

**DRAFT**

DOCUMENT RELEASE AND CHANGE FORM			Release Stamp	
Prepared For the U.S. Department of Energy, Assistant Secretary for Environmental Management By Washington River Protection Solutions, LLC, 1800, Richland, WA 99352 Contractor For U.S. Department of Energy, Office of River Protection, under Contract DE-AC27-08RV14800 TRADEMARK DISCLAIMER: Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or any agency thereof or its contractors or subcontractors. Printed in the United States of America.				
1. <b>Doc No:</b> RPP-SPEC-61352 <b>Rev.</b> 01				
2. <b>Title:</b> Procurement Specification for Concrete Disposal Box				
3. <b>Project Number:</b> <input checked="" type="checkbox"/> N/A		4. <b>Design Verification Required:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
5. <b>USQ Number:</b> <input type="checkbox"/> N/A N/A-3		6. <b>PrHA Number</b> <b>Rev.</b> <input type="checkbox"/> N/A		<b>Clearance Review Restriction Type:</b> public
<b>7. Approvals</b>				
<b>Title</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>	
Structural SME	McShane, Michael P			
Design Authority	Kennedy, Douglas J			
Checker	Riel, Eric M			
Originator	Kennedy, Douglas J			
Radiological Control	Franz, James A			
Responsible Engineering Manager	Smith, Gregory E			
Welding Engineer	Berkey, James			
<b>8. Description of Change and Justification</b>				
Updated Spec for Mono-cast design.				
<b>9. TBDs or Holds</b> <input checked="" type="checkbox"/> N/A				
<b>10. Related Structures, Systems, and Components</b>				
a. <b>Related Building/Facilities</b> <input checked="" type="checkbox"/> N/A		b. <b>Related Systems</b> <input checked="" type="checkbox"/> N/A		c. <b>Related Equipment ID Nos. (EIN)</b> <input checked="" type="checkbox"/> N/A
<b>11. Impacted Documents – Engineering</b> <input checked="" type="checkbox"/> N/A				
<b>Document Number</b>	<b>Rev.</b>	<b>Title</b>		
<b>12. Impacted Documents (Outside SPF):</b> N/A				
<b>13. Related Documents</b> <input type="checkbox"/> N/A				
<b>Document Number</b>	<b>Rev.</b>	<b>Title</b>		
RPP-SPEC-61069	00	Procurement Specification for Concrete Disposal Box		
<b>14. Distribution</b>				
<b>Name</b>		<b>Organization</b>		
Engeman, Jason K		TANK FARM PROJECTS ENGINEERING		
Kennedy, Douglas J		TANK FARM PROJECTS ENGINEERING		
Palmrose, Steven V		WASTE STORAGE & TECH SUPPORT		

# DRAFT

## PROCUREMENT SPECIFICATION FOR CONCRETE DISPOSAL BOX

### Prepared by

D. Kennedy  
S. Palmrose  
Washington River Protection Solutions, LLC

Date Published  
November 2019



Prepared for the U.S. Department of Energy  
Office of River Protection

Contract No. DE-AC27-08RV14800

# DRAFT

## TABLE OF CONTENTS

1.0	SCOPE .....	1
2.0	APPLICABLE DOCUMENTS .....	1
2.1	Non-Government Documents .....	1
2.2	Non-Code of Record Documents .....	2
3.0	TECHNICAL REQUIREMENTS .....	2
3.1	Item Description .....	2
3.1.1	Item Diagrams .....	3
3.1.2	Interface Definition .....	3
3.2	Characteristics .....	4
3.2.1	Functional Characteristics .....	4
3.2.2	Physical Characteristics .....	4
3.2.3	Reliability .....	5
3.2.4	Maintainability .....	5
3.2.5	Transportability and Storage .....	5
3.3	Design and Fabrication .....	5
3.3.1	Design Features .....	5
3.3.2	Materials .....	6
3.3.3	Inserts/Embeds .....	7
3.3.4	Hoisting and Rigging .....	7
3.3.5	Drawings and Material Lists .....	8
3.3.6	Fabrication/Assembly Processes .....	8
3.3.7	Cleaning .....	9
3.3.8	Special Tools .....	9
3.3.9	Identification and Marking .....	10
4.0	QUALITY ASSURANCE REQUIREMENTS .....	10
4.1	Quality Assurance Program .....	10
4.2	Qualifications .....	10
4.2.1	Welding Personnel and Procedures .....	10
4.2.2	Welding Inspectors and Procedures .....	10
4.2.3	Fabricator Qualifications .....	11
4.3	Inspections and Tests .....	11
4.3.1	Weld Inspection and Examination .....	11
5.0	DOCUMENT SUBMITTAL .....	11
5.1	Approval of Submittals .....	13
5.2	List of Submittals .....	13
6.0	PREPARATION FOR DELIVERY .....	14
6.1	Preservation and Packaging .....	14
6.2	Marking .....	14
6.3	Shipping and Handling .....	14

# DRAFT

## LIST OF TERMS

### Abbreviations and Acronyms

ASCE	American Society of Civil Engineers
ASNT	American Society for Nondestructive Testing
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
DMCS	Document Management Control System
DOE	Department of Energy
FTP	File Transfer Protocol
IBC	International Building Code
LLCE	Long Length Contaminated Equipment
MSR	Master Submittal Register
SSC	System, Structure, and Component
WRPS	Washington River Protection Solutions

### Units

°	Degree
°F	Degrees Fahrenheit
ft	Foot
h	Hour
%	Percent
lb	Pound

# DRAFT

RPP-SPEC-61352 Rev.01  
1.0 SCOPE

This procurement specification provides the requirements for a precast concrete disposal box used to shield Waste Transfer Pumps for disposal. Although primarily intended for transfer pump disposal, the box may also be used for other contaminated equipment. Work includes the design, fabrication, assembly, inspection, testing, documentation, packaging, and shipping of the assembly. Work does not include the site placement and use of the equipment.

## 2.0 APPLICABLE DOCUMENTS

### 2.1 NON-GOVERNMENT DOCUMENTS

The following documents form a part of the basis of design to the extent specified in the applicable sections of this document and establish the Code of Record. In the event of a conflict between documents referenced herein and the requirements of this specification, the requirements of this specification shall take precedence. Table 2-1 contains the Non-Government portion of the code of record.

**Table 2-1. Non-Government Code of Record Documents.**

Document Number	Title
<b>Industry Consensus Codes and Standards</b>	
ASCE 7-10	<i>Minimum Design Loads for Buildings and Other Structures</i> , American Society of Civil Engineers (ASCE), Reston, Virginia.
ASCE 37-14	<i>Design Loads on Structures During Construction</i> , American Society of Civil Engineers (ASCE), Reston, Virginia.
International Building Code <sup>®1</sup> -2015	<i>International Building Code<sup>®</sup> (IBC<sup>®1</sup>)</i> , International Code Council <sup>®1</sup> Inc., Washington, DC.
ACI 318-2014	<i>Building Code Requirements for Structural Concrete</i> , American Concrete Institute, Farmington Hills, MI.
ACI ITG-7-2009	<i>Specification for Tolerances for Precast Concrete</i> , American Concrete Institute, Farmington Hills, MI.
ASNT SNT-TC-1A-2016	<i>Personnel Qualification and Certification in Nondestructive Testing</i> , and ASNT-CP-105, <i>Standard Topical Outlines for Qualification of Nondestructive Testing Personnel</i> , American Society for Nondestructive Testing Inc., Columbus, OH.
ASTM BTH-1-2014	<i>Design of Below-the-Hook Lifting Devices</i> , American Society of Mechanical Engineers, New York, NY.
ASTM C1077-2017	<i>Standard Practice for Agencies Testing Concrete and Concrete Aggregates for use in Construction and Criteria for Testing Agency Evaluation</i> , ASTM International, West Conshohocken, PA.
ASTM E329-2018	<i>Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection</i> , ASTM International, West Conshohocken, PA.
AWS D1.1-2016	<i>Structural Welding Code – Steel</i> , American Weld Society, Miami, FL.
AWS D1.4-2011	<i>Structural Welding Code – Reinforcing Steel</i> , American Weld Society, Miami, FL.

<sup>1</sup> “International Code Council,” “IBC,” and the “International Building Code” are trademarks of the International Code Council, Inc.

# DRAFT

RPP-SPEC-61352, Rev. 0

Table 2-1. Non-Government Code of Record Documents.

Document Number	Title
PCI MNL-116-1999	<i>Manual for Quality Control for Plants and Production of Structural Precast Concrete Products</i> , Precast/Prestressed Concrete Institute, Chicago, IL.
PCI MNL-120-2010	<i>PCI Design Handbook – Precast and Pre-stressed Concrete</i> , Precast/Prestressed Concrete Institute, Chicago, IL.

Technical society and technical association specifications and standards are generally available for reference from libraries or they may be obtained directly from the Technical Society/Association.

## 2.2 NON-CODE OF RECORD DOCUMENTS

The following documents shown in Table 2-2 are utilized in or are referenced by this Specification. The following documents form a part of this Specification to the extent identified herein, but are not considered to be Code of Record documents.

**Table 2-2. Non-Government Non-Code of Record Documents. (2 Sheets)**

Document Number	Title
<b>WRPS Documents</b>	
DOE/RL-92-36 Rev. 1 Release 84	<i>Hanford Site Hoisting and Rigging Manual</i> , U.S. Department of Energy, Richland Operations Office, Richland, WA.
TFC-ENG-STD-06 Rev. D-2	“Design Loads for Tank Farm Facilities,” Washington River Protection Solutions, LLC, Richland, WA.
TFC-ENG-STD-51 Rev. A-1	“Vendor Calculation Standards,” Washington River Protection Solutions, LLC, Richland, WA.
TFC-ENG-FAC SUP-C-25 Rev. E-0	“Hoisting and Rigging,” Washington River Protection Solutions, LLC, Richland, WA.
RPP-8360 Rev. 6	“Lifting Attachment and Lifted Item Evaluation, a Hanford Tank Operating Contractor Process,” Washington River Protection Solutions, LLC, Richland, WA.
<b>Drawings (See Attachments)</b>	
SK-3629-DB, sheets 1-5	Concrete Box Conceptual Design

## 3.0 TECHNICAL REQUIREMENTS

### 3.1 ITEM DESCRIPTION

The disposal box is to be used to transport and provide radiation shielding for a piece of long length contaminated equipment (LLCE). Transfer pumps (used to pump radioactive and chemical waste) are removed from waste tanks (when no longer needed or in-operable) and staged for waste package preparation and disposal. Typically a DOT certified waste disposal box is used to transport waste packages from the point of origin to the final disposal facility. The current boxes do not have adequate shielding and/or the waste package required multiple handlings prior to final disposal. A concrete disposal box will be used to provide

# DRAFT

containment/shielding during the waste package preparation, transportation, and final disposal. The disposal box will be made up of a mono-cast box and several lids to allow LLCE to be placed within the box. The disposal box shall be structurally adequate to support the loads during rigging. The disposal box shall be open along the entire length of the box and have covers that provide shielding after pump placement.

The disposal box will be capable of being loaded onto a trailer using a single crane when empty and when loaded with the LLCE equipment. Once loaded, the box will be moved from a staging area to a restricted area for equipment loading and waste package preparation. The disposal box, LLCE and lids will be removed from the trailer (single crane pick) and placed in a waste disposal site.

The disposal box will provide continuous shielding along the length of the box when the lids are installed, minimizing radiation at the cracks between lid segments. Shielding requirements are met by minimum wall thickness of concrete as shown on drawings attached to this specification and section 3.3.1 along with additional design features.

### 3.1.1 Item Diagrams

Attachment A provides drawings for the disposal box system. Alternate design details may be provided by the supplier provided minimum interior dimensions and shielding (wall thickness) are maintained. Alternate design details are subject to approval from the BUYER prior to work. Alternate design may include but are not limited to Pre-Stress or Post Tension Concrete.

### 3.1.2 Interface Definition

The disposal box shall be designed to interface with a waste transfer pump as described herein. The transfer pumps come in a variety of configurations and are comprised of a long column assembly that is either 40, 45 or 49 feet long made from pipe couplings and 4", 5", or 6" SCH 40 steel pipe. A motor and pump discharge head are affixed to one end of the column and pump bowls to the other. The motor and discharge head adds an additional length of 50" to the column/bowl section. A vendor drawing of the pump assemblies and component weights are available upon request. Typically the pump is wrapped in multiple layers of polyethylene sleeving and rubber to contain the radioactive contamination. The heaviest transfer pump assembly is as follows:

Item	Weight	Center of Gravity (from flange)
Motor	540 lb.	30 in.
Discharge Weldment	660 lb.	9 in.
Pump Column	1370 lb.	-244 in.
<u>Bowl Assembly</u>	<u>550 lb.</u>	<u>-528 in.</u>
Total:	3120 lb.	

Additional loading will be placed in the box from packaging materials and miscellaneous items, these items should be included as an evenly distributed load of 1000 lb. along the length of the box. The disposal box shall allow for the pump column to rest on the bottom of the box and the motor/pump discharge head will be cantilevered into the motor box section. Additional cribbing

# DRAFT

may be used to crack the column for additional stability. Figure 3-1 provides a graphical representation of a typical transfer pump.

The disposal box lids may be walked on and are subject to live loading of 125 psf or 500 lb. concentrated load.



**Figure 3-1. Typical Transfer Pump**

The radioactivity levels of the transfer pump vary from one end to the other. Generally, the motor end (closest to the flange) will have the least dose and the pump bowls (furthest from the flange) will have the most dose. The column section (in between) will have moderate dose.

## 3.2 CHARACTERISTICS

### 3.2.1 Functional Characteristics

The disposal box shall be designed based on the design loads contained in TFC-ENG-STD-06 for Special Performance Category 1 (PC-1M) for temporary equipment. The following is a list of general requirements from the standard.

- Dead Loads. Dead loads shall include the weights of the transfer pump (Section 3.1.2) and equipment, including the structures own weight and RPP-8360 contingency factors.
- Live Loads. ASCE 7-10 Table 4-1: Catwalks for maintenance access
- Rigging Loads. Dynamic lifting live loads per RPP-8360.
- Load combinations, shall comply with ASCE 7. Load combinations for the concrete disposal box are: a) rigging without lids or pump/motor/shaft, b) rigging with lids and pump/motor/shaft and c) supported by the ground with pump/motor/shaft, lids in place, and live loads on lids.

### 3.2.2 Physical Characteristics

Physical characteristics are defined in Section 3.1.



# DRAFT

### 3.2.3 Reliability

The disposal box shall have a minimum design life of 5 years statically sitting outdoors unprotected, with up to 10 years preferred. Exposed steel components shall have a durable coating that can withstand 5 years of exposure to prevent corrosion.

### 3.2.4 Maintainability

The assembled disposal box must be designed to be handled multiple times, loading and unloading from a truck (approximately ten times) without damage.

### 3.2.5 Transportability and Storage

The disposal box will be designed for ease of equipment transport, installation in the field, and assembly/disassembly. The assembly shall be modular to the extent practical, and should be designed to be transported on a standard 80k lbs. rated trailer. The disposal box shall be oriented on the trailer in a manner that allows a single crane to remove it without the need for reorientation (assembly).

## 3.3 DESIGN AND FABRICATION

### 3.3.1 Design Features

Earlier versions of concrete disposal boxes have been fabricated resulting in lessons learned. The design features listed below shall be implemented into the design and final drawings.

- The main box shall be comprised of 3 sections: Hot End (furthest from pump flange), Column Section and Motor Box (Motor End, near pump flange). Minimum shielding thicknesses will vary between sections:
  - Hot End – Wall thickness (and lid) shall be 8” for the first 12’.
  - Column Section – Wall thickness (and lids) shall be 6” from Hot End to Motor Box.
  - Motor Box – Wall thickness (and lid) shall be 4”.

Embedded steel plate is acceptable if thinner concrete is used. Equivalent thicknesses can be provided.

- Gasket material shall be provided around the perimeter of the box to preclude elements from entering. These gaskets may be affixed to the box or individual lids. Gaskets are preferred between the lid sections but not required.

# DRAFT

- The box lids shall have ports that allow the box to be filled with grout at the end of its life (final resting place). These ports shall be 4" SCH. 40 steel pipe with 4" NPT threads. Each lid shall have a minimum of 1 port near an edge. The motor box lid shall have 2 ports. All of the ports shall be capped (PVC pipe cap) to block the elements during shipping and storage. Port locations shall not hinder or interfere with rigging equipment. The ports shall be flush with the bottom of the lids.
- Cover lids currently in use at Hanford utilize an overlapping design (common to industry), wherein each lid segment is designed to cover a portion of one neighboring lid segment and is itself partially covered by a neighboring segment. The lid tabs should be sized appropriately to prevent damage when removing and install lid sections. The lids shall be keyed to start installation from the hot end (furthest the pump flange) and work towards the motor end. Steel cover plates are acceptable as long as equivalent shielding is maintained.
- The box should have a support foot to allow box placement without cribbing (assume cribbing required during transport).

### 3.3.2 Materials

Materials of construction (concrete materials and mixtures, reinforcing bars, cast in anchors, inserts, plates, etc.) shall be selected by the Seller based on acceptable performance when subjected to the design requirements in Sections 3.2. The concrete shall have a minimum density of 150 lb/ft<sup>3</sup> (+/- 5 lb/ft<sup>3</sup>). The following information shall be provided for approval prior to fabrication.

- Product Data: For each type of product indicated.
- Design Mixtures: For each precast concrete mixture. Include compressive strength and water-absorption tests.
- Fabrication Drawings: Include member locations, plans, elevations, dimensions, shapes and sections, openings, support conditions, and size, location, and types of reinforcement, including special reinforcement. Detail fabrication and installation of precast structural concrete units.
  - Detail loose and cast-in hardware, lifting and erection inserts, connections, etc.
  - Indicate locations, tolerances, and details of anchorage devices to be embedded in or attached to structure or other construction.
- Design Calculations, stamped by an engineer registered in the state of Washington.
  - Calculations shall comply with the requirements found in TFC-ENG-STD-51, *Vendor Calculation Standard*. Compliance to sections of the standard that cannot be satisfied by the Seller shall be stated to the Buyer.

# DRAFT

Material shall comply with the following:

- All reinforcing steel must be traceable to manufacturer approved Certified Material Test Reports (CMTR's).
- Reinforcing Bars: ASTM A 615, Grade 60 and/or ASTM A706 Grade 60, deformed.

### **3.3.3 Inserts/Embeds**

Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements.

Embedded items shall be positioned at locations specified in design documents. Inserts, plates, weldments, lifting devices and other items to be embedded in precast shall be held rigidly in place so that they do not move significantly during casting.

Hoist rings (if used) shall be fully seated when installed (not bottomed out). Finished surface of concrete should be smooth and perpendicular to the ferrule insert to allow proper hoist ring installation.

### **3.3.4 Hoisting and Rigging**

Lifting points shall be designed by Professional Engineer licensed to practice in the State of Washington who is qualified to perform lifting analysis.

Hoisting and rigging device or equipment designs, tests, and reports shall be submitted to the Tank Operations Contractor for safety evaluation and approval during design review. TFC-ENG-FAC SUP-C-25, Hoisting and Rigging, and the provisions of RPP-8360, Lifting Point Evaluation Process shall be used. Other appropriate design standards may be used with the approval of WRPS Rigging Engineer. The design shall also address lifting attachments, all associated lifting and rigging equipment.

The lifting attachment(s) on the equipment (lifting eyes, lugs, ears, etc.) and the lifted item shall be designed in accordance with RPP-8360 except ASME BTH-1 should be used to verify lifting lug hole diameter compared to the shackle pin diameter.

Lifting instructions and lift diagrams shall be provided. The lift diagram must show estimated (or measured) weight and center of gravity. The lifted item should be level and plumb when suspended. Lift points and weights shall be identified on the equipment to include the maximum weight condition.

Load handling activities require positive control of the load throughout the entire process of moving the load.

Lifting points shall include the following load minimum contingency factors;

- 5% for items that are solid.

# DRAFT

- 15% for pump/motor/shaft assembly.
- 25% for dynamic loads from crane operation.

The Seller shall provide instructions and any special requirements for rigging and lifting the disposal box. If the use of spreader bar(s) is selected to be used, the rigging instructions shall state so, requirements are found in section 3.3.8.

The Seller shall evaluate the box for lifting using the following configurations:

- Pick points (4) on box to spreader plate on each end (2) – slings (2) to hook.
- *Optional - Pick points (4) on box to hook.*

Evaluate each configurations for minimum sling length requirements for the following conditions:

- Box loaded with lids.
- Box empty with lids.
- Box empty without lids.

### **3.3.5 Drawings and Material Lists**

Detailed dimensioned fabrication/assembly drawings shall be submitted to the Buyer for approval prior to fabrication. All component parts shall be listed in the bill of materials, referring to the applicable material specifications or manufacturer and part number or supplier's fabrication drawing.

The supplier may propose deviations from Attachment A that will improve fabrication or design, but are subject to approval from the BUYER. If modifications are proposed that vary from this specification the supplier shall provide a narrative describing modifications.

### **3.3.6 Fabrication/Assembly Processes**

Suspend reinforcement from back of mold or use bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place according to PCI MNL 116.

The disposal box shall be constructed in accordance with the manufacturer's standard practices and approved design and fabrication details.

All structural welding shall meet the requirements of the following codes as applicable and all welds will be visually inspected per statically loaded American Welding Society (AWS) criteria:

- AWS D1.1/D1.1M, "Structural Welding Code – Steel," for structural carbon steel
- AWS D1.3/D1.3M, "Structural Welding Code – Sheet Steel," for sheet steel.

# DRAFT

AWS D1.6, “Structural Welding Code – Stainless Steel,” for structural stainless steel and stainless steel to carbon steel

If required for fabricating hoisting inserts, lifting lugs, welding of structural members, etc, as well as any repairs to such parts, shall be performed in accordance with the applicable AWS welding standard (i.e. AWS D1.1 for steel or AWS D1.4 for reinforcing steel). All welds will be visually inspected per statically loaded criteria.

All critical welds shall be identified in the design media. For the purpose of this requirement, critical welds are defined as those welds whose failure could result in loss of load or loss of load control. All critical welds on lifting devices shall be full-penetration welds, if possible, and shall be verified by approved non-destructive examination (NDE).

**Commercial Grade Finishes:** Remove fins and large protrusions and fill large holes. Rub or grind ragged edges. Faces must have true, well-defined surfaces. Air holes, water marks, and color variations are permitted. Limit form joint offsets to 3/16 inch. Smooth, steel trowel finish unformed surfaces. Consolidate concrete, bring to proper level with straightedge, float, and trowel to a smooth, uniform finish. It is preferred to have edges chamfered to prevent chipping during handling and use.

### **3.3.7 Cleaning**

Before delivery to the site, the components shall be clean to the extent that extraneous materials are not present.

### **3.3.8 Special Tools**

Special tools and fixtures required to ship, lift and install/remove lids shall be included in the quotation and furnished with delivery of the system. Make exceptions known to Buyer.

If spreader bars (plates) are used the following testing and information shall be provided:

- Structural calculation.
- Certified Load Test in accordance with BTH-1 and provide documentation.
- Temperature Range for Rated Load (10 degrees minimum temperature).
- Spreader bar(s) shall be labeled with a minimum of the following per ASME B30.20:
  - Manufacturers Name.
  - Serial Number.
  - Weight of Beam.

# DRAFT

- ASME BTH-1 Design Category.
- ASME BTH-1 Service Class.

### **3.3.9 Identification and Marking**

All equipment that is designed to be mechanically lifted shall have lifting points, the center of gravity, and the lifting weight marked. All specialized lifting devices shall be marked in accordance with ASME B30.26 or ASME B30.20 as applicable. Additionally, each lid shall have the weight clearly labeled.

## **4.0 QUALITY ASSURANCE REQUIREMENTS**

### **4.1 QUALITY ASSURANCE PROGRAM**

The Seller shall comply with the Procurement Quality Clauses as stated in the Procurement Documents.

For manufacturing procedures and testing requirements, and for quality-control recommendations, comply with PCI MNL 116, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products." For dimensional tolerances of members, comply with ACI ITG-7, "Specification for Tolerances for Precast Concrete."

### **4.2 QUALIFICATIONS**

#### **4.2.1 Welding Personnel and Procedures**

Personnel and procedures for welding structural components shall have been qualified in accordance with the applicable AWS welding standard (i.e. AWS D1.1 for steel or AWS D1.4 for reinforced steel) prior to the start of welding (welding qualifications and procedures per ASME B&PVC, Section IX are acceptable). A copy of welder performance qualification test results and renewal of qualification documentation shall be maintained at the jobsite for the Buyer's evaluation, if desired. A copy of the Weld Procedure Specifications, Procedure Qualification Records, and Supporting Demonstration Records, as applicable, shall be maintained at the jobsite for the Buyer's evaluation, if desired.

#### **4.2.2 Welding Inspectors and Procedures**

Visual weld examinations shall be performed and appropriate documentation prepared by Certified Welding Inspectors who have received certification in accordance with AWS QC1. Certified Associate Welding Inspectors, certified in accordance with AWS QC1, may perform examinations when under immediate direction of Certified Welding Inspectors.

# DRAFT

Personnel performing nondestructive examination shall be certified in accordance with Seller's written practice, which shall meet requirements of ASNT SNT-TC-1A. Level II or III personnel shall be used to interpret test results. These services may be a subcontract to the Seller.

The Seller shall maintain a file containing personnel certifications and nondestructive examination performance procedures as applicable at the fabrication site for Buyer's evaluation, if desired.

#### **4.2.3 Fabricator Qualifications**

The Seller shall assume responsibility for engineering, fabricating and shipping precast structural concrete units to comply with design requirements. Responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

#### **4.3 INSPECTIONS AND TESTS**

The Buyer reserves the right to witness all tests and shall be given a minimum of five (5) working days written notice prior to each test date (not required for weld inspection and examination).

The Seller shall provide Manufacturer's Material Certificates for the following:

- Cementitious materials.
- Reinforcing materials and pre-stressing tendons.
- Admixtures.
- Material Test Reports: Certified suppliers test reports for aggregates and compressive strength test reports.

##### **4.3.1 Weld Inspection and Examination**

Inspection and examination of structural welds shall be performed in accordance with the applicable AWS welding standard (i.e. AWS D1.1 for steel or AWS D1.4 for reinforcing steel).

All welds shall be visually inspected as a minimum. Weld maps shall be prepared and submitted. Non-destructive examinations, including Visual, Penetrant Test, or Magnetic Particle Test examinations, shall be recorded and submitted.

#### **5.0 DOCUMENT SUBMITTAL**

Required submittals are identified and listed on the procurement Master Submittal Register (MSR) in addition to Table 5-1 below. The MSR identifies the minimum submittals required by this specification and identifies when the submittals are required to be submitted in the

# DRAFT

procurement process. The MSR included with the purchase order will constitute the governing MSR.

Submittals shall be provided using the TOC Incoming Letter of Transmittal (form A-6005-315). All transmittal subject headings shall contain, at a minimum, the subcontract number, submittal number identified by the MSR, and submittal description.

Submittals shall be provided in electronic format unless available only as a hard copy. Electronic submittals may be sent to TOCVND@rl.gov or delivered via a WRPS designated File Transfer Protocol (FTP) site. Electronic formats must be non-password protected in one of the following formats:

- Microsoft® Office Compatible
- Portable Document Format (PDF)
- Tagged Image File Format (TIFF)
- Graphics Interchange Format (GIF)
- Joint Photographic Experts Group (JPEG)
- Windows Media Video (WMV)
- Moving Picture Expert Group (MPEG)
- Extensible Markup Language (XML)
- HyperText Markup Language (HTML)
- Comma Separated Values (CSV)
- Text (TXT)

All deliverable documentation shall be complete, accurate, legible, and reproducible. Before delivery, design media and documents shall be reviewed by qualified Subcontractor personnel for technical adequacy and appropriate content in accordance with the Subcontractor's Quality Assurance procedures. The Subcontractor shall attest, in writing, to the accuracy and completeness of the information contained in the final deliverables.

Deliverables shall be subject to approval by the BTR. Deliverables shall comply with this specification and technical basis documents and other requirements identified herein.

Item	Title	Purpose	When required
1	Schedule	Review	Per MSR (see Section 5.1)
2	Prefabrication Information	Approval	Per MSR (see Section 5.1)
3	Weld Inspection and Examination Documentation	Approval	Per MSR (see Section 5.1)
4	Inspection and Tests	Approval	Per MSR (see Section 5.1)
5	Shipping and Handling Plan	Approval	Per MSR (see Section 5.1)



# DRAFT

## 5.1 APPROVAL OF SUBMITTALS

All Submittals transmitted shall include the designation in the Master Submittal Register (MSR) per TOC Vendor Processes stated in TFC-BSM-IRM\_DC-C-07“Records Management,” and in compliance with TFC-BSM-IRM\_DC-C-07, “Vendor Processes”.

Approval by the Buyer does not relieve the Seller of responsibility for accuracy or adequacy of design under this specification.

If any revision has been made to previously submitted items, the Seller shall resubmit updated versions of said items for approval, in addition to the items listed above.

Certified data shall be defined to mean that the design adequacy of a given item (document, drawing, calculation, etc.) be verified by persons other than those who prepared the item. Each deliverable (drawing, calculation, etc.) shall have at least an originator's/preparer's signature and a checked-by or approved-by signature.

## 5.2 LIST OF SUBMITTALS

This list of submittals along with relevant dates shall be kept as part of the MSR.

- a. (Item 1) Schedule: Submit a schedule showing design, fabrication, assembly, testing and shipment of the equipment after receipt of the order.
- b. (Item 2) Prefabrication Information (see Section 3.3.1).
  - 1) Product Data,
  - 2) Design Mixtures,
  - 3) Fabrication Drawings, and
  - 4) Design Calculations.
  - 5) Welding Program Documents  
WPS/PQR, NDE Procedure, Visual Inspection Procedure, Weld Certifications, NDE Certifications and CWI Certifications.
- c. (Item 3) Weld Inspection and Examination Documentation (see Section 4.3.1).
- d. (Item 4) Inspection and Tests (See Section 4.3).

Include As-Built drawings as applicable.
- e. (Item 5) Shipping and Handling Plan (see Section 6.0).

# DRAFT

## 6.0 PREPARATION FOR DELIVERY

### 6.1 PRESERVATION AND PACKAGING

All items shall be suitable for long-term storage in an unprotected exterior environment. Temporary bracing, fixtures, or hardware installed to stabilize furnished items during shipment or handling (excluding packaging materials) shall be tagged or otherwise identified so that it can be removed before installation or operation of the item.

### 6.2 MARKING

Packages shall be suitably marked on the outside to facilitate identification of the purchase order, the procurement specification, the package contents, weight, and any special handling instructions.

### 6.3 SHIPPING AND HANDLING

The Seller shall recommend the preferred transportation method and provide protection of the equipment during transit and storage. The Seller shall submit to the Buyer for review and approval of a Shipping and Handling Plan that includes preservation, packaging, shipping, storage, and lifting procedures. Buyer approval of the plan is required before packaging and shipment. If a special type of transportation to protect equipment is required, those devices shall be part of the Seller's package and identified as special equipment.

The disposal box shall be shipped in accordance with the applicable DOT standards and in an orientation ready for lifting. Additional handling of the equipment to orientate it for lifting is not acceptable. Transport and tie-down instructions and diagrams shall be provided. Calculations shall be required for the design of all transport tie-down attachment points. If lift points are used for transport tie-downs, the design shall account for these loads. Transport tie-down points shall be identified on the equipment. All hoisting, rigging, transport and load handling activities shall comply with DOE-RL- 92-36, RPP-8360 "Lifting Attachment and Lifted Item Evaluation", and TFC-ENG-STD- 06.

**DRAFT**

**Attachment A – Modular Disposal Box System Dimensional Requirements**

**(13 Sheets)**

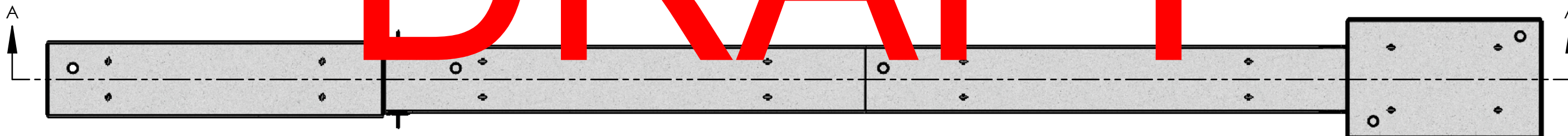
4

3

2

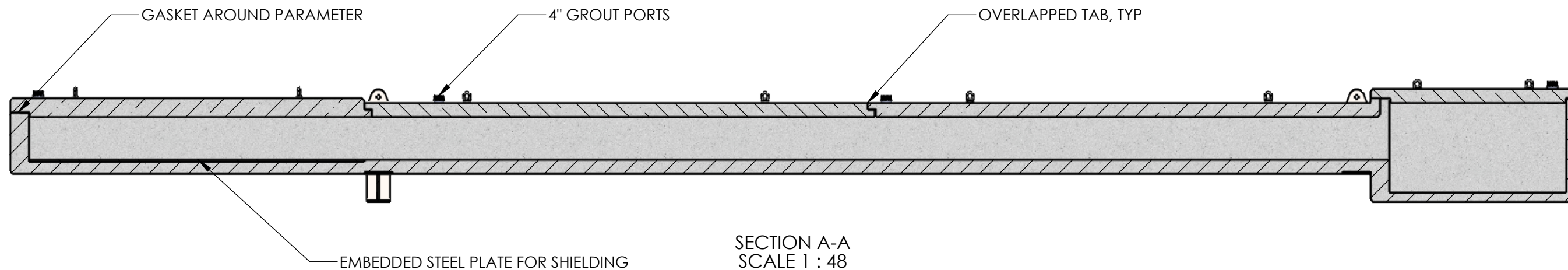
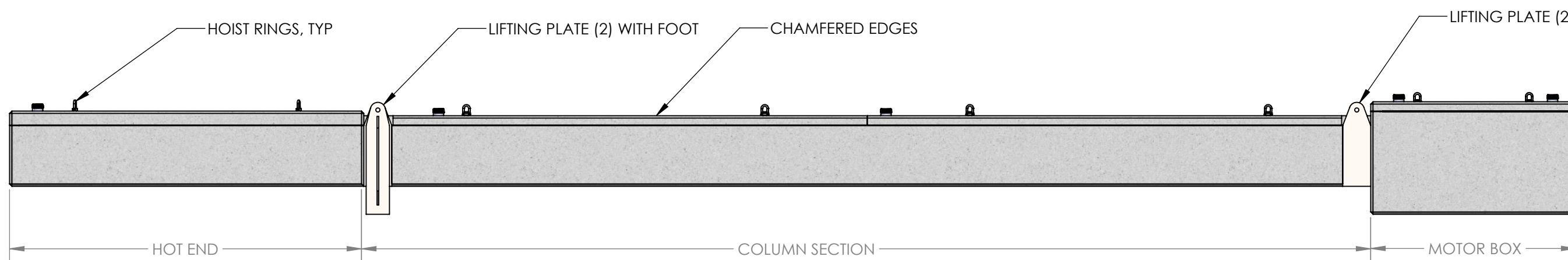
1

# DRAFT



B

B



A

A

SECTION A-A  
SCALE 1 : 48

4

3

2

1

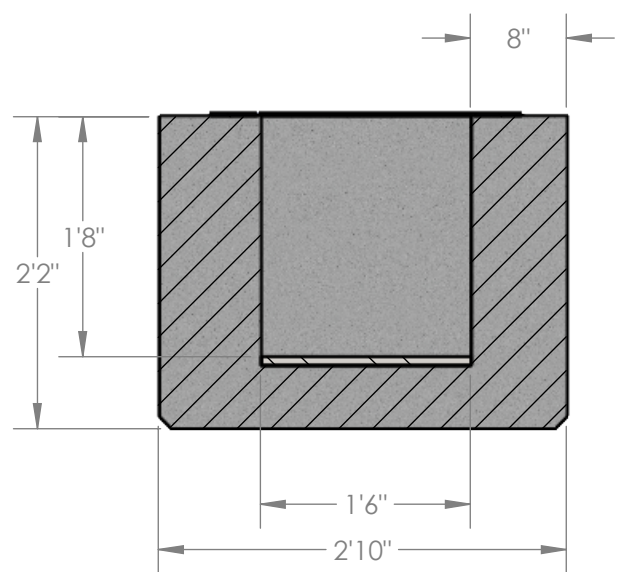
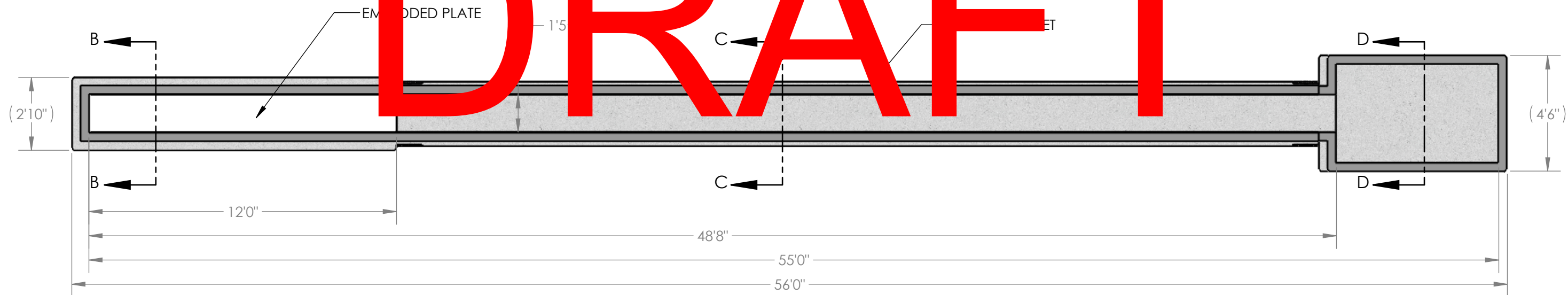
4

3

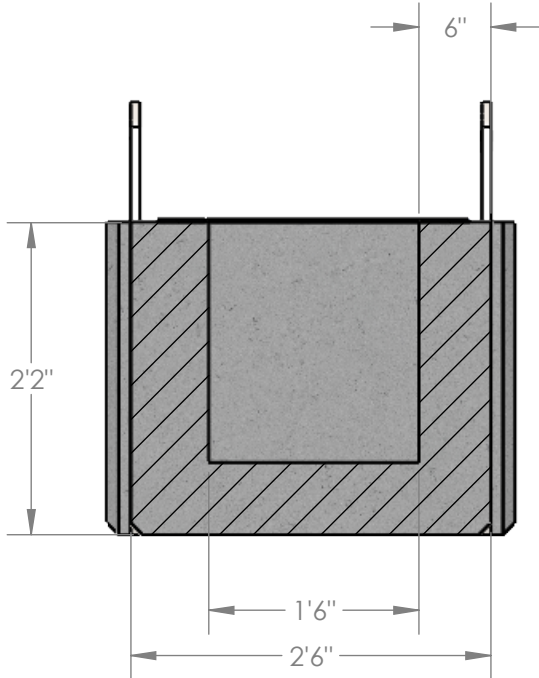
2

1

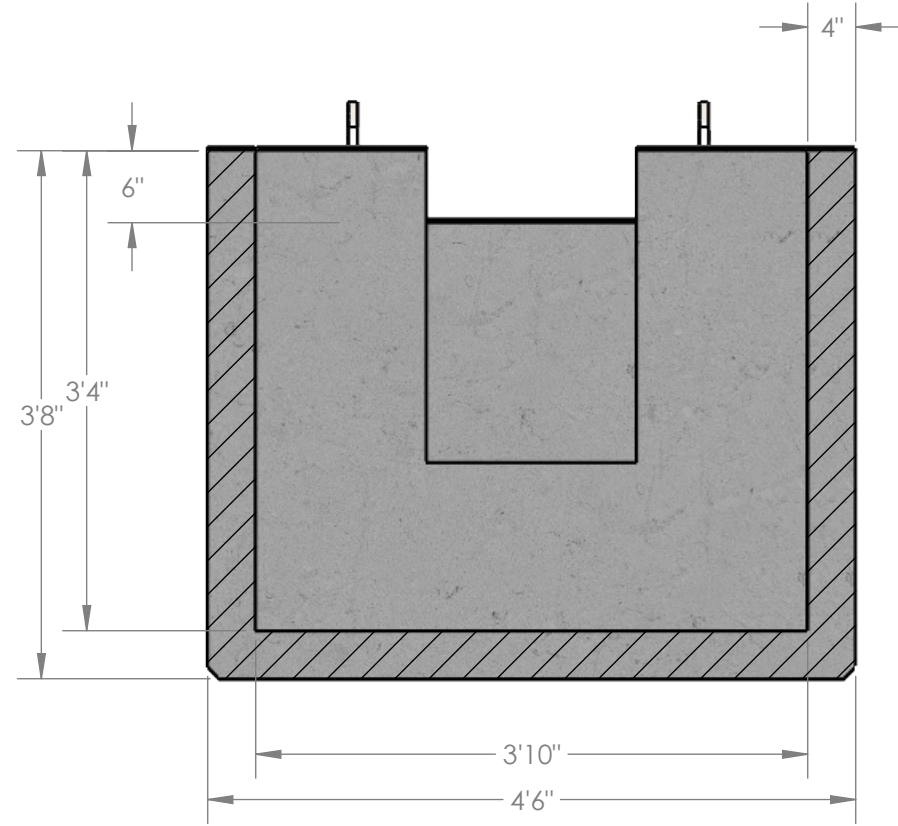
# DRAFT



SECTION B-B  
SCALE 1 : 16



SECTION C-C  
SCALE 1 : 16



SECTION D-D  
SCALE 1 : 16

4

3

2

1

A

A

B

B

4

3

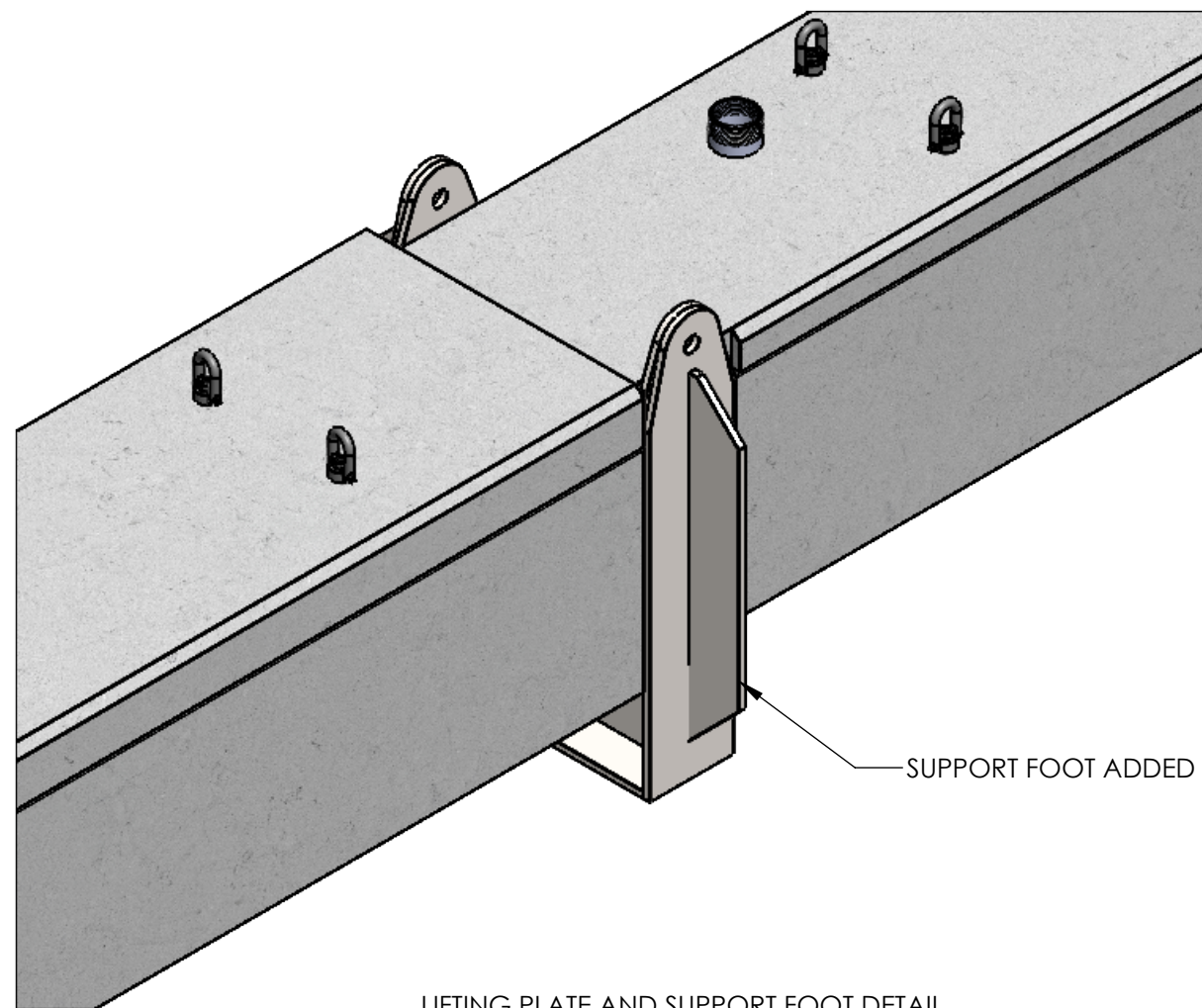
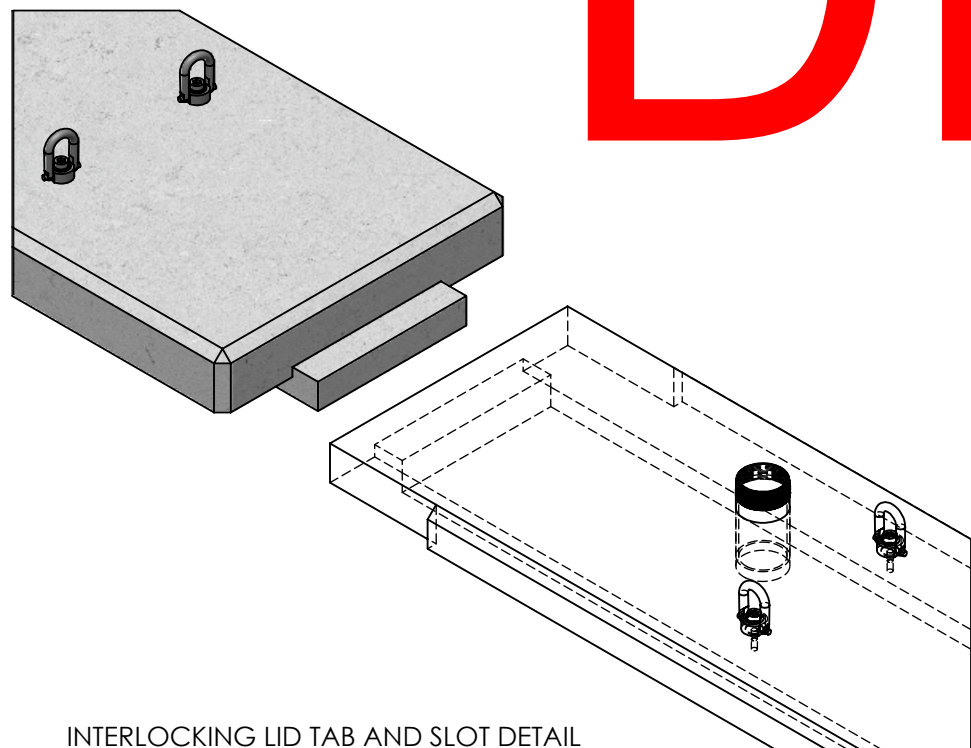
2

1

# DRAFT

B

B



A

A

4

3

2

1