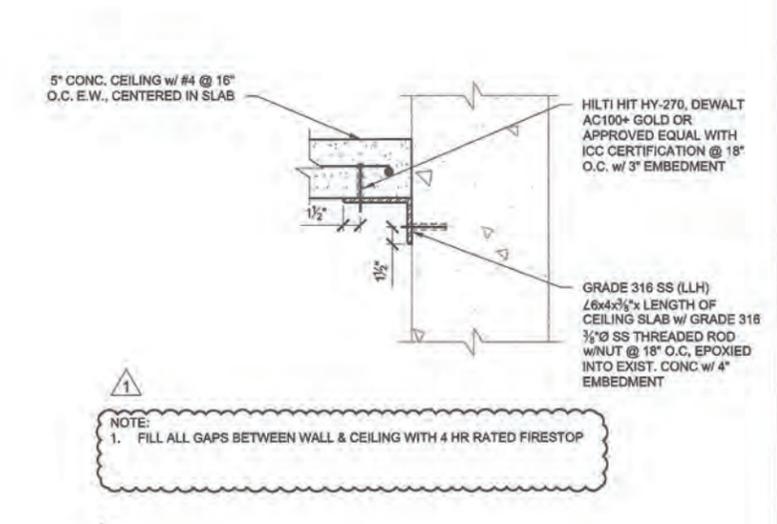
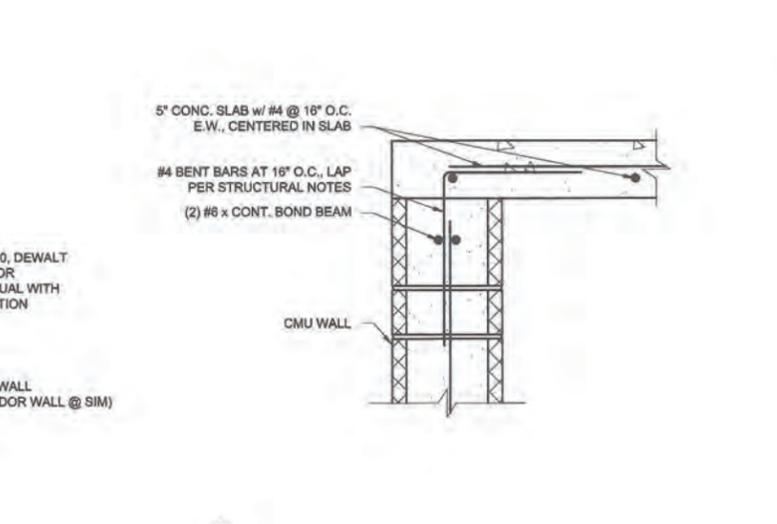
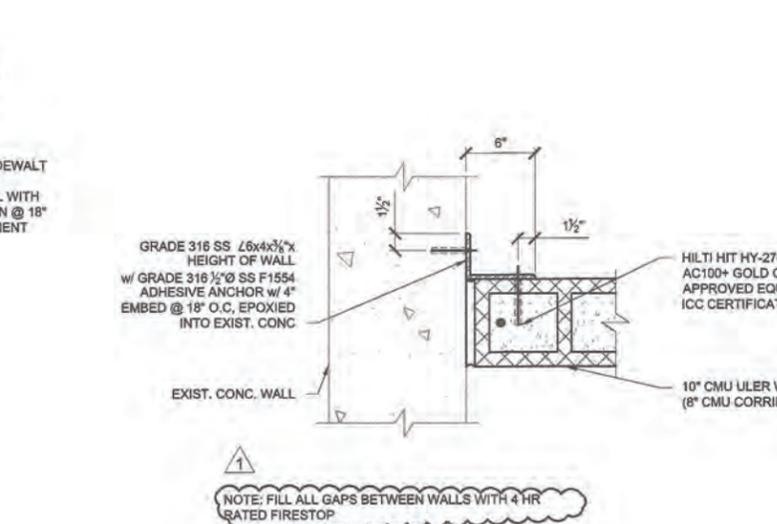
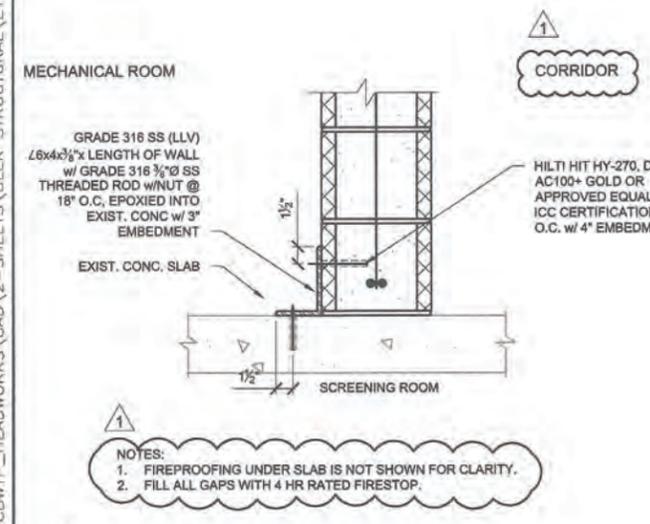
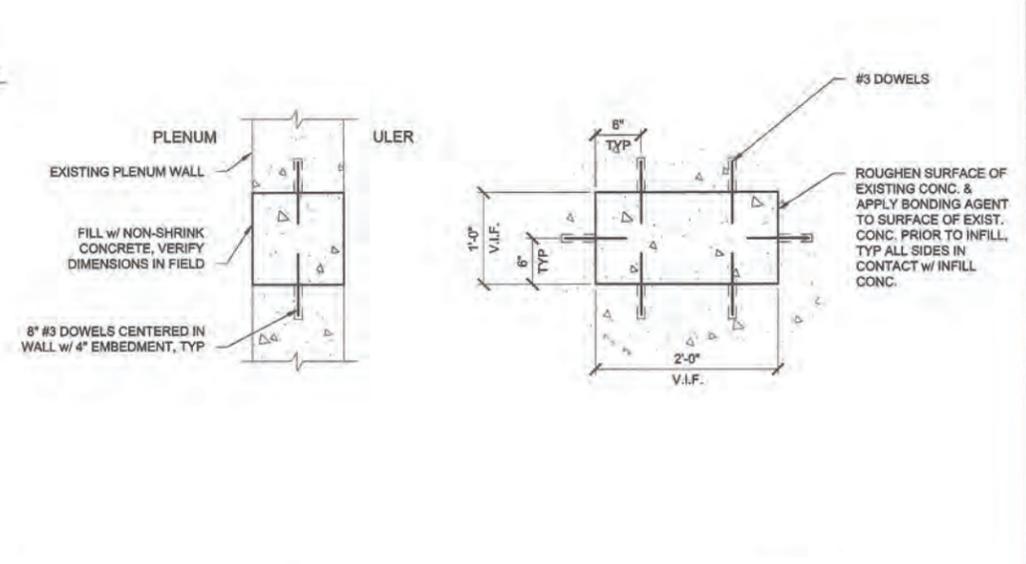
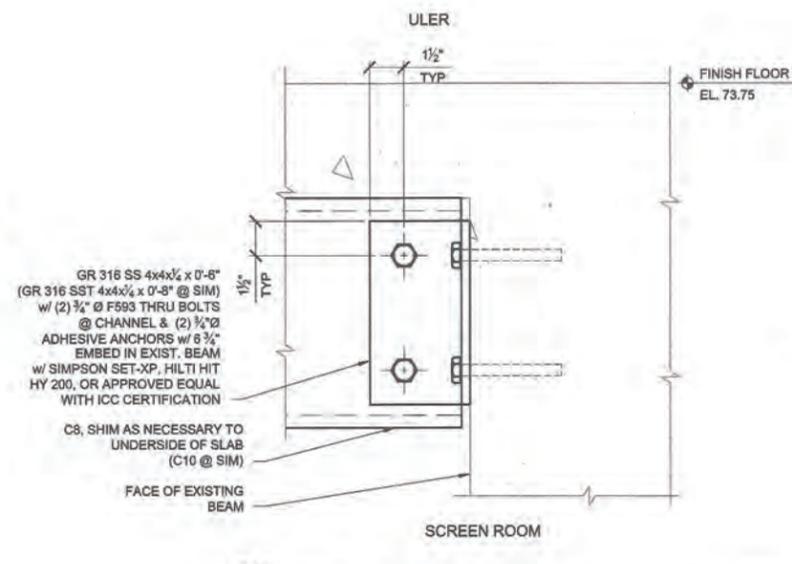
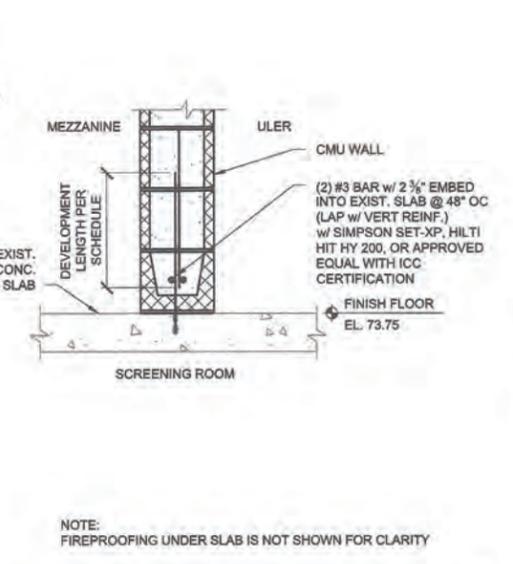
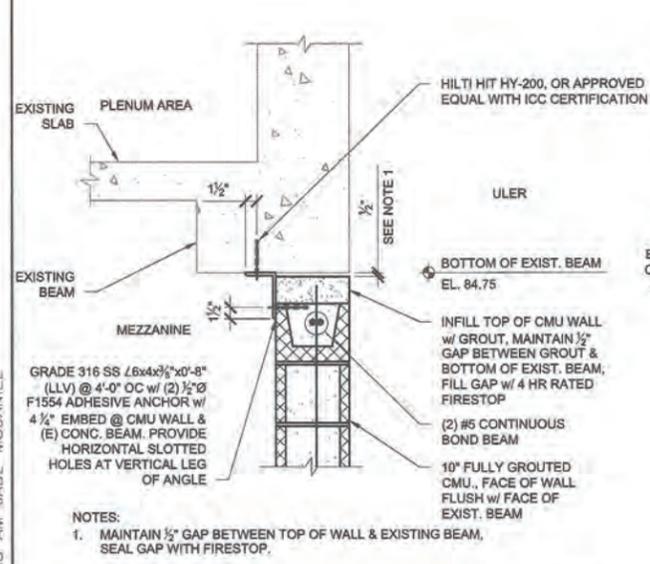
CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800  
**AKANA**



**CBWWTP HEADWORKS  
SCREENING IMPROVEMENTS**  
UPPER LEVEL ELECTRICAL ROOM  
ULER SECTIONS AND ELEVATIONS

1/4 SECTION
JOB NO. E10805
SHEET NO. S21
X OF X

P:\PDX PROJECTS\2019\19-013 CDMSMITH-CBWTP HEADWORKS\CAD\2-SHEETS\ULER STRUCTURAL\E10805\_S22.DWG 10/15/2021 6:53 AM JADE MCDANIEL



NO.	DATE	DESCRIPTION	APPRO.
1	10/15/21	ADDENDUM 3 - CORRIDOR EDITS	PEK
REVISION			

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 235-1600

**AKANA**

**STRUCTURAL**  
REGISTERED PROFESSIONAL  
PAUL E. KLUIVERS  
EXPIRES 6/30/23

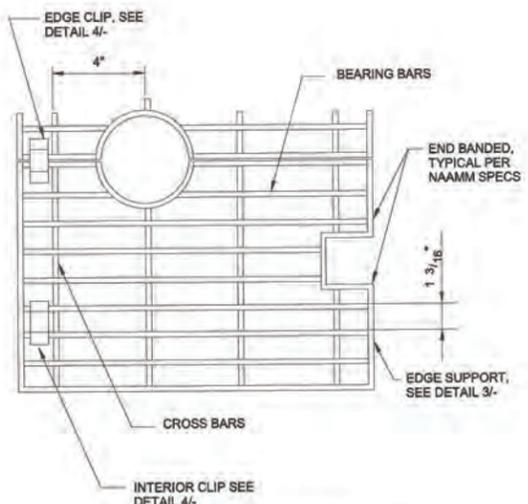
**CBWTP HEADWORKS**  
**SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
ULER DETAILS

1/4 SECTION  
JOB NO. E10805  
SHEET NO. S22  
X OF X

10/15/2021 8:49:39 AM

C:\Users\jode.mcdaniel\Documents\PD\10805\_X\HWS\_j.mcdaniel.rvt



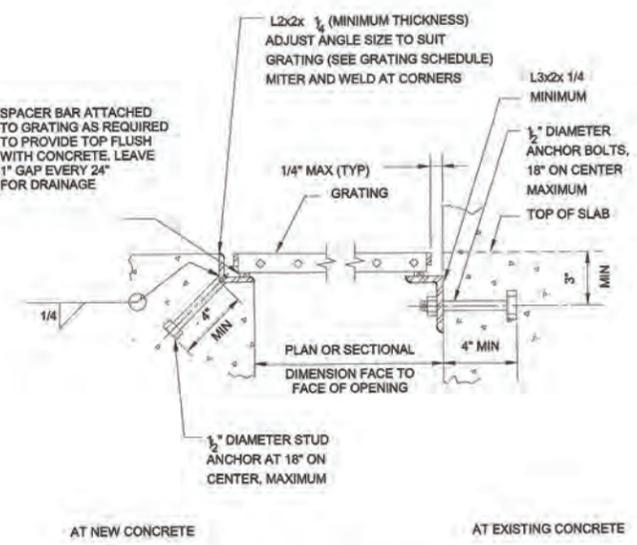
GRATING SCHEDULE	
BEARING BAR SIZE	CLEAR SPAN
1 1/2 x 1/8	UP TO 3'-6"
2 x 3/16	4'-0"
2 1/2 x 3/16	5'-0"
SEE PLANS	> 5'-0"

- NOTES:
- UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE DRAWINGS, ALL COVERPLATE SUPPORT ANGLES, CHANNELS AND BEAMS SHALL BE ALUMINUM.
  - ALL GRATING AND STAIR TREADS TO BE ALUMINUM
  - UNLESS OTHERWISE SPECIFIED, PROVIDE 4 GRATING CLIPS APPROXIMATELY 4" FROM THE CORNERS OF EACH PIECE. ADJACENT PIECES MAY BE ANCHORED WITH ONE CLIP AND TWO STUDS, SEE DETAIL 4/-.
  - GRATING SHALL BE REMOVABLE.
  - CLEAR SPAN SHALL BE PLAN DIMENSION, FACE TO FACE OF OPENING.

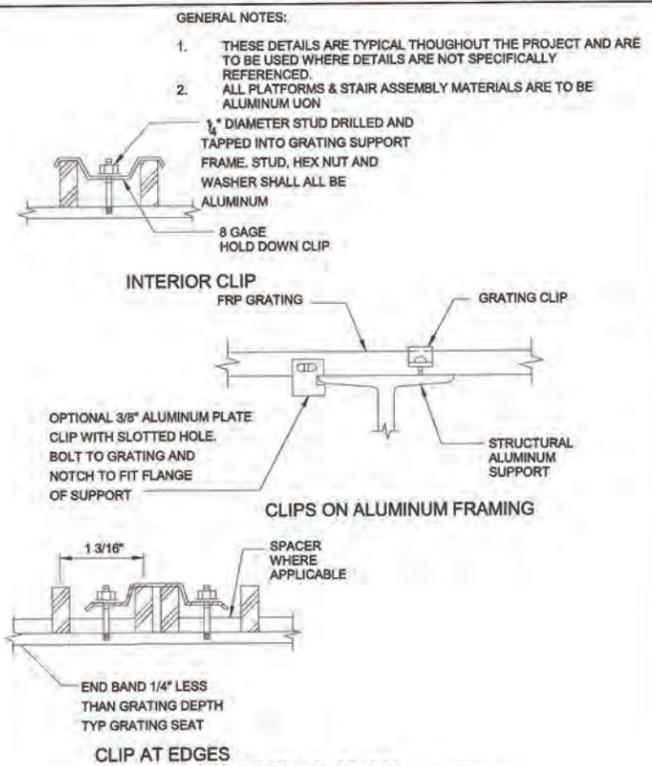
- NOTES:
- TYPICAL ALL BEARING AND CROSS BARS TO INTERIOR END BANDS
  - ADDITIONAL INFORMATION, SEE DETAIL 2/-

GRATING PLAN  
DETAIL  
SCALE: NTS  
1

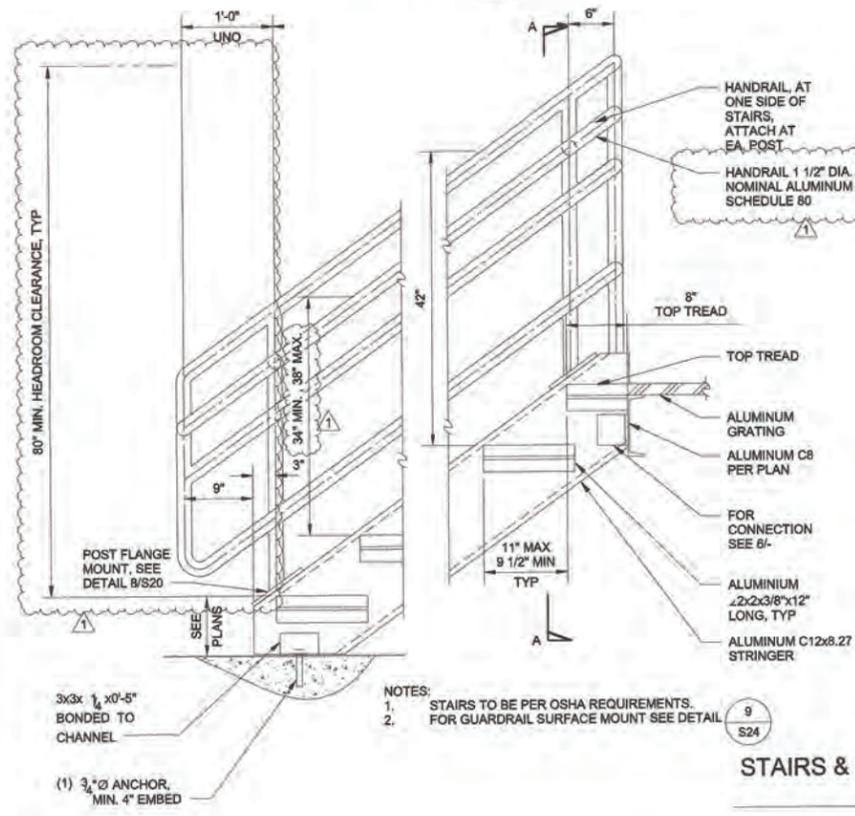
GRATING SCHEDULE & NOTES  
DETAIL  
SCALE: NTS  
2



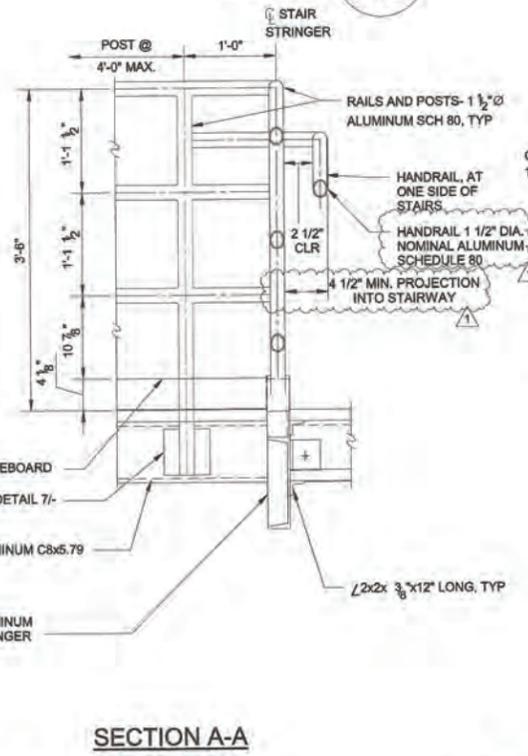
GRATING SUPPORTS AT CONCRETE  
DETAIL  
SCALE: NTS  
3



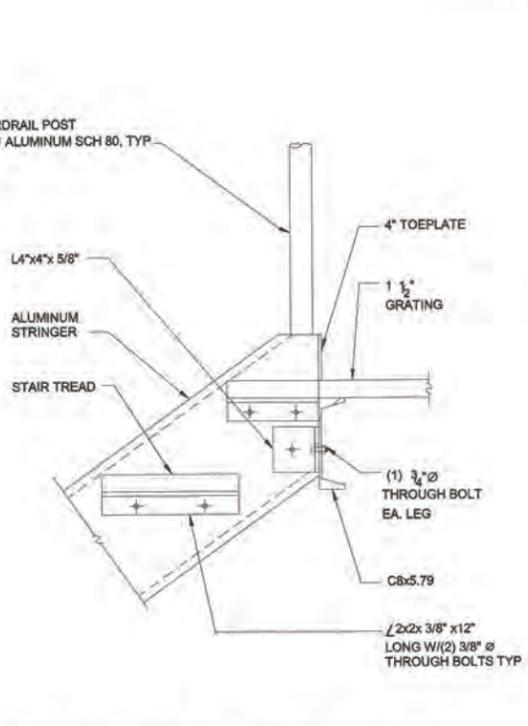
GRATING CLIPS  
DETAIL  
SCALE: NTS  
4



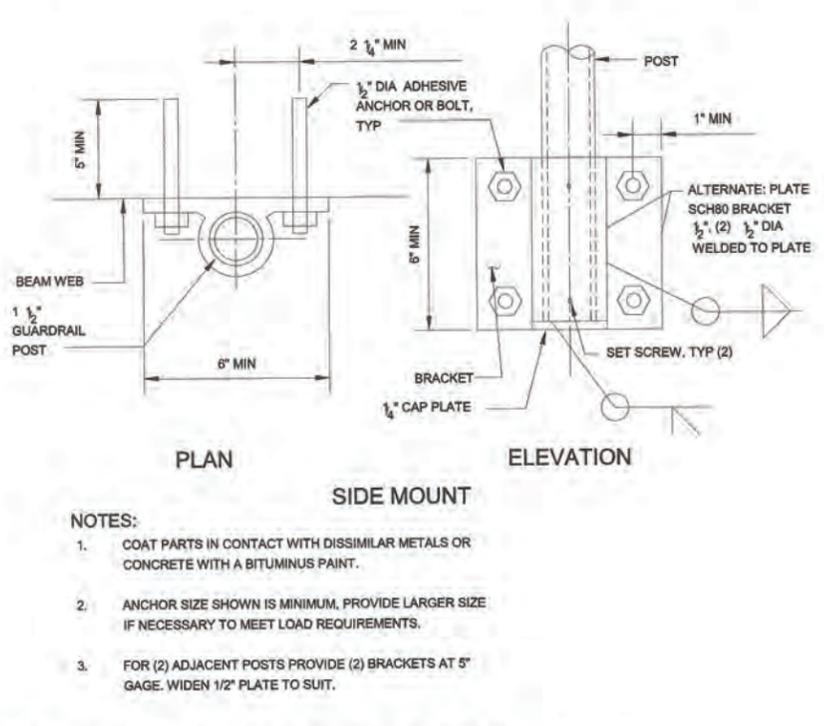
STAIRS & GUARDRAIL  
DETAIL  
SCALE: NTS  
5



SECTION A-A



STAIR CONNECTION TO CHANNEL  
DETAIL  
SCALE: NTS  
6



REMOVABLE GUARDRAIL POST ANCHORAGE  
DETAIL  
SCALE: NTS  
7

- NOTES:
- COAT PARTS IN CONTACT WITH DISSIMILAR METALS OR CONCRETE WITH A BITUMINUS PAINT.
  - ANCHOR SIZE SHOWN IS MINIMUM, PROVIDE LARGER SIZE IF NECESSARY TO MEET LOAD REQUIREMENTS.
  - FOR (2) ADJACENT POSTS PROVIDE (2) BRACKETS AT 5" GAGE. WIDEN 1/2" PLATE TO SUIT.

NO.	DATE	REVISION
1	10/15/21	ADDENDUM 3

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

PROJECT COMPLETED	CHECKED BY
MAP CORRECTED BY	FINAL MAP DATA
DRAWING NAME:	E10805_S14.dwg

CITY OF PORTLAND  
ENVIRONMENTAL SERVICES  
CDM Smith  
AKANA  
2220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

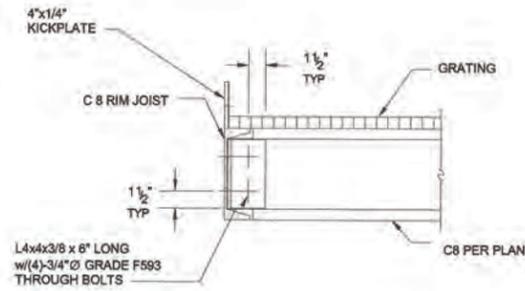


CBWTP HEADWORKS  
SCREENING IMPROVEMENTS  
TYPICAL DETAILS I

1/4 SECTION
JOB NO. E10805
SHEET NO. S23
X OF X

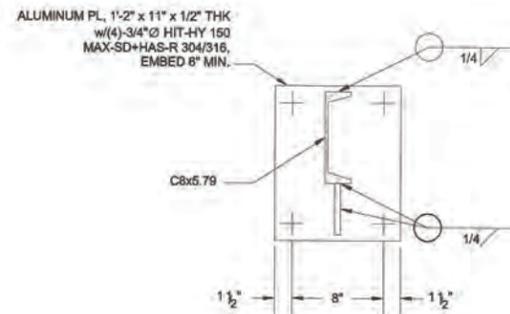
GENERAL NOTES:

1. THESE DETAILS ARE TYPICAL THROUGHOUT THE PROJECT AND ARE TO BE USED WHERE DETAILS ARE NOT SPECIFICALLY REFERENCED.
2. ALL PLATFORMS & STAIR ASSEMBLY MATERIALS ARE TO BE ALUMINUM UNON



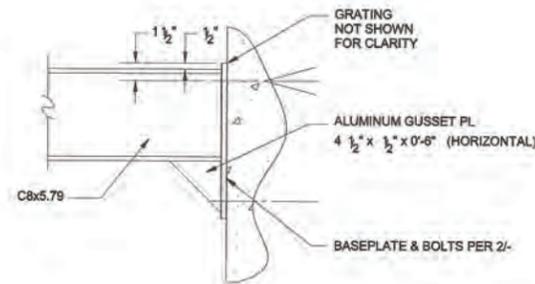
PLATFORM BEAM / RIM JOIST  
DETAIL  
SCALE: NTS

1



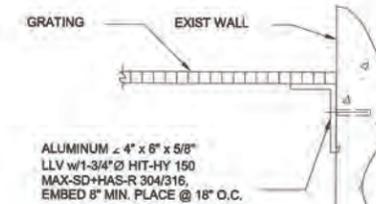
PLATFORM BEAM / WALL  
DETAIL  
SCALE: NTS

2



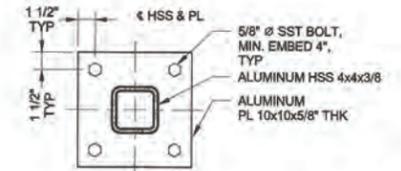
PLATFORM BEAM / WALL  
DETAIL  
SCALE: NTS

3



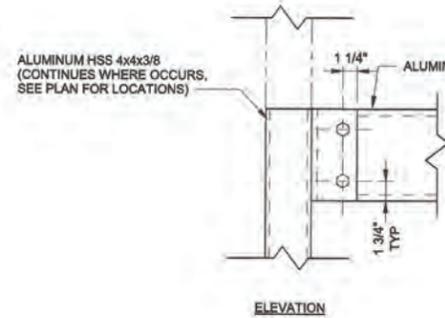
GRATING/WALL CONNECTION  
DETAIL  
SCALE: NTS

4



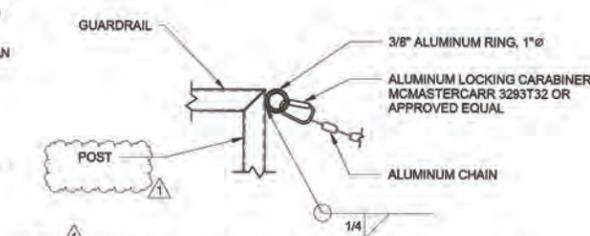
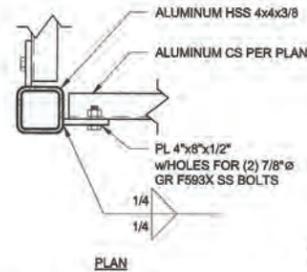
PLATFORM COLUMN/BASEPLATE  
DETAIL  
SCALE: NTS

5



PLATFORM COLUMN/BEAM  
DETAIL  
SCALE: NTS

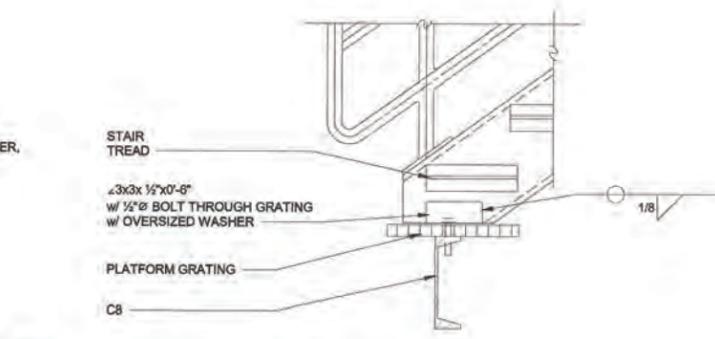
6



- NOTES:
1. SEE PLANS FOR REMOVABLE CHAIN GUARDRAIL LOCATION
  2. CHAIN SPACING SAME AS RAIL SPACING SHOWN ON 5/S23
  3. CHAIN GUARDRAIL CONNECTION TO POST TYP AT OPPOSITE SIDE OF OPENING
  4. DESIGN STRENGTH OF REMOVABLE CHAIN GUARDRAIL SYSTEM IS PER OSSC 1607.8

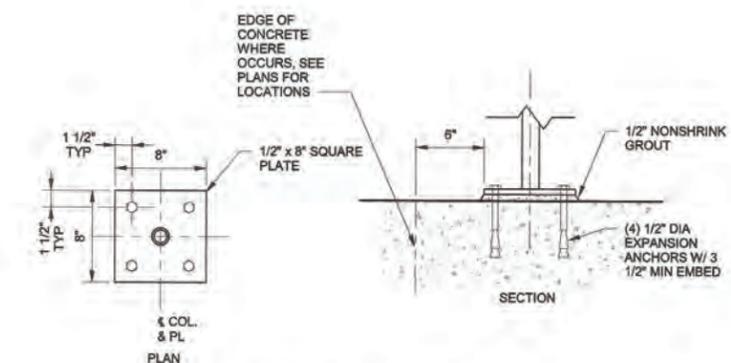
REMOVABLE CHAIN GUARDRAIL  
DETAIL  
SCALE: NTS

7



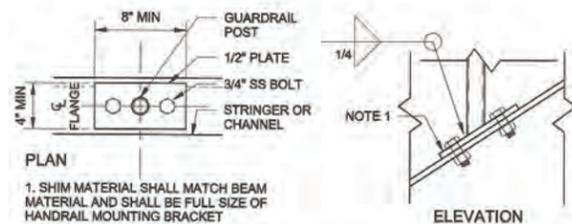
STAIR CONNECTION AT GRATING  
DETAIL  
SCALE: NTS

8



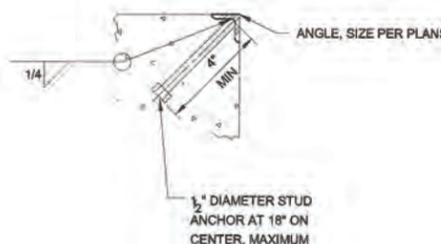
GUARDRAIL SURFACE MOUNT  
DETAIL  
SCALE: NTS

9



POST FLANGE MOUNT  
DETAIL  
SCALE: NTS

10



EMBEDDED ANGLE  
DETAIL  
SCALE: NTS

11

10/15/2021 8:49:39 AM

C:\Users\jode.mcdoniel\Documents\PDx\_E10805\_XHWS\_mcdoniel.rvt

NO.	DATE	DESCRIPTION	PEK	APPD.
1	10/15/21	ADDENDUM 3		
		REVISION		

XREF(S) USED: ROTATION ANGLE: ##### CONSTRUCTED BY: PROJECT COMPLETED: MAP CORRECTED BY: _____ CHECKED BY: _____ DRAWING NAME: E10805_S14.dwg	DESIGNED BY: MAW DATE APPD.: DRAWN BY: PROGRAM MGR. JXX CHECKED BY: CONST. MGR. MHH DESIGN MGR.
--	---

CITY OF PORTLAND ENVIRONMENTAL SERVICES CDM Smith 1220 SW Morrison St, Suite 200 Portland, OR 97205 Tel: (503) 233-1600	AKANA
--	-------

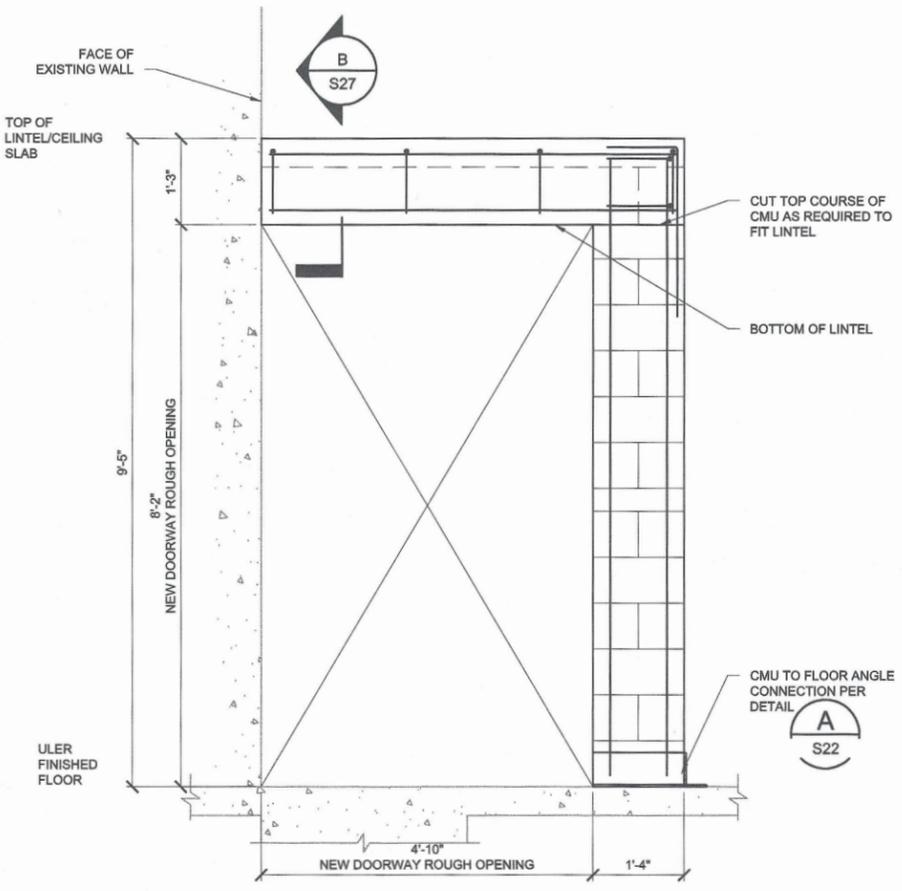
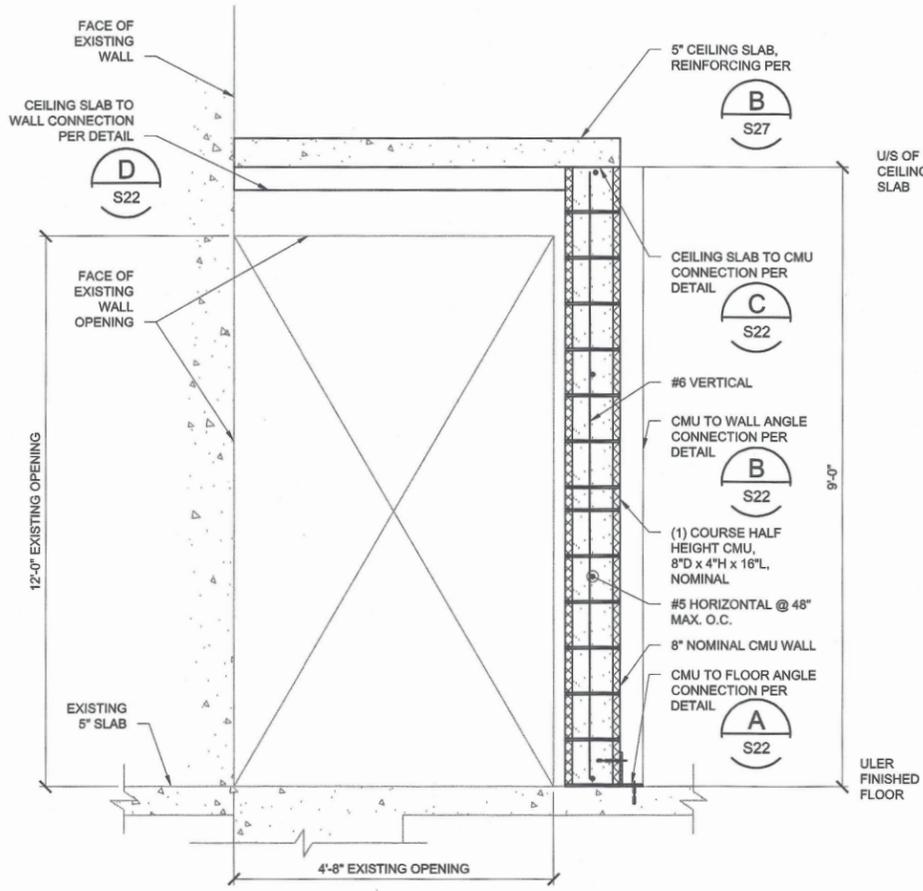
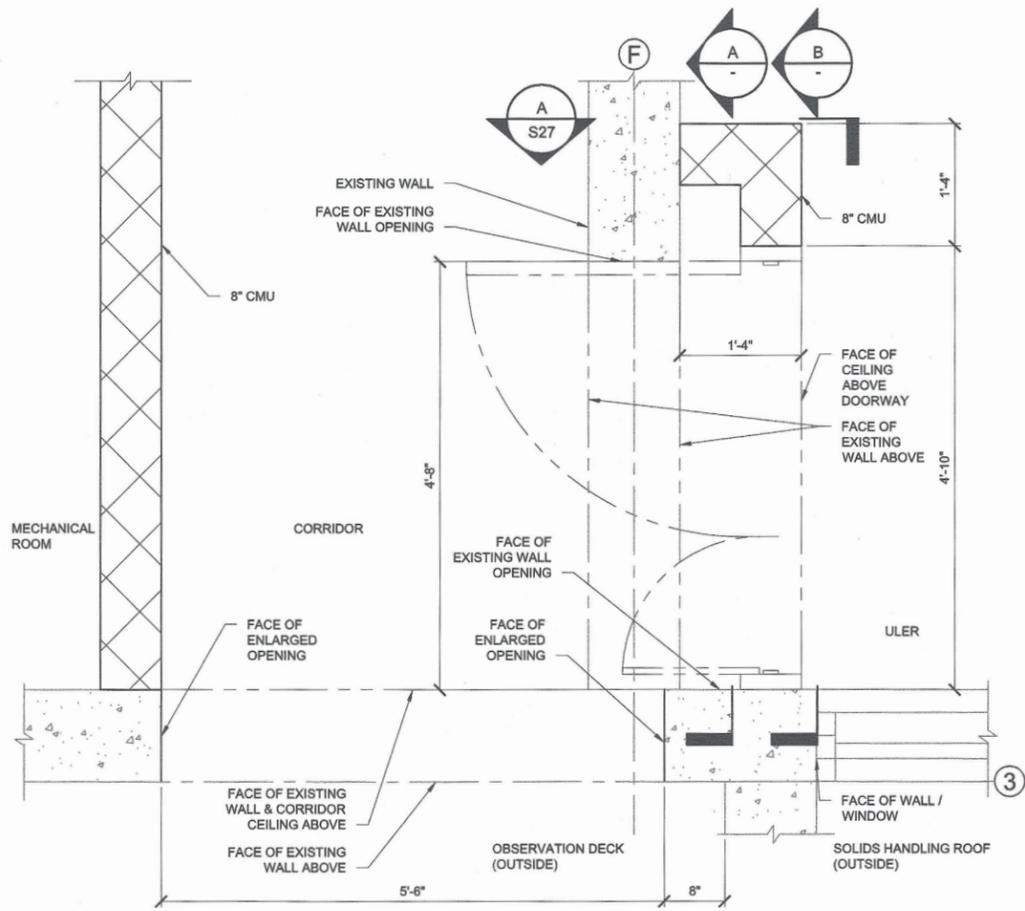
STRUCTURAL ENGINEER  
 JANA E. KLUIFFERS  
 JULY 18, 1983  
 EXPIRES 6/30/23

CITY OF PORTLAND  
 ENVIRONMENTAL SERVICES  
 CBWTP HEADWORKS  
 SCREENING IMPROVEMENTS

TYPICAL DETAILS II

1/4 SECTION
JOB NO. E10805
SHEET NO. S24
OF X

P:\PDX PROJECTS\2019\19-013 CDMSMITH-CBWTP-HEADWORKS\CAD\2-SHEETS\ULER STRUCTURAL\E10805\_S26.DWG 10/15/2021 6:54 AM JADE MCDANIEL



NOTES:  
1. FRAMING AND FIREPROOFING AT UNDERSIDE OF ULER SLAB NOT SHOWN FOR CLARITY  
2. FILL ALL GAPS BETWEEN WALLS, CEILING, & LINTEL WITH 4 HR RATED FIRESTOP

NOTES:  
1. FRAMING AND FIREPROOFING AT UNDERSIDE OF ULER SLAB NOT SHOWN FOR CLARITY  
2. FILL ALL GAPS BETWEEN WALLS, CEILING, & LINTEL WITH 4 HR RATED FIRESTOP  
3. EXISTING OPENING BEYOND NOT SHOWN FOR CLARITY  
4. DOORS & DOOR FRAMING NOT SHOWN FOR CLARITY



XREF(S) USED:		DESIGNED BY	DATE APPD.
ROTATION ANGLE: #####		DRAWN BY	PROGRAM MGR.
CONSTRUCTED BY		CHECKED BY	CONST. MGR.
PROJECT COMPLETED		DESIGN MGR.	
MAP CORRECTED BY			
CHECKED BY			
FINAL MAP DATA			
DRAWING NAME: E10805_S26.dwg			
NO.	DATE	DESCRIPTION	APPD.
1	10/15/21	ADDENDUM 3 - SHEET ADDED	PEK
REVISION			

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**



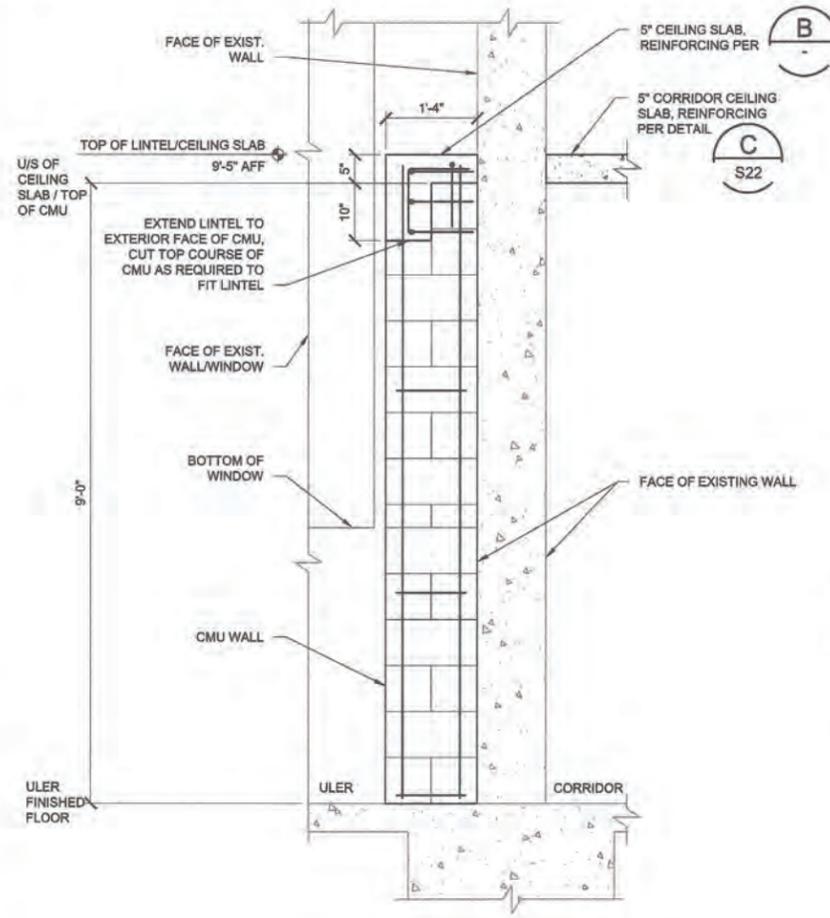
STRUCTURAL  
REGISTERED PROFESSIONAL  
PAUL E. KLUVERS  
EXPIRES 6/30/23

**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

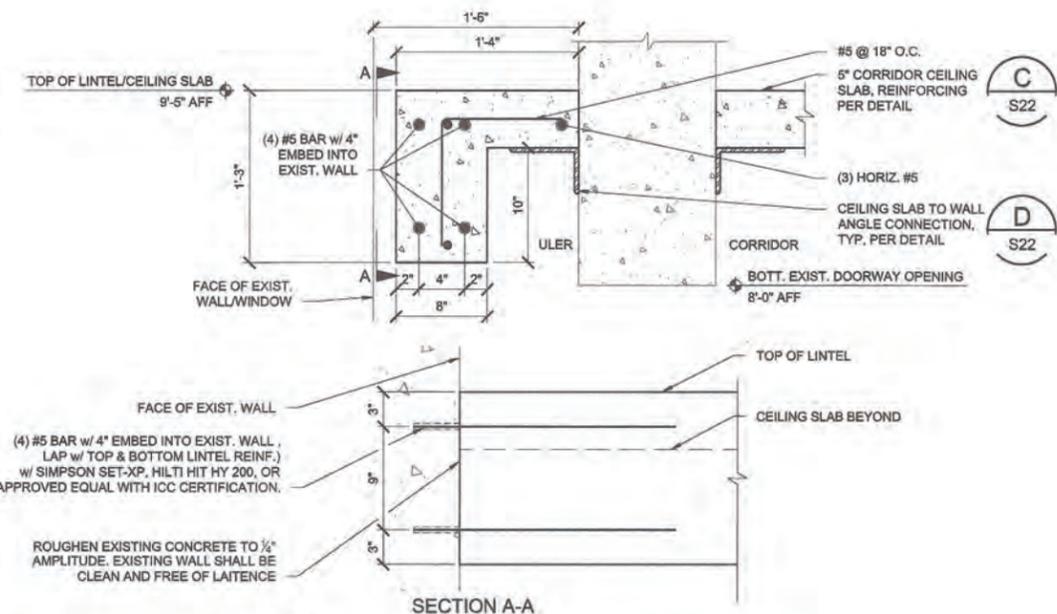
UPPER LEVEL ELECTRICAL ROOM  
ULER DOORWAY ENLARGED PLAN & SECTIONS

14 SECTION  
JOB NO. E10805  
SHEET NO. S26  
X OF X

P:\PDX PROJECTS\2019\19-013 CDMSMITH-CBWP-HEADWORKS\CAD\2-SHEETS\ULER-STRUCTURAL\E10805\_S27.DWG 10/15/2021 6:54 AM JADE MCDANIEL



**LINTEL/EXIST. WALL CONNECTION** (A)  
3/4" = 1'-0"



NOTES:  
1. FILL ALL GAPS BETWEEN WALLS, CEILING, & LINTEL WITH 4 HR RATED FIRESTOP

**LINTEL/EXIST. WALL CONNECTION** (B)  
1 1/2" = 1'-0"

NO.	DATE	DESCRIPTION	APPD.
1	10/15/21	ADDENDUM 3 - SHEET ADDED	PEK
REVISION			

XREF(S) USED:	DESIGNED BY	DATE APPD.
ROTATION ANGLE: #####	MAY	
CONSTRUCTED BY	DRAWN BY	PROGRAM MGR.
PROJECT COMPLETED	AM	
MAP CORRECTED BY	CHECKED BY	CONST. MGR.
	PEK	
	DESIGN MGR.	
	PEK	

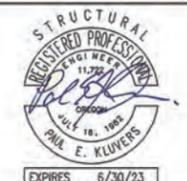
DRAWING NAME:	E10805_S27.dwg
---------------	----------------

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800

**AKANA**

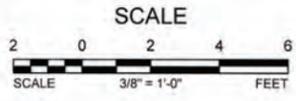
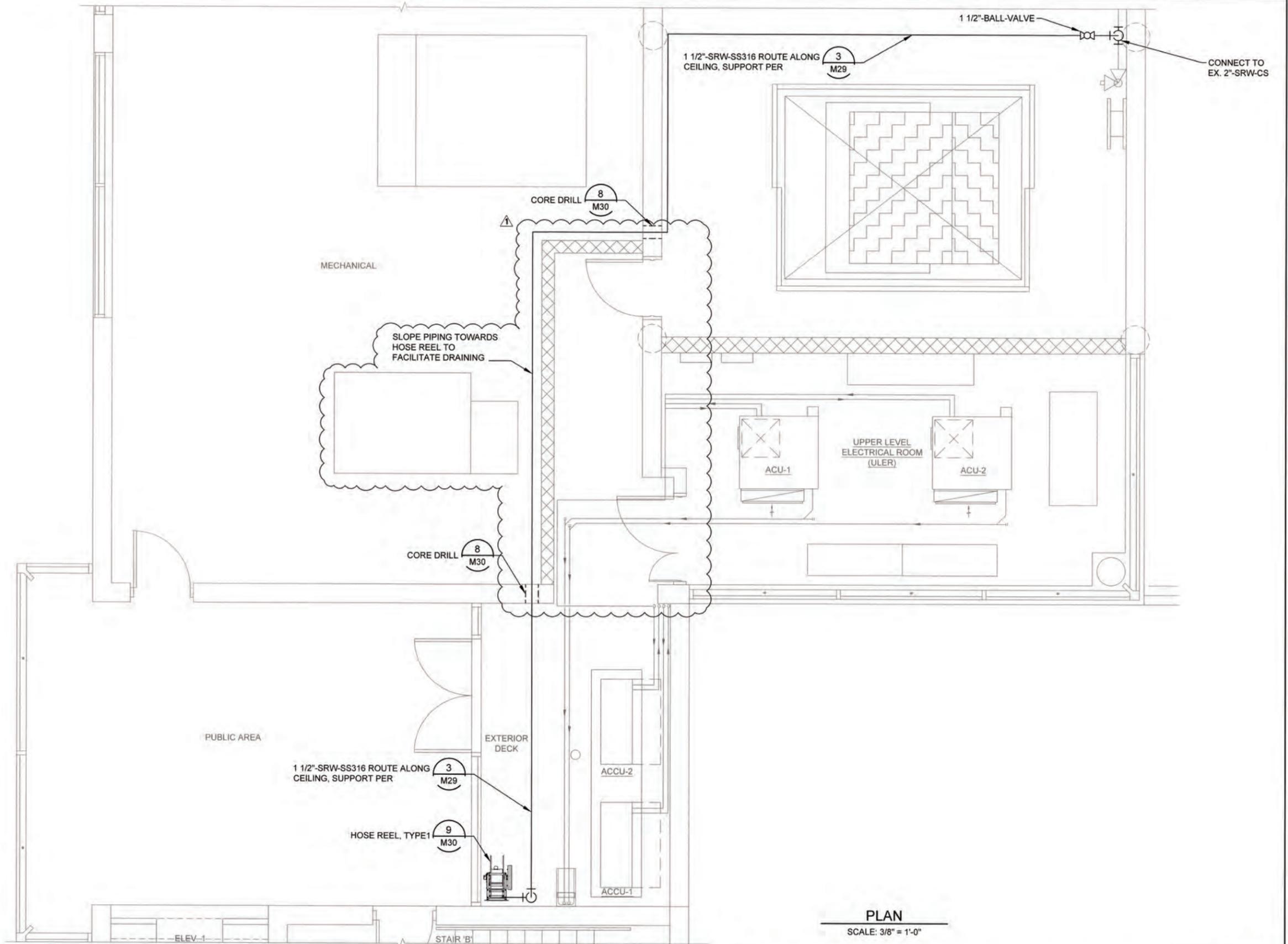


**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
ULER DOORWAY SECTIONS AND DETAILS

14 SECTION
JOB NO. E10805
SHEET NO. <b>S27</b>
X OF X

C:\CDM\EXT\TALBOT\K\00312566\E10805\_M28.DWG 10/14/2021 3:22 PM TALBOT, WAHKEAN



PLAN  
SCALE: 3/8" = 1'-0"

NO.	DATE	DESCRIPTION	APPD.
1	10/12/21	ADDENDUM 3	MPH
		REVISION	

XREF(S) USED:	
ROTATION ANGLE:	
CONSTRUCTED BY:	
PROJECT COMPLETED:	
MAP CORRECTED BY:	CHECKED BY:
FINAL MAP DATA	
DRAWING NAME:	E10805_M28.dwg

DESIGNED BY:	DATE APPD.
DRAWN BY:	PROGRAM MGR.
CHECKED BY:	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800



**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**  
  
UPPER LEVEL ELECTRICAL ROOM  
(ULER) MECHANICAL PLAN

1/4 SECTION
JOB NO. E10805
SHEET NO. M28
X OF X

**HVAC SYSTEM CONTROL SEQUENCE OF OPERATION:**

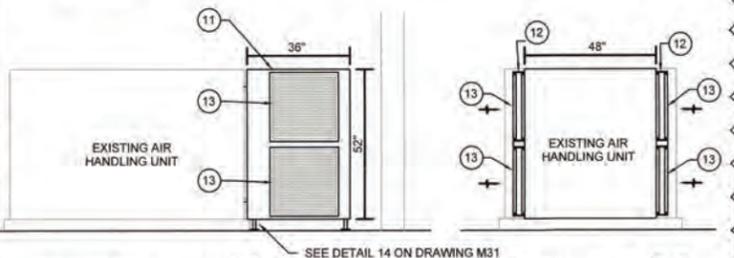
(APPLY TO THIS DRAWING ONLY)

**GENERAL:**

1. PROVIDE ULER (UPPER LEVEL ELECTRICAL ROOM) HVAC SYSTEM WITH DEDICATED MICROPROCESSOR BASED PROGRAMMABLE CONTROLLER (OWNER PREFERRED DISTECH ECB CONTROLLER) TO MONITOR AND CONTROL ULER HVAC SYSTEM PER CONTROL SEQUENCE OF OPERATION DESCRIBED ON THIS DRAWING.
2. PROVIDE AND INSTALL ALL DX SPLIT SYSTEM CONTROL AND INTERLOCK WIRING BETWEEN INDOOR AND OUTDOOR UNITS (ACU-1 & ACCU-1, ACU-2 & ACCU-2).
3. ALL FIELD CONTROL AND INTERLOCK WIRING BETWEEN HVAC EQUIPMENT, SENSORS AND CONTROLLER SHALL BE PROVIDED AND INSTALLED BY MECHANICAL HVAC CONTROL CONTRACTOR. ALL WIRING AND CONDUIT WORK SHALL MEET DIVISION 16 REQUIREMENTS.
4. ALL FIELD CONTROL AND INTERLOCK WIRING BETWEEN DISTECH CONTROLLER AND EXISTING BUILDING DISTECH PANEL AND IFIX SHALL BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.

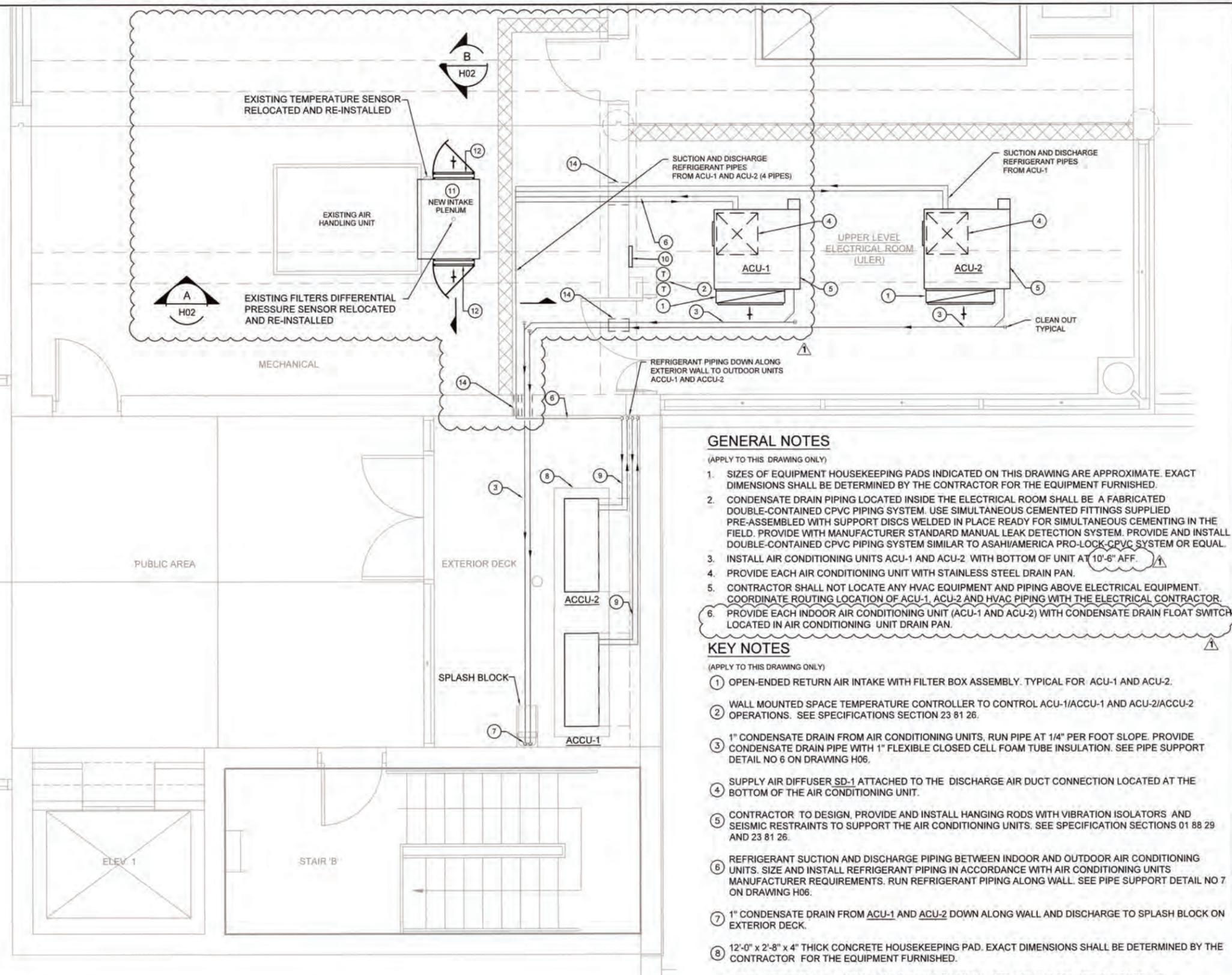
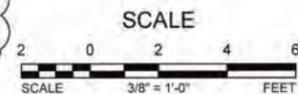
**SPLIT AIR HANDLING UNIT SYSTEM OPERATION:**

1. SPLIT SYSTEMS ACU-1/ACCU-1 AND ACU-2/ACCU-2 SHALL RUN TO MAINTAIN ULER SPACE TEMPERATURE SETPOINT (85°F ±2°F), ADJUSTABLE.
2. DISTECH ECB CONTROLLER SHALL ENABLE LEAD SPLIT SYSTEM TO START. IF LEAD SYSTEM IS NOT ABLE TO MAINTAIN SPACE TEMPERATURE FOR MORE THAN 10 MINUTES (ADJUSTABLE), LAG SPLIT SYSTEM SHALL START.
3. DISTECH ECB CONTROLLER SHALL CONTROL SPLIT AIR CONDITIONING UNIT SYSTEMS (ACU-1/ACCU-1 AND ACU-2/ACCU-2) OPERATIONS TO ALTERNATE LEAD/LAG SPLIT SYSTEMS EVERY 168 HOURS (ADJUSTABLE).
4. SPLIT SYSTEM TEMPERATURE CONTROLLER (PROVIDED BY UNIT MANUFACTURER) SHALL ADJUST INDOOR UNIT FAN SPEED AND OUTDOOR UNIT COMPRESSOR CAPACITY (DOWN TO 40% OF MAX COOLING CAPACITY) AUTOMATICALLY TO MEET SPACE COOLING DEMAND.
5. WHEN LEAD SPLIT SYSTEM FAILS TO OPERATE (ACU AND/OR ACCU), DISTECH ECB CONTROLLER SHALL ENABLE LAG SPLIT SYSTEM TO OPERATE.
6. DISTECH ECB CONTROLLER SHALL MONITOR THE STATUS OF THE FOLLOWING:
  - A. ACU-1 AND ACU-2 SUPPLY FANS RUN STATUS (ON/OFF)
  - B. ACCU-1 AND ACCU-2 RUN STATUS (ON/OFF)
  - C. CONDENSATE DRAIN PAN FLOAT SWITCH FOR ACU-1 AND ACU-2.
7. DISTECH ECB CONTROLLER SHALL ISSUE THE FOLLOWING ALARMS TO EXISTING BUILDING DISTECH PANEL AND TO IFIX:
  - A. WHEN ANY UNIT ACU-1, ACU-2, ACCU-1, OR ACCU-2 FAILS TO RUN.
  - B. WHEN SPACE TEMPERATURE RISES ABOVE 90°F.
  - C. WHEN ANY CONDENSATE DRAIN PAN FLOAT SWITCH IS ACTIVATED.
8. AIR CONDITIONING UNIT SHALL SHUT DOWN WHEN ASSOCIATED DRAIN PAN FLOAT SWITCH IS ACTIVATED.



**SECTION A** SCALE: 3/8" = 1'-0" H02  
**SECTION B** SCALE: 3/8" = 1'-0" H02

- 11 REMOVE EXISTING INTAKE AIR/FILTER RACK SECTION AND REPLACE WITH NEW 48"x36"x52" GALVANIZED STEEL INTAKE AIR PLENUM. ATTACHED NEW PLENUM TO EXISTING AIR HANDLING UNIT INTAKE. PLENUM SHALL HAVE THE FOLLOWING OPENINGS:
  - 46.25"x40.75" (FIELD VERIFY) AT AIR HANDLING UNIT INTAKE AIR CONNECTION SIDE.
  - 48"x24" AT PLENUM INTAKE FILTER BOX SIDES. SEE KEY NOTE 12.
 REMOVE EXISTING TEMPERATURE AND PRESSURE SENSORS AND RE-INSTALL IN NEW PLENUM AND PUT IN PROPER WORKING ORDER.
- 12 24"x50"x4" GALVANIZED STEEL FILTER BOX WITH HINGED FRAME AND FILTER RACKS ATTACHED TO PLENUM. FILTER RACKS SHALL BE SIZED TO HOUSE 24"x24"x2" DEEP MERV 8 THROWAWAY FILTERS.
- 13 22"x22" RETURN AIR GRILLE RG-1 ATTACHED TO FILTERS BOX/RACK.
- 14 CORE DRILL OPENING FOR EACH PIPE WALL PENETRATION PER DETAIL NUMBER 8 ON SHEET H06. ROUTE PIPING ABOVE CORRIDOR CEILING.



**HVAC PLAN**  
 SCALE: 3/8" = 1'-0"

**GENERAL NOTES**

(APPLY TO THIS DRAWING ONLY)

1. SIZES OF EQUIPMENT HOUSEKEEPING PADS INDICATED ON THIS DRAWING ARE APPROXIMATE. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE EQUIPMENT FURNISHED.
2. CONDENSATE DRAIN PIPING LOCATED INSIDE THE ELECTRICAL ROOM SHALL BE A FABRICATED DOUBLE-CONTAINED CPVC PIPING SYSTEM. USE SIMULTANEOUS CEMENTED FITTINGS SUPPLIED PRE-ASSEMBLED WITH SUPPORT DISCS WELDED IN PLACE READY FOR SIMULTANEOUS CEMENTING IN THE FIELD. PROVIDE WITH MANUFACTURER STANDARD MANUAL LEAK DETECTION SYSTEM. PROVIDE AND INSTALL DOUBLE-CONTAINED CPVC PIPING SYSTEM SIMILAR TO ASAHI/AMERICA PRO-LOCK CPVC SYSTEM OR EQUAL.
3. INSTALL AIR CONDITIONING UNITS ACU-1 AND ACU-2 WITH BOTTOM OF UNIT AT 10'-6" AFF.
4. PROVIDE EACH AIR CONDITIONING UNIT WITH STAINLESS STEEL DRAIN PAN.
5. CONTRACTOR SHALL NOT LOCATE ANY HVAC EQUIPMENT AND PIPING ABOVE ELECTRICAL EQUIPMENT. COORDINATE ROUTING LOCATION OF ACU-1, ACU-2 AND HVAC PIPING WITH THE ELECTRICAL CONTRACTOR.
6. PROVIDE EACH INDOOR AIR CONDITIONING UNIT (ACU-1 AND ACU-2) WITH CONDENSATE DRAIN PAN LOCATED IN AIR CONDITIONING UNIT DRAIN PAN.

**KEY NOTES**

(APPLY TO THIS DRAWING ONLY)

- 1 OPEN-ENDED RETURN AIR INTAKE WITH FILTER BOX ASSEMBLY. TYPICAL FOR ACU-1 AND ACU-2.
- 2 WALL MOUNTED SPACE TEMPERATURE CONTROLLER TO CONTROL ACU-1/ACCU-1 AND ACU-2/ACCU-2 OPERATIONS. SEE SPECIFICATIONS SECTION 23 81 26.
- 3 1" CONDENSATE DRAIN FROM AIR CONDITIONING UNITS, RUN PIPE AT 1/4" PER FOOT SLOPE. PROVIDE CONDENSATE DRAIN PIPE WITH 1" FLEXIBLE CLOSED CELL FOAM TUBE INSULATION. SEE PIPE SUPPORT DETAIL NO 6 ON DRAWING H06.
- 4 SUPPLY AIR DIFFUSER SD-1 ATTACHED TO THE DISCHARGE AIR DUCT CONNECTION LOCATED AT THE BOTTOM OF THE AIR CONDITIONING UNIT.
- 5 CONTRACTOR TO DESIGN, PROVIDE AND INSTALL HANGING RODS WITH VIBRATION ISOLATORS AND SEISMIC RESTRAINTS TO SUPPORT THE AIR CONDITIONING UNITS. SEE SPECIFICATION SECTIONS 01 88 29 AND 23 81 26.
- 6 REFRIGERANT SUCTION AND DISCHARGE PIPING BETWEEN INDOOR AND OUTDOOR AIR CONDITIONING UNITS. SIZE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH AIR CONDITIONING UNITS MANUFACTURER REQUIREMENTS. RUN REFRIGERANT PIPING ALONG WALL. SEE PIPE SUPPORT DETAIL NO 7 ON DRAWING H06.
- 7 1" CONDENSATE DRAIN FROM ACU-1 AND ACU-2 DOWN ALONG WALL AND DISCHARGE TO SPLASH BLOCK ON EXTERIOR DECK.
- 8 12'-0" x 2'-8" x 4" THICK CONCRETE HOUSEKEEPING PAD. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE EQUIPMENT FURNISHED.
- 9 ROUTE REFRIGERANT SUCTION AND DISCHARGE PIPING BETWEEN INDOOR AND OUTDOOR AIR CONDITIONING UNITS ON EXTERIOR DECK FLOOR. PROVIDE AND INSTALL PIPE SUPPORTS AT MAXIMUM 5 FEET OFF CENTER.
- 10 MICROPROCESSOR BASED PROGRAMMABLE HVAC SYSTEM CONTROLLER BASED ON DISTECH ECB MODEL. DISTECH ECB IS THE OWNER PREFERRED HVAC SYSTEM CONTROLLER.

C:\CDM\EXT\IBRAHIMSY\DO312574\E10805\_H02.DWG 10/15/2021 8:05 AM IBRAHIM, SAID Y.

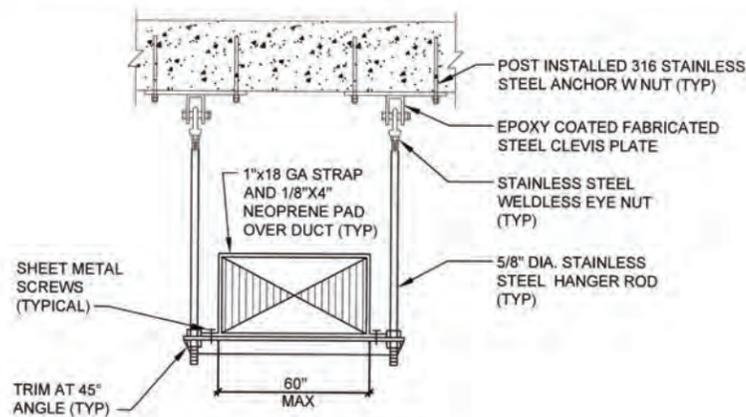
NO.	DATE	DESCRIPTION	APPD.
101421		ADDENDUM 3	SYI
		REVISION	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
 1220 SW Morrison St, Suite 200  
 Portland, OR 97205  
 Tel. (503) 232-1800

REGISTERED PROFESSIONAL ENGINEER  
 96814PE  
 SAID Y IBRAHIM  
 OREGON  
 JAN 13, 2021  
 SAID Y IBRAHIM  
 EXPIRES: JUN 30, 2023

1/4 SECTION  
 JOB NO. E10805  
 SHEET NO. H02  
 X OF X

**CBWTP HEADWORKS SCREENING IMPROVEMENTS**  
 UPPER LEVEL ELECTRICAL ROOM (ULER) HVAC PLAN



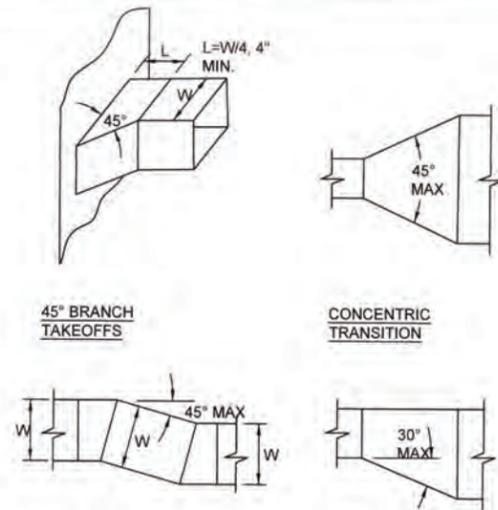
RECTANGULAR DUCT HANGER

NOTES:

1. DUCT SUPPORT DESIGN SHALL CONFORM WITH SMACNA SEISMIC RESTRAINT MANUAL.
2. THREADED HANGER ROD, HANGER STRAP, UNISTRUT, ANGLE AND HARDWARE SHALL BE TYPE 316L STAINLESS STEEL.
3. SEE SPECIFICATIONS SECTIONS 01 88 29 AND 23 31 16.

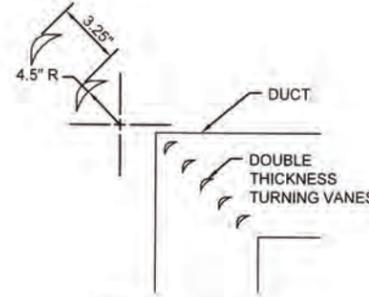
TYPICAL DUCT HANGER  
DETAIL 1

SCALE: NTS



TYPICAL RECTANGULAR DUCT FITTINGS  
DETAIL 2

SCALE: NTS

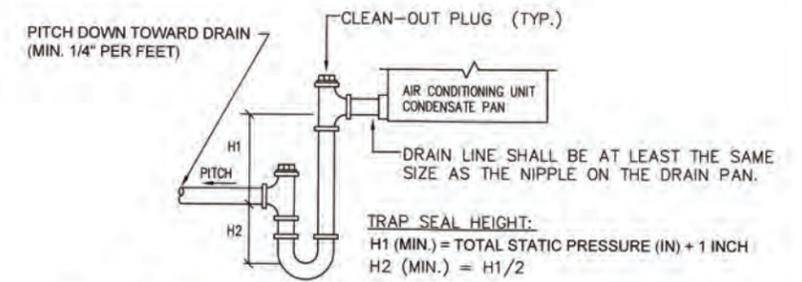


NOTES:

1. TURNING VANES SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE DUCT IN WHICH THEY ARE INSTALLED.

TURNING VANES  
DETAIL 3

SCALE: NTS

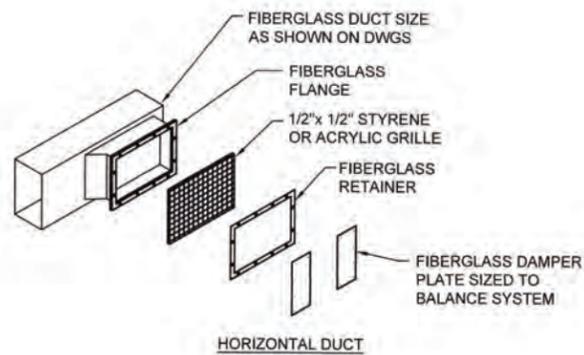


NOTES:

1. PROVIDE TEES W/ CLEAN-OUT PLUGS AT ALL 90° BENDS.
2. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAPS.
3. SUPPORT LENGTHY DRAIN LINES TO PREVENT SAG AND CONDENSATE OVERFLOW.
4. MANUALLY PRIME FILL TRAP BEFORE START UP TO FORM INITIAL DRAIN SEAL.
5. CONDENSATE DISCHARGE MUST BE BELOW LEVEL OF DRAIN PAN.

TYPICAL CONDENSATE TRAP  
DETAIL 4

SCALE: NTS

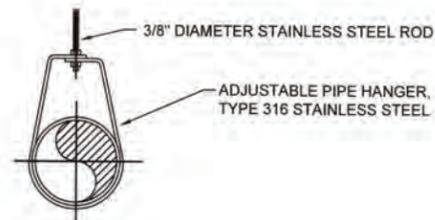


NOTES:

1. SUPPLY GRILLE SIZES ARE FROM INSIDE TO INSIDE OF GRILLE STOP, AS INDICATED ON THE HVAC DRAWINGS.
2. GRILLE LATTICE WORK TO OCCUPY NO MORE THAN 9% OF TOTAL GRILLE AREA.
3. ALL FIBERGLASS PIECES ARE TO MATCH COLOR OF FIBERGLASS DUCT.

TYPICAL FRP GRILLE/DAMPER  
DETAIL 5

SCALE: NTS

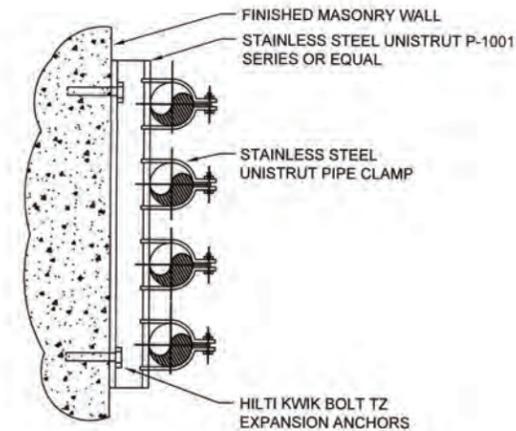


NOTES:

1. SEE SPECIFICATIONS SECTION 01 88 29.
2. PROVIDE STAINLESS STEEL PROTECTOR SHIELD FOR INSULATED PIPE.
3. MAXIMUM DISTANCE BETWEEN PIPE SUPPORTS SHALL BE 5 FEET.

PIPE HANGER  
DETAIL 6

SCALE: NTS

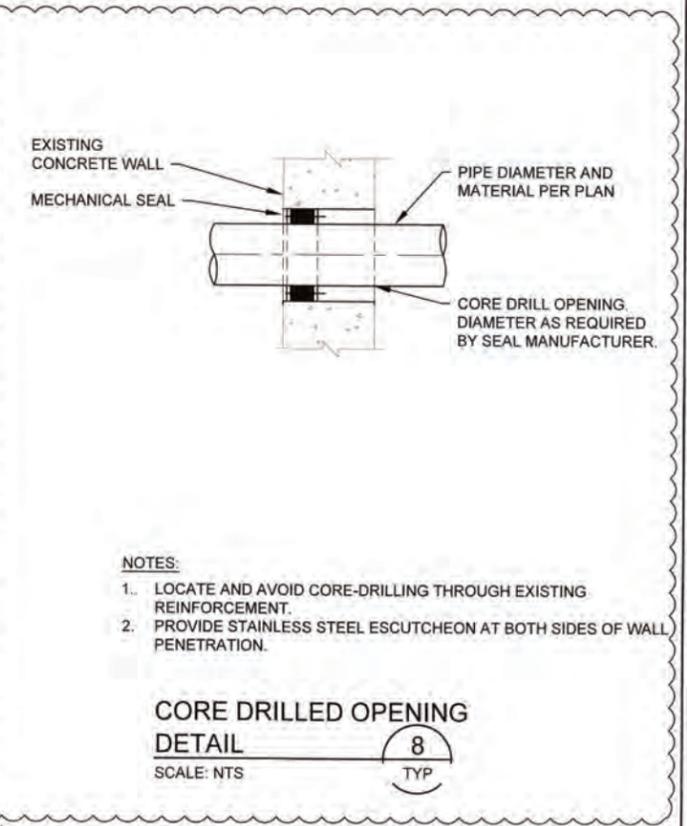


NOTES:

1. SEE SPECIFICATIONS SECTIONS 01 88 29 AND 23 23 00.
2. PROVIDE STAINLESS STEEL PROTECTOR SHIELD FOR INSULATED PIPE.
3. MAXIMUM DISTANCE BETWEEN PIPE SUPPORTS SHALL BE 5 FEET.

WALL MOUNTED PIPE SUPPORT  
DETAIL 7

SCALE: NTS



NOTES:

1. LOCATE AND AVOID CORE-DRILLING THROUGH EXISTING REINFORCEMENT.
2. PROVIDE STAINLESS STEEL ESCUTCHEON AT BOTH SIDES OF WALL PENETRATION.

CORE DRILLED OPENING  
DETAIL 8

SCALE: NTS

C:\CDM\TEXT\IBRAHIMSY\DO312574\E10805\_H06.DWG 10/14/2021 8:07 PM IBRAHIM, SAID Y.

NO.	DATE	DESCRIPTION	APPD.
1	10/14/21	ADDENDUM 3	SYI
REVISION			

DESIGNED BY	DATE APPD
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

XREF(S) USED:	
ROTATION ANGLE:	####
CONSTRUCTED BY	
PROJECT COMPLETED	
MAP CORRECTED BY	CHECKED BY
FINAL MAP DATA	
DRAWING NAME	E10805_H06.dwg

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**  
**CDM Smith**  
1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel (503) 232-1600



CBWTP HEADWORKS  
SCREENING IMPROVEMENTS  
HVAC DETAILS

1/4 SECTION  
JOB NO. E10805  
SHEET NO. H06  
X OF X

AIR CONDITIONING UNIT SCHEDULE - INDOOR UNIT																			
TAG	AREA SERVED	SUPPLY FAN		COOLING PERFORMANCE										ELECTRICAL		BASED ON		MAXIMUM OPERATING WEIGHT (lbs)	NOTES
		CFM	ESP (IN WC)	TYPE	SENSIBLE MBH	TOTAL MBH	EAT (DB/WB) °F	LAT (DB/WB) °F	REFRIGERANT	MAX FACE VELOCITY (FT/MIN)	MAX APD (IN WC)	MIN ROWS	MAX FPI	FLA	VOLT/PHASE	MANUFACTURER	MODEL		
ACU-1	UPPER LEVEL ELECTRICAL ROOM	1,750	0.25	DX	57.5	57.5	86/65	55/53	R-410A	500	0.5	4	14	3.2	460/3	LIEBERT	MINI MATE MT-060	500	ALL
ACU-2	UPPER LEVEL ELECTRICAL ROOM	1,750	0.25	DX	57.5	57.5	86/65	55/53	R-410A	500	0.5	4	14	3.2	460/3	LIEBERT	MINI MATE MT-060	500	ALL

**NOTES:**

- BOTTOM SUPPLY UNIT.
- PROVIDE WITH FILTER BOX WITH 2-INCH MERV 8 FILTERS.
- EXTERNAL STATIC PRESSURE DOES NOT INCLUDE FILTERS.
- PROVIDE WITH FILTER CLOG SWITCH, COMMON ALARM, AND REMOTE SHUTDOWN CONTACTS.
- PROVIDE WITH SINGLE POINT POWER CONNECTION.
- PROVIDE WITH LOW AMBIENT CONTROL THAT WILL ALLOW THE UNIT TO OPERATE IN LOW AMBIENT CONDITIONS DOWN TO -30 °F.
- PROVIDE WITH REMOTE AIR COOLED CONDENSING UNIT (ACCU) AND ALL RELATED CONTROLS, REFRIGERANT PIPING AND ACCESSORIES FOR COMPLETE ACU OPERATION. ACCU AND ACU SHALL BE FROM SAME MANUFACTURER. SEE ACCU-1 AND ACCU-2 SCHEDULE ON THIS DRAWING.

AIR CONDITIONING UNIT SCHEDULE - OUTDOOR UNIT														
TAG	LOCATION	AREA SERVED	COOLING PERFORMANCE					ELECTRICAL			MAXIMUM OPERATING WEIGHT (lb)	BASED ON		NOTES
			TYPE	SENSIBLE MBH	TOTAL MBH	MAX OUTSIDE AIR TEMP °F	REFRIGERANT	FLA	MCA	VOLT/PHASE		MANUFACTURER	MODEL	
ACCU-1	SEE DRAWING H02	INDOOR UNIT ACU-1	DX	56.5	56.5	95	R-410A	12.6	15	460/3	351	LIEBERT	PFD067	ALL
ACCU-2	SEE DRAWING H02	INDOOR UNIT ACU-2	DX	56.5	56.5	95	R-410A	12.6	15	460/3	351	LIEBERT	PFD067	ALL

**NOTES:**

- SEE ACU SCHEDULE NOTES ON THIS DRAWING.
- PROVIDE WITH VARIABLE CAPACITY SCROLL COMPRESSOR.
- CONDENSER COILS SHALL BE PROVIDED WITH FACTORY APPLIED EPOXY-COATING FOR EXTENDED COIL LIFE IN CORROSIVE ENVIRONMENTS. FACTORY-APPLIED E-COAT USING IMMERSION AND BAKING PROCESS SHALL PROVIDE A FLEXIBLE EPOXY-COATING TO ALL COIL SURFACES. COIL SHALL BE PROTECTED FROM SOLAR UV RAY DEGRADATION WITH A FACTORY-APPLIED UV TOPCOAT COATING.
- PROVIDE ALL REFRIGERANT PIPING AND RELATED ACCESSORIES AND CONTROL BETWEEN INDOOR ACU AND OUTDOOR ACCU.
- PROVIDE ALL FIELD CONDUITS, CONTROL AND INTERLOCK WIRING BETWEEN INDOOR ACU AND OUTDOOR ACCU.

AIR DEVICE SCHEDULE											
TAG	DESCRIPTION	FACE SIZE	NEC SIZE (INCH)	MAX FLOW (CFM)	MAX APD (IN WC)	MAX NC	MATERIAL	MANUFACTURER	MODEL	NOTES	
SD-1	SUPPLY AIR DIFFUSER, 4 WAY PATTERN	24"x24"	20"x20"	1,700	0.2	40	ALUMINUM	TITUS	MCD	ALL	
RG-1	RETURN GRILLE, 3/4" BLADE SPACING, 0° DEFLECTION.	24"x24"	22"x22"	2,500	0.1	40	STEEL	TITUS	350RS	4	

**NOTES:**

- DESIGN CFM AS NOTED ON HVAC PLANS.
- DUCT SIZE OF DIFFUSER SHALL BE EQUAL TO NECK SIZE, UNLESS NOTED OTHERWISE.
- PROVIDE WITH OPPOSED BLADE VOLUME CONTROL DAMPER.
- STANDARD WHITE FINISH

C:\COMEXT\IBRAHIM\0312574\E10805\_H07.DWG 10/14/2021 8:04 PM IBRAHIM, SAID Y.

NO.	DATE	DESCRIPTION	APPROVED
1	10/14/21	ADDENDUM 3	SYI
		REVISION	

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800



REGISTERED PROFESSIONAL  
ENGINEER  
96814PE  
SAID Y. IBRAHIM  
OREGON  
JAN 13, 2021  
SAID Y. IBRAHIM  
EXPIRES: JUN 30, 2023

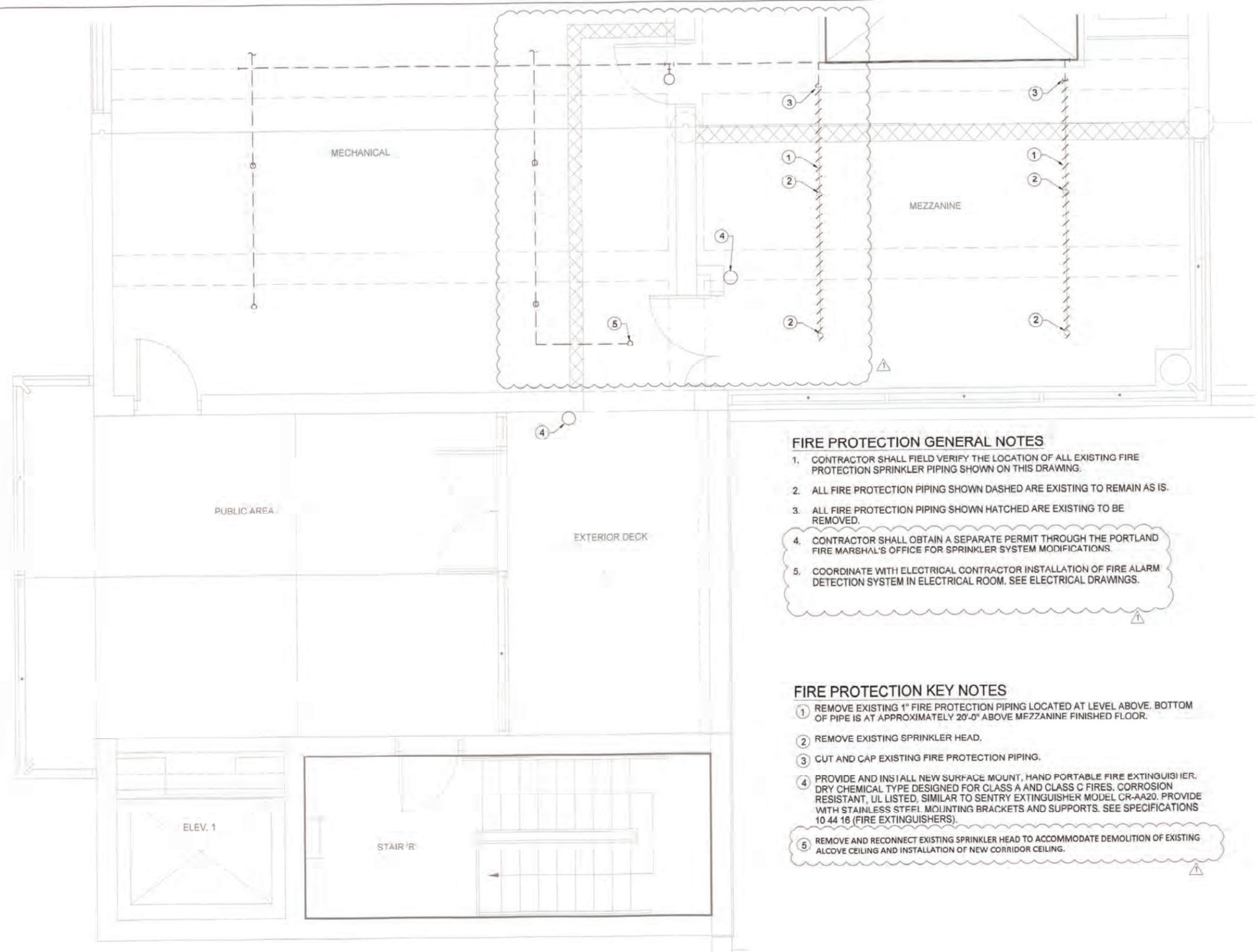
**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

HVAC SCHEDULES

JOB NO. E10805
SHEET NO. H07
X OF X

1/4 SECTION

G:\CDM\EXT\IBRAHIMSY\03-2590\E10805\_F01.DWG 10/29/2021 1:24 PM IBRAHIM, SAID Y.



**FIRE PROTECTION GENERAL NOTES**

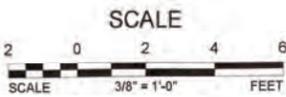
1. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING FIRE PROTECTION SPRINKLER PIPING SHOWN ON THIS DRAWING.
2. ALL FIRE PROTECTION PIPING SHOWN DASHED ARE EXISTING TO REMAIN AS IS.
3. ALL FIRE PROTECTION PIPING SHOWN HATCHED ARE EXISTING TO BE REMOVED.
4. CONTRACTOR SHALL OBTAIN A SEPARATE PERMIT THROUGH THE PORTLAND FIRE MARSHAL'S OFFICE FOR SPRINKLER SYSTEM MODIFICATIONS.
5. COORDINATE WITH ELECTRICAL CONTRACTOR INSTALLATION OF FIRE ALARM DETECTION SYSTEM IN ELECTRICAL ROOM. SEE ELECTRICAL DRAWINGS.

**FIRE PROTECTION KEY NOTES**

- ① REMOVE EXISTING 1" FIRE PROTECTION PIPING LOCATED AT LEVEL ABOVE. BOTTOM OF PIPE IS AT APPROXIMATELY 20'-0" ABOVE MEZZANINE FINISHED FLOOR.
- ② REMOVE EXISTING SPRINKLER HEAD.
- ③ CUT AND CAP EXISTING FIRE PROTECTION PIPING.
- ④ PROVIDE AND INSTALL NEW SURFACE MOUNT, HAND PORTABLE FIRE EXTINGUISHER, DRY CHEMICAL TYPE DESIGNED FOR CLASS A AND CLASS C FIRES, CORROSION RESISTANT, UL LISTED, SIMILAR TO SENTRY EXTINGUISHER MODEL CR-AA20. PROVIDE WITH STAINLESS STEEL MOUNTING BRACKETS AND SUPPORTS. SEE SPECIFICATIONS 10 44 16 (FIRE EXTINGUISHERS).
- ⑤ REMOVE AND RECONNECT EXISTING SPRINKLER HEAD TO ACCOMMODATE DEMOLITION OF EXISTING ALCOVE CEILING AND INSTALLATION OF NEW CORRIDOR CEILING.

**FIRE PROTECTION PLAN**

SCALE: 3/8" = 1'-0"



NO.	DATE	DESCRIPTION	APPRO.
1	10/14/21	ADDENDUM 3	SYI
		REVISION	

DESIGNED BY	DATE APPD.
DRAWN BY	PROGRAM MGR.
CHECKED BY	CONST. MGR.
DESIGN MGR.	
XREF(S) USED:	
NOTATION ANGLE:	
CONSTRUCTED BY:	
PROJECT COMPLETED:	
MAP CORRECTED BY:	CHECKED BY:
DRAWING NAME: FINAL MAP DATA	
E10805_F01.dwg	

CITY OF PORTLAND  
**ENVIRONMENTAL SERVICES**

**CDM Smith**

1220 SW Morrison St, Suite 200  
Portland, OR 97205  
Tel: (503) 232-1800



**CBWTP HEADWORKS  
SCREENING IMPROVEMENTS**

UPPER LEVEL ELECTRICAL ROOM  
(ULER) FIRE PROTECTION PLAN

1/4 SECTION
JOB NO. E10805
SHEET NO. F01
X OF X

# CWTP Headworks Screenings Improvements

## Project E10805

### Site Visit

CBWTP 9:00 AM

If your name is not on the list, please add the information at the bottom of the list. Otherwise, INITIAL by the box beside your name and make corrections if necessary.

Initial by name	NAME	ORG./ROLE	PHONE NO.	EMAIL
	Kellie Wing	Resolute / <sup>Demo</sup> PM	971-337-7252	Kellie.wing@resoluteconst.com
	Donnie Pate	Slayden/Prime	541-604-6763	Slayden.bids@MWHConstructors.com
	Miranda Mawerly	✓ ✓	6196474244	✓ ✓
	Jake Dwyck	Omega Morgan	503-260-5442	jake.dwyck@omegamorgan.com
	Nicholas Arruda	Omega Morgan	503-341-0421	Nicholas.Arruda@omegamorgan.com
	Grayson Hart	omegamorgan	503-349-3756	Grayson.Hart@omegamorgan.com
	Kori Keller	Christensen Electric	503-975-0291	Kori.Keller@christensen.com
	Eric Johnson	Kiewit	503-387-1773	eric.johnson@kiewit.com
	Kevin Beck	Kiewit	925-348-6619	Kevin.beck@kiewit.com
	Mark Bertolas	Kiewit / Prime	408 910 5437	mark.bertolas@kiewit.com
	Phil Davis	Kiewit	916 257-5248	philip.davis@kiewit.com

**CWTP Headworks Screenings Improvements  
Project E10805**

**Site Visit  
CBWTP 1:00 PM**

If your name is not on the list, please add the information at the bottom of the list. Otherwise, INITIAL by the box beside your name and make corrections if necessary.

Initial by name	NAME	ORG./ROLE	PHONE NO.	EMAIL
	PAT RANGLES	PROF ENGR	425-316-6999	BIDS@MCCLUREANDSONS.COM
	Vasa Velazquez	Prog Manager	971 888 1758	Vasa@Mojinas.co
	Tom Jones	OPERATOR	503-453 2086	
	Kenny Maly	operator	503 427 3470	
	Brad Duncan	Stelker J	360-836-2583	brdc@stelkerj.com
	Ray Hurst	Integrity Machinery	971-408-6650	rayh@integrity-mm.com
	Joe Davis	Imm	971-645-7163	joed@integrity-mm.com
	Miranda McNeilly	Estimator	619 647 2774	slayden.bids@mwhconstructors.com