



# CERTIFICATION PROGRAMS

## Mock Exercise Instructions for Fabricators of Hydraulic Steel Structures

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### 1. Scope

For applicability, refer to the *Supplemental Program Requirements for Fabricators of Hydraulic Steel Structures (the Supplements)*. This exercise will demonstrate fabrication knowledge, skills, and capability to produce fabricated steel to the quality required for hydraulic steel structures.

### 2. Document Requirements

In addition to the required documents listed in the Supplements, the fabricator shall have the following documents available for review during the site audit:

1. Valid SAW or FCAW Welding Procedure Specification (WPS) with supporting Procedure Qualification Record (PQR) for all welds in this exercise.
2. Current Welder Performance Qualification Records for processes and positions to be used in the exercise.
3. Material Test Reports (MTRs) for materials used. (May be an example of an MTR)
4. Purchase orders for Fracture Critical (FC) materials used. (May be an example of a P.O.)
5. A detailed shop fabrication drawing and a general note sheet for the mock exercise, as described by the Assembly Instructions.
6. A weld tracking procedure and a weld tracking log capable of identifying and tracking each individual weld.
7. Procedure for welding process controls necessary to control distortion and shrinkage for fabrication of hydraulic steel structures.

### 3. Assembly Instructions

1. The mock exercise demonstration shall produce a welded assembly as shown in Attachment A.
2. The welded assembly shall consist of 8 welded plates as shown in Attachment A



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3. Material: The assembly and detail drawing shall utilize ASTM A709-50 plate material. Fracture critical material shall be ASTM A709-50 Zone 1, 2, or 3 as selected by the fabricator. Material listed as stainless steel shall be 304 or 316 material. All plate thicknesses shown are minimum.
4. All welds shall use the SAW or FCAW process and the appropriate AWS joint detail.
5. Welds between carbon steel and stainless steel in Attachment A shall be qualified in accordance with AWS D1.6 and shall utilize AWS D1.6 joint details.
6. All welds shall be considered in tension in regards to inspection and NDT.

### 4. Dimensional Tolerances:

1. All dimensional tolerances shall be +/- 1/16-inch except as noted below.
2. The overall 4'-0 length of the completed welded assembly shall not deviate by more than +/- 1/32-inch after machining.
3. Angular distortion for CJP groove welding shall be controlled to maintain squareness and flatness to within +/- 3/32-inch.
4. Hole location tolerances shall be +/-1/32-inch. Hole diameter tolerances shall be -0.000 inch to +0.010 inch.

### 5. 5. General Requirements

1. All aspects of this exercise shall be performed by the fabricator in accordance with the fabricator's QMS.
2. All welding shall be performed by a certified welder in accordance with valid WPSs accompanied by a supporting PQRs (complete with test results). Welding of the PQR assemblies must be performed by the fabricator.
3. Fracture critical welding shall be performed in accordance with the fabricator's FCP and the requirements of Clause 12, AASHTO/AWS D1.5M/D1.5, Bridge Welding Code .
4. During the site audit, the personnel responsible for and performing the work shall demonstrate understanding necessary for effective implementation of the requirements of the latest editions of the applicable codes and standards.
5. The auditor shall not perform any inspections, direct any work, or provide instruction. The auditor may request alternate sequences in agreement with the auditee to meet unforeseen on-site conditions. The auditor is present to observe the process and the application of the requirements by the auditee.

### 6. Additional References:

1. AWS D1.6 Structural Welding Code – Stainless Steel



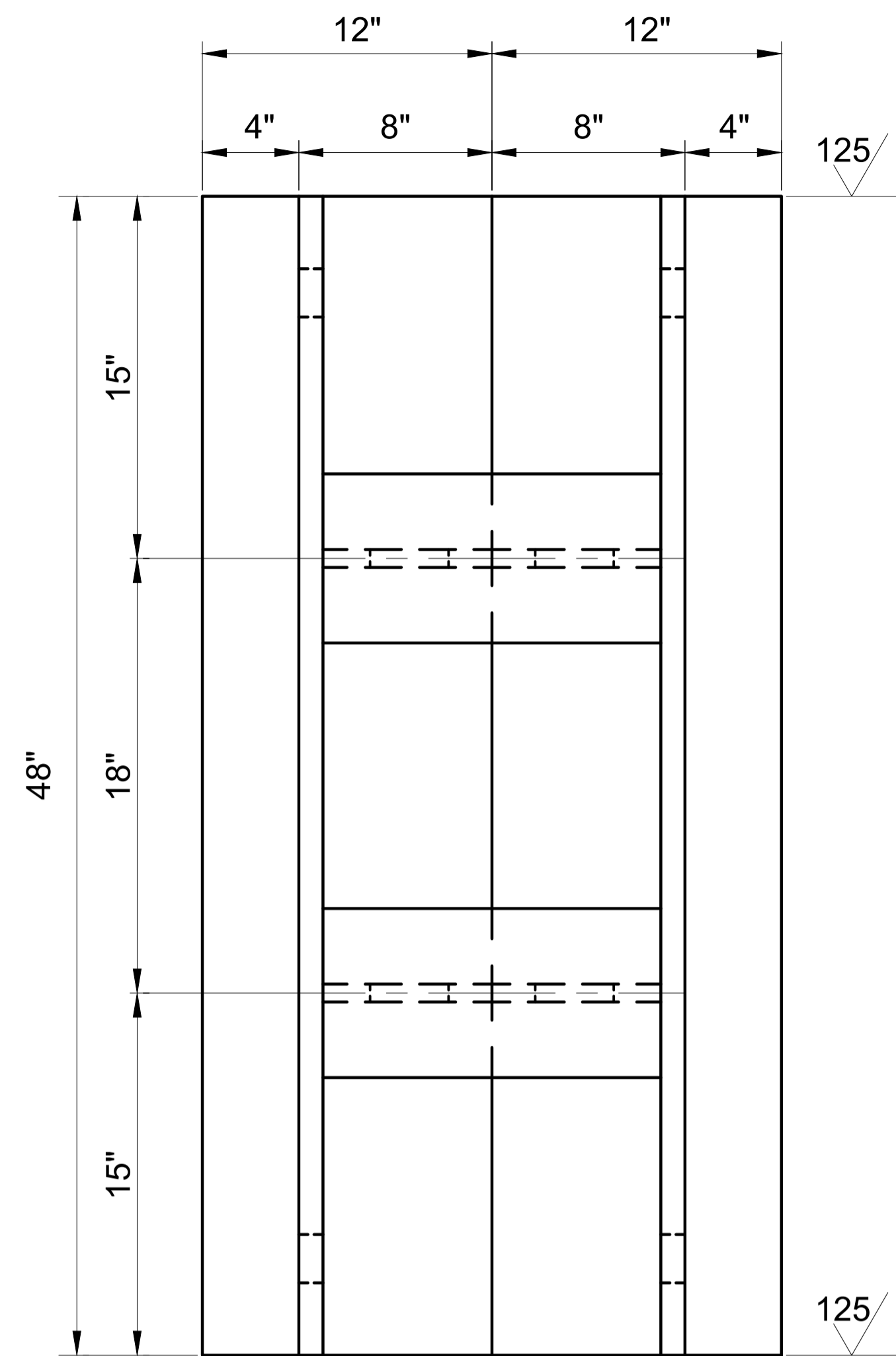
**6. TABLE 1 - Sequencing of Fabrication, Inspection, and Audit Activities**

Fabrication Activity	Inspection Instructions	Audit Activities
Bottom Plate - Butt-joint CJP weld (Plate 1 to 2 shall be completed first to permit RT)	<p>The welded assembly may be completed prior to the start of the on-site audit.</p> <p>Visual inspection and NDT shall be performed in accordance with the fabricator's QMS and FCP.</p>	<p>The on-site auditor shall observe the completed welds. Witness of NDT is not required.</p> <p>The Fabricator's inspection records, including NDT reports, shall be made available for the onsite auditor to review.</p>
T-Joint CJP weld (Plate 1 to 3)		
T-Joint CJP weld (Plate 2 to 4)		
T-Joint CJP weld (Plate 6 to 3 and 4 and Plate 8 to 3 and 4)		
T-Joint Fillet Welds (Plate 5 and Plate 7)		



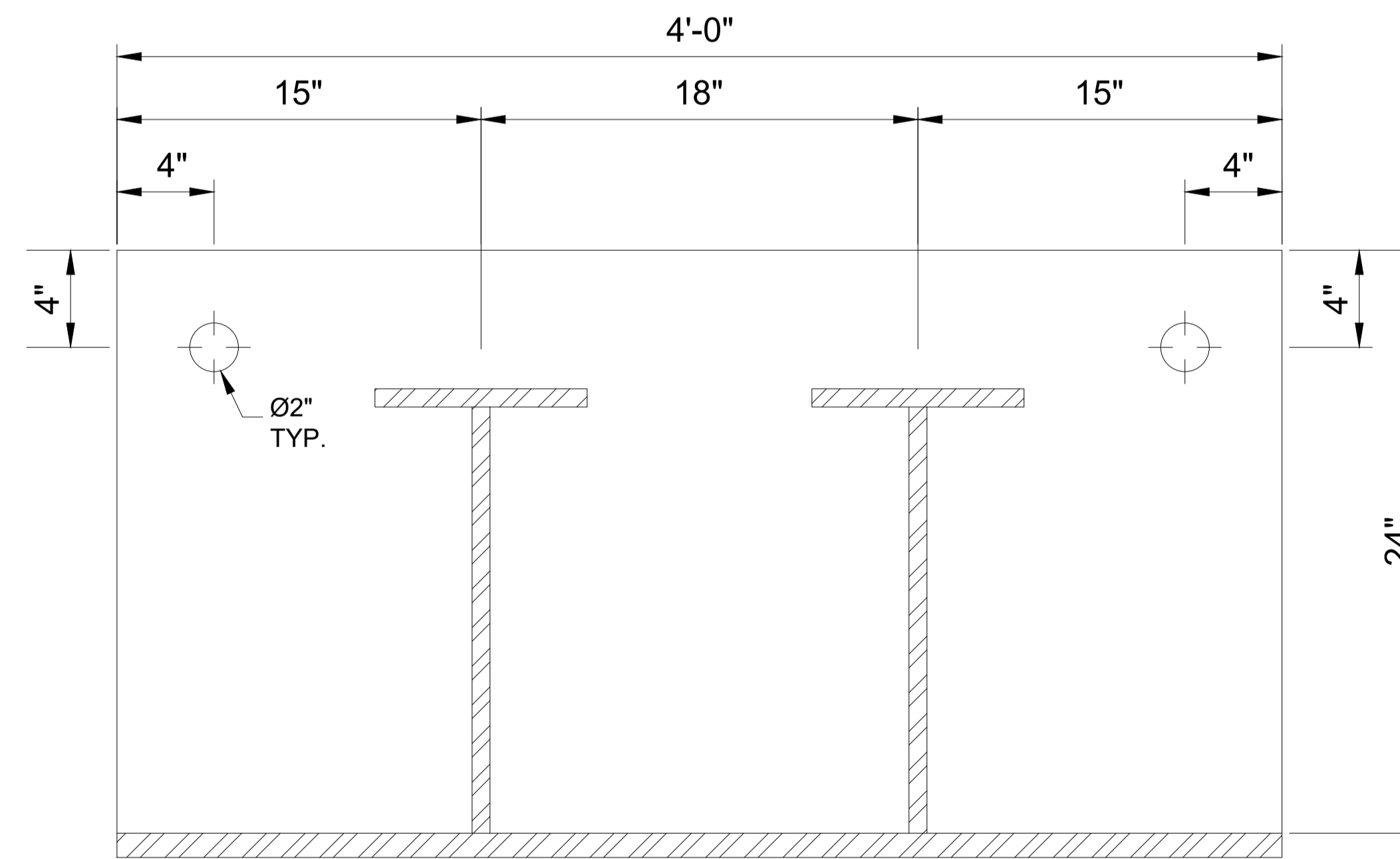
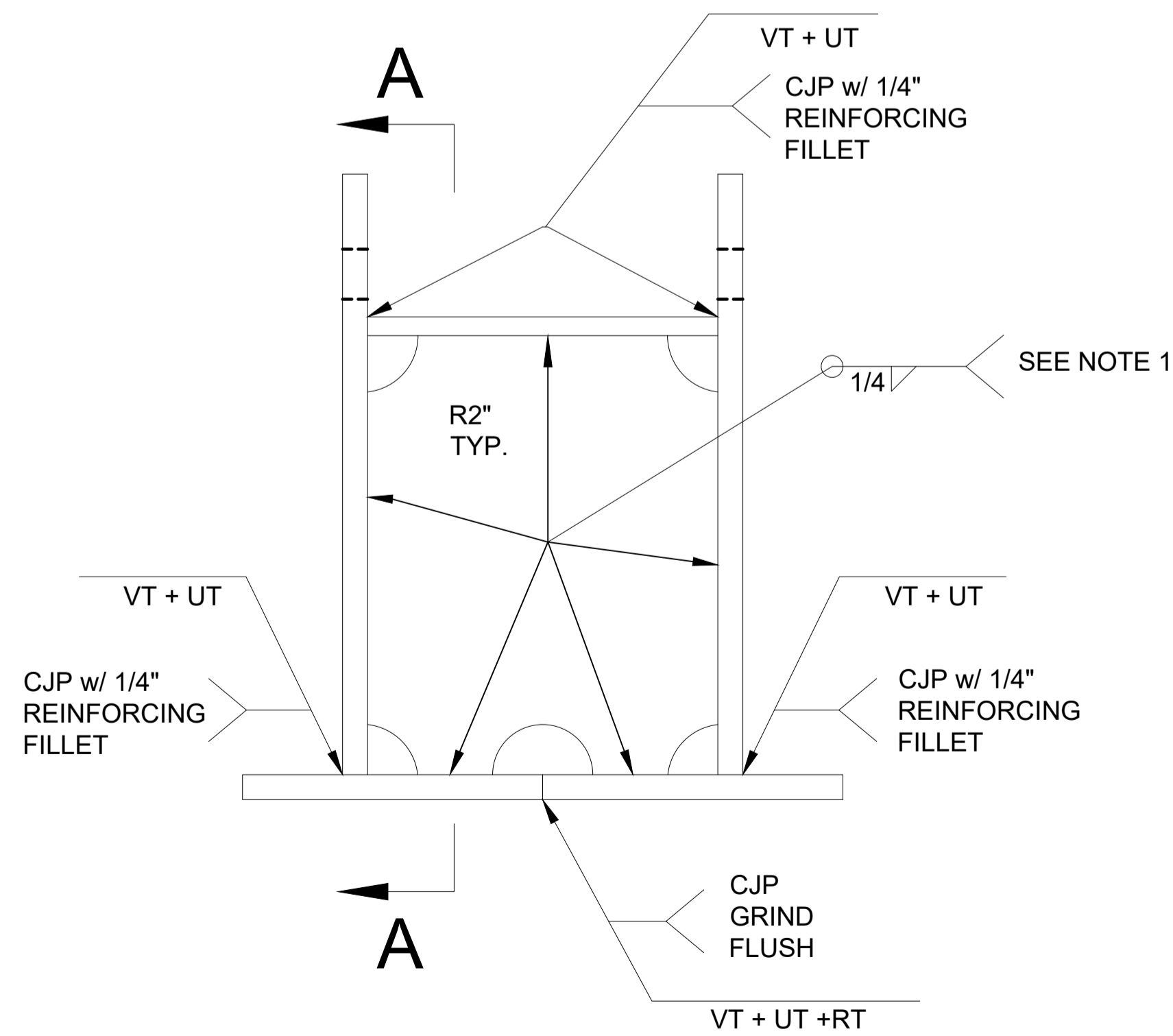
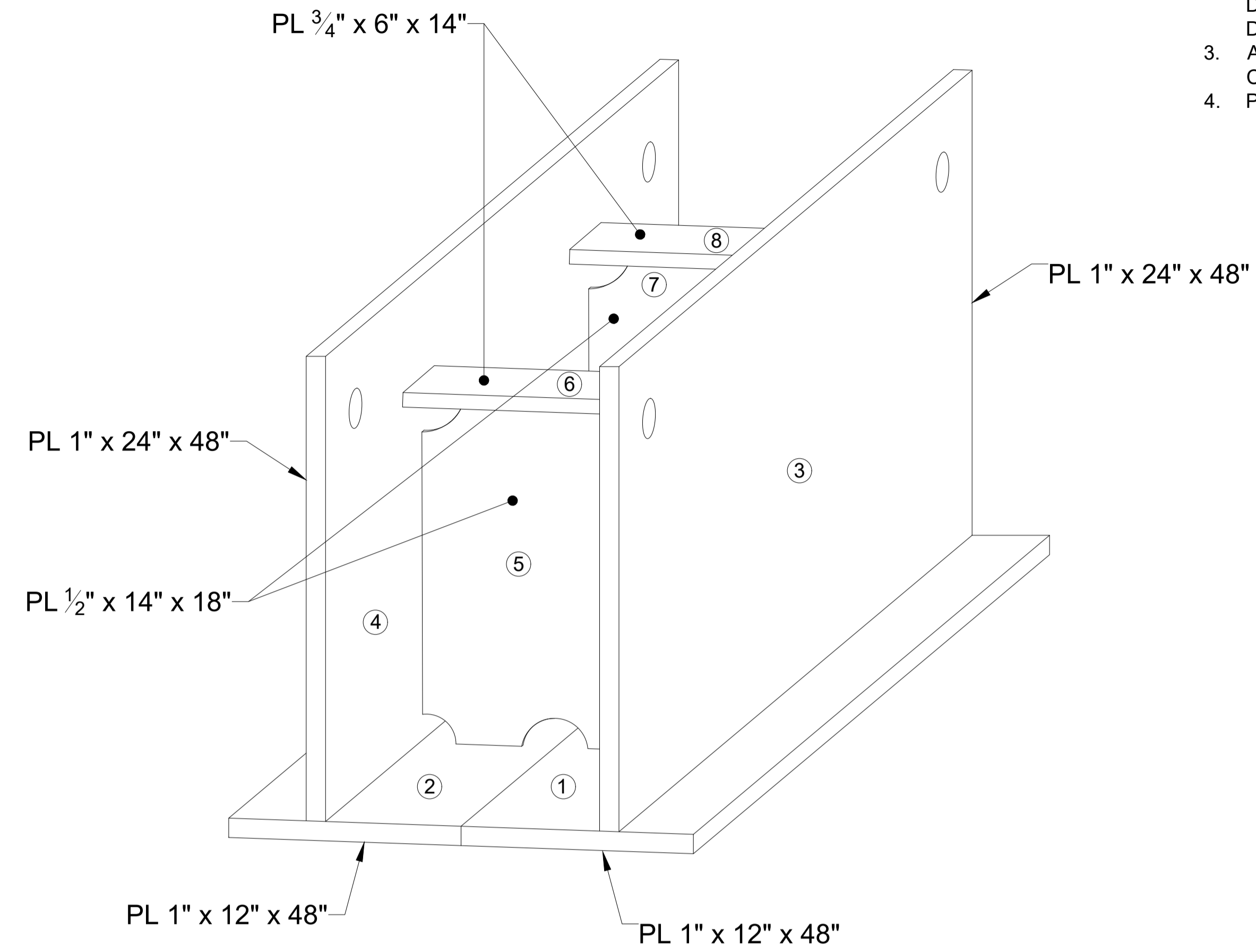
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Holes	Drilling of holes may be completed prior to site audit.  Dimensional inspection of hole sizes, locations, and alignment shall be performed in accordance with the fabricator's QMS.	The onsite auditor shall observe the measurement/verification of hole sizes, locations, and alignment.  The Fabricator's QC and inspection records shall be made available for the onsite auditor to review.
Final Inspection	Final inspection shall be performed in accordance with the fabricator's QMS and FCP.	The Fabricator's QC and final inspection records, including NDT reports, shall be made available for the onsite auditor to review.



**NOTES**

1. ALL WELDS SHALL BE CONTINUOUS.
2. CJP WELD JOINT DETAILS (SINGLE BEVEL, DOUBLE BEVEL, etc.) SHALL BE DETERMINED BY THE FABRICATOR BASED ON WELDING SEQUENCE AND DISTORTION CONTROL.
3. ALL CJP WELDS BETWEEN CARBON STEEL MATERIAL SHALL BE CONSIDERED FRACTURE CRITICAL WELDS IN TENSION.
4. PLATE 1 SHALL BE STAINLESS STEEL.



**SECTION A**

**Attachment A**

**HYD Mock Exercise - Standard**