

**PRC ENGINEERING PACKAGE**

**EP No: ECR-19-001330 Rev 00**

**EP Title: RO-RO Liner Box - Update Sketch**

Document Action Only  Physical Modification

**1.0 PACKAGE DESCRIPTION**

**RELEASE**  Radiological Record

**Request and Justification:**

This is a Work Package Engineering Package (WPEP) and follows WPEP process described in PRC-PRO-EN-20050 Appendix F.  
 This specific item functions under the WPEP process because:  
 -It is not a SSC  
 -It is evaluated by Engineering to confirm it does not affect a SC, SS or DID SSC  
 ERDF uses the RO/RO Liner Box shown on Columbia Energy and Environmental Services (CEES) DWG. NO CEES-12-351-M-017, Sheets 1 through 4 to ship and macroencapsulate waste debris. The RO/RO Liner Boxes are fabricated offsite and delivered to ERDF, ERDF has then been constructing offsets using expanded metal grating to install in the RO/RO Liner Box to provide a minimum 2 inch thick separation between the sides of the RO/RO Liner Box and the waste. After the waste debris is loaded in the RO/RO Liner Box, the 2-inch separation is filled with grout to create a 2-inch thick grout encapsulation around the waste debris. ERDF desires the option to have the expanded metal grating offsets be installed by the RO/RO Liner Box fabricator.



**Work Package No/Project No:**

N/A

**Area:**  
N/A

**Facility:**  
ERDF

**Building:**  
N/A

**System ID:**  
N/A

Release

Work Complete  Field Work Complete

Design Authority

**Change Description and Scope:**

Develop a design for expanded metal grating offsets that can be installed inside of the RO/RO Liner Box specified on DWG. NO. CEES-12-351-M-017, Sheets 1 through 4 to provide a minimum 2-inch thick separation between the grating and the floor and walls of the RO/RO Liner Box.

**2.0 PACKAGE INDEX**

| Action | Document No. | Rev. No. | E/S/R | Section Description                    | Page No. | Release to Work? |
|--------|--------------|----------|-------|--|----------|------------------|
| I      | SK-01        | 0        | E     | RO/RO Liner Box Grating Install Sketch | 4-5      | Yes              |

bb/lm per email 10/3/19

**3.0 DESIGN REQUIREMENTS**

Expanded metal grating shall match the grating previously used ERDF to fabricated offsets for the RO/RO Liner Box:

- Grating shall provide 2-inch separation between RO/RO Liner box floor and walls (front, back, and side walls).
- Grating on the RO/RO walls shall be extend from the grating on the floor of the RO/RO Liner Box up to 6-inches from the top of the RO/RO Liner box walls.
- Grating shall be 4.0LB Expanded Metal Grate-X grating - Pacific Steel part No. GE448, GE4510 or Equivalent
- Provide a drain plug located on the back end of the RO/RO Liner Box that will drain liquid out of the box after a 6-inch thick grout floor has been poured.
- The structural components of the RO/RO Box Liner shall not be removed or replaced.

**4.0 ACCEPTANCE CRITERIA and METHODS**

| Acceptance Criteria  | Acceptance Method   |
|--|---|
| Design Verification  | <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Testing |
| The offset between the expanded metal grating and the RO/RO Liner Box walls and floor shall be 2-inches $\hat{A}\pm 0.25$ inches | <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Testing |
| Drain Plug is installed on the back end of the can and is located with $\hat{A}\pm 0.5$ inches                                   | <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Testing |
| No structural components of the RO/RO Box Liner have been removed or replaced.   | <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Testing |
| The grating does not extend within the 6 inches of the top of the wall, $\hat{A}\pm 1.0$ inches.                                 | <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Testing |

### 5.0 OTHER AFFECTED DOCUMENTS

| Document Type      | Document No.                           | Rev. No. | Owning Organization | Technical Authority |
|--------------------|--|----------|---------------------|---------------------|
| Supplier Submittal | CEES-12-351-M-017, Sheets 1 through 4. | 1        | ERDF                | W. A. Borlaug       |

### 6.0 DESIGN VERIFICATION

Verification by:  Peer Review  Formal Design Review  Alternate Calculations  Qualification Testing

#### Design Verification Checklist:

- a. Are the Functional Requirements and Design Criteria appropriately selected for the modification?  Yes  No  NA
- b. Does the design meet the specified Functional Requirements and Design Criteria?  Yes  No  NA
- c. Were the design inputs correctly incorporated into the design?  Yes  No  NA
- d. Is the design output reasonable compared to the design inputs?  Yes  No  NA
- e. Have suitable materials, parts, and processes been specified?  Yes  No  NA
- f. Have suitable acceptance, inspection, and operability been adequately addressed in the change?  Yes  No  NA
- g. Have constructability, maintenance, and operability been adequately addressed in the design?  Yes  No  NA
- h. Are all affected design documents identified and appropriately changed?  Yes  No  NA

Additional Design Verification Documents Prepared?  Yes  No

**NOTE:** Identify additional Design Verification Documentation in Section 2.0 Package Index.

A review of the design has been performed. The selected Functional Requirements and Design Criteria meet the stated Engineering Request. Design Verification performed by the method(s) identified has confirmed that the design documented by this FMP is adequate and meets the stated Functional Requirements and Design Criteria.

H0825858 - TIM E WINTLE 9/26/2019 10:56:14 AM

**Design Verifier:** Print Name Signature Date

### 7.0 REVIEWS

USQ:  USQ  GCX No:  Not Required

H3932535 - BILL A BORLAUG 9/26/2019 11:45:09 AM

**Reviewer** Print Name Signature Date

Environmental:  Screened Ref: CERCLA  Not Required

H2794509 - BARRY L LAWRENCE 9/26/2019 2:26:22 PM

|                                       |
|---------------------------------------|
| <b>8.0 APPROVALS and DISTRIBUTION</b> |
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| <b>Approvals</b> |
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|   |                                  |                       |
|---|----------------------------------|-----------------------|
| <del>H4608741 - HANK B MCCORMICK</del> <sup>WAB</sup> <sub>10/2/19</sub><br>ECR Author: Print Name <b>H3932535 W.A. BORLAUG</b> | <i>W.A. Borlaug</i><br>Signature | Date <b>10/2/2019</b> |
|---|----------------------------------|-----------------------|

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| H3932535 - BILL A BORLAUG | 9/26/2019 2:41:47 PM |  |
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| <b>Design Authority:</b> Print Name | Signature | Date |
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| <b>Engineering Manager:</b> Print Name | Signature | Date |
|--|-----------|------|

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| <b>Title:</b> Print Name N/A | Signature | Date |
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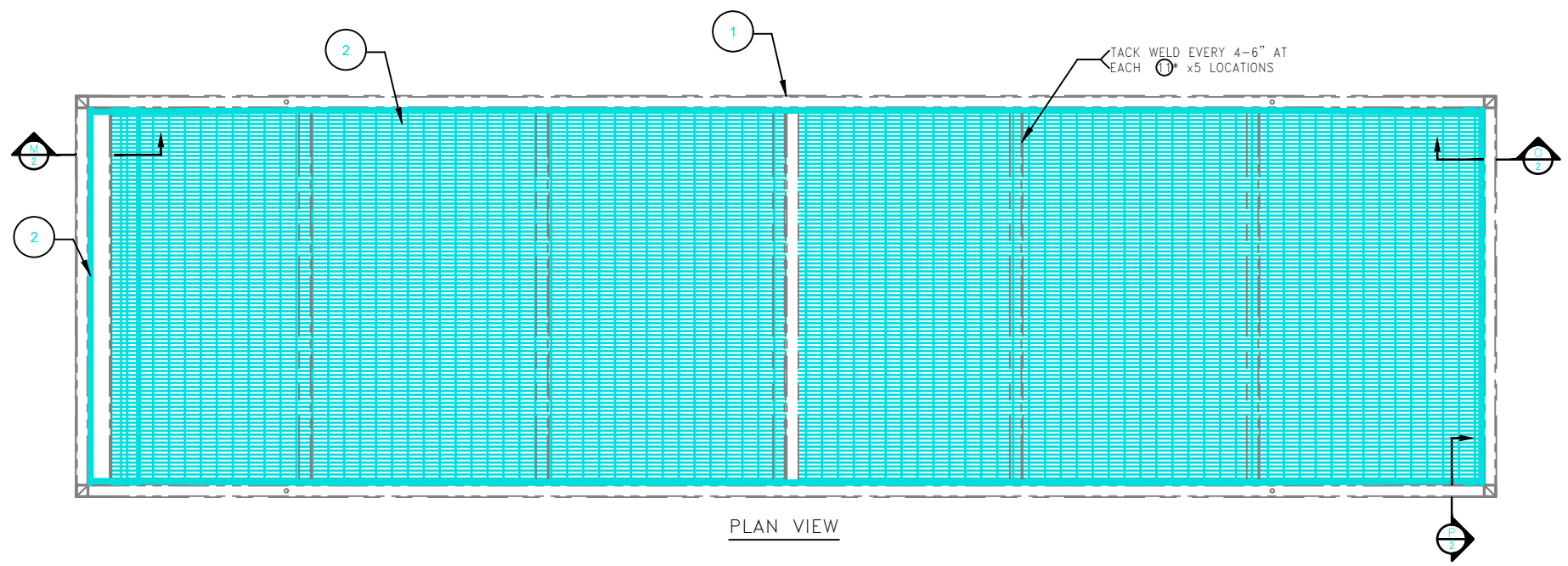
|                     |
|---------------------|
| <b>Distribution</b> |
|---------------------|

| HID      | Name           |
|----------|----------------|
| H4608741 | Hank McCormick |
| H3932535 | Bill Borlaug   |
| H0825858 | Tim Wintle     |

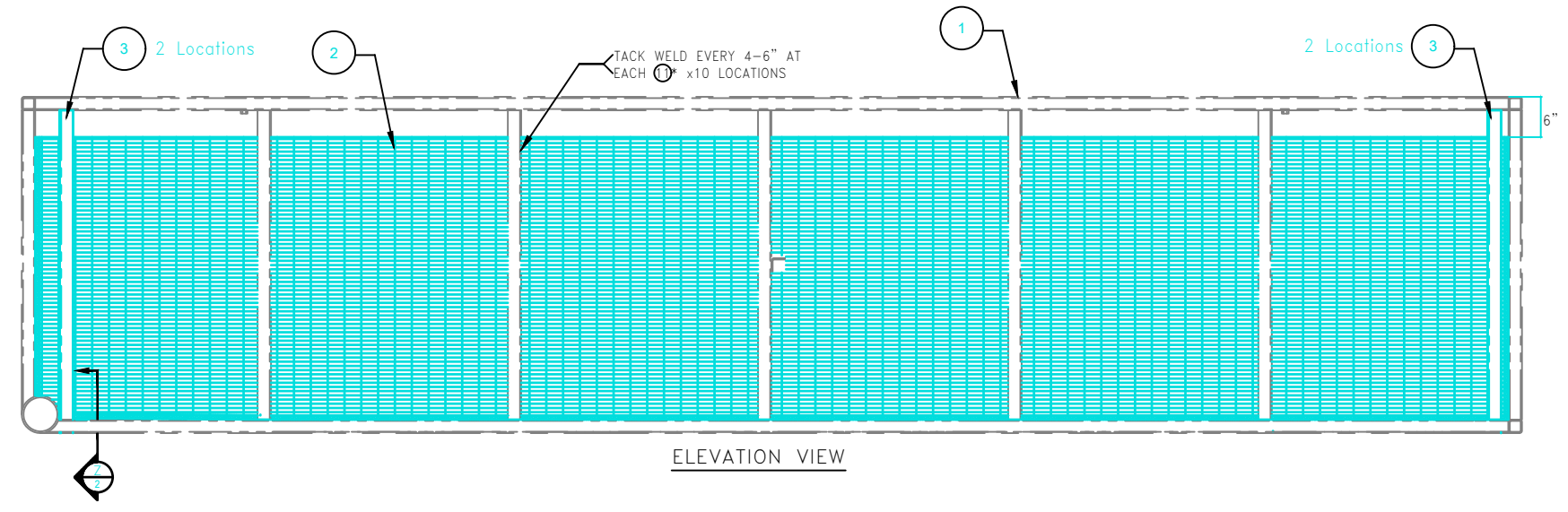
| PARTS/MATERIAL LIST |                  |   |               |     |          |
|---------------------|------------------|---|---------------|-----|----------|
| QTY REQD            | PART/DASH NUMBER | NOMENCLATURE/DESCRIPTION                            | MANUFACTURE   | SHT | ITEM NO. |
| -010                | -010             | RO/RO Liner Extension Sketch-01                     |               | 1   |          |
| -                   | -                | RO/RO Liner BOX _ DWG# CEES-12-351-M-017 Sheets 1-4 | N/A           |     | 1        |
| -                   | GE448, GE4510    | 4.0 LB Expanded Metal Grating - Grate-X             | Pacific Steel |     | 2        |
| -                   | -                | Angle 2" x 2" x 3/16" THK - ASTM A36                | N/A           |     | 3        |
| 1                   | 12555K92         | 4in Threaded Steel Adapter - Weld In                | McMASTER-CARR |     | 4        |
| 1                   | 4513K435         | 4in Pipe Plug - Solid                               | McMASTER-CARR |     | 5        |

**NOTES:**

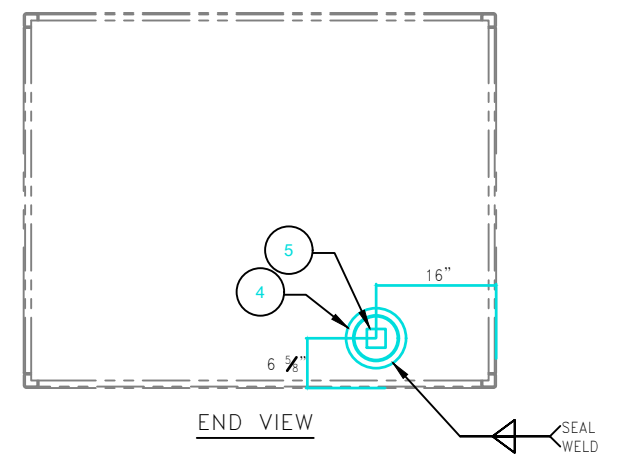
1. THE GRATING IS AN ADDITION TO THE RO/RO LINER BOX DRAWING CEES-12-351-M-017 SHEETS 1-4, AND THE CORRESPONDING SUBMITTAL NUMBER S037528A00-05-004A-034A
2. THE EXTERIOR 12 GAUGE PLATE IS NOT SHOWN COMPLETELY ON THIS SKETCH FOR CLARITY
3. REBAR<sup>®</sup> MUST BE REMOVED AS IT WILL INHIBIT THE PLACEMENT OF THE FLOOR GRATING
4. GRATING SPLICES MUST BE JOINED WITH 3/16" X 2" FLAT BAR AND TACK WELDED AS NEEDED TO KEEP FROM SEPARATING
5. INSTALL A 4" DRAIN PLUG AS LOCATED IN THE "END VIEW" OF THE RO/RO LINER BOX THROUGH THE 12 GAUGE PLATE
6. ANY ITEM NUMBERS CONTAINING ⊗ REFERENCING THE PARTS LIST ON DWG CEES-12-351-M-017 SHEET-1 PARTS LIST



PLAN VIEW



ELEVATION VIEW



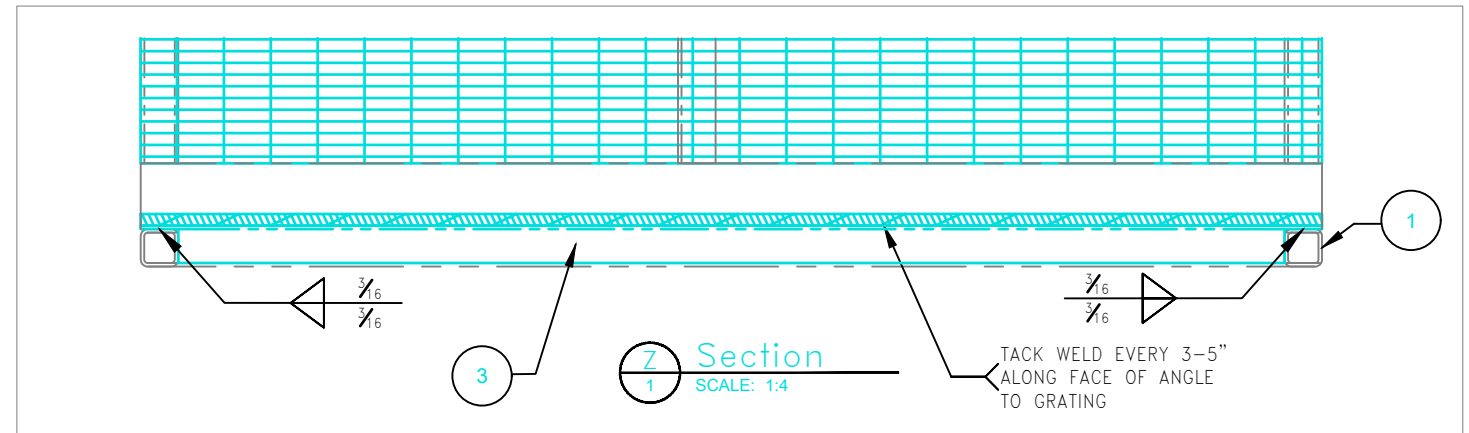
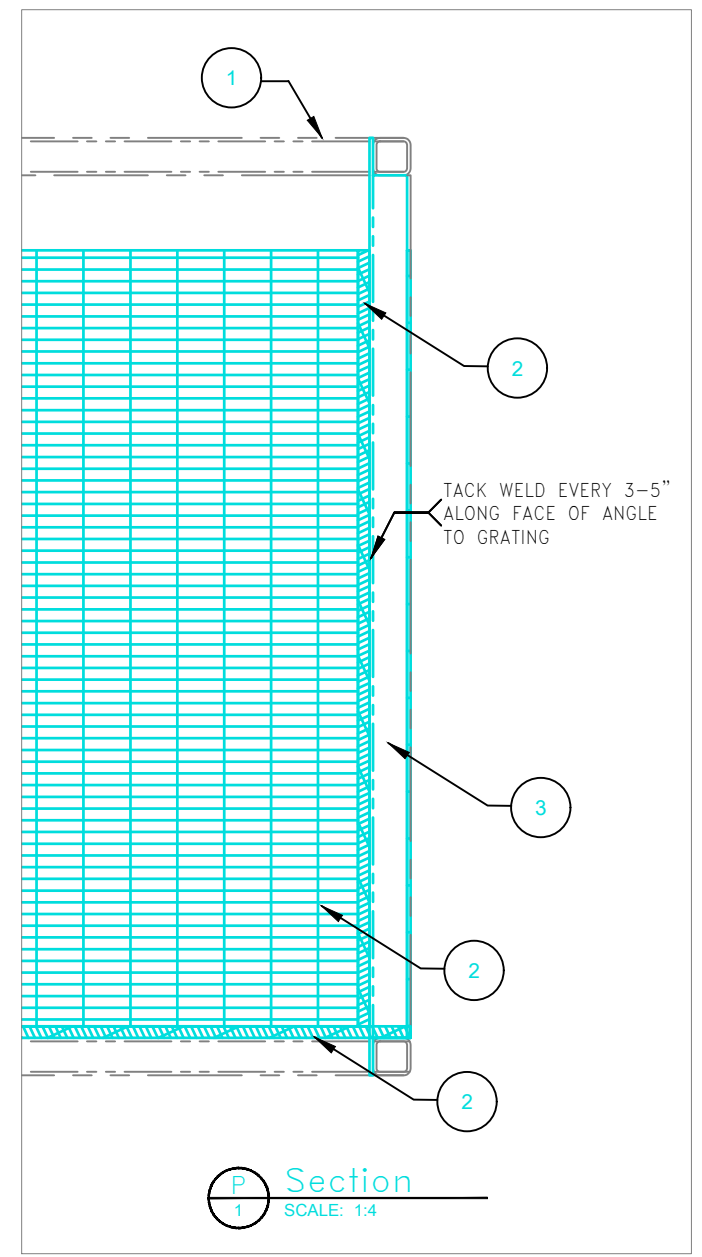
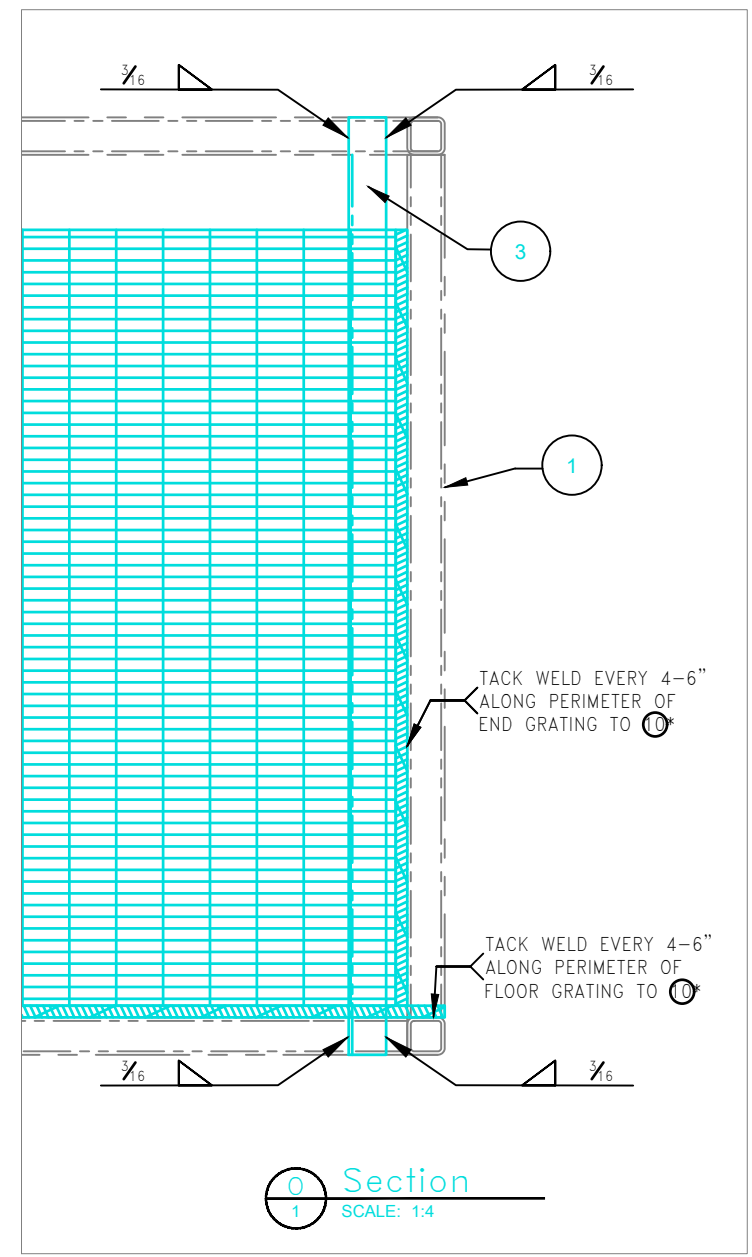
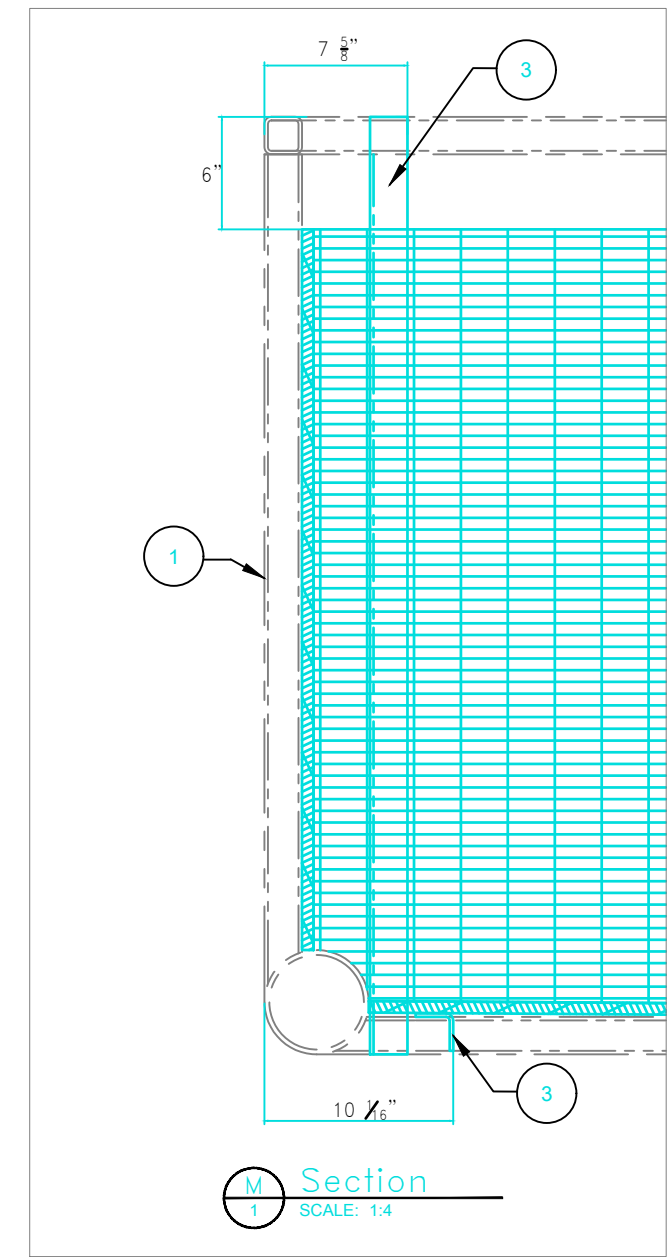
END VIEW

| DWG NUMBER | TITLE                     | REF NUMBER     | TITLE      |
|------------|---------------------------|----------------|------------|
|            | DRAWING TRACEABILITY LIST |                | REFERENCES |
|            |                           | NEXT USED ON ? |            |

|                                  |  |  |
|----------------------------------|--|--|
| BLDG. NO. ?                      | CAUTION<br>NOT COMPLETE WITHOUT CURRENT CHANGE DOCUMENTS FROM DATABASE | ATTENTION<br>DESTROY THIS DOCUMENT BY SHREDDING<br>MAY CONTAIN SENSITIVE INFORMATION |
| DRAWN BY<br>Hank McCormick       | DATE<br>07/20/19   | U.S. DEPARTMENT OF ENERGY<br>Richland Operations Office                              |
| DISCIPLINE ENGINEER              |  | RO/RO Liner Box<br>Grating Install Sketch  |
| ENGINEERING CHECKER              |  |  |
| REVISION AUTHORITY<br>Tim Wintle | DATE<br>01/03/2019   | SIZE<br>F  |
|                                  | CHGNO.   | DWG NUMBER<br>SK-01  |
|                                  | SCALE<br>1:10  | SHEET<br>1   |
|                                  |  | REV<br>0   |

Sh 1

ECR-19-001330



ECR-19-001330 SK-01 Sh 2

| DWG NUMBER | TITLE                     | REF NUMBER     | TITLE      | DESCRIPTION |
|------------|---------------------------|----------------|------------|-------------|
|            | DRAWING TRACEABILITY LIST |                | REFERENCES | REVISIONS   |
|            |                           | NEXT USED ON ? |            |             |

|   |                  |  |                                |
|---|------------------|--|--------------------------------|
| <b>CAUTION</b><br>NOT COMPLETE WITHOUT CURRENT CHANGE DOCUMENTS FROM DATABASE |                  | <b>ATTENTION</b><br>DESTROY THIS DOCUMENT BY SHREDDING MAY CONTAIN SENSITIVE INFORMATION |                                |
| DRAWN BY<br><b>Hank McCormick</b>   | DATE<br>07/20/19 | <b>U.S. DEPARTMENT OF ENERGY</b><br>Richland Operations Office                           |                                |
| DISCIPLINE ENGINEER   |                  | <b>RO/RO Liner Box</b><br><b>Grating Install Sketch</b>                                  |                                |
| DESIGN AUTHORITY<br>Tim Wittle  | DATE<br>07/20/19 | SIZE<br>F  | DRAWING NUMBER<br><b>SK-01</b> |
| SHEET<br>2  | REV<br>0         | SCALE<br>1:4   | PLOTID<br>1                    |