

**SPECIFICATIONS AND PROPOSAL**

**FOR**

**REMOVAL OF SUPERFERRY RAMP**

**NAWILIWILI HARBOR, KAUAI, HAWAII**

**JOB S70160**

**STATE OF HAWAII**  
**DEPARTMENT OF TRANSPORTATION**  
**HARBORS**

**NOTICE TO BIDDERS**

Hawaii Revised Statutes (HRS), Chapter 103D

SEALED BIDS for REMOVAL OF SUPERFERRY RAMP, NAWILIWILI HARBOR, KAUAI, HAWAII, JOB S70160, will begin as advertised in HiePRO. Bidders shall register and submit complete bids through HiePRO only. Refer to the following HiePRO link for important information on registering: <https://hiepro.ehawaii.gov/welcome.html>.

Plans, specifications, proposal, and other documents designated or incorporated by reference shall be available in HiePRO.

DEADLINE TO SUBMIT BIDS is January 3, 2024, at 2:00 p.m., Hawaii Standard Time (HST). **Bidders shall submit and upload the complete proposal to HiePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HiePRO. Do not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection. FAILURE TO UPLOAD THE PROPOSAL TO HiePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

The Scope of Work consists of removing and disposing of the existing Superferry ramp at Pier 1 at Nawiliwili Harbor, Kauai, Hawaii. The estimated cost of construction is between One hundred thousand dollars (\$100,000.00) and two hundred forty-nine thousand dollars (\$249,000.00).

To be eligible for award, bidders shall possess a valid State of Hawaii General Engineering “A” Contractor’s license **at the time of bidding**.

The GENERAL PROVISIONS dated 2016 applicable to this project are available on the internet at <http://hidot.hawaii.gov/administration/con/>.

All Request for Information (RFI) questions and substitution requests shall be submitted via HlePRO **no later than December 20, 2023, at 2:00 p.m., HST.** RFI questions received after the stated deadline will not be addressed. Verbal RFI questions will not receive a response. All responses to RFI questions shall be issued by formal addendum and posted in HlePRO.

Employment of State Residents on Construction Procurement Contracts. Compliance with HRS, §103B-3, is a requirement for this project whereby a minimum of 80 percent of the bidder's work force on this project shall consist of Hawaii residents.

Campaign Contributions by State and County Contractors. Contractors are hereby notified of the applicability of HRS, §11-355, which states that campaign contributions are prohibited from specified State or County government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, contact the Campaign Spending Commission at (808) 586-0285.

Protests. Any protest of this solicitation shall be submitted in writing to the Director of Transportation, in accordance with HRS, §103D-701, and Hawaii Administrative Rules, §3-126.

The Equal Employment Opportunity Regulations of the Secretary of Labor implementing Executive Order 11246, as amended, shall be complied with on this project.

The U.S. Department of Transportation Regulation entitled "Nondiscrimination in Federally-Assisted Programs of the U.S. Department of Transportation," Title 49, Code of Federal Regulations (CFR), Part 21, is applicable to this project.

Bidders are hereby notified that the State Department of Transportation will affirmatively ensure that the contract entered into pursuant to this advertisement will be awarded to the lowest

responsible bidder without discrimination on the grounds of race, color, national origin or sex (as directed by 23 CFR Part 200).

For additional information, contact Mr. Gregg Hirokawa, Project Manager, by phone at (808) 587-1985 or email at [gregg.hirokawa@hawaii.gov](mailto:gregg.hirokawa@hawaii.gov).

The State reserves the right to reject any or all proposals and to waive any defects in said proposals in the best interest of the public.



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DREANALEE K. KALILI  
Deputy Director of Transportation for Harbors

Posted on HIEPRO: December 4, 2023

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## **INSTRUCTIONS FOR CONTRACTOR'S LICENSING**

"A" general engineering contractors and "B" general building contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project (*See, HRS § 444-7 for the definitions of an "A" and "B" project.*), respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license (*An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32.*). The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

## SPECIAL PROVISIONS

The General Provision is amended as follows:

A. ARTICLE I - TERMS, ABBREVIATIONS, AND DEFINITIONS

1. Section 1.3 Definitions: The definition for “Subcontractor” is amended by deleting it and replacing it with the following:

“Subcontractor – An individual, partnership, firm, corporation, or joint venture, or other legal entity, as licensed or required to be licensed under Chapter 444, Hawaii Revised Statutes, as amended, which enters into an agreement with the Contractor to perform a portion of the work.”

2. Section 1.3 Definitions: The definition for “Proposal (or Bid)” is amended by deleting it and replacing with the following:

“PROPOSAL (OR BID) - The offer of a Bidder, on the prescribed HDOT form, submitted by the Bidder in response to a solicitation request, to perform the work required by the proposed contract documents, for the price quoted and within the time allotted.”

3. Add the following to Section 1.3 Definitions.

“HAWAII ePROCUREMENT SYSTEM (HIePRO) - The State of Hawaii eProcurement System for issuing solicitations, receiving proposals and responses, and issuing notices of award.”

B. ARTICLE II – STANDARD PROVISIONS FOR COMPETITIVE SEALED BIDS AND AWARDS

1. 2.7 Request for Substitution of Specified Materials and Equipment Before Bid Opening is amended as follows:

- a. The last sentence in the first paragraph (line 147 to 152) be replaced with the following:

“Where a bidder intends to use a material or equipment of an unspecified brand, make, or model, the bidder must submit a request to the Department for review and approval at the earliest date possible. Requests shall be submitted via email to the Contact person listed in HIePRO for the solicitation and also posted as a question in HIePRO under the question/answer tab referencing the email with the request. The request must be posted in HIePRO no later than the deadline as stated in the Notice to Bidders.”



- b. The first sentence in the second paragraph (line 154 to 156) shall be replaced with the following:

“It shall be the responsibility of the bidder to submit sufficient evidence based upon which a determination can be made by the Department that the alternate brand is a qualified equivalent.”

2. 2.8 Preparation and Delivery of Bid is amended as follows: Last paragraph (line 189 to 192) shall be replaced with the following:

**“Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Original (wet ink, hard copy) proposal documents are not required to be submitted. Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Do not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection.**

**FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified.”

3. 2.11 Bid Security is amended by deleting (a) and replacing it with:

“(a) Unless directed otherwise in the invitation for bids, each bid shall be accompanied by bid security which is intended to protect the Department against the failure or refusal of a bidder to execute the contract for the work bid or to supply the required performance and payment bonds. Bid security shall be in an amount equal to at least five percent of the base bid and additive alternates. Bid security shall be in one of the following forms:

- (1) A deposit of legal tender;
- (2) A valid surety bid bond, underwritten by a company licensed to issue bonds in the State of Hawaii; or
- (3) A certificate of deposit; credit union share certificate; or cashier’s, treasurer’s, teller’s, or official check drawn by or a certified check accepted by a bank, savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA) and payable at sight or unconditionally assigned to the Department. These instruments may be utilized only to a

maximum of one hundred thousand dollars (\$100,000.00). If the required amount totals over one hundred thousand dollars (\$100,000.00), more than one instrument not exceeding one hundred thousand dollars (\$100,000.00) each and issued by different financial institutions shall be accepted.

If bidder elects options (1) or (3) above for its bid security, said security shall be in its original form and shall be submitted before the bid deadline to the Contract Office, Department of Transportation, Aliiimoku Hale, 869 Punchbowl Street, Room 105, Honolulu, Hawaii 96813. **Original surety bid bonds do not need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be included with its bid uploaded to HiePRO.**

4. 2.12 Pre-Opening Modification or Withdrawal of Bids is amended by deleting 2.12 Pre-Opening Modification or Withdrawal of Bids in its entirety and replacing it with the following:

“2.12 Pre-Opening Modification or Withdrawal of Bids. A bidder may withdraw or modify a proposal after the bidder submits the proposal in HiePRO. Withdrawal or modify of proposal must be completed before the time set for the receiving of bids.”

5. 2.14 Public Opening of Bids is amended by deleting 2.14 Public Opening of Bids in its entirety.
6. 2.20 Bid Evaluation and Award is amended by replacing 2.20(a) and 2.20(b) with the following:

“(a) The award shall be made to the lowest, responsive, responsible bidder within 120 days after bid opening and shall be based on the criteria set forth in the invitation for bids. The Department may request the bidders to allow the Department to consider the bids for the issuance of an award beyond the 120 day period. Agreement to such an extension must be made by a bidder in writing. Only bidders who have agreed to such an extension will be eligible for the award.

(b) No bid shall be withdrawn or corrected for a period of 120 days after bid opening except for a mistake as described in this article; however, a bidder may withdraw a bid without penalty anytime prior to award of the contract if it finds it is unable to comply with the provisions regarding the employment of State of Hawaii residents as described in Section 7.2 and 103B-3, H.R.S.”

#### C. ARTICLE VII – LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1. 7.1 Insurance Requirements is amended by deleting paragraph “(b)(4) Builder’s Risk for All Work” in its entirety.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

**SPECIFICATIONS**

**PART II**

**TECHNICAL PROVISIONS**

## ARTICLE X - PROJECT DESCRIPTION

10.1 GENERAL - The work to be done under this project includes furnishing all labor, materials and equipment necessary to remove and dispose of the existing Superferry ramp as shown on the drawings at Pier 1, Nawiliwili Harbor, Kauai, Hawaii.

Bidders are advised to examine the existing conditions at the project site to familiarize themselves with the nature and extent of work involved. Appointments may be made with the State Harbors Maintenance Engineer for clarification of the work involved and the character and quality of materials specified.

10.2 SCOPE OF WORK - The work to be done includes, but is not necessarily limited to, the following major items of work:

- A. Mobilization and demobilization.
- B. Providing a detailed site specific Best Management Practices (BMP) Plan.
- C. Removal and disposal of the existing Superferry ramp, additional ramp and chain link fence components, and other miscellaneous items.

10.3 CONTRACT DRAWINGS – The location and size of the repair areas shown on the plan are approximate and are included for bidding purposes only. All structures and portions of structures shown on the plan are existing unless specifically noted. Existing conditions shown are based on the best available information. No guarantee is given that they are more than approximately correct.

10.4 WORK SCHEDULE - The work schedule and assignment of storage area(s) shall be discussed and coordinated with the Harbors Kauai District Manager and the Construction Engineer and shall be subject to their written approval. The Contractor shall turn in a work schedule two (2) weeks prior to actual construction for approval by the Harbors Kauai District Manager and the Construction Engineer. The Contractor shall be responsible for maintaining the work and storage areas in neat and orderly condition.

**Shipping and dock activities by tenants/users will take precedence over the Contractor's activities. Vessels call at various days of the week. An approximate vessel schedule for the project area can be found at [hawaii.portcall.com](http://hawaii.portcall.com). The exact scheduling of the work and restrictions on the Contractor's activities will be established at the pre-construction meeting.**

**Phasing and careful coordination of the work will be required to allow continuous use of the project location and adjacent areas. The Contractor shall be responsible for coordination with all tenants/users of the area and the Harbors District Operations Staff on a daily basis regarding scheduling of all work at no additional cost to the State.**

The Contractor shall coordinate its work so as to minimize interference with the pier operations. All work shall be scheduled to minimize interference with any operations in the project area. Weekend and night work may be required.

**Matson operates on Pier 1 on Fridays and Sundays. Contractor may not be allowed to work at Pier 1 on Fridays.**

The exact scheduling and sequencing of the work and restrictions on the Contractor's operation while working at the project site will be established at the pre-construction meeting. The Contractor shall attend the pre-construction meeting to coordinate its work with others and shall complete all work within the work schedule.

**10.5 LIABILITY AND RESPONSIBILITY** - The Contractor shall provide, erect and maintain warning signs, lights, barricades, fences, watchmen and/or other means as necessary to prevent unauthorized persons from wandering onto the job site where they may suffer injury or create a hazard to the construction operations or the work in progress. The Contractor shall also take all reasonable precautions for safety in its operations and to prevent injury to its employees and to others at the job site.

The Contractor shall be responsible for any and all damages to harbor and adjacent facilities caused by its operations or negligence. The Contractor shall, at its own expense, make prompt restitution for damages to the facilities caused by its operations or negligence. The Contractor shall hold the State harmless from all claims for loss or injury.

The Contractor shall remove defective work and replace the required work at no cost to the State.

The Contractor SHALL verify existing conditions in the field prior to ordering any materials. The existing conditions are based on the best available information. The Contractor shall make no claim for extra compensation should actual existing conditions differ from those shown on the plans.

**Hawaii One Call.** The Contractor shall comply with the Hawaii One Call law, HRS Section 269E-4. This includes, but is not limited to, coordination with the Hawaii One Call Center (HOCC) for any work involving excavation at least five (5) working days but not more than twenty-eight (28) calendar days prior to commencing excavation. The contractor shall provide to HOCC a description of the excavation site that may include the county, place, address and measurements as needed. HOCC contact information: telephone 811; website <http://www.digsafelyhawaii.com>.

**10.6 BEST MANAGEMENT PRACTICES (BMPs)** - The Contractor must follow standard best management practices (BMPs) for air pollution, water pollution, noise and solid waste control, as required by Federal, State and County regulations, to protect the environment from effects of construction activity, including prohibiting any construction debris or other deleterious materials to fall, flow or otherwise enter harbor waters.

The Contractor shall submit a site specific BMP plan to the Harbors Construction Engineer for review and comment before work begins. The plan shall satisfy the requirements of ARTICLE XII – TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL. This plan shall describe and detail the methods and procedures to be used to prevent air and water pollution, including preventing any materials, wastes, and debris from entering any adjacent storm drain system and the harbor to the satisfaction of the Harbors Construction Engineer. The Contractor shall revise the BMP plan – at no additional cost to the State - should it be determined by the Harbors Construction Engineer that the plan is insufficient to prevent pollution.

10.7 PERMITS - The Contractor will require permits for all welding and burning operations, if welding or burning is contemplated the Contractor shall obtain the required work permit from the Harbors Kauai District Manager.

A Building Permit from the County of Kauai will not be required for this project.

10.8 SUBMITTALS – The Contractor shall submit for review one (1) copy of the following items in PDF format.

- A. Best Management Practices (BMP) Plan including removal of hazardous material in accordance with Article XII of these Technical Specifications.
- B. Health and Safety Plan
- C. Proof of valid TWIC credential card for all Contractor and Sub-contractor workers.
- D. Demolition and Removal Plan and Schedule.

10.9 STANDARD SPECIFICATIONS - The term "Standard Specifications" as used in these Technical Specifications, shall mean the Hawaii Standard Specifications for Road and Bridge Construction, State of Hawaii, Department of Transportation, Highways Division, 2005.

10.10 AS BUILT DRAWINGS - The Contractor shall keep one (1) set of drawings at the job site and make all field changes thereon. After completion of the project, a PDF/A format digital file marked up with all the field changes shall be submitted to the Construction Engineer.

10.11 HARBOR SECURITY - The Contractor shall submit required documentation of all Contractor and subcontractor’s employees, their representatives, suppliers, manufacturers, and alike, and of all necessary vehicles needing access to the project site to the Harbors Construction Engineer and Kauai District Manager before starting work on the project. The documentation will include the following:

- A. Authorized personnel's first name, middle initial(s), and last name by company name.
- B. Vehicle(s) license plate number(s) by company name.
- C. The Contractor may be directed to use a specified entrance to enter and exit the harbor. Upon every entry, each employee must present and possess a photo identification (ID) card.
- D. All Contractor's and sub-contractor's employees, their representatives, suppliers, manufacturers, and authorized personnel needing access to the project site shall wear their photo ID card at all times.
- E. Contractor's vehicles must be identified with a company logo and will be subject to search. Any employee's personal belongings will also be subject to search.
- F. If the Contractor wishes to remove any fencing or open any locked gates, they shall coordinate with and request approval from the Harbors Construction Engineer and Kauai District Manager. If approval is granted, the Contractor shall then be responsible for securing open fencing or gate(s) immediately after entering, or posting security personnel to monitor ingress and egress. Inspections of vehicles and equipment moving through the access points will be done in accordance with current MARSEC level and directives.
- G. If security personnel are required, the Contractor shall hire the same contract security that provides service to the State of Hawaii, Department of Transportation, Harbors. In the event that the security contract for Harbors changes, Contractor must hire the new security contractor.
- H. By the end of each day, the Contractor shall re-erect and restore all fencing/barrier/perimeter security measures to the satisfaction of the Harbors Construction Engineer and the Kauai District Manager. Electricity and lighting shall also be restored and in satisfactory working order, to no less than pre-construction conditions, by the end of each day, to the satisfaction of the Harbors Construction Engineer and Kauai District Manager.
- I. Under no circumstances shall perimeter security be compromised. If determined by the State, and solely by the State, that the contractor has left the project site in a condition that compromises security of the harbor, the State reserves the right to make the necessary arrangements to provide and enhance perimeter security, including restoration of electrical power and lighting, at the sole expense of the Contractor.
- J. At times, the maritime security level for the State of Hawaii and/or the general color-coded security level for State of Hawaii may be temporarily elevated. In these events, the contractor may be prohibited to access the project site and may be required to stop work as directed by either the Harbors Construction Engineer

or Kauai District Manager. The Department of Transportation, Harbors will consider impacts to the work and schedule as a result of prolonged work stoppages.

- K. Maritime Security Awareness training is mandatory for all personnel entering the Harbor facility. The Contractor shall be responsible to ensure all of its employees, representatives, subcontractors, vendors, and all alike, requiring access to the harbor area for this project, have been trained and possess the required maritime security card before entering the Harbor's property. Prior to starting work on this project, the Contractor shall provide a list of names (full legal name) and birth dates of all employees, representatives, subcontractors, vendors, and all alike, as well as their vehicles license number, year, make, color and model that will be entering the project site, together with a letter attesting that all personnel have received this training to the Harbors Kauai District Manager and Construction Engineer. All employees, representatives, subcontractors, vendors, and all alike, shall wear their respective company's identification card bearing the company's name, the individual's first and last name, and middle initial(s), and a recent photograph of the individual on the front of the identification card at all times while on Harbor's property.

With the possible exception of Item J above, all other requirements indicated shall be considered incidental to the project and shall be provided by the contractor at no cost to the State.

The Contractor's personnel requiring unescorted access to secure areas of maritime facilities will be required to obtain a Transportation Worker Identification Credential (TWIC). No escorting of personnel is allowed. The project area has been deemed to be within a secured area. TWIC was established by Congress through the Maritime Transportation Security Act and is administered by the Transportation Security Administration (TSA) and U.S. Coast Guard. To obtain a TWIC, the applicant must provide biographic and biometric information such as fingerprints, sit for a digital photograph and successfully pass a security threat assessment conducted by TSA. The Contractor will be responsible to obtain and pay for all costs associated in providing their appropriate employees with TWIC. Information regarding TWIC is available on the TSA website at: <https://www.tsa.gov/for-industry/twic>.

10.12 COMPLETION TIME - All work for this project shall be completed within the specified time period as listed on page P-1 of the Proposal. The number of days shall commence on the issuance of the notice to proceed. The intent of the contract is to provide for the construction final acceptance of the work described by the contract documents at the accepted bid price and within the time established by the contract. The Contractor has the duty to furnish all labor, materials, equipment, tools, transportation, incidentals, and supplies and to determine the means, methods and schedules required to complete the work in accordance with the contract documents.

Unless otherwise directed by the Engineer in writing, the Contractor shall not commence with physical construction without sufficient materials and equipment available at the project site for either continuous construction until completion, or completion of a specified portion of the work.



10.13 PAYMENT - Payment shall be made as specified below. Such payment shall include furnishing all labor, material, equipment and other expenses required to complete each item in accordance with the plans and specifications. The Best Management Practices (BMP) plan, including temporary water pollution, dust, and erosion measures shall be considered incidental to the pay item below.

Item 1 – Ramp Removal. Payment shall be made at the lump sum price bid in the Proposal Schedule. Such payment shall include setting up and removing all plant equipment and materials at the job site; providing temporary barricades as required for Harbor operations during construction; demolition, removal, hauling and disposal of the ramp, the additional ramp and chain link fence components, and the other miscellaneous items, and all other incidental work required to complete this item.

## ARTICLE XI - MOBILIZATION AND DEMOBILIZATION

11.1 GENERAL - The work consists of furnishing at the job site, plant, equipment, materials, labor and appliances and performing all work in connection with mobilization and demobilization for the job in accordance with this Article of the Specifications.

### 11.2 DESCRIPTION

- A. Mobilization shall include setting up, ready for use, all plant, equipment and necessary materials at the job site.
- B. Providing temporary barricades as required for Harbor operations during construction.
- C. Moving the barricades back to their original position upon completion of work.
- D. Demobilization shall include the removal of all the Contractor's plant and equipment and surplus material from the job site. The cleanup of the job site, satisfactory to the Construction Engineer, shall also be included in this article.

11.3 PAYMENT - Payment for Mobilization and Demobilization shall be considered incidental to the applicable items described in Article X of these Specifications.

ARTICLE XII – TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL  
**For Project NOT Subject to NPDES NOI-C Permit**

12.1 DESCRIPTION - This section is required for all work, including the Contractor's storage sites. It describes the following:

- A. A detailed site-specific Best Management Practice (BMP) Plan including diagrams and narratives; constructing, maintaining, and repairing temporary water pollution, dust, and erosion control measures at the project site including local material sources, work areas and access roads; removing and disposing of wastes and hazardous wastes; and control of fugitive dust (defined as uncontrolled emission of solid airborne particulate matter from any source other than combustion). Additionally, all projects at Honolulu, Kalaehoa Barbers Point, and Kahului Harbors are subject to State of Hawaii, Department of Transportation (HDOT) Harbors, Stormwater Management Plan (SWMP) requirements, unless exempted, and are subject to Harbors Stormwater BMP inspections. If any requirement conflicts with those administered by State of Hawaii, Department of Health (HDOH), the Contractor shall follow the more stringent requirement.
- B. Compliance with applicable federal and other state permit conditions.
- C. Work associated with dewatering and hydrotesting activities and compliance with conditions of the NPDES general permit coverage authorizing discharges associated with construction activity dewatering and hydrotesting.

12.2 GENERAL REQUIREMENTS - In order to provide for the control of water pollution, dust, and erosion arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, the work performed shall comply with all applicable federal, state, and local laws and regulations concerning water pollution control including, but not limited to, the following regulations:

- A. State of Hawaii, HDOH, Hawaii Administrative Rules (HAR) Chapter 11-54 – Water Quality Standards and Chapter 11-55 – Water Pollution Control.
- B. For projects at Honolulu, Kalaehoa Barbers Point, and Kahului Harbors ONLY, HDOT Harbors, Stormwater Management Plan.
- C. For projects at Honolulu, Kalaehoa Barbers Point, and Kahului Harbors ONLY, City and County of Honolulu (CCH), Rules Relating to Water Quality.
- D. For projects at Honolulu, Kalaehoa Barbers Point, and Kahului Harbors ONLY, CCH, Storm Water BMP Manual for Construction.
- E. 40 CFR Part 110, Environmental Protection Agency (EPA), Discharge of Oil.

- F. 40 CFR Part 117, EPA, Determination of Reportable Quantities for Hazardous Substances.
- G. 40 CFR Part 261, EPA, Identification and Listing of Hazardous Waste.
- H. 40 CFR Part 302, EPA, Designation, Reportable Quantities, and Notification.
- I. 49 CFR Part 171, U.S. Department of Transportation, Hazardous Materials Regulations.

12.3 MATERIALS - Materials shall conform to the following when applicable:

- A. Slope Drains. Slope drains may be constructed of pipe, fiber, mats, erosion control fabric, geotextiles, rubble, Portland cement concrete, bituminous concrete, plastic sheets, or other materials acceptable to the Construction Engineer.
- B. Grass. Grass shall be quick growing species such as rye grass, Italian grass, or cereal grasses. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover. Alternative grasses are allowable if acceptable to the Construction Engineer.
- C. Fertilizer and Soil Conditions. Fertilizer and soil conditioners shall be a standard commercial grade acceptable to the Construction Engineer.
- D. Silt Fences. Silt fences shall be synthetic filter fabric mounted on posts and embedded in compacted ground in compliance with American Society for Testing and Materials (ASTM) D6462-03, Standard Practice for Silt Fence Installation.
- E. Berms. Berms shall be gravel or sand wrapped with geotextile material. Alternate materials are allowable if acceptable to the Construction Engineer.
- F. Alternate materials or methods to control, prevent, remove, and dispose of pollution are allowable if acceptable to the Construction Engineer.

12.4 CONSTRUCTION

- A. Preconstruction Requirements.
  - 1. Temporary Water Pollution, Dust, and Erosion Control Meeting. The contractor shall be required to submit a site-specific BMP Plan to the Construction Engineer and address all comments by the Construction Engineer. After the Plan is accepted in writing by the Construction Engineer, the Contractor shall schedule a meeting with the Construction Engineer before the start of construction work to discuss the sequence of work, and plans and proposals for water pollution, dust, and erosion control.

2. Temporary Water Pollution, Dust, and Erosion Control Submittals.  
The Contractor shall submit the site-specific BMP Plan to the Construction Engineer prior to the start of work for review of compliance with this Article. A site-specific BMP Plan template is available online at <https://hidot.hawaii.gov/harbors/malamaikeawakai/>, under **HDOT Harbors Construction and Post-Construction Programs – Documents and Forms.**
- a. Written site-specific BMP Plan shall include the following as applicable:
- 1) Identification of potential pollutants and their sources and other factors that may cause water pollution, dust, and erosion.
  - 2) A list of all material and heavy equipment to be used during construction. Vehicles and equipment shall be well maintained and free from any type of fluid leaks.
  - 3) Construction schedule.
  - 4) Name(s) of specific individual(s) designated responsible for water pollution, dust and erosion controls on the project site. Include home, business, and cellular telephone numbers, fax numbers, and e-mail addresses.
  - 5) Descriptions of the methods and devices used to eliminate certain pollutants (e.g., wastewater, fuels, solvents, detergents, toxic or hazardous substances) from discharging into state waters and drainage systems, and provide details of BMP(s) to be installed or utilized. Indicate approximate dates when BMP(s) will be installed and removed.
  - 6) Description of maintenance and subsequent removal of BMP(s).
  - 7) Method(s) of removal and disposal of solid and regulated hazardous wastes encountered or generated during construction. The Contractor is advised to procure regulated hazardous materials on an as-needed basis, as feasible. All excess regulated hazardous materials at the conclusion of this project shall remain the property of the Contractor and shall be removed from HDOT Harbors property upon the completion of the project.
  - 8) Method(s) of removing and disposing concrete and asphalt pavement cutting slurry, concrete curing water, and hydrodemolition water.

- 9) Method(s) of containing, removing and disposing of demolition dust and debris to minimize the discharge of these pollutants into state waters and drainage systems.
- 10) Spill kit contents and location.
- 11) Fugitive dust control, including dust from grinding, sweeping, or brooming off operations or combination thereof.
- 12) Method(s) of storing and handling of regulated hazardous materials (e.g. oils, paints) and other products used for the project. Safety Data Sheets (SDS) for all regulated hazardous materials used during construction activities shall be kept on-site throughout the duration of the project and readily available upon inspection. All containers of regulated hazardous materials should be provided with secondary containment during storage. Regulated hazardous materials not specifically needed in the execution of this project shall not be brought or stored on site. As feasible, the Contractor is encouraged to use products that do not contain any regulated constituents. The use of green products is encouraged.
- 13) Method(s) of concrete washout/waste control.
- 14) Method(s) of managing material stockpiles to minimize erosion and dust.
- 15) Good housekeeping practices.
  - a) Minimize tracking of sediment offsite from project entrances and exits.
  - b) Litter management. The Contractor shall have a comprehensive housekeeping policy and shall actively enforce housekeeping requirements. Housekeeping items include, but are not limited to, cups, cans, bottles and other forms of lightweight litter, unattended containers of hazardous materials, concrete debris (e.g. dust, chips, and other sweepings), and discarded articles of disposable Personal Protective Equipment (e.g., earplugs, dust masks, and gloves). Employees who are specifically tasked with housekeeping duties shall be identified by name.

- c) The Contractor should provide and maintain covered waste receptacles. No construction debris or other refuse that is generated as a result of project activities is to be disposed in HDOT Harbors-owned waste receptacles.
- 16) Provide plan(s)/drawing(s) showing location of followings when applicable:
- a) Boundaries of the property and the locations where construction activities will occur, including:
    - i. Locations where earth-disturbing activities will occur (noting any sequencing of construction activities);
    - ii. Approximate slopes and drainage patterns with flow arrows before and after the construction;
    - iii. Locations where sediment, soil, or other construction materials will be stockpiled;
    - iv. Locations of any contaminated soil or contaminated soil stockpiles;
    - v. Locations of any crossings of state waters;
    - vi. Designated points on the site where vehicle will exit onto paved roads;
    - vii. Locations of structures and other impervious surfaces upon completion of construction; and
    - viii. Locations of construction support activity areas.
  - b) Locations of all state waters, including wetlands and indicate which water bodies are listed as impaired.
  - c) The boundary lines of any natural buffers.
  - d) Topography of the site, existing vegetative cover, and features (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of stormwater

onto, over, and from the site property before and after major grading activities.

- e) Stormwater discharge locations, including locations of any storm drain inlets on-site and in the immediate vicinity of the site to receive stormwater runoff from the project; and locations where stormwater will be discharging to state waters (including wetlands).
  - f) Locations of all potential pollutant-generating activities.
  - g) Locations of stormwater control measures; and
  - h) Locations where chemicals will be used and stored.
- 17) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Parts 110, 117, or 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.
- 18) The Contractor shall date and sign the site-specific BMP Plan.

- b. The Contractor shall keep the accepted Plan on-site or at an easily accessible location throughout the duration of the project. Revisions to the Plan shall be included with the original plan. The Contractor shall obtain written acceptance from the Construction Engineer before revising BMP. An updated Plan shall be kept on-site throughout the remainder duration of the project.

The Contractor shall follow guidelines in the “*The City and County of Honolulu Storm Water Best Management Practice Manual – Construction*,” (dated November 2011) in developing, installing, and maintaining BMP for the project. Additionally, the Contractor shall follow applicable CCH *Rules Relating to Water Quality for all projects at Honolulu, Kalaeha, Barbers Point, and Kahului Harbors*, and use respective Soil Erosion Guidelines for other Maui, Kauai and Hawaii County projects. Information can be found at the respective County websites.

- B. Construction Requirements are as follows.



1. No work shall be allowed to begin until submittals detailed in Subsection 3.4.A.2 – Temporary Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Construction Engineer. The Contractor shall prevent pollutants from entering state waters. These efforts shall address areas such as those that drain to water, are over water, or drain to storm drains adjacent and in the area of the project site. The Contractor shall design, operate, implement, and maintain the Plan to ensure that storm water discharges associated with construction activities will not cause or contribute to a violation of applicable state water quality standards.
2. All projects at Honolulu, Kalaehoa Barbers Point, and Kahului Harbors are subject to HDOT Harbors SWMP requirements for construction at those harbors unless the project meets a specified exemption class. The requirements include, but are not limited to, construction site BMP initial, recurring (i.e. every two weeks from October through March and every two months otherwise), and final inspections at the frequencies outlined in the SWMP. No grading or land disturbance activities are allowed until the initial BMP inspection is completed and required BMPs are found to be properly installed.
3. Address all comments received from the Construction Engineer.
4. Modify and resubmit plans and construction schedules to correct conditions that develop during construction which were unforeseen during the design and pre-construction stages.
5. Coordinate temporary control provisions with permanent control features throughout the construction and post-construction period.
6. BMP shall be in place and operational until the construction is completed and accepted by Harbors.
7. Install and maintain either or both stabilized construction entrances and wheel washes to minimize tracking of dirt and mud onto roadways. Restrict traffic to stabilized construction areas only. Clean dirt, mud, or other material tracked onto the road immediately. Modify stabilized construction entrances to prevent mud from being tracked onto roadways.
8. Chemicals may be used as soil stabilizers for either or both erosion and dust control if acceptable to the Construction Engineer.
9. Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be a source of fugitive dust.
10. Clean up and remove any pollutant that can be attributed to the Contractor.

11. Install or modify BMP due to change in the Contractor's means and methods, or for omitted condition that should have been allowed for in the accepted site-specific BMP Plan or a BMP that replaces an accepted site-specific BMP that is not satisfactorily performing.
12. Properly maintain BMP.
13. Remove, replace or relocate any BMP that must be removed, replaced or relocated due to potential or actual flooding, or potential danger or damage to the project or public.
14. The Contractor's designated representative specified in Subsection 3.4.A.2.a.4 shall address any BMP concerns brought up by the Construction Engineer within 24 hours of notification, including weekends and holidays. Should the Contractor fail to satisfactorily address these concerns, the Construction Engineer reserves the right to employ outside assistance or use the Construction Engineer's own labor forces to provide necessary corrective measures. The Construction Engineer will charge the Contractor such incurred costs plus any associated project engineering costs. The Construction Engineer will make appropriate deductions from the Contractor's monthly progress estimate. Failure to apply BMP shall result in either or both the establishment and increase in the amount of retainage due to unsatisfactory progress or withholding of monthly progress payment. Continued failure to apply BMP may result in one or more of the following: The Contractor being fully responsible for all additional costs incurred by HDOT Harbors including any fines levied by HDOH, suspension of the Contract, or cancellation of the Contract.

- C. Hydrotesting Activities. If work includes removing, relocation or installing waterlines, and the Contractor elects to flush waterline or discharge hydrotesting effluent into state waters or drainage systems, obtain a Notice of General Permit Coverage (NGPC) authorizing discharges associated with hydrotesting waters from the HDOH Clean Water Branch (CWB). If a permit is required, prepare and submit permit application (CWB-Notice of Intent (NOI) Form F) to the HDOH CWB.

Do not begin hydrotesting activities until the HDOH CWB has issued a NGPC. Hydrotesting operations shall be in accordance with conditions in the NGPC. Submit a copy of the NPDES Hydrotesting Waters Application and Permit to the Construction Engineer.

- D. Dewatering Activities. If excavation or backfilling operations requires dewatering, and the Contractor elects to discharge dewatering effluent into state waters or existing drainage systems, the Contractor shall obtain an NGPC authorizing discharges associated with construction activity dewatering from the HDOH CWB. If a permit is required, prepare and submit permit application (CWB-NOI Form G) to the HDOH CWB.

Do not begin dewatering activities until the HDOH-CWB has issued an NGPC. Conduct dewatering operations in accordance with the conditions in the NGPC. Submit a copy of the NPDES Dewatering Application and Permit to the Construction Engineer.

12.5 PAYMENT – Payment for Temporary Water Pollution, Dust, and Erosion Control shall not be measured and paid for separately but shall be considered incidental to the applicable items described in Article X of these Specifications.

No progress payment will be authorized until the Construction Engineer accepts in writing the site-specific BMP Plan or when the Contractor fails to maintain the project site in accordance with the accepted BMP Plan.

The Contractor shall reimburse the State of Hawaii within 30-day for the full amount of all outstanding costs incurred by the State of Hawaii for all citations or fines received as a result of the Contractor's non-compliance with regulations.

## ARTICLE XIII – DEMOLITION AND REMOVAL

### 13.1 GENERAL

Description. The work under this article of the specifications consists of the furnishing and installation of all labor and materials required to demolish the and dispose of the existing Superferry ramp and additional ramp components, chain link fence components, and other miscellaneous items located in a separate area as shown on the plans.

- A. All work shall be in accordance with the following sections of the Standard Specifications except as modified or supplemented herein:  
  
Section 202 Removal of Structures and Obstructions
- B. Section(s) on Materials referenced in the above sections are hereby incorporated.
- C. Submit proposed demolition and removal procedures to the Harbors Construction Engineer before work is started. Procedures shall provide detailed description of methods and equipment to be used for each operation, and sequence of operations including tentative dates and times where demolition work will produce excessive noise levels.

### 13.2 CONSTRUCTION METHODS

- A. All work shall be executed in an orderly and careful manner with due consideration for all items to remain. The Contractor shall take precautions to prevent damage to items indicated to remain. The Contractor shall repair any damage to items indicated to remain at no cost to the State.
- B. Contractor shall assume hydraulic fluid remains in the ramp system and shall take the necessary precautions to prevent the fluid from discharging into the Harbor and clean up any spills.
- C. Noise and Dust Control - The following noise and dust control measures are listed to reduce the negative impacts to the tenants of Nawiliwili Harbor during the construction activities.
  - 1. The Contractor shall coordinate with the Harbors Construction Engineer the dates and times when demolition work will produce excessive sound levels. The Contractor shall schedule work around tenant operations or provide other measures to minimize noise during construction activities when required.
  - 2. The Contractor shall take appropriate action to check the spread of dust and to avoid the creation of nuisance in the surrounding area. Provide

barriers, dust screens, tarpaulins or similar action to prevent damage to and dust from entering the adjacent structures. Comply with all dust regulations imposed by local air pollution agencies.

3. The Contractor shall obtain approval from the Harbors Construction Engineer for proposed noise and dust control measures to be implemented during the construction activities prior to placement.
- D. Use of explosives will not be permitted.
- E. Contractor shall notify the Harbors Construction Engineer if existing utilities will not be in service during demolition work.
- F. Removal and Disposal
1. Shop drawings for the existing Superferry ramp to be demolished are provided at the end of the specifications for reference. Contractor shall also remove and dispose of additional ramp components, chain link fence components, and other miscellaneous items located in a separate area as shown on the plans.
  2. Title of Materials – Title to all materials to be removed, except as specified otherwise, is vested in the Contractor upon approval by the Harbors Construction Engineer of the Contractor’s demolition and removal procedures, and authorization to begin demolition. The State will not be responsible for the condition or loss of, or damage to, such property after notice to proceed.
  3. Removed material shall be disposed of away from the project site in a lawful manner at no cost to the State. The Contractor will not be allowed to deposit removed material into trash dumpsters owned by the State or tenants.
  4. Remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets or adjacent areas. Comply with Federal, State, and local hauling and disposal regulations.

13.3 PAYMENT - Payment for Demolition and Removal Work shall be made as described in Article X of these Specifications.

ARTICLE XIV – PROJECT PHOTOGRAPHS



Photo 1: Project Site



Photo 2: Additional Superferry Ramp and Chain Link Fence Components for Removal and Disposal



Photo 3: Fender Steel Frames for Removal and Disposal

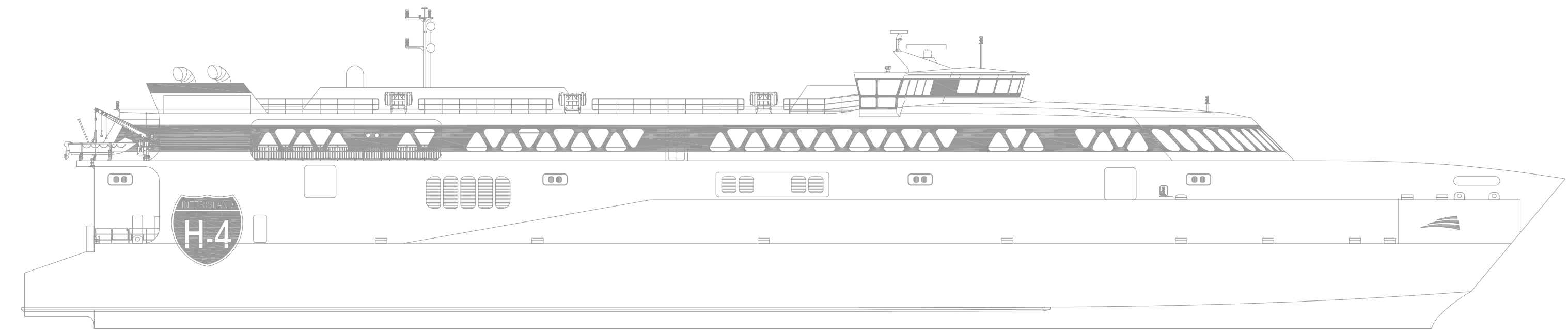


Photo 4: Additional Items for Removal and Disposal

# HDOT JOB NO. HC90018

## BARGES AND VEHICLE RAMP SYSTEMS FOR INTER-ISLAND FERRY SERVICE

ISSUED FOR CONSTRUCTION  
SEPTEMBER 1, 2006



No.	SHEET TITLE	IN SET	No.	SHEET TITLE	IN SET	No.	SHEET TITLE	IN SET
GENERAL			STRUCTURAL CONTINUED			MECHANICAL CONTINUED		
G-1	TITLE SHEET	X	S-25.2	FERRY APRON FINGERS - SECTIONS AND DETAILS		M-13.5	HPU PLATFORM ASSEMBLY	X
G-2	HONOLULU INSTALLATION	X	S-26	SHORE APRON FINGERS - SECTIONS AND DETAILS	X	M-13.6	NAWILIWILI HPU PLATFORM PLAN AND ELEVATION	X
G-3	KAHULUI INSTALLATION	X	S-27	SHORE RAMP FINGER - SECTION AND DETAILS 1	X	M-16.0	NAWILIWILI RAMP DOLLIE INSTALLATION	X
G-4	KAWAIHAE INSTALLATION	X	S-29	RAILING SECTIONS AND DETAILS 1	X	M-16.1	NAWILIWILI RAMP DOLLIE	X
G-5	NAWILIWILI INSTALLATION	X	S-30	RAILING SECTIONS AND DETAILS 2	X	M-16.2	NAWILIWILI RAMP DOLLIE SADDLE ASSEMBLY	X
STRUCTURAL			MECHANICAL					
S-1	STRUCTURAL NOTES	X	S-31	RAILING SECTIONS AND DETAILS 3	X	M-17.0	TOW ATTACHMENT	X
S-1.1	STRUCTURAL NOTES CONTINUED, ABBREVIATIONS & VICINITY MAP	X	S-32	RAMP GATE SECTIONS AND DETAILS	X	M-17.1	TOW ATTACHMENT FORK LOCK DETAIL	X
S-2	SHORE RAMP AT NAWILIWILI TERMINAL - PLAN & ELEVATION	X	S-33	RAMP GATE SECTIONS AND DETAILS	X	M-17.2	TOW ATTACHMENT PIN PLATE DETAIL	X
S-3.0	SHORE RAMP AT NAWILIWILI TERMINAL - BOTTOM CHORD FRAMING PLAN AND SECTION	X	M-1	MECHANICAL NOTES	X	M-18.0	PEDESTRIAN BARRIER INSTALLATION DETAILS	X
S-3.1	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS	X	M-2	SHORE RAMP INSTALLATION & PARTS IDENTIFICATION	X	M-18.1	PEDESTRIAN BARRIER FABRICATION AND DETAILS	X
S-3.2	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS	X	M-3	SHORE RAMP MAIN WHEELSET & APRON CYLINDER INSTALLATION	X			
S-3.3	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS & DETAILS	X	M-4	SHORE RAMP WHEEL ASSEMBLY	X			
S-3.4	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS & DETAILS	X	M-5.0	SHORE APRON LOCKING STRUT	X			
S-3.5	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS & DETAILS 2	X	M-5.1	SHORE RAMP SUPPORT JACK	X			
S-4.0	SHORE RAMP AT NAWILIWILI TERMINAL - TYPICAL SECTION	X	M-6.0	APRON LIFT SYSTEM GENERAL ARRANGEMENT	X			
S-4.1	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 1	X	M-7.0a	APRON LIFT SYSTEM - LIFT FRAME ASSEMBLY - KAWAIHAE				
S-4.2	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 2	X	M-7.0b	APRON LIFT SYSTEM - LIFT FRAME ASSEMBLY - HON, KAH & NAW				
S-4.3	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 3	X	M-7.0c	UNDERBEAM ROLER ASSEMBLY				
S-4.4	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 4	X	M-7.1	LIFT FRAME ASSEMBLY DETAILS				
S-4.5	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 5 & 6	X	M-7.2	HINGE BEAM PRIMARY WELDMENT DETAILS	X			
S-4.6	SHORE RAMP AT NAWILIWILI TERMINAL - SECTION AT GRID 7	X	M-7.3	HINGE BEAM PRIMARY WELDMENT SECTIONS & DETAILS	X			
S-5	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS 1	X	M-7.4	UNDERBEAM CLEVIS	X			
S-6	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS 3	X	M-7.5	38' APRON UNDERBEAM PLAN & ELEVATION VIEWS	X			
S-7	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS	X	M-7.6	38' APRON UNDERBEAM DETAILS	X			
S-9	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS	X	M-7.7	28' APRON UNDERBEAM PLAN & ELEVATION VIEWS	X			
S-10	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS	X	M-7.8	28' APRON UNDERBEAM DETAILS	X			
S-11	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS	X	M-7.9	LIFT FRAME DETAILS 38' AND 28' APRON SYSTEMS	X			
S-12	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS	X	M-7.10	REAR BEAM DETAILS 38' AND 28' APRON SYSTEMS	X			
S-13	SHORE RAMP AT NAWILIWILI TERMINAL - SECTIONS AND DETAILS 2	X	M-7.11	FERRY APRON LOCKING SYSTEM	X			
S-14	SHORE RAMP PLAN & ELEVATION AT HONOLULU, KAWAIHAE & KAHULUI	X	M-7.12	LIFT FRAME DETAILS	X			
S-15	SHORE RAMP TYPICAL SECTION AT HONOLULU, KAWAIHAE & KAHULUI	X	M-7.13	CENTERING CYLINDER ROD END	X			
S-15.1	SHORE RAMP TYPICAL SECTION AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.0	SUBFRAME ASSEMBLY	X			
S-16	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.1	SUBFRAME ASSEMBLY DETAILS	X			
S-17	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.2	SUBFRAME DETAILS BARGE APRONS	X			
S-17.1	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.3	SUBFRAME DETAILS BARGE APRONS	X			
S-17.2	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.4	SUBFRAME DETAILS NAWILIWILI APRON	X			
S-17.3	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.5	SUBFRAME DETAILS NAWILIWILI APRON	X			
S-17.4	SHORE RAMP SECTIONS & DETAILS AT HONOLULU, KAWAIHAE & KAHULUI	X	M-8.6	SUBFRAME DETAILS BEARING PANEL & SECTION VIEWS	X			
S-18	25' SHORE APRON AT HONOLULU - PLAN AND ELEVATION	X	M-8.7	SUBFRAME DETAILS 28' & 38' KINGPIN GUIDES	X			
S-19	30' SHORE APRON AT KAHULUI - PLAN AND ELEVATION	X	M-8.8	SUBFRAME DETAILS BEARING PANEL & SECTION VIEWS	X			
S-20	35' SHORE APRON AT KAWAIHAE - PLAN AND ELEVATION	X	M-8.9	SUBFRAME DETAILS CYLINDER BEAM	X			
S-21	28' FERRY APRON AT HONOLULU, KAHULUI & NAWILIWILI - PLAN AND ELEVATION	X	M-8.10	SUBFRAME DETAILS BEARINGS PLATES	X			
S-22	38' FERRY APRON AT KAWAIHAE - PLAN AND ELEVATION	X	M-9	FERRY APRON HINGES & MISCELLANEOUS MECHANICAL DETAILS	X			
S-22.1	TRANSITION SPAN - PLAN AND ELEVATION	X	M-10.0	FERRY APRON HYDRAULIC LIFT & LOCK CYLINDERS	X			
S-23	SHORE APRON - SECTIONS AND DETAILS	X	M-10.1	FERRY APRON HYDRAULIC SNUBBER CYLINDERS	X			
S-24	SHORE APRON - SECTIONS AND DETAILS 1	X	M-10.2	SHORE APRON AND TOW ATTACHMENT CYLINDERS	X			
S-24.1	SHORE APRON - SECTIONS AND DETAILS 2	X	M-13.0	28' APRON HYDRAULIC SCHEM. HONOLULU, KAHULUI & NAWILIWILI	X			
S-24.2	SHORE APRON - SECTIONS AND DETAILS 3	X	M-13.1	38' APRON HYDRAULIC SCHEMATIC, KAWAIHAE	X			
S-25	FERRY APRON - SECTIONS AND DETAILS 1	X	M-13.2	HYDRAULIC COMPONENTS AND LOGIC	X			
S-25.1	FERRY APRON - SECTIONS AND DETAILS 2	X	M-13.3	SHORE TO BARGE RAMP HYDRAULICS, HONOLULU, KAHULUI, KAWAIHAE	X			
S-25.11	FERRY APRON - SECTIONS & DETAILS	X	M-13.4	FERRY APRON HYDRAULIC POWER UNIT GENERAL ARRANGEMENT	X			

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**

**kpff** Consulting Engineers  
1601 Fifth Avenue, Suite 1600  
Seattle, Washington 98101  
(206) 622-5822 Fax (206) 622-8130

JOB TITLE  
**BARGES & VEHICLE RAMP SYSTEMS  
FOR INTERISLAND FERRY SERVICE**

SHEET TITLE  
TITLE SHEET

SUBMITTED BY: \_\_\_\_\_ RECOMMENDED BY: \_\_\_\_\_

SECTION HEAD: \_\_\_\_\_ ENGINEERING PROGRAM MANAGER: \_\_\_\_\_

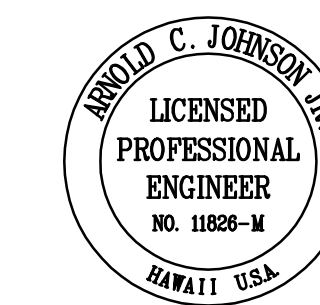
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DRAWN BY: JLF FOR HARBORS ADMINISTRATOR: \_\_\_\_\_  
CHECKED BY: ACJ JOB NUMBER: H.C. 90018  
DATE: 9/1/06 REVISION: \_\_\_\_\_  
SCALE: N/A \_\_\_\_\_

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(NOT TO SCALE)

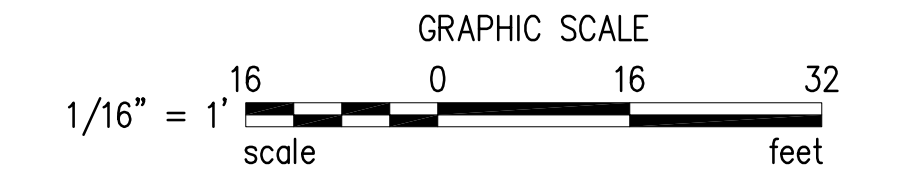
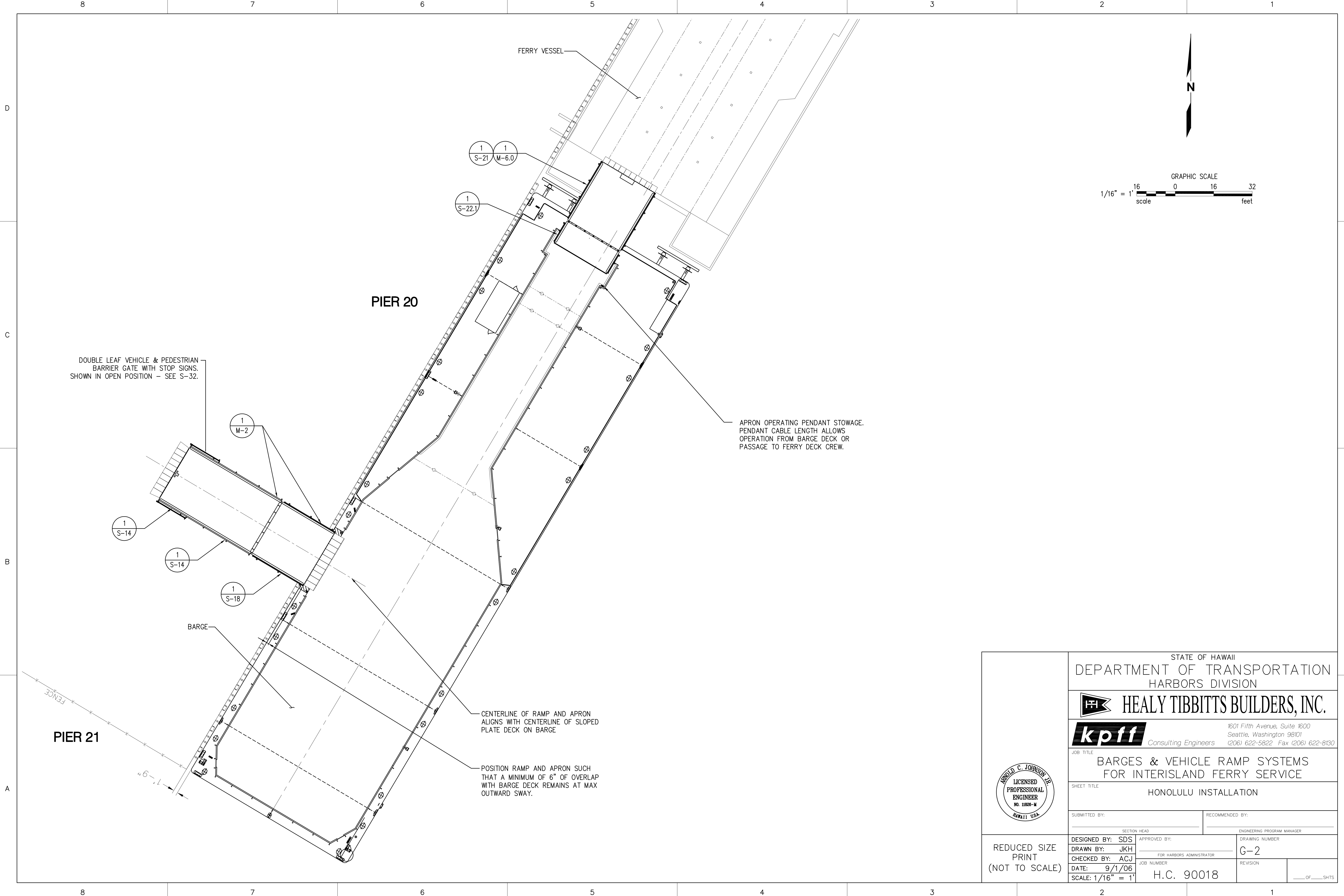
DRAWING NUMBER  
G-1

REVISION

DESIGN RECORD DRAWING





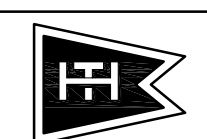



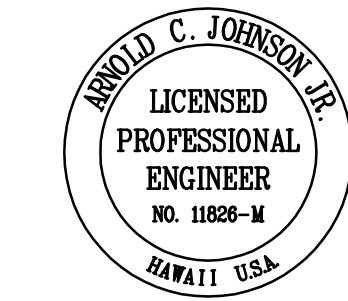
DOUBLE LEAF VEHICLE & PEDESTRIAN BARRIER GATE WITH STOP SIGNS. SHOWN IN OPEN POSITION - SEE S-32.

APRON OPERATING PENDANT STOWAGE. PENDANT CABLE LENGTH ALLOWS OPERATION FROM BARGE DECK OR PASSAGE TO FERRY DECK CREW.

CENTERLINE OF RAMP AND APRON ALIGNS WITH CENTERLINE OF SLOPED PLATE DECK ON BARGE

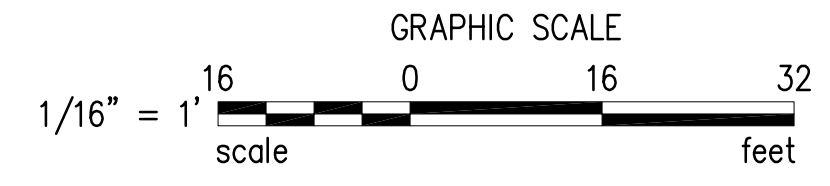
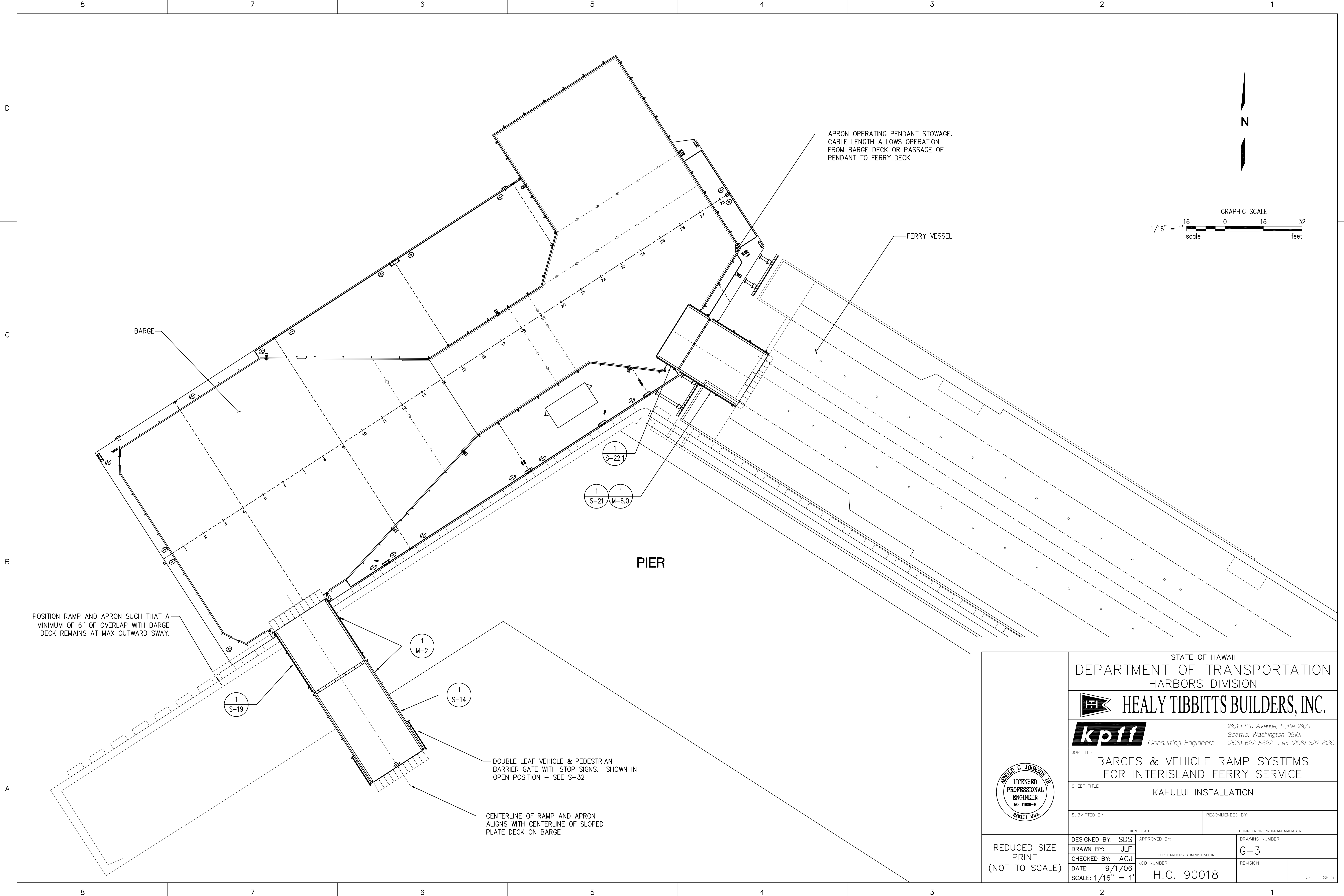
POSITION RAMP AND APRON SUCH THAT A MINIMUM OF 6" OF OVERLAP WITH BARGE DECK REMAINS AT MAX OUTWARD SWAY.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
 <b>HEALY TIBBITTS BUILDERS, INC.</b>			
 Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>HONOLULU INSTALLATION</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: JKH		FOR HARBORS ADMINISTRATOR	
CHECKED BY: ACJ		JOB NUMBER	
DATE: 9/1/06		H.C. 90018	
SCALE: 1/16" = 1'		DRAWING NUMBER <b>G-2</b>	
		REVISION	
		___ OF ___ SHTS	

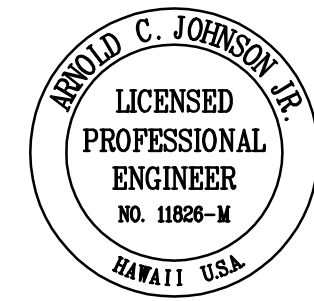


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DESIGN RECORD DRAWING

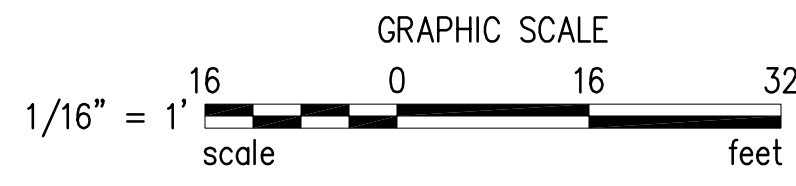
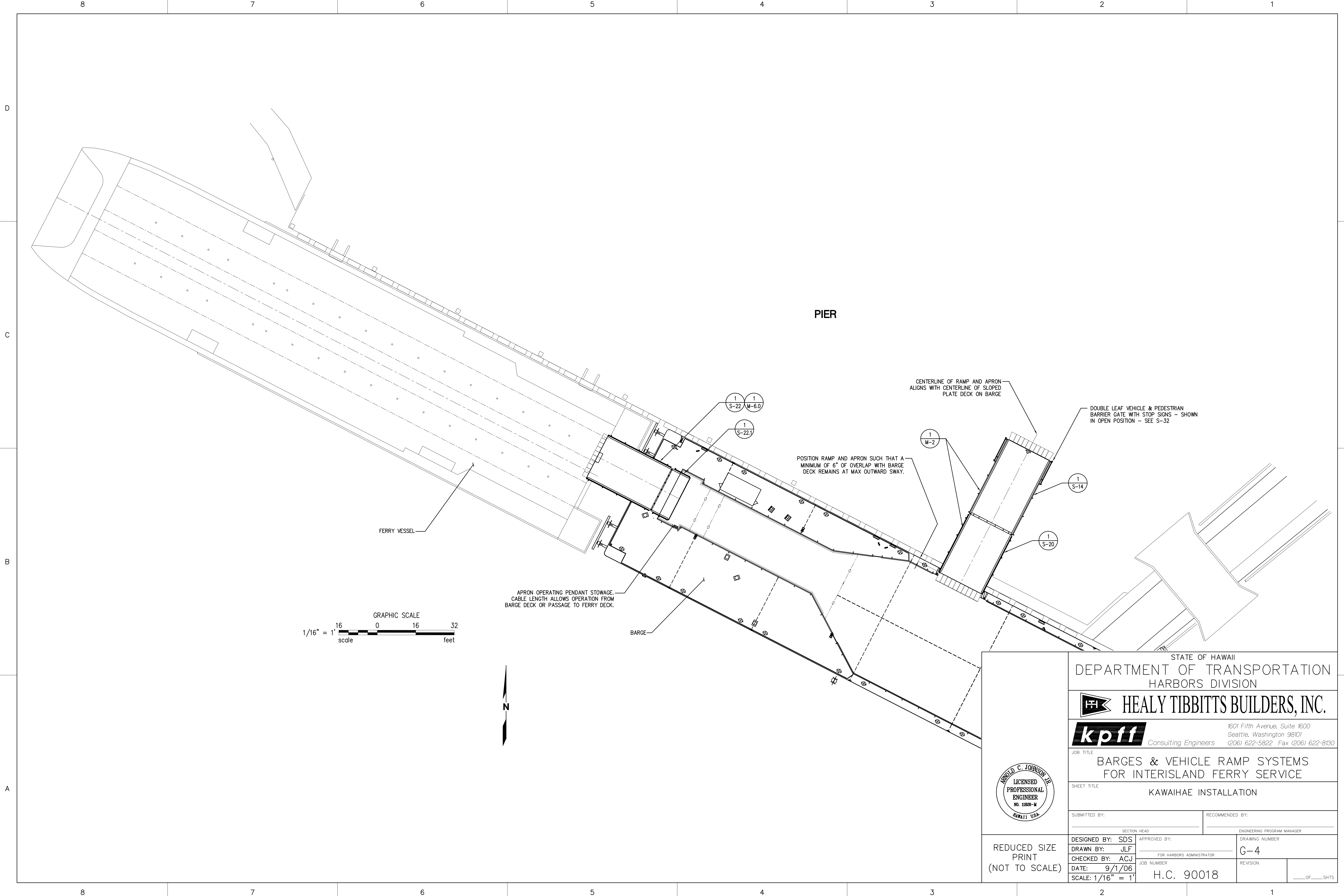




STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>KAHULUI INSTALLATION</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: JLF		FOR HARBORS ADMINISTRATOR	
CHECKED BY: ACJ		JOB NUMBER	
DATE: 9/1/06		REVISION	
SCALE: 1/16" = 1'		H.C. 90018	
DRAWING NUMBER <b>G-3</b>		REVISION	
REVISION		___ OF ___ SHTS	

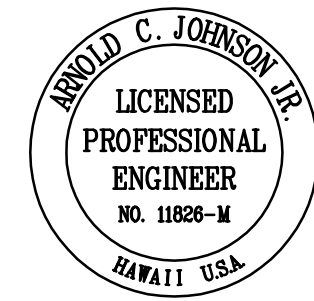


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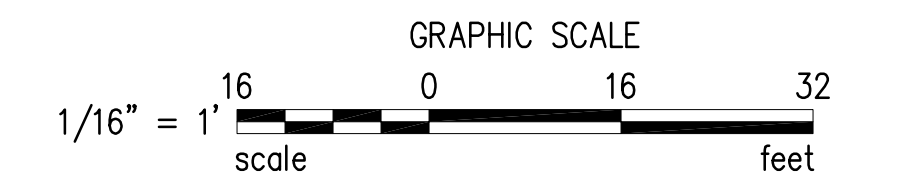
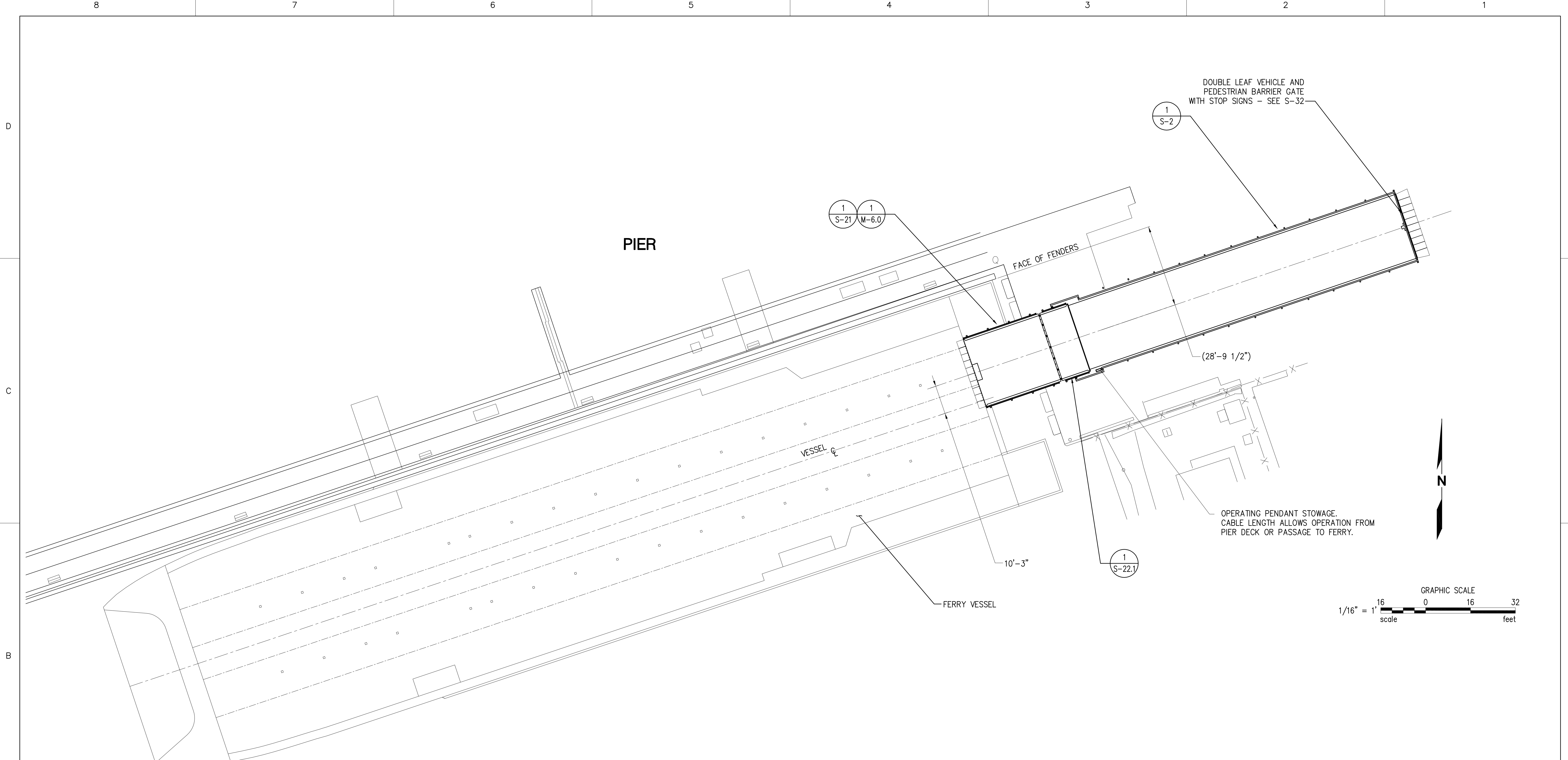


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SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: JLF		FOR HARBORS ADMINISTRATOR	
CHECKED BY: ACJ		JOB NUMBER	
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	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
	SHEET TITLE <b>NAWLIWILI INSTALLATION</b>	
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY: _____	DRAWING NUMBER
DRAWN BY: JLF	FOR HARBORS ADMINISTRATOR	<b>G-5</b>
CHECKED BY: ACJ	JOB NUMBER	REVISION
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DESIGN RECORD DRAWING

**GENERAL**

- THE FABRICATOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.
- THE FABRICATOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, LIFTING AND LASHING FITTINGS, PADS AND OTHER AIDS, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES AND UNEQUAL PARTS.
- DURING OUR INITIAL SITE VISIT TO PIER 20 AT HONOLULU HARBOR ON NOVEMBER 2005, EXTENSIVE DETERIORATION OF SHEET PILE WALL UNDER THE BULLRAIL AND EROSION OF THE PAVEMENT BEHIND THE SHEET PILE WAS OBSERVED. THE SHEET PILE AND THE PAVEMENT BEHIND IT WILL BE REPLACED AND REPAIRED PRIOR TO INSTALLATION OF THE HONOLULU SHORE RAMP.
- CONFLICTING REQUIREMENTS: IN THE EVENT OF A CONFLICT BETWEEN THE CONTRACT DRAWINGS, GENERAL NOTES, AND SPECIFICATIONS, AT THE DISCRETION OF THE ENGINEER, THE MORE STRINGENT PROVISION SHALL GOVERN.
- FOR LOADING AND OTHER CRITERIA NOT COVERED HERE, REFER TO BASIS OF DESIGN.
- THE FABRICATOR SHALL PROVIDE ACCESS TO THE WELDING INSPECTOR OR ENGINEER AT ALL TIMES WHILE THE WORK IS BEING PERFORMED.

**APPLICABLE DESIGN CODES, GUIDELINES AND REFERENCES**

- ALL MATERIALS, METHODS, AND TOLERANCES ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION – 2002, UNLESS NOTED OTHERWISE, AND THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", 13TH EDITION, 2005.
- HOLLOW STRUCTURAL SECTION STANDARD PRACTICES, FABRICATION AND TOLERANCES ARE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS."
- BASIS FOR DESIGN – VEHICLE RAMPS AND APRONS FOR INTER-ISLAND FERRY SERVICES.

**STEEL**

IN ADDITION TO THESE REQUIREMENTS, STEEL SHALL BE IN ACCORDANCE WITH SPECIFICATION, SECTION 05120.

- STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A 709, GRADE 50, UNLESS NOTED OTHERWISE.
- HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 GRADE B.
- STEEL FABRICATION SHALL MEET THE REQUIREMENTS OF ASTM A6.
- STAINLESS STEEL SHALL BE ASTM A276 TYPE 316L OR ASTM A240 TYPE 316L, UNLESS NOTED OTHERWISE.
- STAINLESS STEEL PIPE SHALL BE ASTM A312 GRADE TP316L.
- STAINLESS STEEL ROD SHALL BE AISI 630 H1150.
- ALL STRUCTURAL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS AND REFERENCE STANDARDS. INDICATION ON SECTION 05120-STRUCTURE STEEL.
- STEEL PIPES SHALL CONFORM TO ASTM A53, GRADE B, UNO.
- ALL ENDS OF HSS MEMBERS AND OTHER OPEN MEMBERS SHALL HAVE A 1/4" CAP PLATE AND SEAL WELD UNLESS NOTED OTHERWISE.
- RADIUS ALL SHARP EDGES TO 3 MILLIMETERS STEEL.

**WELDING**

IN ADDITION TO THESE REQUIREMENTS, WELDING SHALL BE IN ACCORDANCE WITH SPECIFICATION, SECTION 05091.

- ALL WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED FOR THE WELD AND POSITION SHOWN IN ACCORDANCE WITH AWS D1.1 AND HAVE CURRENT CERTIFICATION FROM AWS.
- WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY WELDING CODE D1.1-2002, FOR HSS MEMBERS ONLY AND AWS D1.5-2002 BRIDGE WELDING CODE FOR MEMBERS OTHER THAN HSS.
- WELDING ELECTRODES SHALL BE 70 KSI STRENGTH AND SHALL BE "LOW-HYDROGEN" ELECTRODES.
- WELDING OF STAINLESS STEEL SHALL BE PERFORMED WITH STAINLESS STEEL ELECTRODES AND SHALL BE IN ACCORDANCE WITH AWS D1.6.
- SEAL WELD ALL OPENINGS IN HSS MEMBERS AND THE PERIMETERS OF ALL FAYING SURFACES. SEAL WELDS ON BASE MATERIAL GREATER THAN 3/4 INCH THICK SHALL BE A 5/16" FILLET, UNO. IF SEAL WELDS ARE IN CONFLICT WITH AWS REQUIREMENTS CONSULT ENGINEER FOR GUIDANCE.
- SEAL WELD ALL NON-WELDED INTERFACES.

**BOLTING**

- APPLY MARINE GRADE LUBRICANT TO THREADS OF ALL STAINLESS STEEL BOLTED PARTSPRIOR TO FASTENING.
- DRILL OR PUNCH ALL HOLES REQUIRED FOR THE ATTACHMENT OF WORK OF OTHER TRADES AND FOR BOLTED CONNECTIONS. BURNED HOLES ARE NOT ACCEPTABLE.
- BOLTS SHALL BE ASTM A325, UNO.

**GALVANIZING**

- ANY STEEL IDENTIFIED AS GALVANIZED SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 OR A153, UNLESS NOTED OTHERWISE.
- PRIOR TO WELDING THE FABRICATOR SHALL REMOVE GALVANIZING FROM AREAS TO BE WELDED BY BURNING, ABRASIVE BLASTING OR GRINDING IN ACCORDANCE WITH AWS D-19.0 "WELDING ZINC COATED STEEL."
- GALVANIZED COATING DAMAGED, OR REMOVED DURING WELDING, SHALL BE REPAIRED BY THE APPLICATION OF ZINC BASED SOLDER REPAIR STICK IN ACCORDANCE WITH ASTM A780. THE ZINC BASED SOLDER REPAIR STICK SHALL BE "ZACLON REPAIR ALLOY" OR APPROVED EQUAL. THE FINAL THICKNESS OF THE COATING SHALL BE 4 MILS.
- THE FABRICATOR & GALVANIZER SHALL COORDINATE MEASURES TO PROVIDE HIGH QUALITY GALVANIZED ITEMS IN ACCORDANCE WITH ASTM A384 AND ASTM A385.

**SUBMITTALS:**

SUBMIT THE FOLLOWING TO THE ENGINEER FOR HIS APPROVAL:

- SUBMIT MILL CERTIFICATES FOR EACH STEEL INDICATING SPECIFICATION COMPLIANCE REGARDING STRENGTH AND CHEMISTRY OF STEEL PROVIDED.
- SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR ALL STRUCTURAL STEEL PRIOR TO ANY FABRICATION.
- WPSs (WELDING PROCEDURE SPECIFICATION)
- PQRs (PERFORMANCE QUALIFICATION RECORD) ON ALL NON-PREQUALIFIED WELDS.
- MANUFACTURERS DATA FOR ALL WELDING CONSUMABLES
- WELD TEST REPORTS

**PAINTING**

IN ADDITION TO THESE REQUIREMENTS, PAINTING SHALL BE IN ACCORDANCE WITH SPECIFICATION, SECTION 09460.

**SURFACE PREPARATIONS**

REMOVE ALL WELD SPLATTER, SMOOTH WELD SEAMS AND SHARP EDGES. FRESH WATER WASH TO REMOVE ALL DIRT AND CONTAMINATION, AS NECESSARY. DEGREASE ACCORDING TO SSPC-SP1 SOLVENT CLEANING. ENSURE AREA IS CLEAN AND DRY PRIOR TO APPLICATION. BLAST DAMAGED/CORRODED AREAS TO SSPC SP6. APPLY THE MATERIAL BEFORE VISIBLE OXIDATION OCCURS. IF OXIDATION DOES OCCUR, THE ENTIRE OXIDIZED SURFACE SHOULD BE RE-BLASTED TO THE STANDARD SPECIFIED ABOVE. FEATHER OR CHIP BACK SURROUNDING AREA TO A SOUND EDGE. OVERLAP ONTO EXISTING COATINGS BY 1 TO 1.5 INCHES.

PRODUCT	COLOR	COATS
INTERZINC 52	MIO SILVER GRAY	1st COAT
INTERGARD 264	MIO DARK GRAY	2nd COAT
INTERTHANE 990	SURF GRAY	TOP COAT

NOTE: INTERTHANE 990 COLOR AS PER OWNERS SPECIFICATIONS.  
1 MIL = 1.0 x 10<sup>-3</sup> INCH

**NON-SKID SURFACE**

NON-SKID COATING BY INTERNATIONAL MARINE COATINGS 1-800 455-9808

COATING SCHEDULE:

- 1ST COAT: PRIMER APPLY INTERGARD 264 EPOZY PRIMER AT 6 MILS, DFT (7.5 MILS WFT).  
2ND COAT: APPLY INTERGARD 631 EPOXY NON-SKID AT 40 MILS, DFT (50 MILS, WFT).

SURFACE PREPARATION:

- REMOVE ALL WELD SPLATTER, SMOOTH WELD SEAMS AND SHARP EDGES. FRESH WATER WASH TO REMOVE ALL DIRT AND CONTAMINATION, AS NECESSARY. DEGREASE ACCORDING TO SSPC-SP1 SOLVENT CLEANING. ENSURE AREA IS CLEAN AND DRY PRIOR TO APPLICATION. BLAST DAMAGED/CORRODED AREAS TO SA2 ISO 8501-1 OR SSPC SP6. APPLY THE MATERIAL BEFORE VISIBLE OXIDATION OCCURS. IF OXIDATION DOES OCCUR, THE ENTIRE OXIDIZED SURFACE SHOULD BE RE-BLASTED TO THE STANDARD SPECIFIED ABOVE. FEATHER OR CHIP BACK SURROUNDING AREA TO A SOUND EDGE. OVERLAP ONTO EXISTING COATINGS BY 1 TO 2 INCHES.
- SURFACES: CLEAN EXTERIOR SURFACES TO BE COATED OF DIRT, DUST, OIL, GREASE, OXIDIZED, LOOSE AND SCALING PAINT, MILDEW, RUST ON METAL AND OTHER FOREIGN MATTER.
- METAL SURFACES: REMOVE CONTAMINATION IN ACCORDANCE WITH SSPC SP-1 SOLVENT CLEANING FOLLOWED BY SSPC SP-10 NEAR WHITE BLAST CLEANING ENTIRE SURFACE INCLUDING ABRASIONS WELDS, SCREEN, STRUCTURAL HOLDING SCREENS AND CONNECTIONS. APPLY PRIMER TO PREPARED SURFACE WITHIN SIX TO EIGHT HOURS FOLLOWING PREPARATION.
- WORK SHALL BE PERFORMED IN THE PRESENCE OF MANUFACTURE'S REPRESENTATIVE. THE PREPARATION AND THE APPLICATION OF ALL COATING SHALL BE IN STRICT RECOMMENDATION OF THE COATING MANUFACTURER AND SPECIFICATION. WHERE THESE MAY BE IN CONFLICT THE MORE STRINGENT SHALL APPLY. THE MANUFACTURER REPRESENTATIVE SHALL HAVE THE AUTHORITY TO REJECT ANY NON-COMPLIANCE WORK INCLUDING SURFACE PREPARATION. THE COATING CONTRACTOR SHALL CORRECT THE WORK THAT IS NOT IN COMPLIANCE WITH THESE SPECIFICATIONS.

**SHOP ASSEMBLY**

- ALL RAMPS AND APRONS SHALL BE COMPLETELY SHOP ASSEMBLED AND SHOP PAINTED PRIOR TO SHIPPING.

**RAMP INSTALLATION**

- RAMPS ARE DESIGNED TO FULLY BEAR ON FLAT/LEVEL SURFACES. THIS SURFACE IS SHOWN AS "THEORETICAL TOP OF EXISTING PIER" ON THE DRAWING.
- INSTALLATION OF RAMP ON UNEVEN SURFACES WILL REQUIRE FULL BEARING SHIMMING UNDER FEET SUCH THAT EFFECTIVE BEARING AREA OF RAMP IS FLAT. THE MAXIMUM TOLERANCE FOR GAP UNDER BASE PLATE SHALL NOT EXCEED 1/64TH OF AN INCH.
- FOR MOVING THE RAMPS AT HONOLULU, KAHULUI AND KAWAIHAE, STEEL WHEELS SHALL TRAVEL ON STRIP OF CONTINUOUS STEEL PLATES, ENGINEERED BY OTHERS TO KEEP THE WHEEL LOADS TO WITHIN THE EXISTING STRUCTURE'S CAPACITY.

**INSPECTION AND TESTING**

- THE FABRICATOR SHALL EMPLOY THE SERVICES OF AN ESTABLISHED INDEPENDENT INSPECTION AND TESTING AGENCY. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE FABRICATOR AND ENGINEER. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- ALL WELDS SHALL BE 100% VISUALLY INSPECTED.
- WELDING INSPECTION AND NDT SHALL BE PERFORMED BY AN INDEPENDENT AWS CERTIFIED TESTING AGENCY.
- AT LEAST 30% OF EACH TYPE AND SIZE OF FILLET WELD AND PJP GROOVE WELD SHALL BE TESTED BY MT.
- ALL CJP WELDS SHALL BE 100% UT TESTED.
- ALL CJP TENSION BUTT WELDS SHALL BE 100% UT TESTED AND 100% MT TESTED.
- WELDING TEST PROCEDURE AND ACCEPTANCE CRITERIA SHALL BE IN ACCORDANCE WITH AWS D1.1.
- THE ENGINEER SHALL PERFORM QC INSPECTIONS OF EACH RAMP OR APRON AT 25% AND 75% COMPLETION.
- THE ENGINEER SHALL PERFORM A FINAL INSPECTION OF EACH COMPLETELY ASSEMBLED RAMP OR APRON PRIOR TO SHIPPING.

**MISCELLANEOUS:**

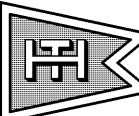

- SEALANT SHALL BE DOW CORNING HVAC/R SILICONE SEALANT OR APPROVED EQUAL. COLOR SHALL BE ALUMINUM.
- NO. 30 ASPHALT FELT SHALL BE TYPE II ASPHALT-SATURATED ORGANIC FELT IN ACCORDANCE WITH ASTM D226.
- MARINE GRADE LUBRICANT SHALL BE "NEVER-SEEZ, MARINE GRADE" ANTI-SIEZE AND LUBRICATING COMPOUND AS MANUFACTURED BY BOSTIK INC.

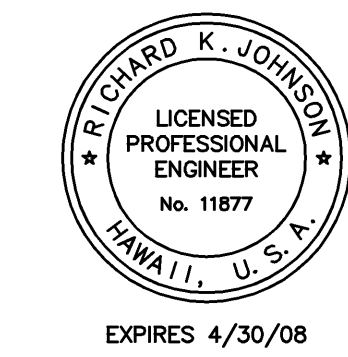
**UHMW AND HDPE:**

UHMW AS INDICATED ON THE PLANS SHALL HAVE THE FOLLOWING CHARACTERISTICS AND ITS COLOR MUST BE APPROVED BY THE ENGINEER. UHMW SHALL BE MADE OF 2 1/2 UV (ULTRA VIOLET) STABILIZED, VIRGIN UHMW.

PROPERTY	TEST METHOD	REQUIREMENT
TENSILE STRENGTH	ASTM D638	
YIELD	ASTM D638	3,000 PSI, MINIMUM
ULTIMATE	ASTM D638	5,000 PSI, MINIMUM
IZOD IMPACT @ 23C	ASTM D256A	25 FT-LB/IN, MINIMUM
ABRASION RESISTANCE	TABER WEIGHT LOSS	18 MAXIMUM
WATER ABSORPTION	ASTM D570	NIL
COEFF. OF FRICTION	ASTM D1894	0.20 MAXIMUM

HIGH-DENSITY POLYETHYLENE (HDPE) MATERIAL SHALL BE MADE FROM RECYCLED OR VIRGIN PLASTIC, IN ACCORDANCE WITH ASTM D-6662. THE MATERIAL SHALL BE OF UNIFORM COLOR, SHALL BE COLOR-STABILIZED, AND SHALL BE RESISTANT TO ULTRA-VIOLENT DETERIORATION, MECHANICAL ABRASION, CHEMICAL ATTACK, DETERGENTS, AND ANIMALS. THE MATERIAL SHALL ALSO BE SUITABLE FOR LONG-TERM EXTERIOR EXPOSURE. COLOR MUST BE APPROVED BY THE ENGINEER

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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>STRUCTURAL NOTES</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
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DESIGN RECORD DRAWINGS

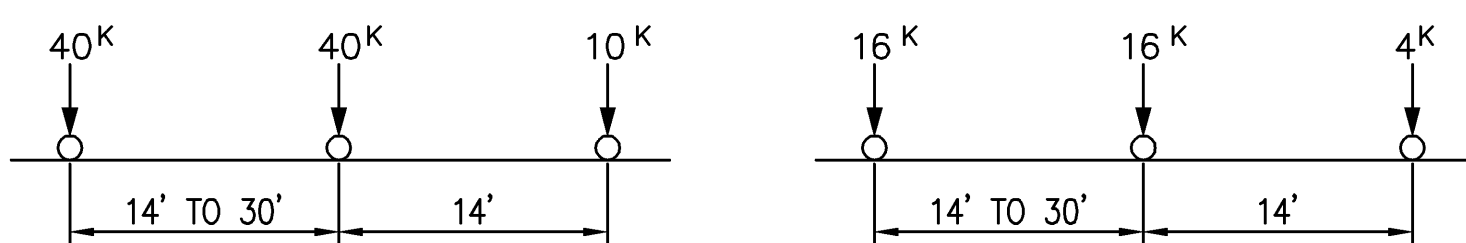
**OPERATING LIVE LOADS**

**OPERATING LIVE LOADS – APRON SUPPORTED AT FERRY OR BARGE**

PASSENGER LOADS: 100 PSF

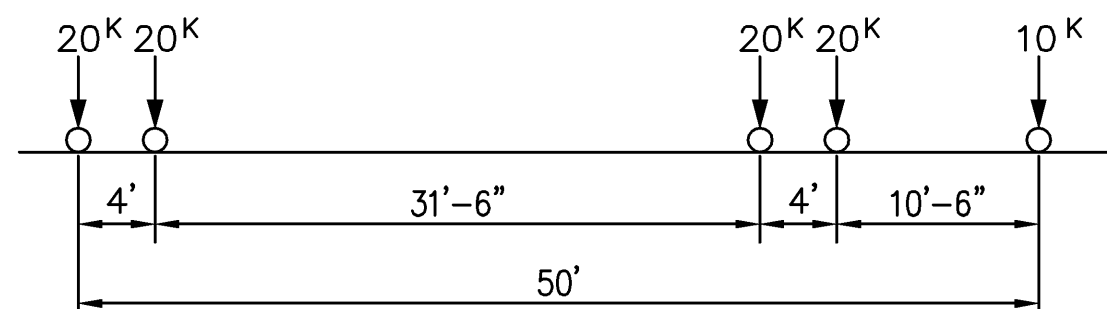
VEHICLE LOADS:

VEHICLE LOADING 1 – ONE HS25 (WB-50)  
 VEHICLE LOADING 2 – TWO LANES OF HS-10  
 VEHICLE LOADING 3 – TWO LANES OF CLASS C MOTOR HOMES

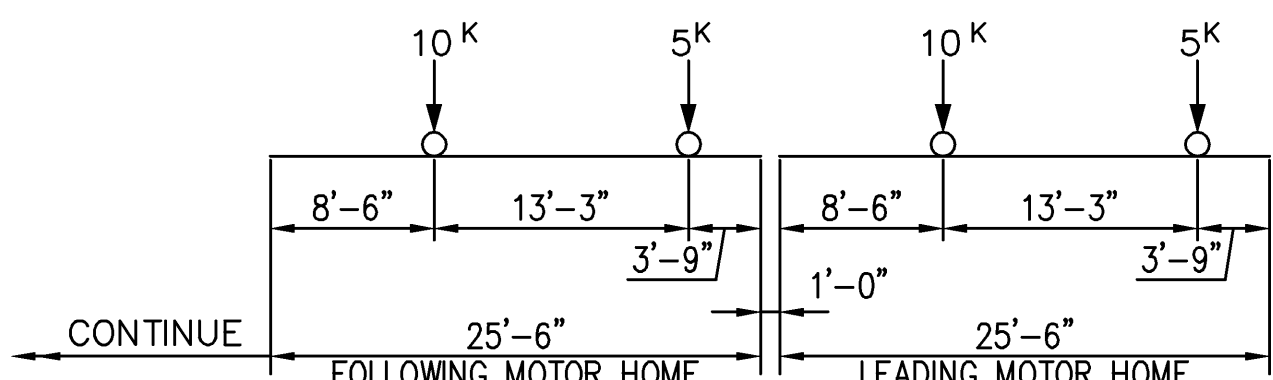


ONE HS-25 TRUCK

HS-10 (LIGHT TRUCKS)



WB-50 TRUCK



CLASS "C" MOTOR HOME LINE-UP

**WIND LOAD**

WIND LOADS PER AASHTO 17TH EDITION.

**STOWED LOAD – FERRY APRON SUPPORTED BY LIFT MECHANISM**

MISCELLANEOUS COMBINATIONS OF PERSONNEL AND TOOLS UP TO A MAXIMUM OF 1000 POUNDS, ASSUMED APPLIED OVER AN AREA 2 FEET SQUARE. THIS CRITERION DOES NOT APPLY TO SHORE RAMP APRONS AT BARGES.

**LATERAL LOADS**

BREAKING (LONGITUDINAL) FORCES IN ACCORDANCE TO AASHTO 17TH EDITION. SEISMIC FORCES IN ACCORDANCE WITH AASHTO 17TH EDITION.

**RAILING LOADS**

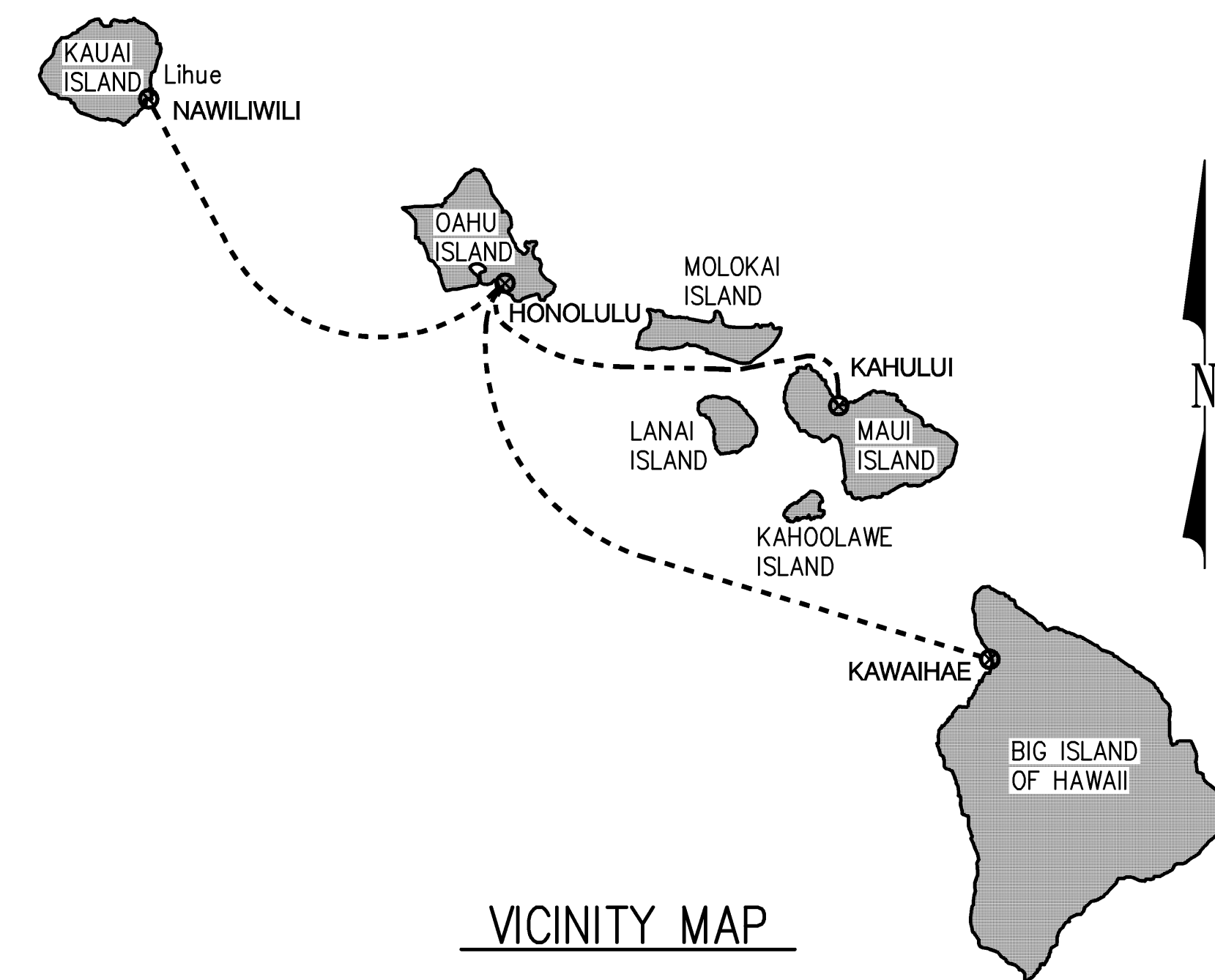
RAILING IS DESIGNED FOR LOADS AS SPECIFIED IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION – 2002.

**THERMAL LOAD**

THERMAL GRADIENT OF MINIMUM 50°F VARYING FROM MAXIMUM TEMPERATURE FOR THE TOP MEMBERS TO MINIMUM TEMPERATURE FOR THE BOTTOM MEMBER.

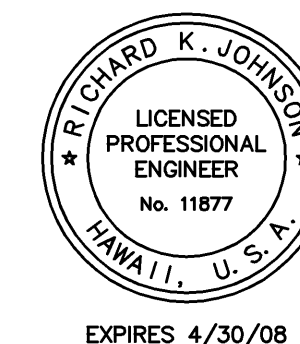
**ABBREVIATIONS**

AB	ANCHOR BOLT	EQ	EQUAL	PEN	PENETRATION
ADD'L	ADDITIONAL	EW	EACH WAY	PJP	PARTIAL JOINT PENETRATION
BM	BEAM	EX/EXIST	EXISTING	PL	PLATE
BOT	BOTTOM	EXP	EXPANSION	PP	PARTIAL PENETRATION
BRG	BEARING	EXT	EXTERIOR	PSI	POUNDS PER SQUARE INCH
BTWN	BETWEEN	FS	FAR SIDE	PSF	POUNDS PER SQUARE FOOT
CIP	CAST IN PLACE	FT	FEET	PQR	PERFORMANCE QUALIFICATION RECORD
CJ	CONSTRUCTION JOINT	GALV	GALVANIZED	P/T	POST-TENSIONING
CJP	COMPLETE JOINT PENETRATION	HK	HOOK	R	RADIUS
CL	CENTERLINE	HORIZ	HORIZONTAL	(REF)	REFERENCE
CLR	CLEAR	HP	HIGH POINT	REINF	REINFORCING
CMF	CORRUGATED METAL PIPE	HSS	HOLLOW STRUCTURAL SECTION	REQ'D	REQUIRED
CMU	CONCRETE MASONRY UNIT	ID	INSIDE DIAMETER	SHT	SHEET
COL	COLUMN	IF	INSIDE FACE	SIM	SIMILAR
CONC	CONCRETE	IN	INCH	SP	SPACE
CONN	CONNECTION	INT	INTERIOR	SQ	SQUARE
CONST	CONSTRUCTION	JT	JOINT	SS	STAINLESS STEEL
CONT	CONTINUOUS	K	KIP (1,000 LBS.)	STD	STANDARD
CP	COMPLETE PENETRATION	L	LENGTH	STIFF	STIFFENER
CTR	CENTER	LB	POUND	STIRR	STIRRUP
DBA	DEFORMED BAR ANCHOR	MAX	MAXIMUM	SYMM	SYMMETRICAL
DIA, Ø	DIAMETER	MIN	MINIMUM	T/	TOP OF
DIAG	DIAGONAL	NDT	NON-DESTRUCTIVE TESTING	T&B	TOP AND BOTTOM
DWG	DRAWING	NO	NUMBER	THK	THICK(NESS)
DWL	DOWEL	NS	NEAR SIDE	THRU	THROUGH
EA	EACH	NTS	NOT TO SCALE	TRANS	TRANSVERSE
EF	EACH FACE	IOC	ON CENTER	TS	STRUCTURAL TUBE
EL	ELEVATION	OD	OUTSIDE DIAMETER	TYP	TYPICAL
ELECT	ELECTRICAL	OP	OUTSIDE FACE	UNO	UNLESS NOTED OTHERWISE
EMBED	EMBEDMENT	OPNG	OPENING	UT	ULTRASONIC TEST
		OPP	OPPOSITE	VERT	VERTICAL
				W/	WITH
				WHS	WELDED HEADED STUD
				WPS	WELDING PROCEDURE SPECIFICATION

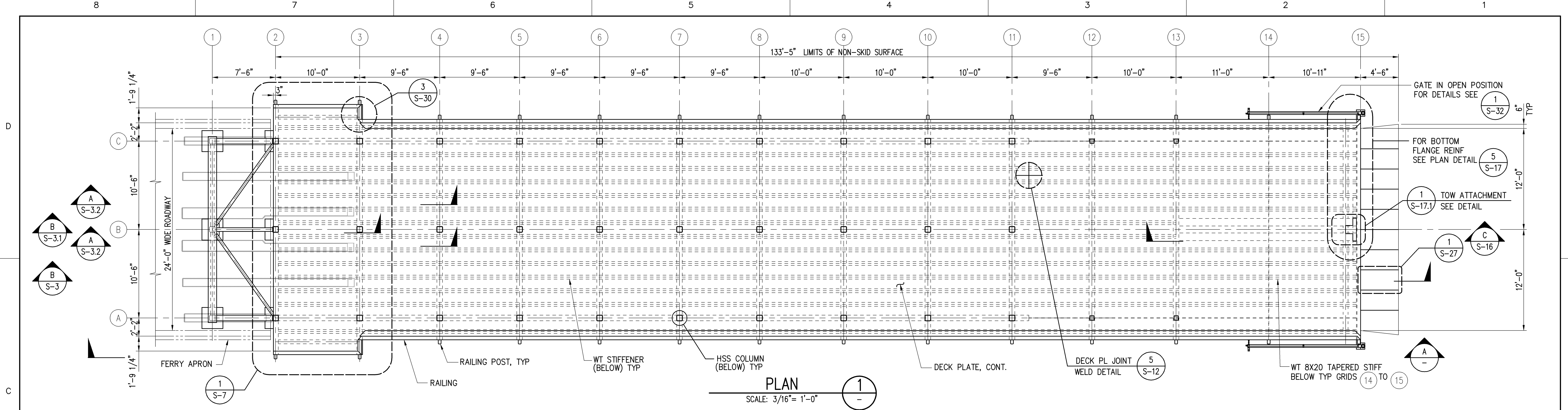


VICINITY MAP

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SHEET TITLE <b>STRUCTURAL NOTES CONTINUED ABBREVIATIONS AND VICINITY MAP</b>	
SUBMITTED BY:	RECOMMENDED BY:
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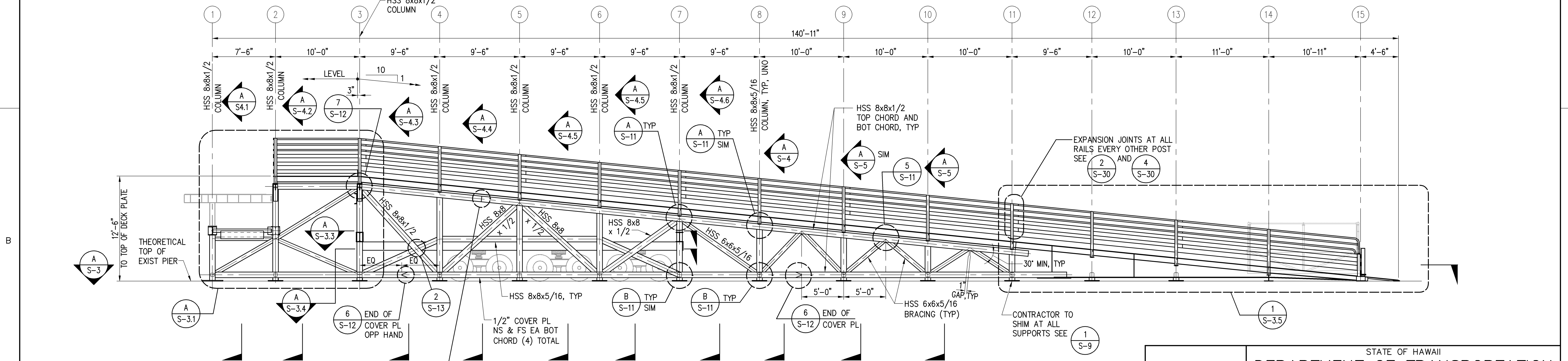


DESIGN RECORD DRAWINGS



PLAN

SCALE: 3/16" = 1'-0"



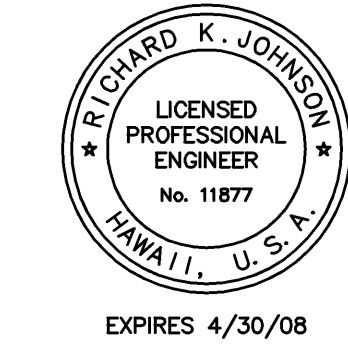
ELEVATION

SCALE: 3/16" = 1'-0"

NOTES:

- LOCATE BUTT JOINTS AS REQUIRED IN TOP AND BOTTOM CHORDS. LIMIT (3) JOINTS PER CHORD.

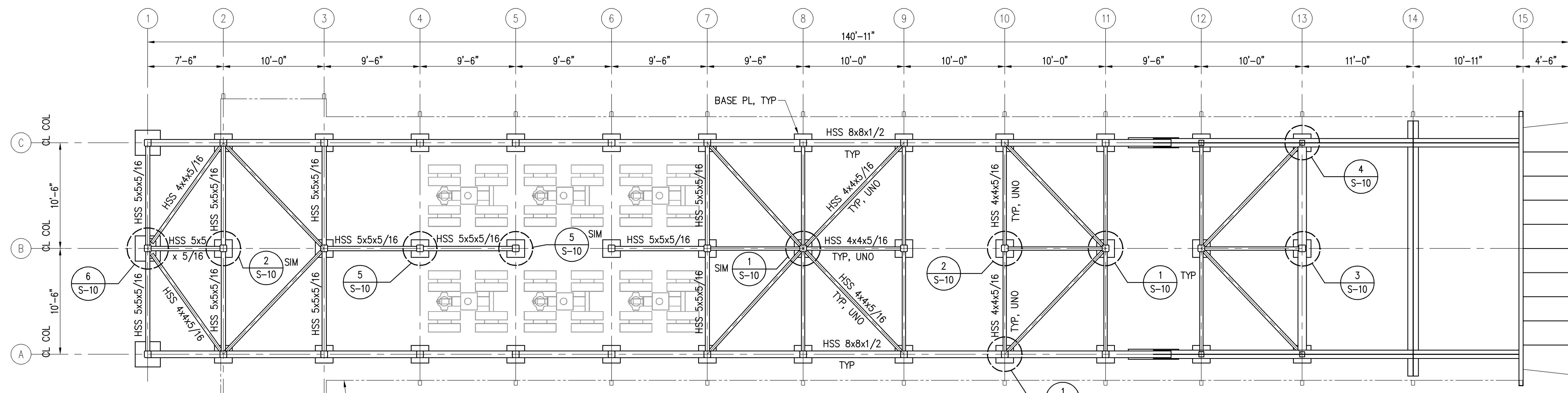
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
HEALY TIBBITTS BUILDERS, INC.	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL PLAN AND ELEVATION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0



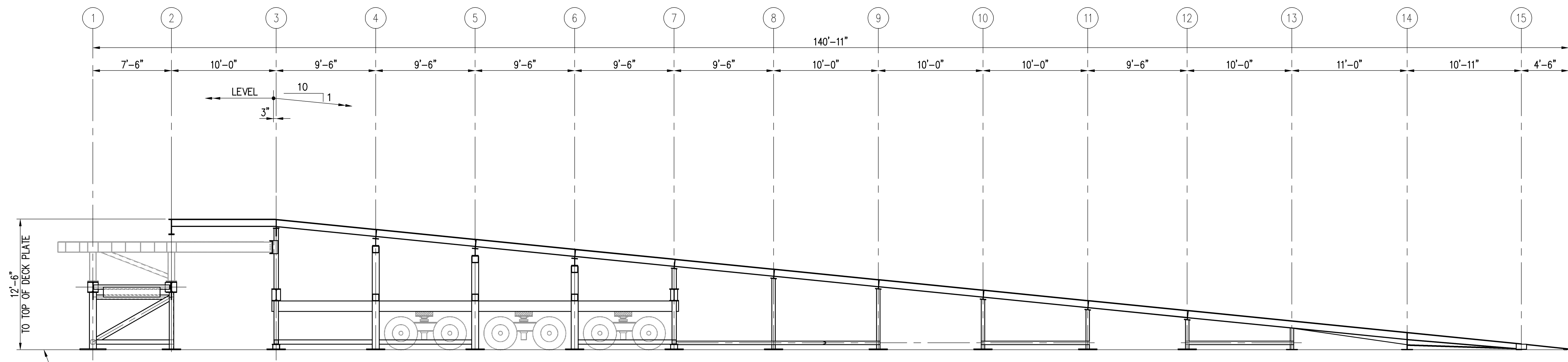
REDUCED SIZE PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWINGS

8 7 6 5 4 3 2 1



**BOTTOM CHORD FRAMING PLAN** **A**  
SCALE: 3/16" = 1'-0"



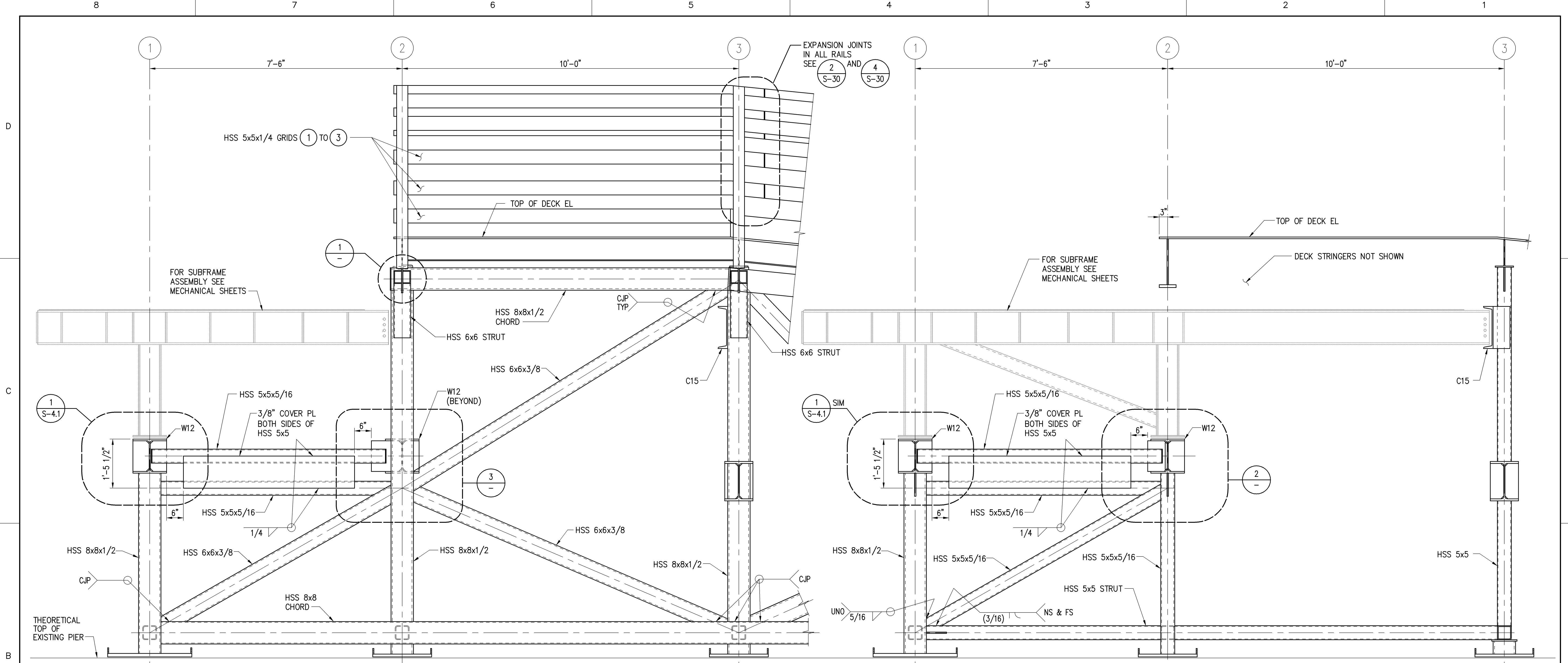
**SECTION** **B**  
SCALE: 3/16" = 1'-0"

		STATE OF HAWAII	
		DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE		BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
SHEET TITLE		SHORE RAMP AT NAWILIWILI TERMINAL BOTTOM CHORD FRAMING PLAN AND SECTION	
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: GGN		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		H.C. 90018	
SCALE: AS SHOWN		DRAWING NUMBER S-3	
		REVISION	
		0	

8 7 6 5 4 3 2 1

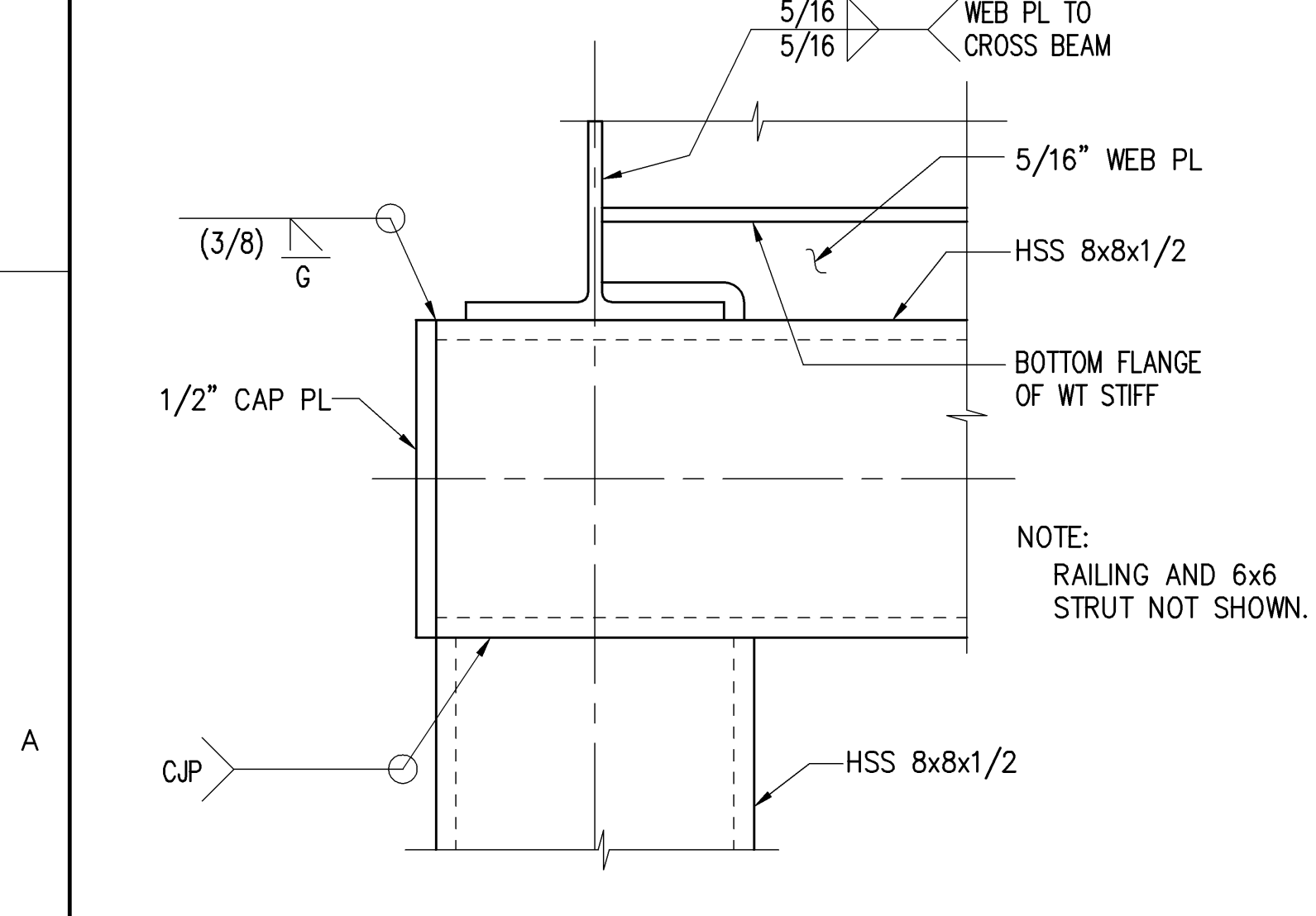
DESIGN RECORD DRAWINGS



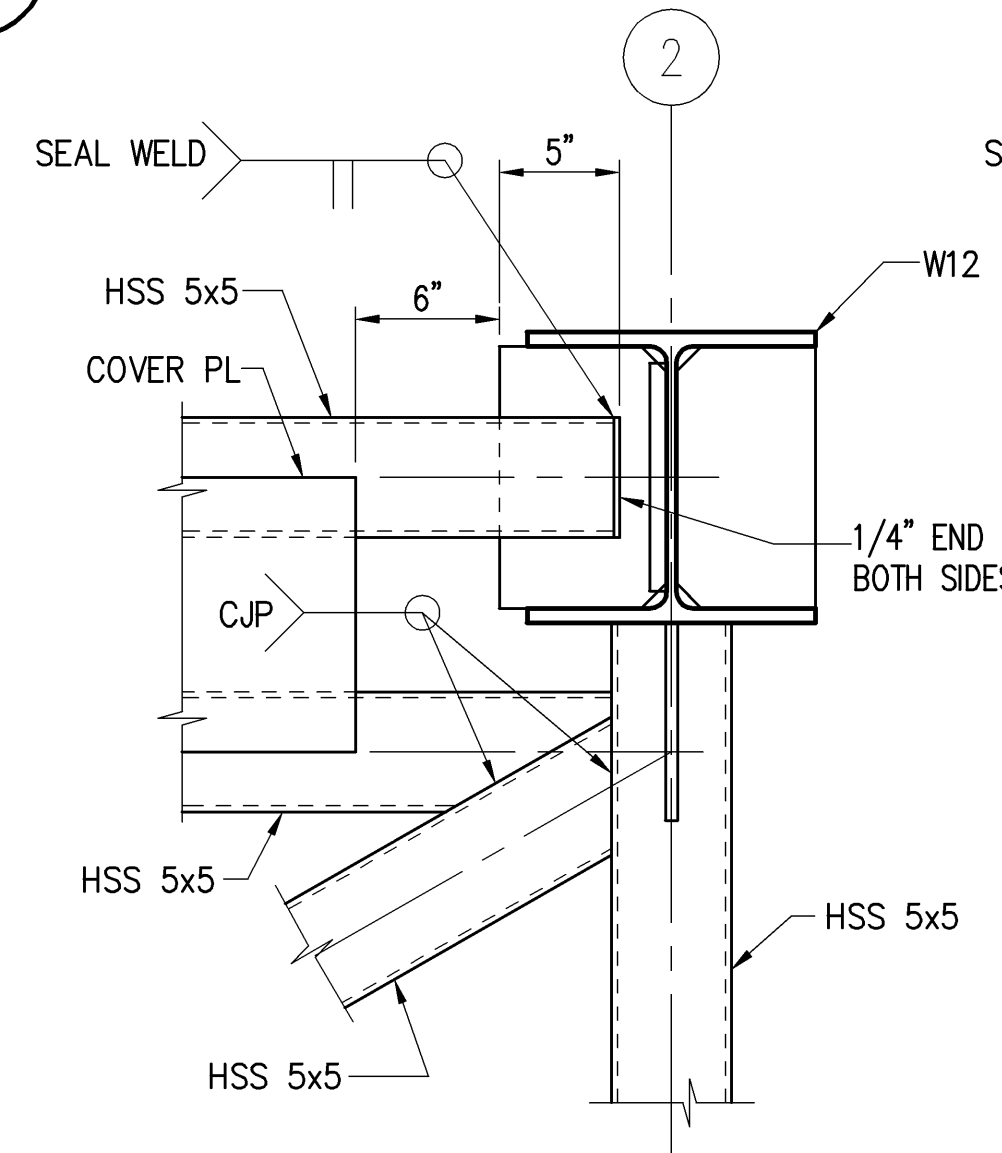


SECTION AT GRIDS A & C **A**  
SCALE: 3/4" = 1'-0"  
S-2

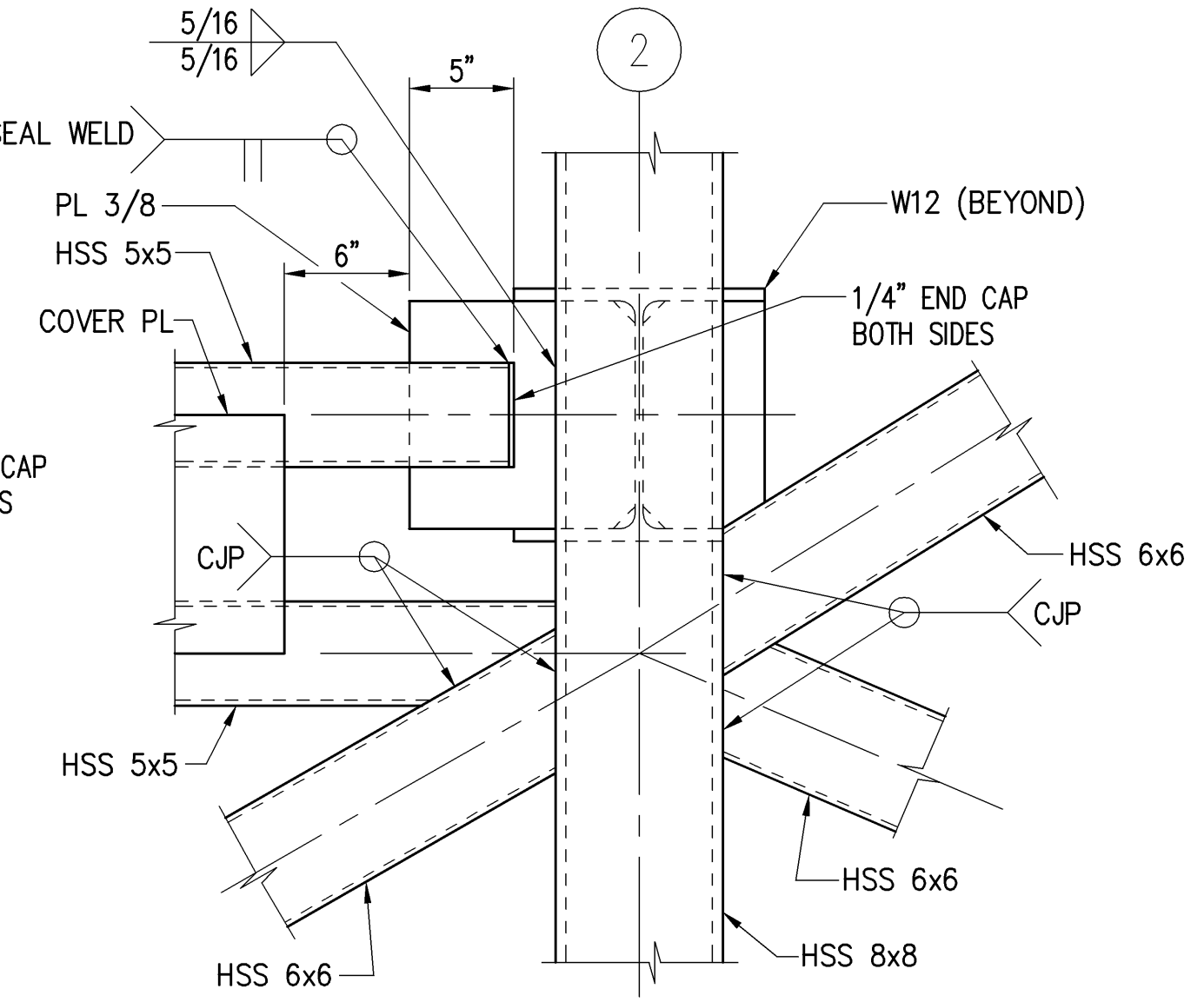
SECTION AT GRID B **B**  
SCALE: 3/4" = 1'-0"  
S-2



DETAIL **1**  
SCALE: 3" = 1'-0"



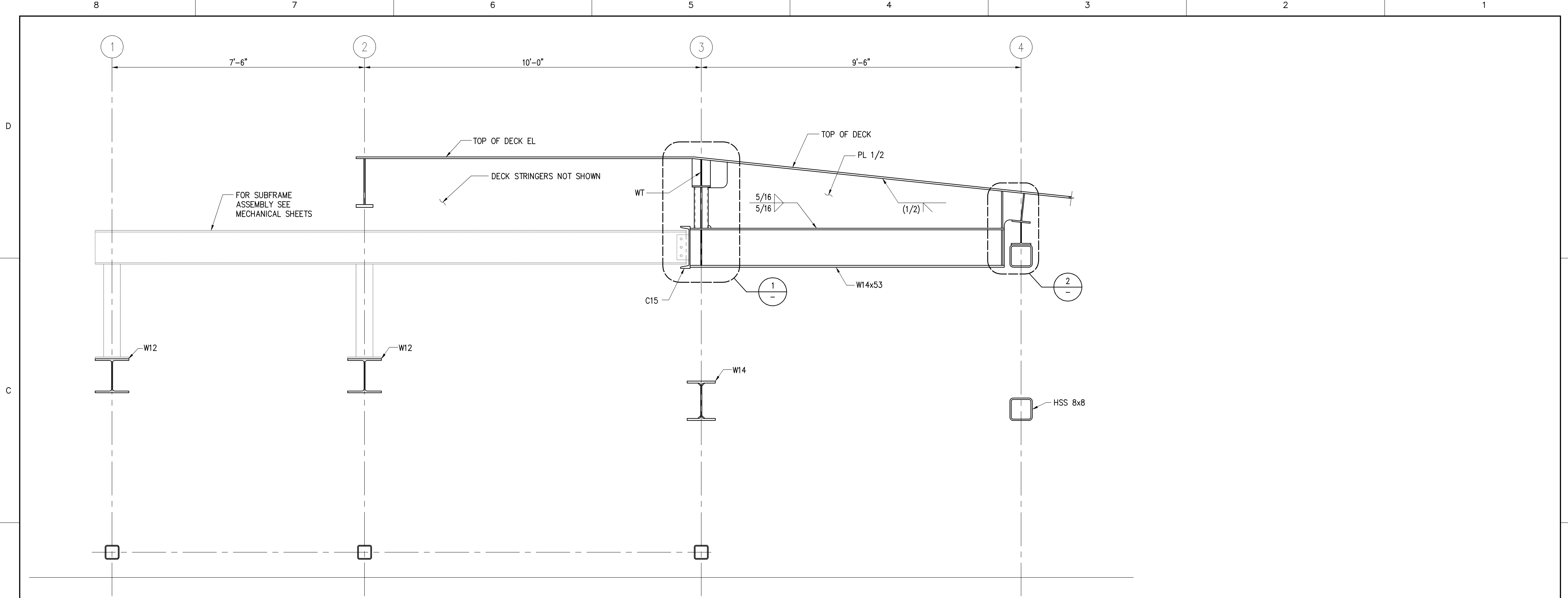
DETAIL **2**  
SCALE: 1 1/2" = 1'-0"  
S-31



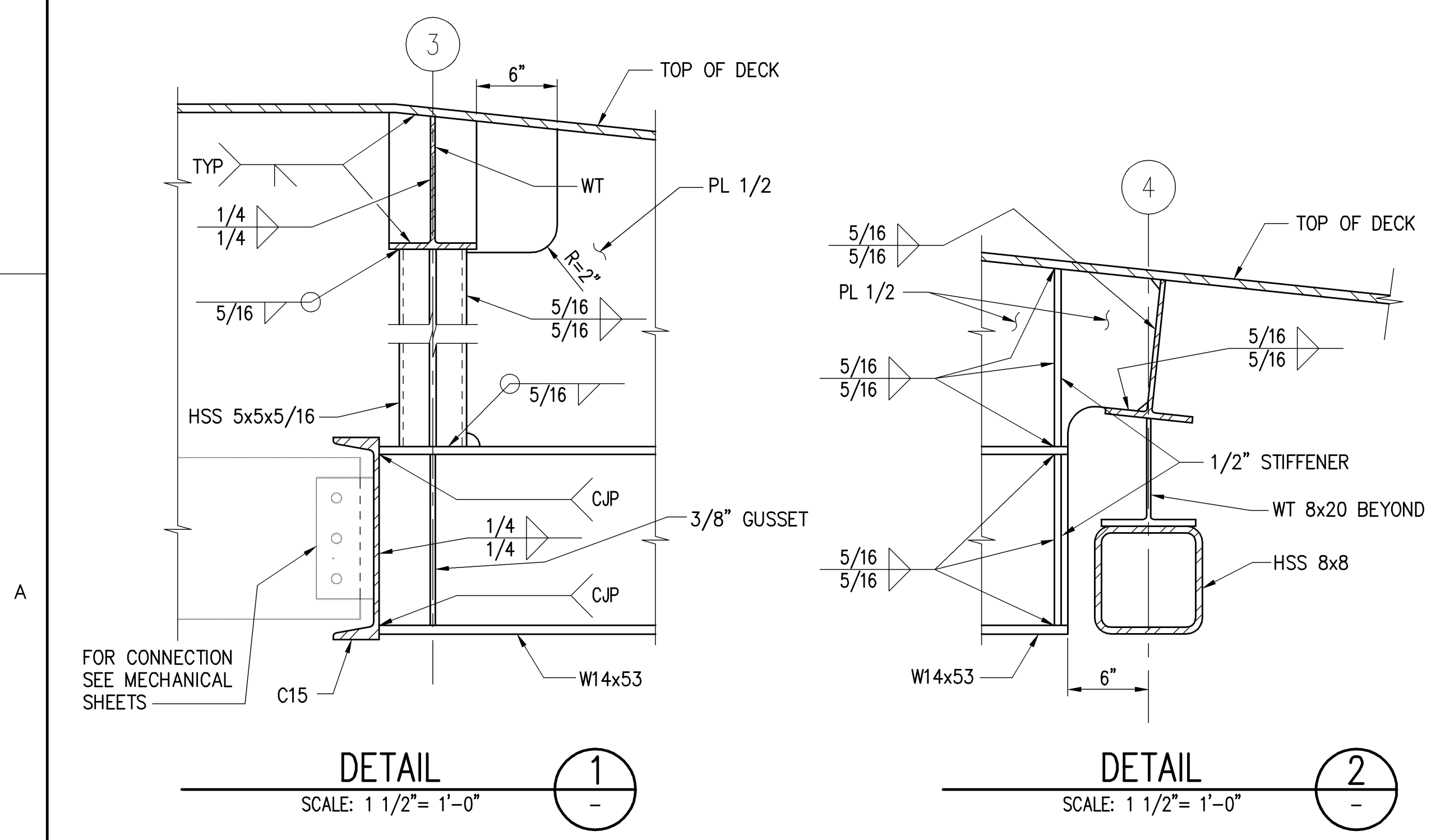
DETAIL **3**  
SCALE: 1 1/2" = 1'-0"  
S-31

		STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		<b>kpff</b> Consulting Engineers	
<b>BARGES &amp; VEHICLE RAMP SYSTEMS          FOR INTERISLAND FERRY SERVICE</b>			
<b>SHORE RAMP AT NAWILIWILI TERMINAL          SECTIONS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: PAB	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR	S-3.1	
CHECKED BY: KN	JOB NUMBER	REVISION	
DATE: 7/16/07	H.C. 90018	0	
SCALE: AS SHOWN		OF ____ SHEETS	

DESIGN RECORD DRAWINGS

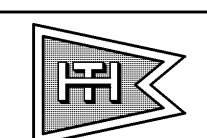


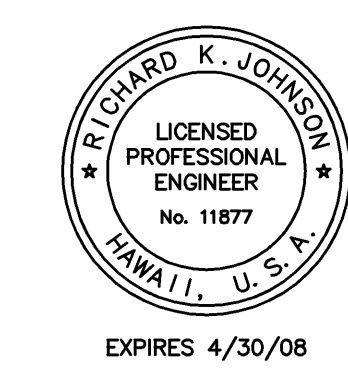
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SCALE: 3/4" = 1'-0" (A) S-2



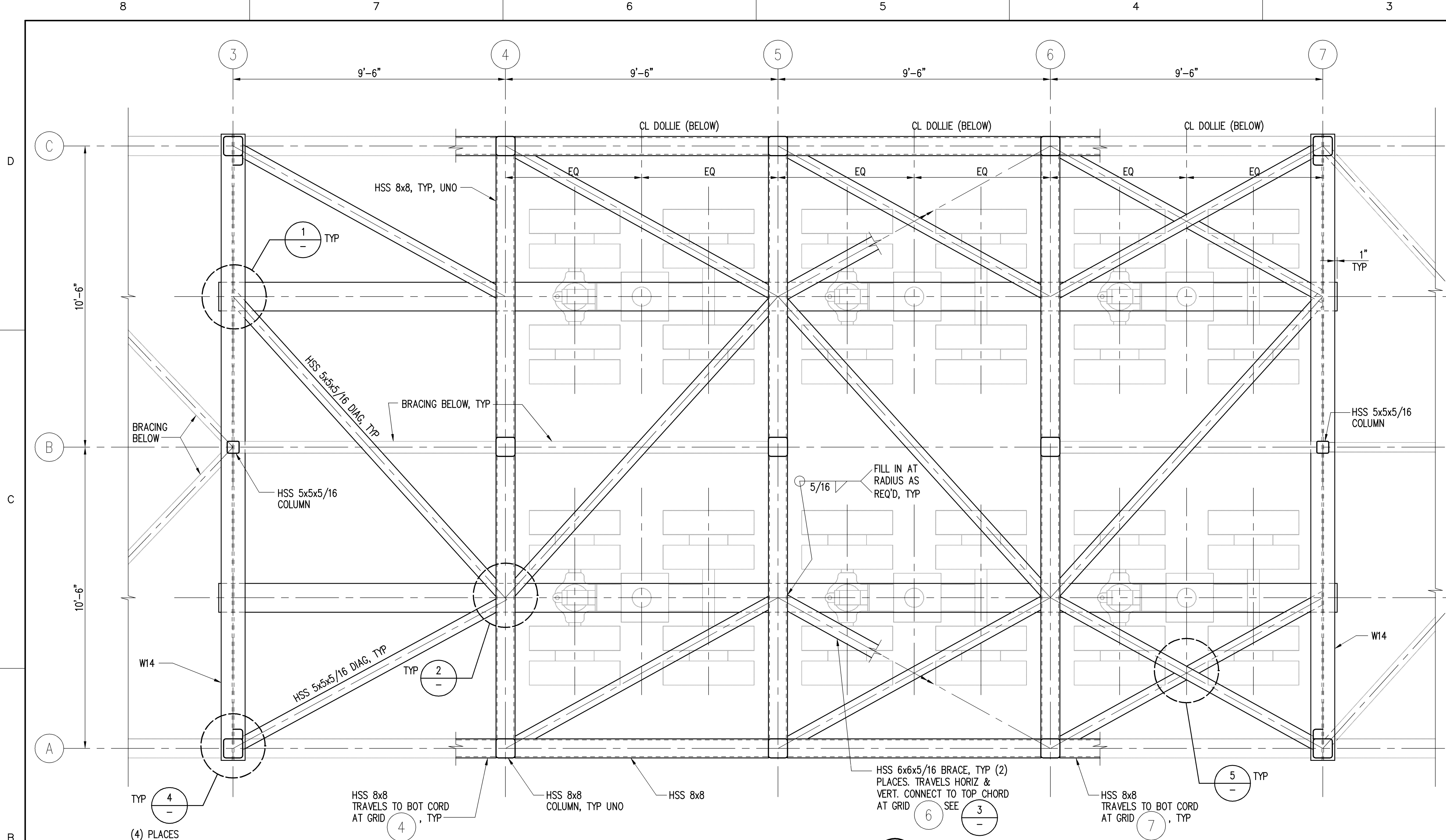
DETAIL 1  
SCALE: 1 1/2" = 1'-0"

DETAIL 2  
SCALE: 1 1/2" = 1'-0"

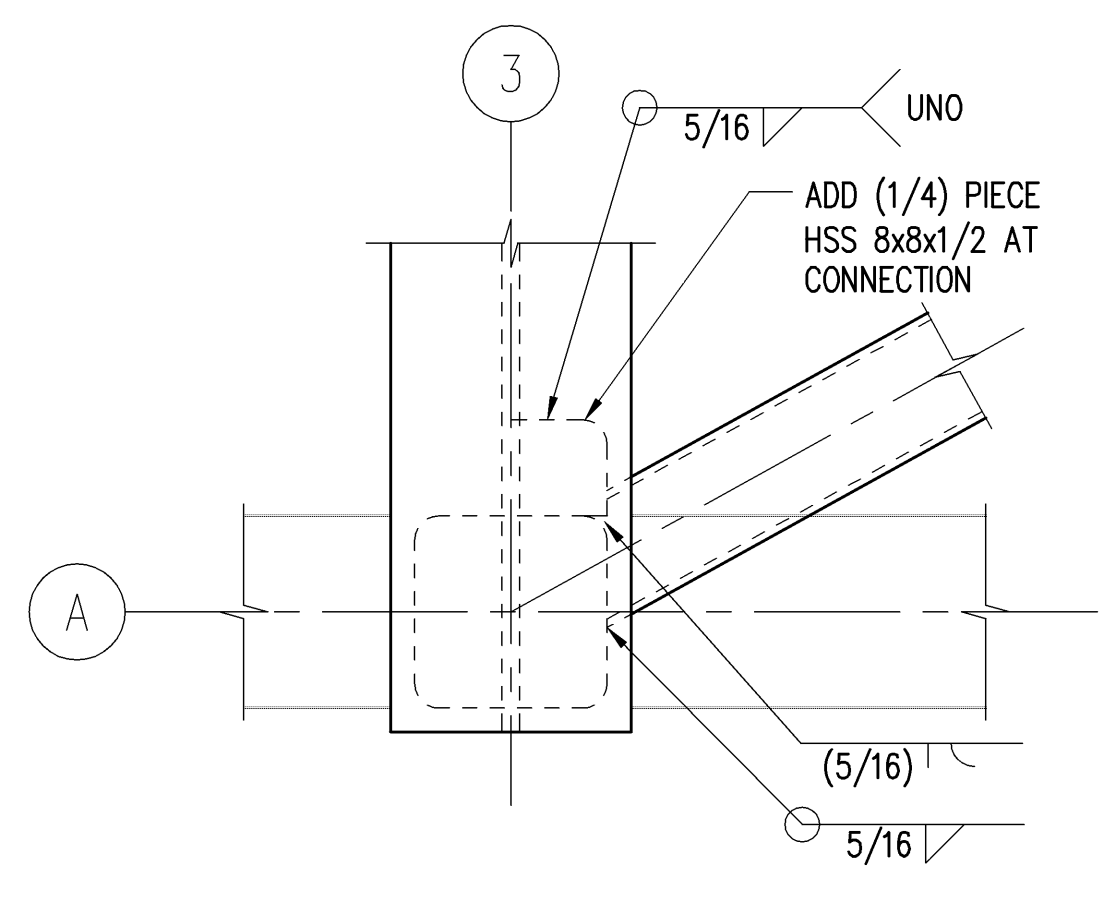
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
 <b>HEALY TIBBITTS BUILDERS, INC.</b>			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
<b>kpff</b> Consulting Engineers			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS          FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL          SECTIONS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: PAB		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		REVISION	
SCALE: AS SHOWN		H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>S-3.2</b>	
		0 OF ____ SHTS	



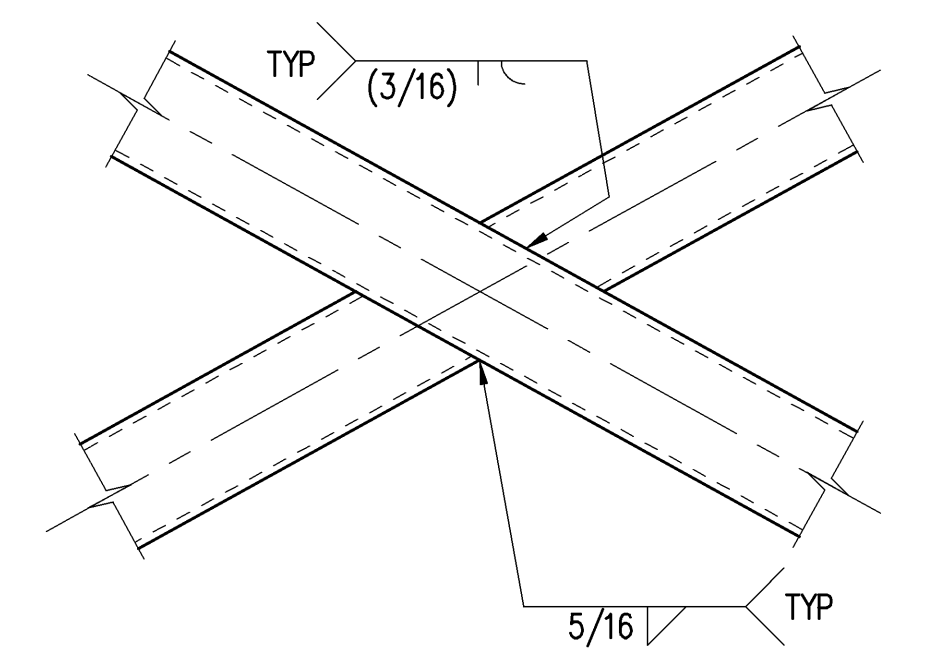
DESIGN RECORD DRAWINGS



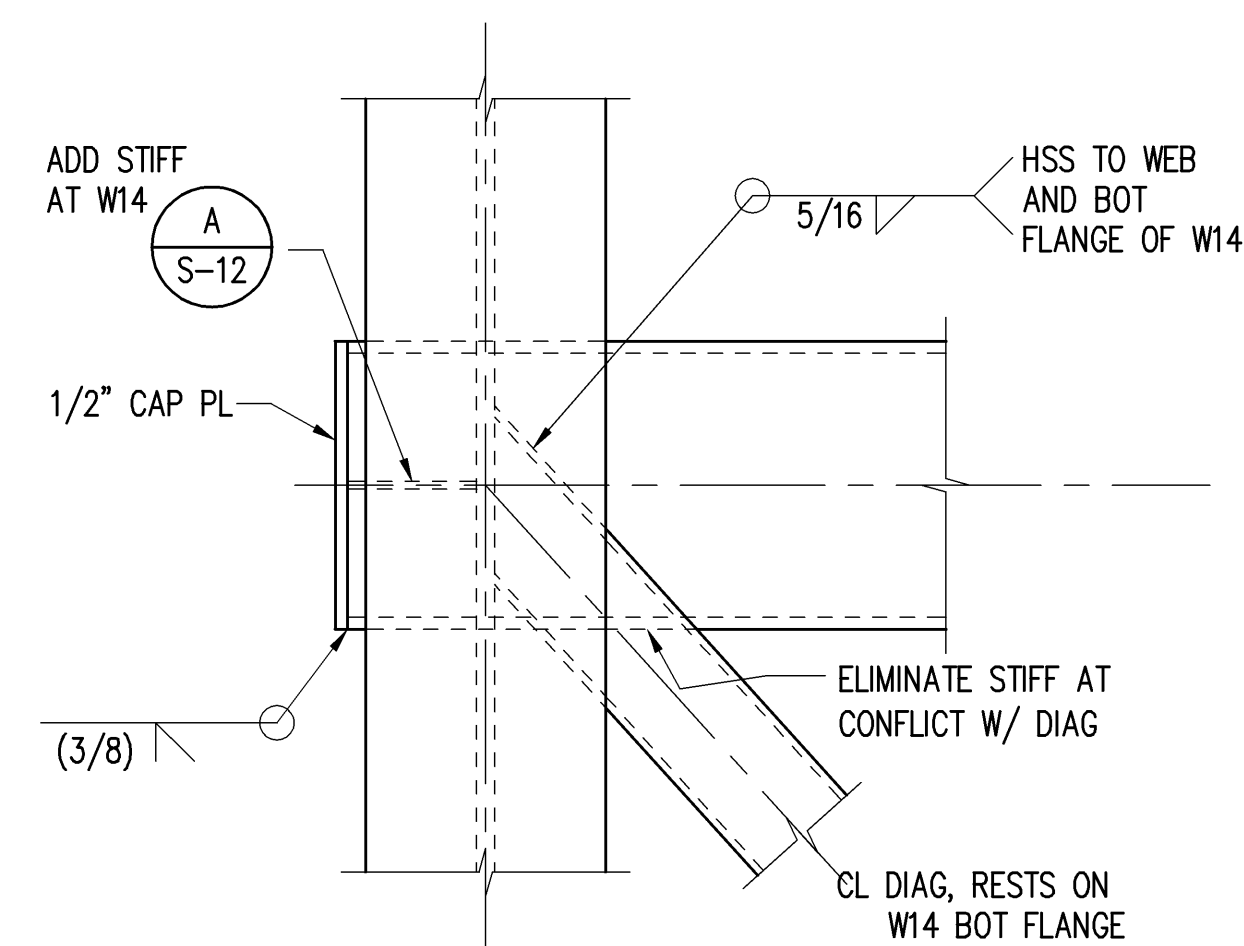
SECTION  
A  
SCALE: 1/2" = 1'-0"  
S-2 S-3.3



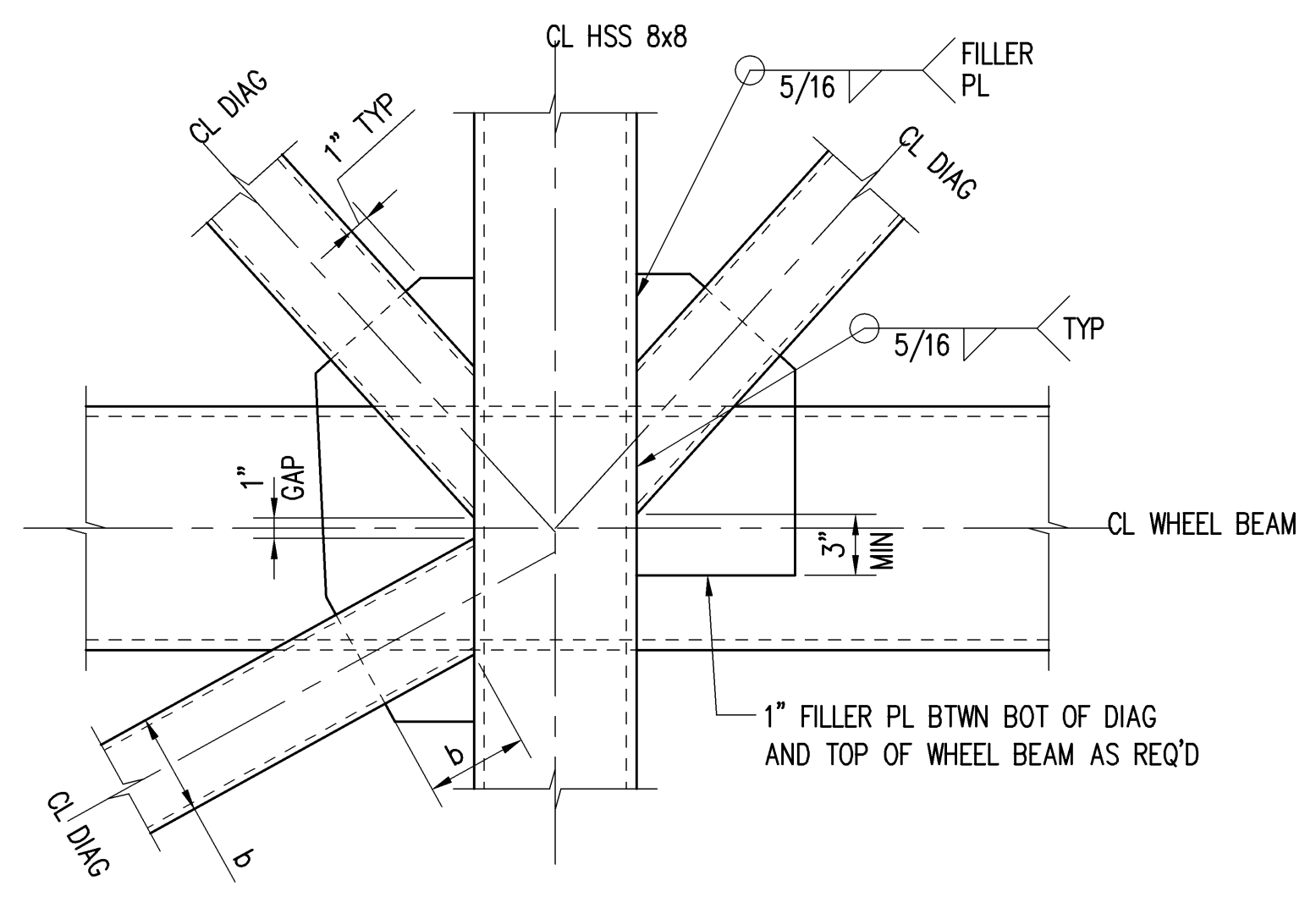
DETAIL  
SCALE: 1 1/2" = 1'-0"  
4



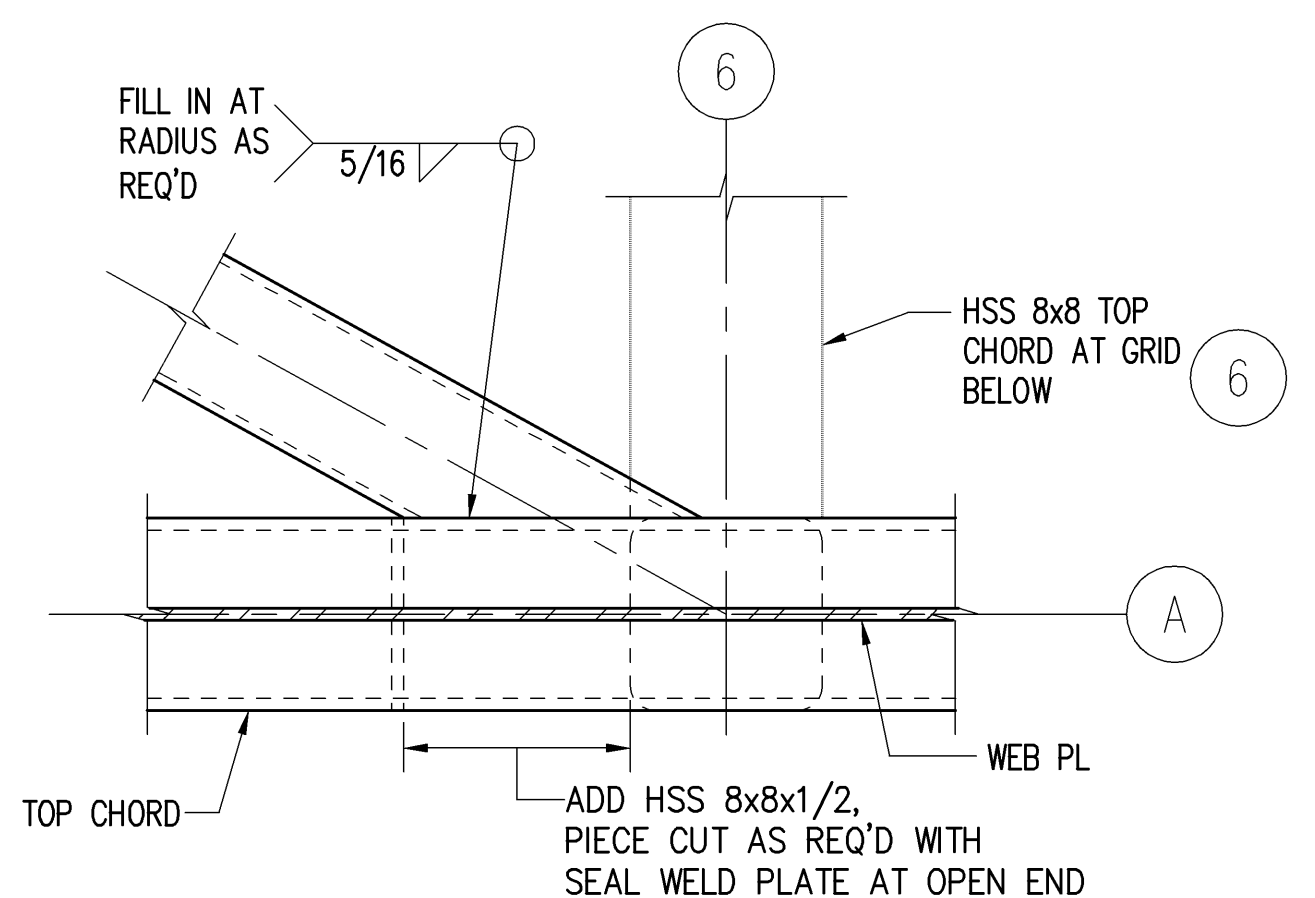
DETAIL  
SCALE: 1 1/2" = 1'-0"  
5



DETAIL  
SCALE: 1 1/2" = 1'-0"  
1

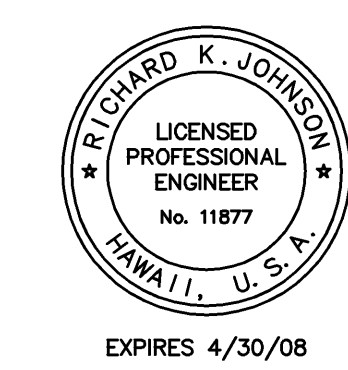


DETAIL  
SCALE: 1 1/2" = 1'-0"  
2



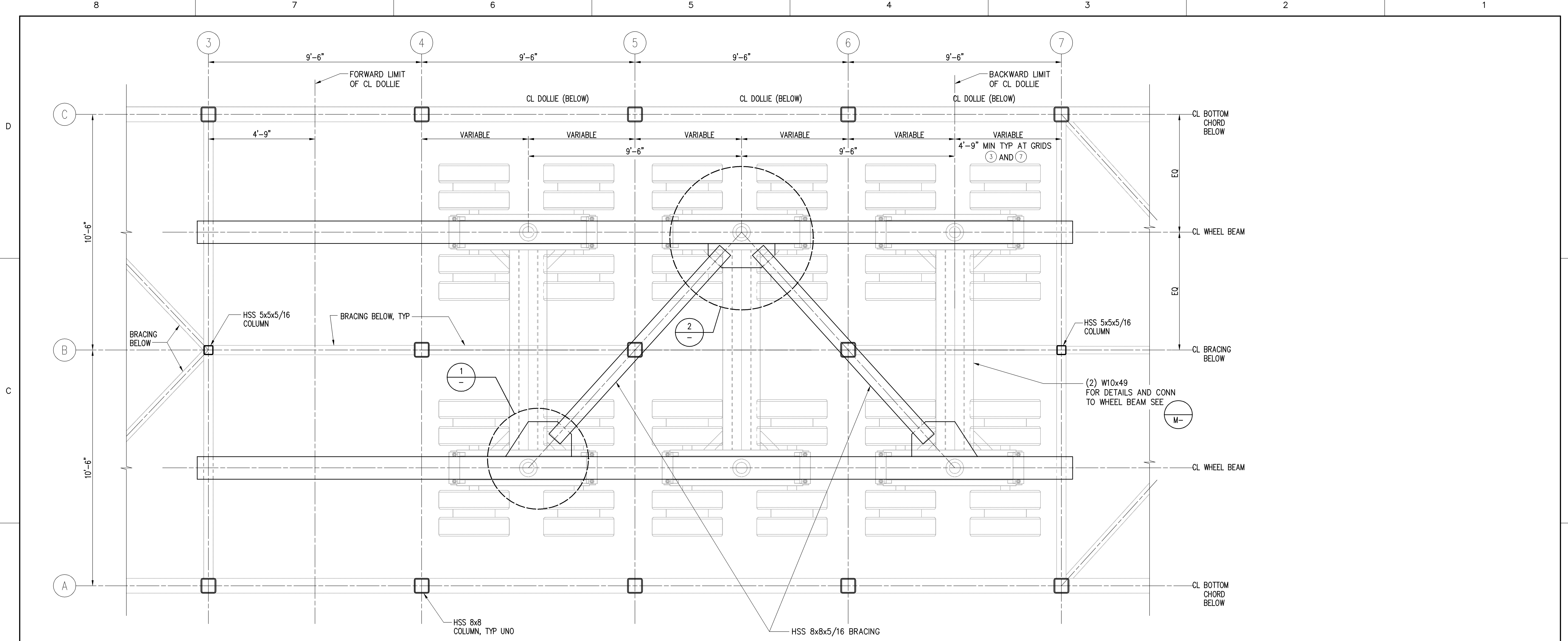
DETAIL  
SCALE: 1 1/2" = 1'-0"  
3

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	DRAWING NUMBER <b>S-3.3</b>
CHECKED BY: KN	FOR HARBORS ADMINISTRATOR
DATE: 7/16/07	REVISION
SCALE: AS SHOWN	H.C. 90018
	0 OF SHTS

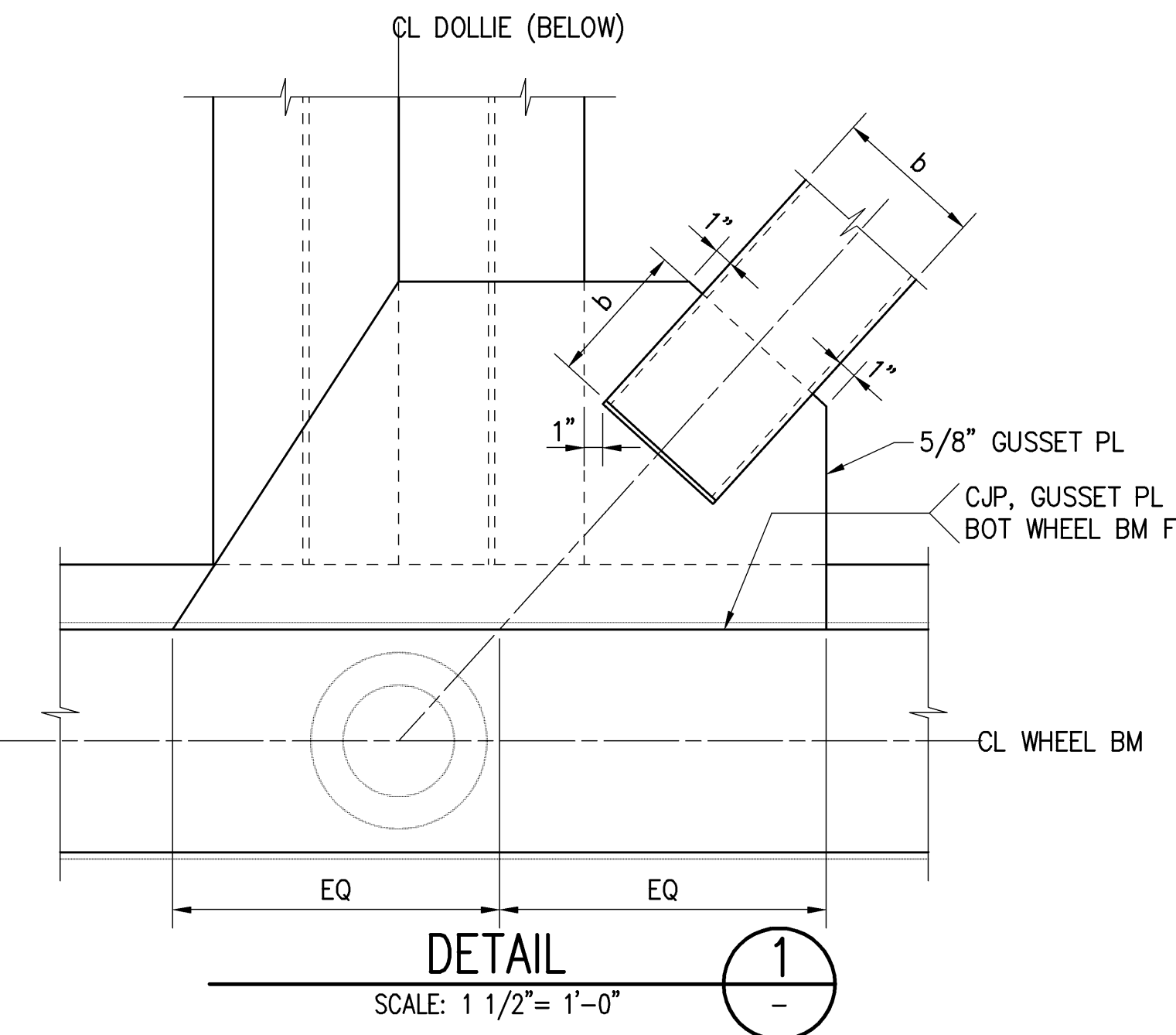


REDUCED SIZE  
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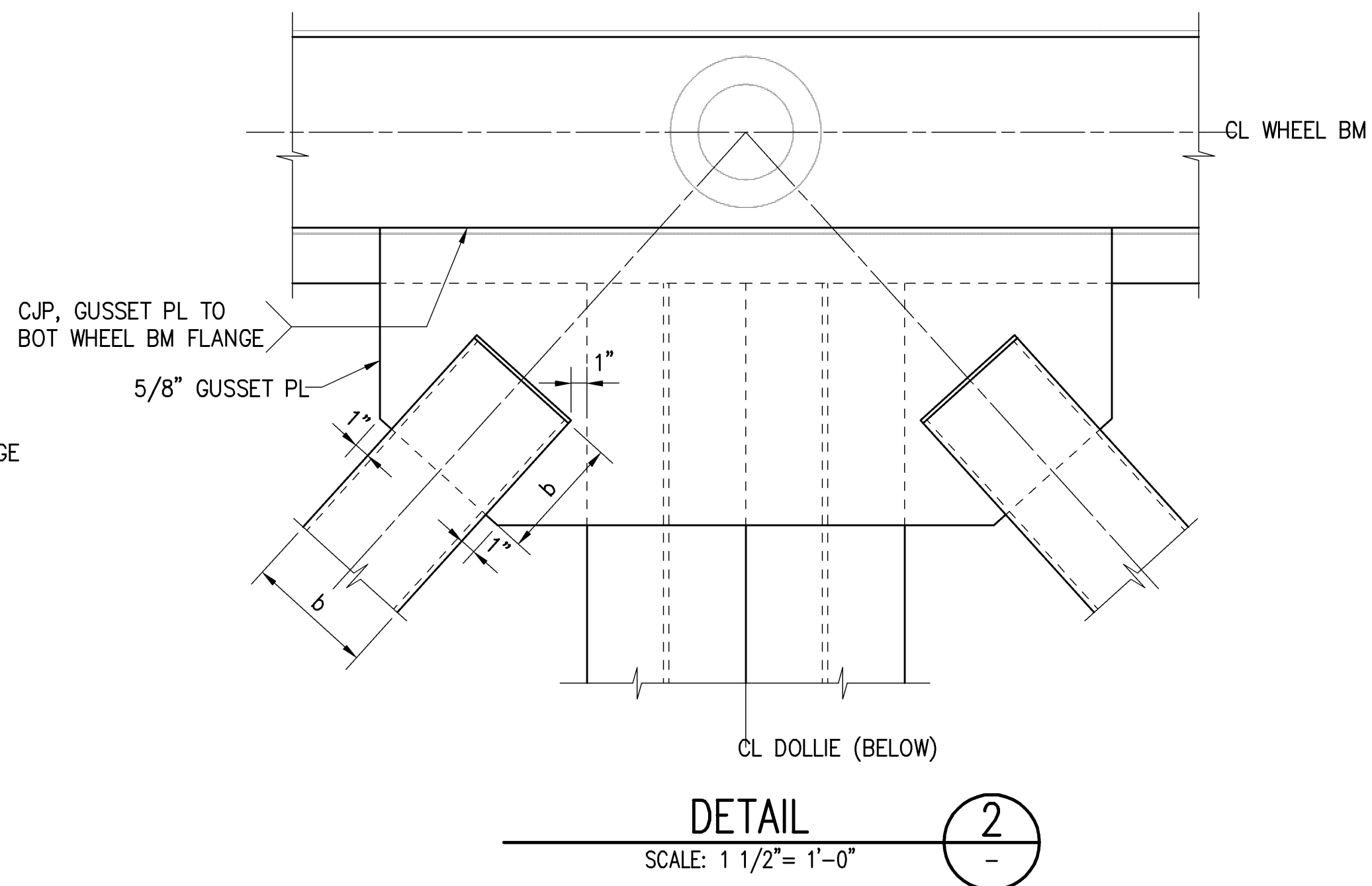
DESIGN RECORD DRAWINGS



SECTION **A**  
SCALE: 1/2" = 1'-0"

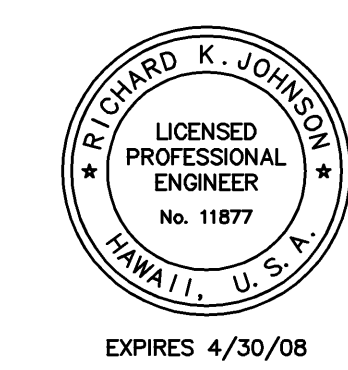


DETAIL **1**  
SCALE: 1 1/2" = 1'-0"

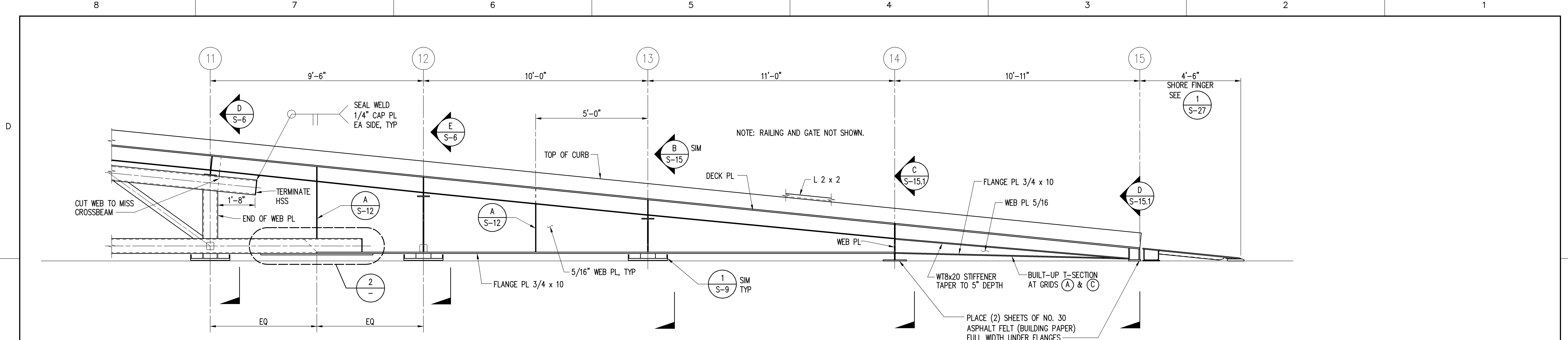


DETAIL **2**  
SCALE: 1 1/2" = 1'-0"

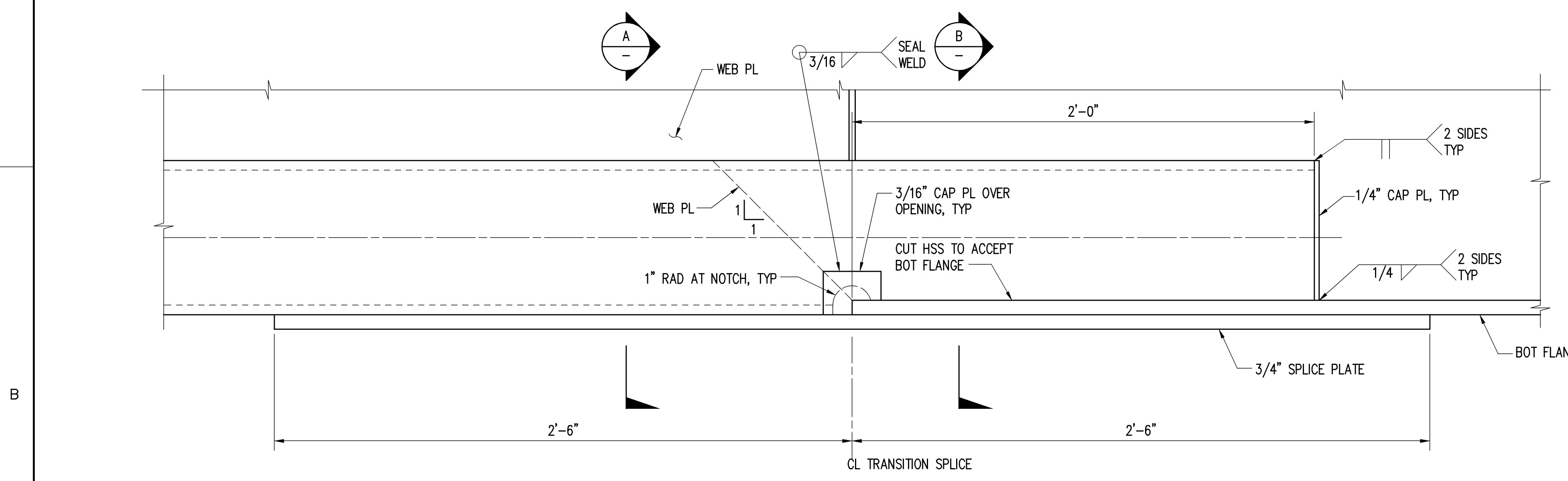
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
<b>kpff</b> Consulting Engineers			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: GGN		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		H.C. 90018	
SCALE: AS SHOWN		DRAWING NUMBER <b>S-3.4</b>	
		REVISION	
		0 OF ___ SHTS	



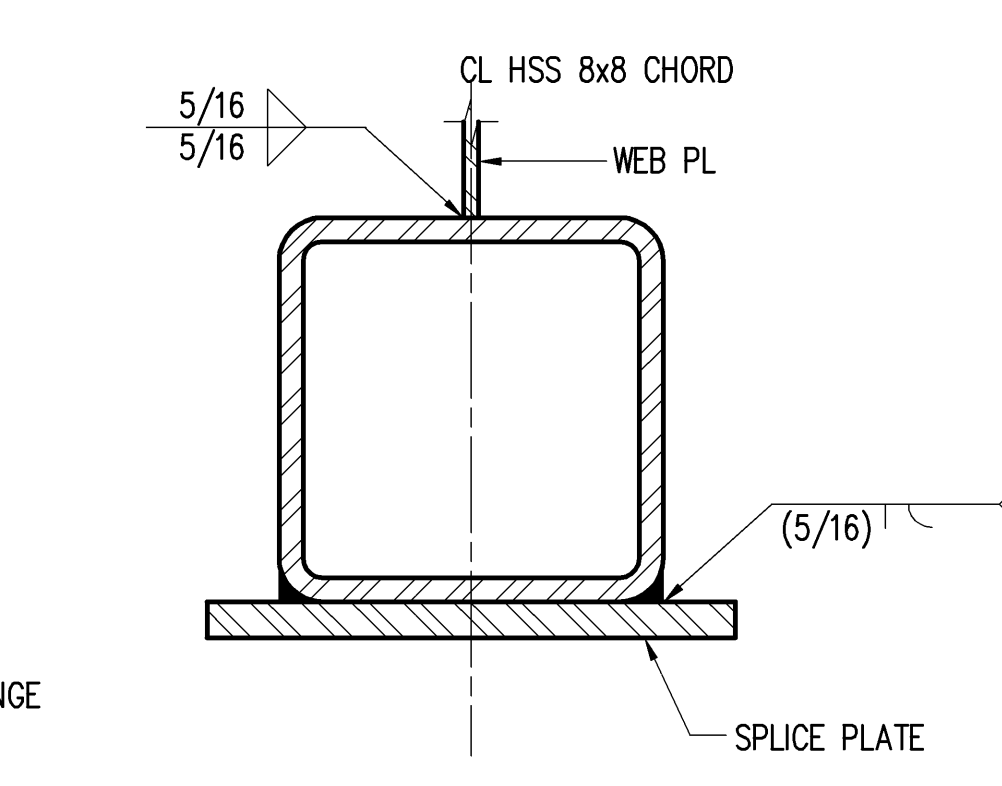
DESIGN RECORD DRAWINGS



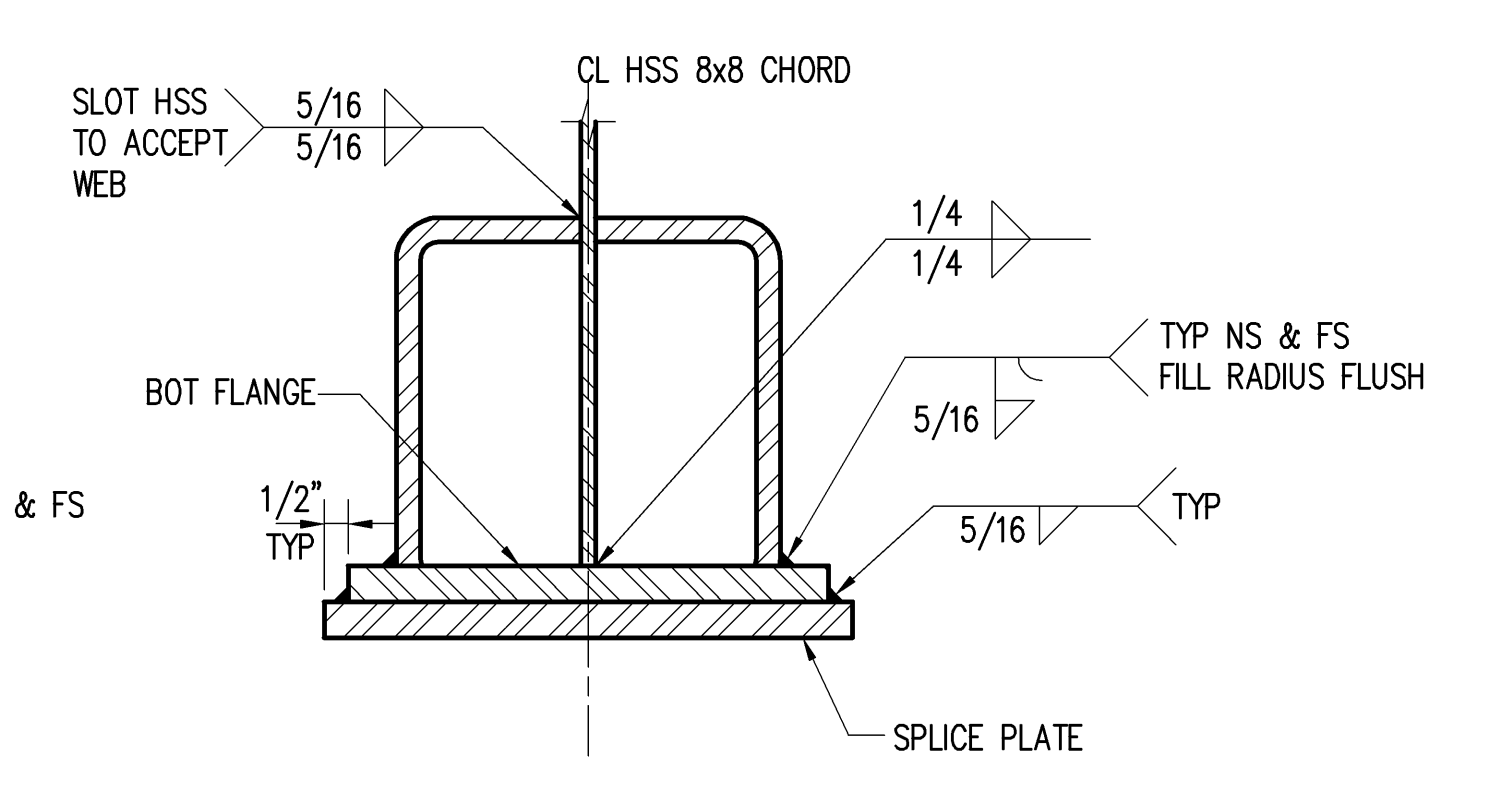
DETAIL 1  
SCALE: 1/2" = 1'-0"



DETAIL 2  
SCALE: 3" = 1'-0"



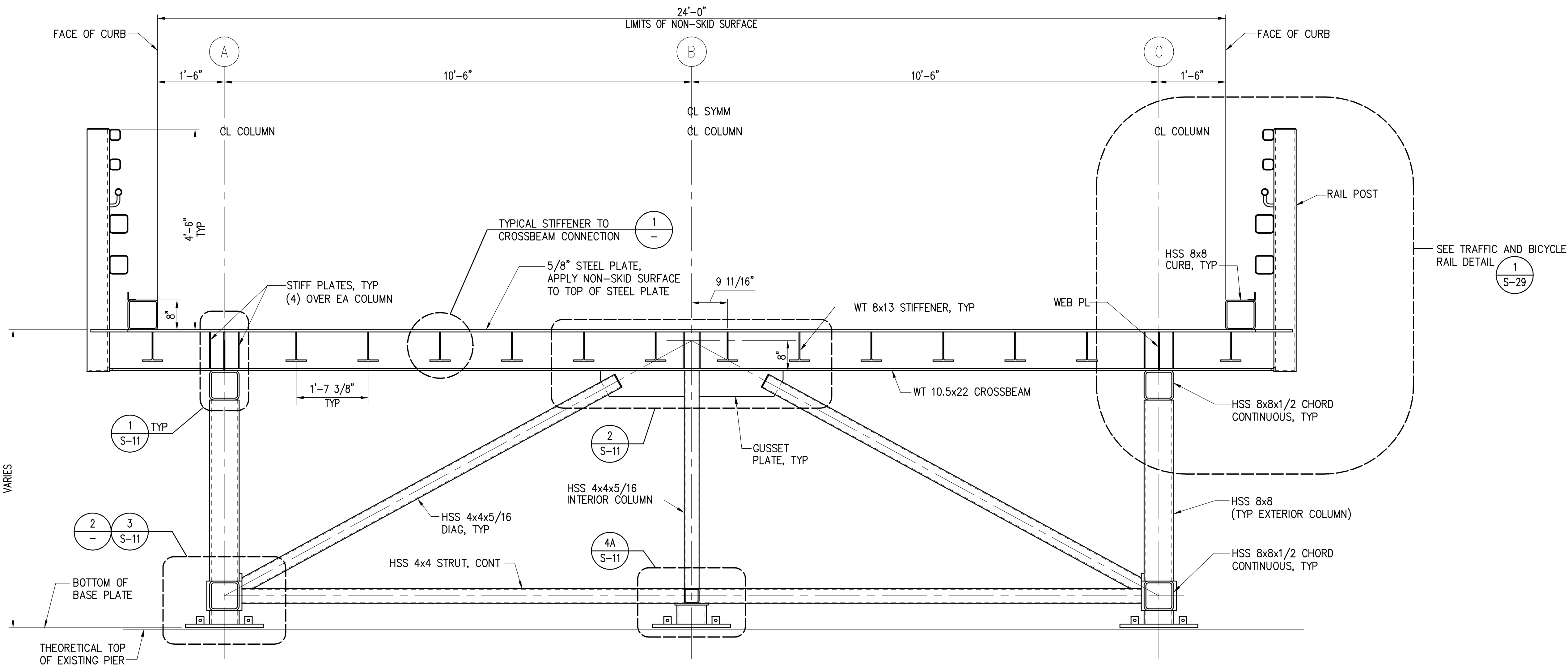
SECTION A  
SCALE: 3" = 1'-0"



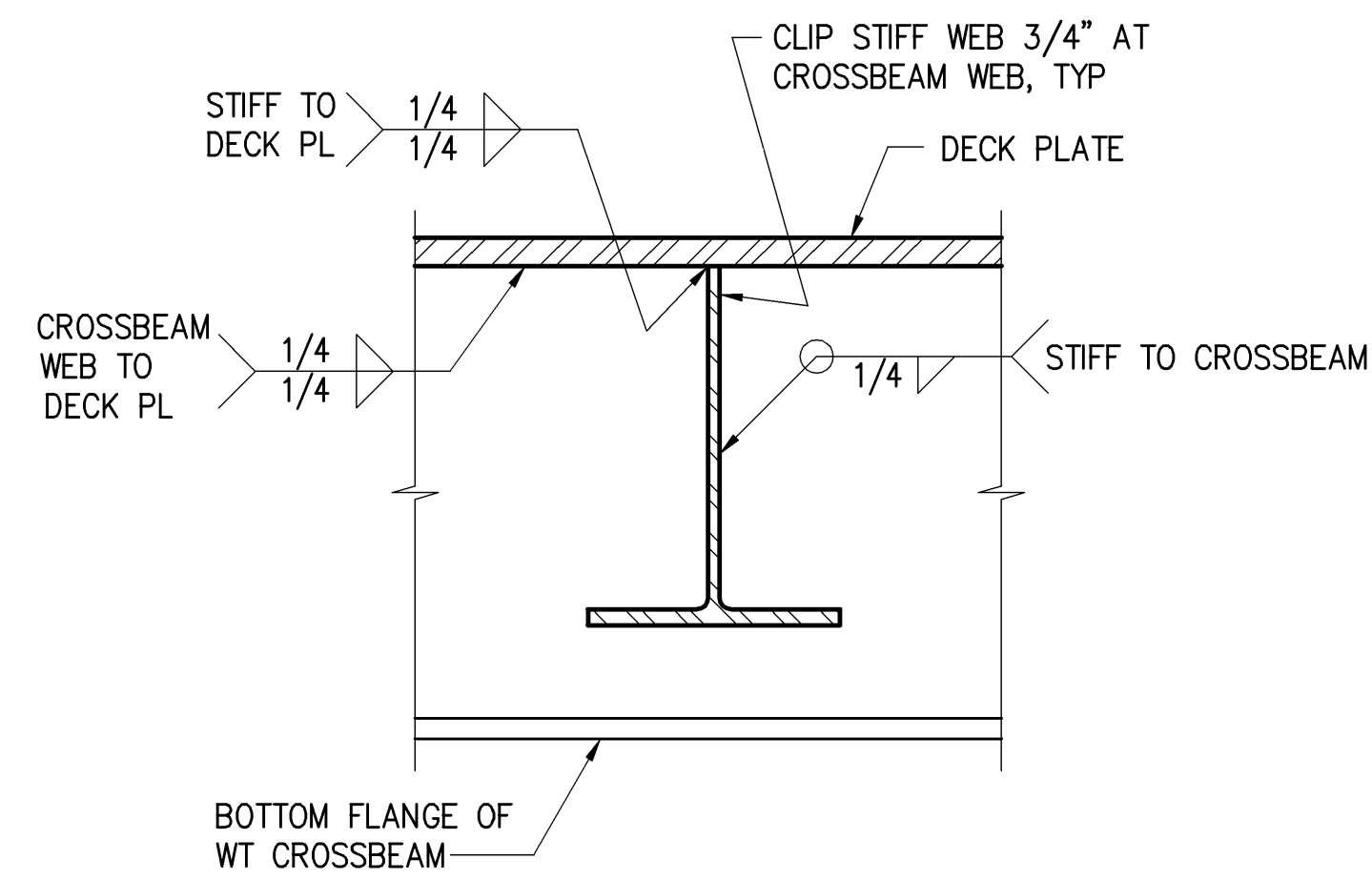
SECTION B  
SCALE: 3" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
HEALY TIBBITTS BUILDERS, INC.	
Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS 2</b>	
SUBMITTED BY:	RECOMMENDED BY:
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
SECTION HEAD	ENGINEERING PROGRAM MANAGER
REDUCED SIZE PRINT (NOT TO SCALE)	DRAWING NUMBER <b>S-3.5</b>
	0 OF ___ SHTS

DESIGN RECORD DRAWINGS

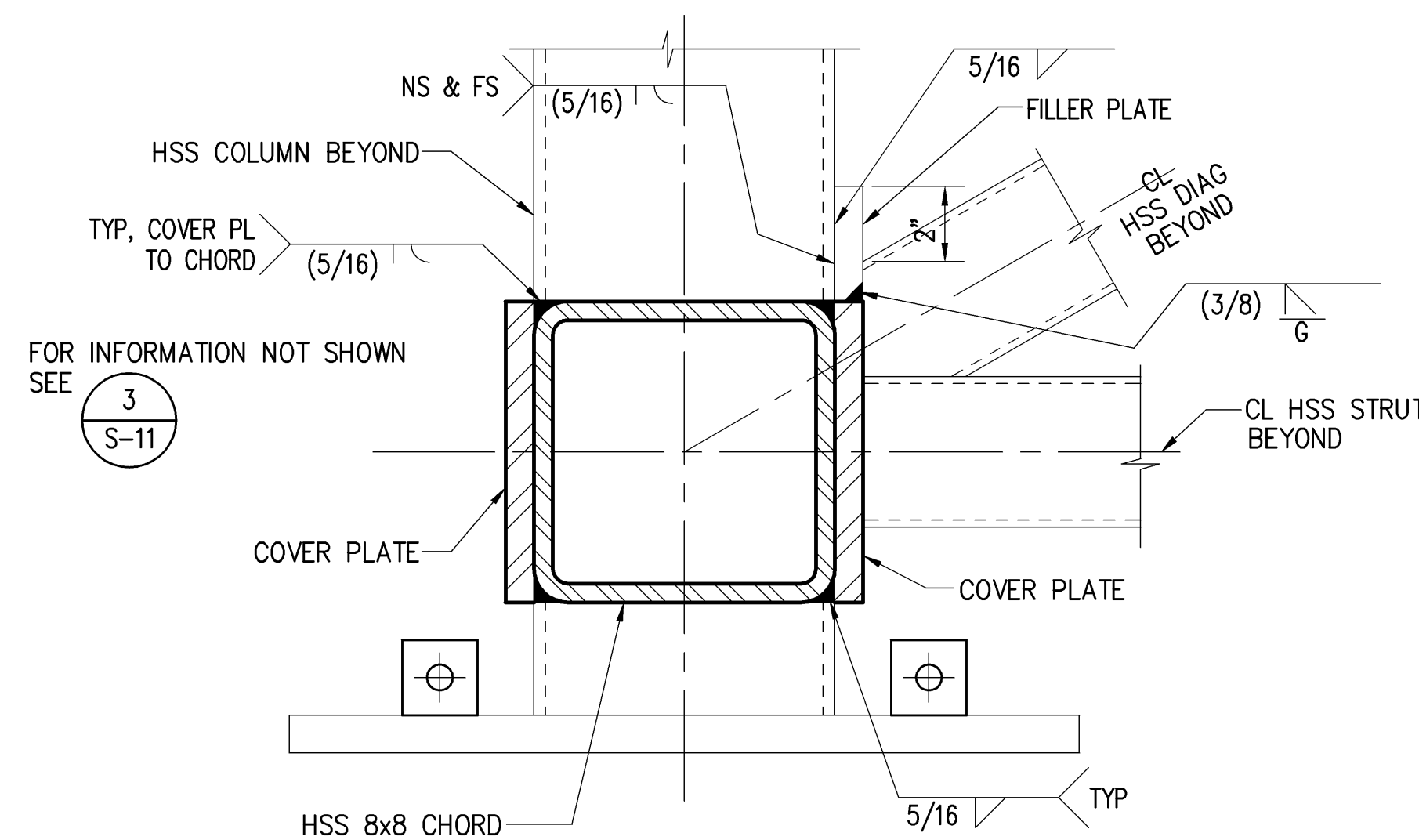


SECTION AT GRID 8 **A**  
SCALE: 3/4" = 1'-0" **S-2**



TYPICAL CONNECTION

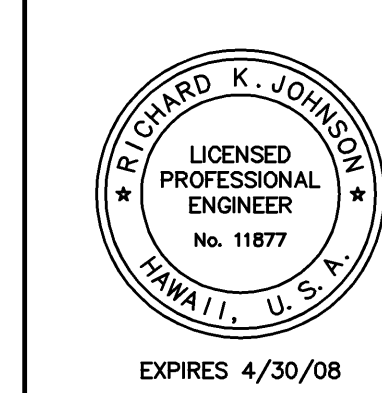
STIFFENER TO CROSSBEAM CONNECTION DETAIL **1**  
SCALE: 3" = 1'-0"



DETAIL

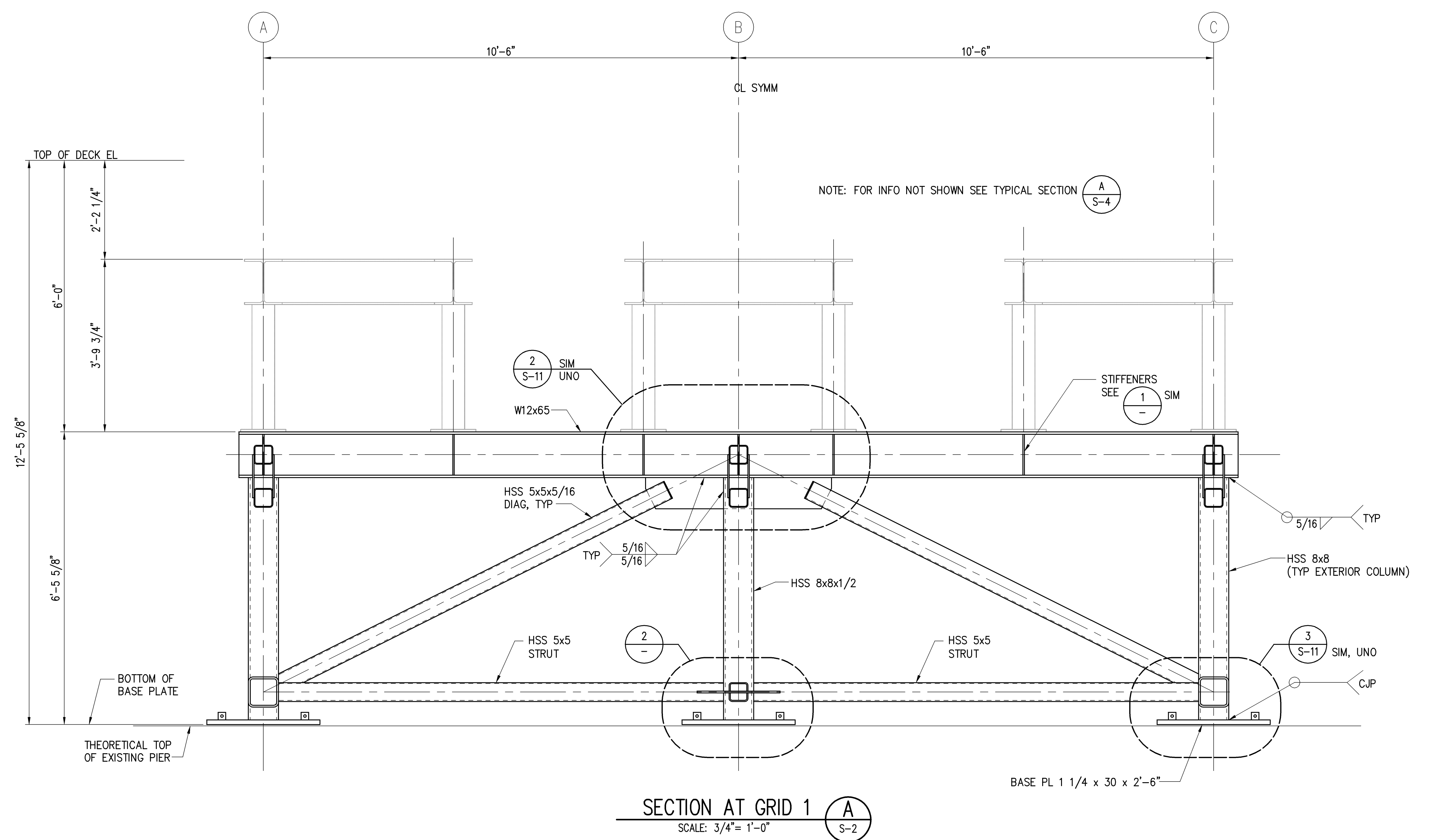
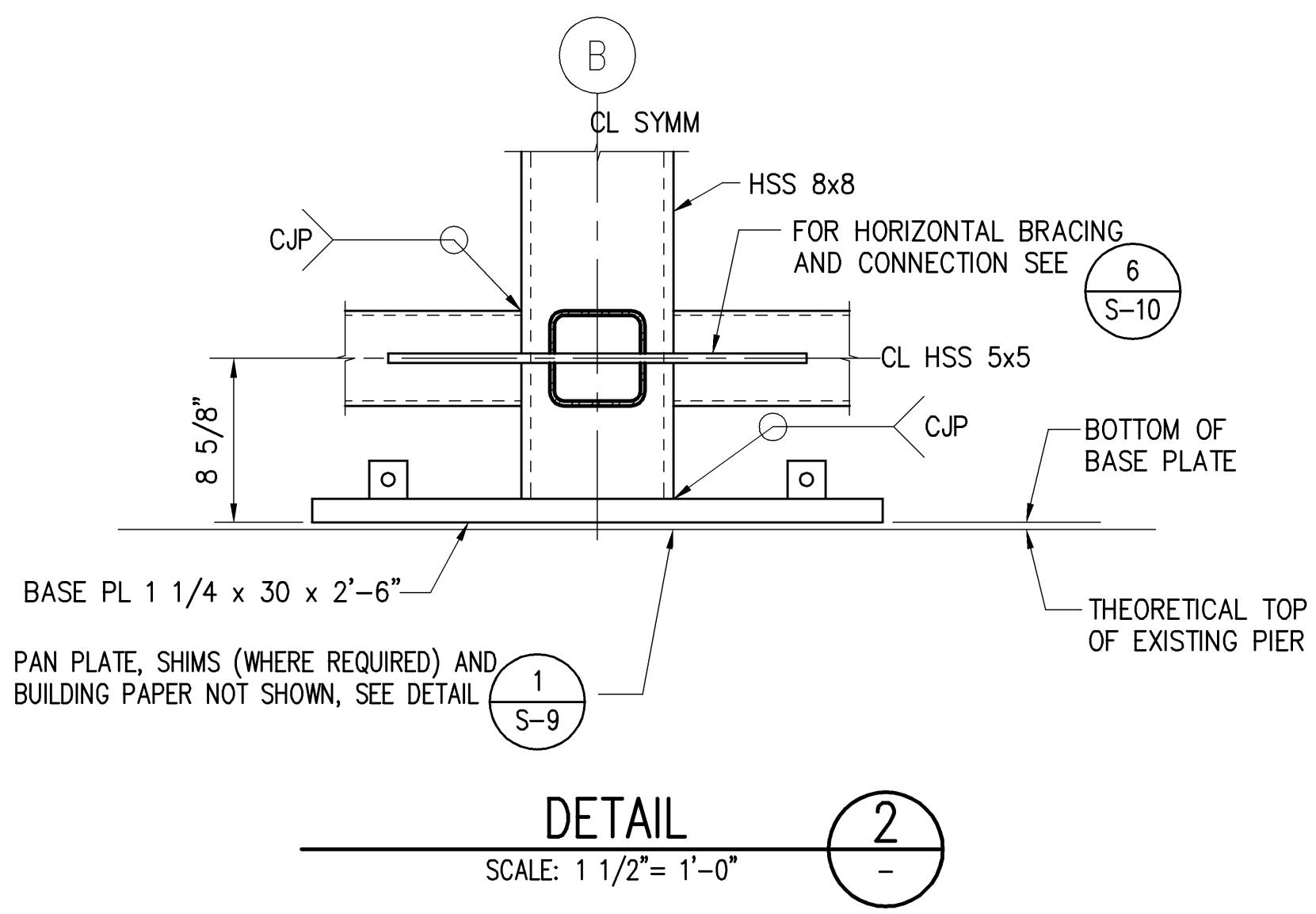
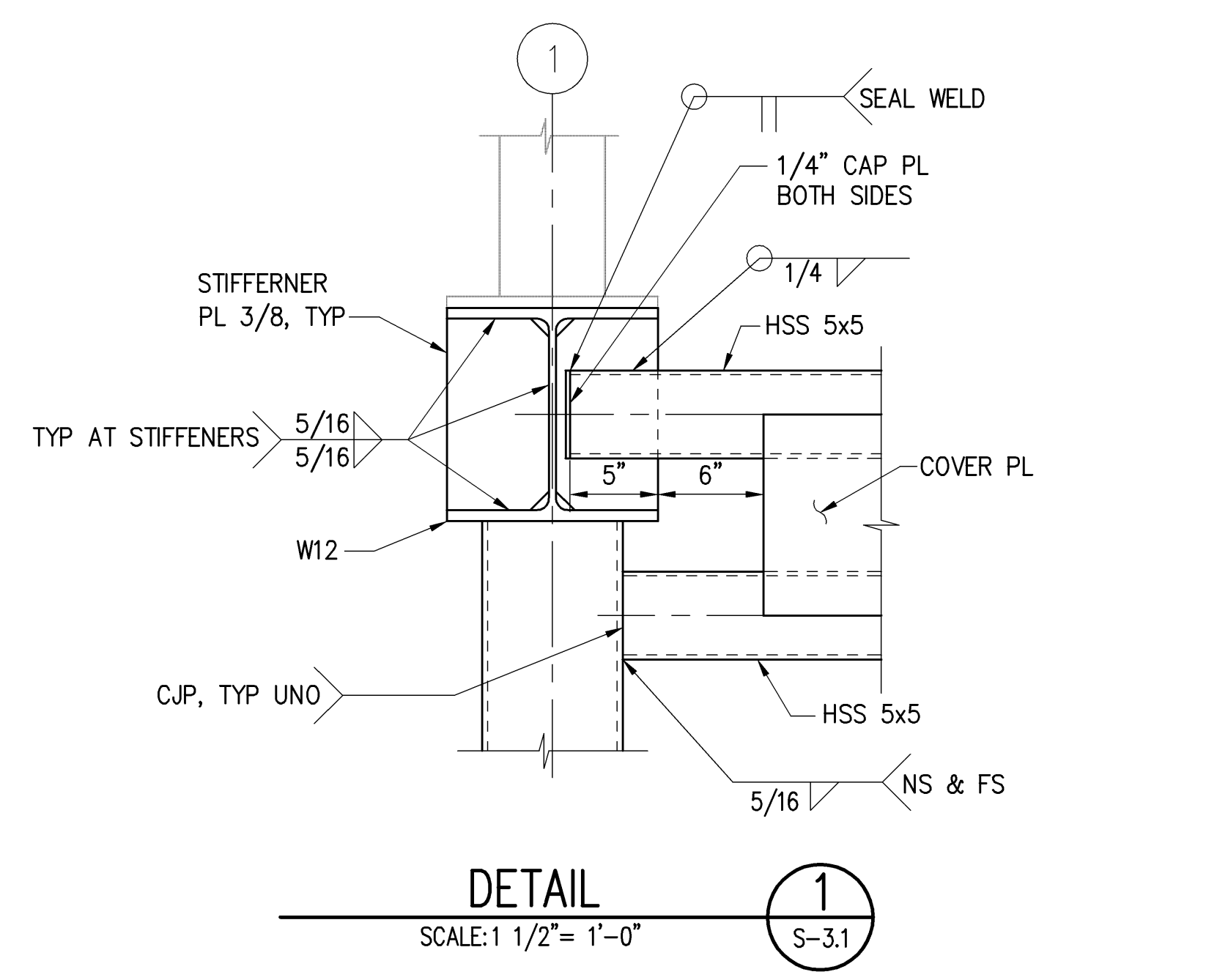
SCALE: 3" = 1'-0" **2**

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
HEALY TIBBITTS BUILDERS, INC.	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL TYPICAL SECTION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
	0
	OF SHTS

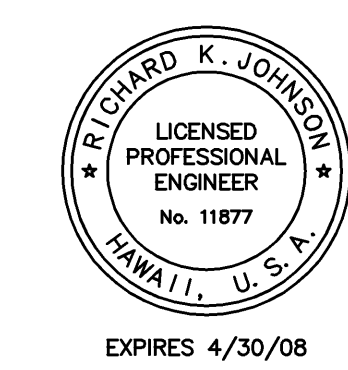


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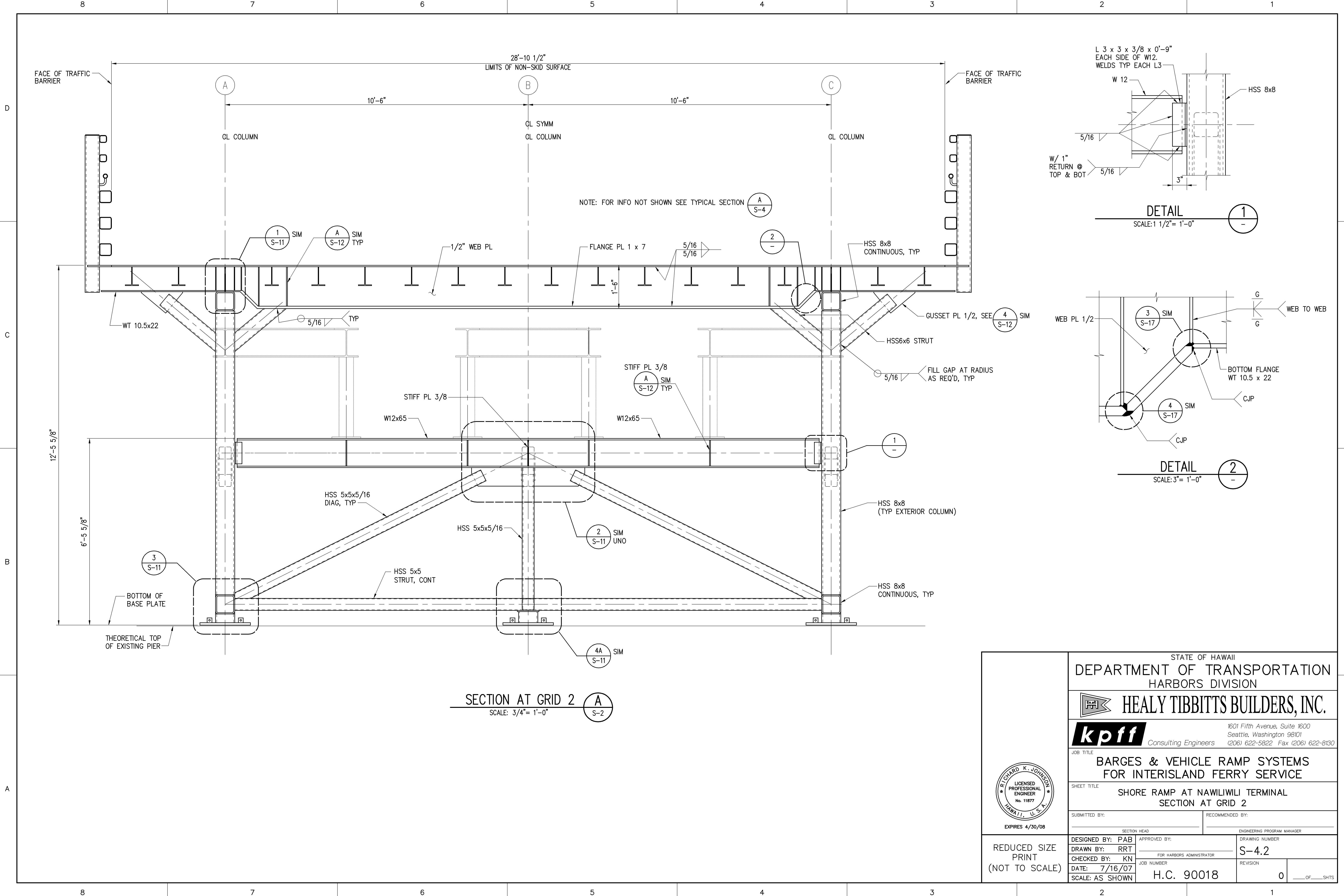
DESIGN RECORD DRAWINGS



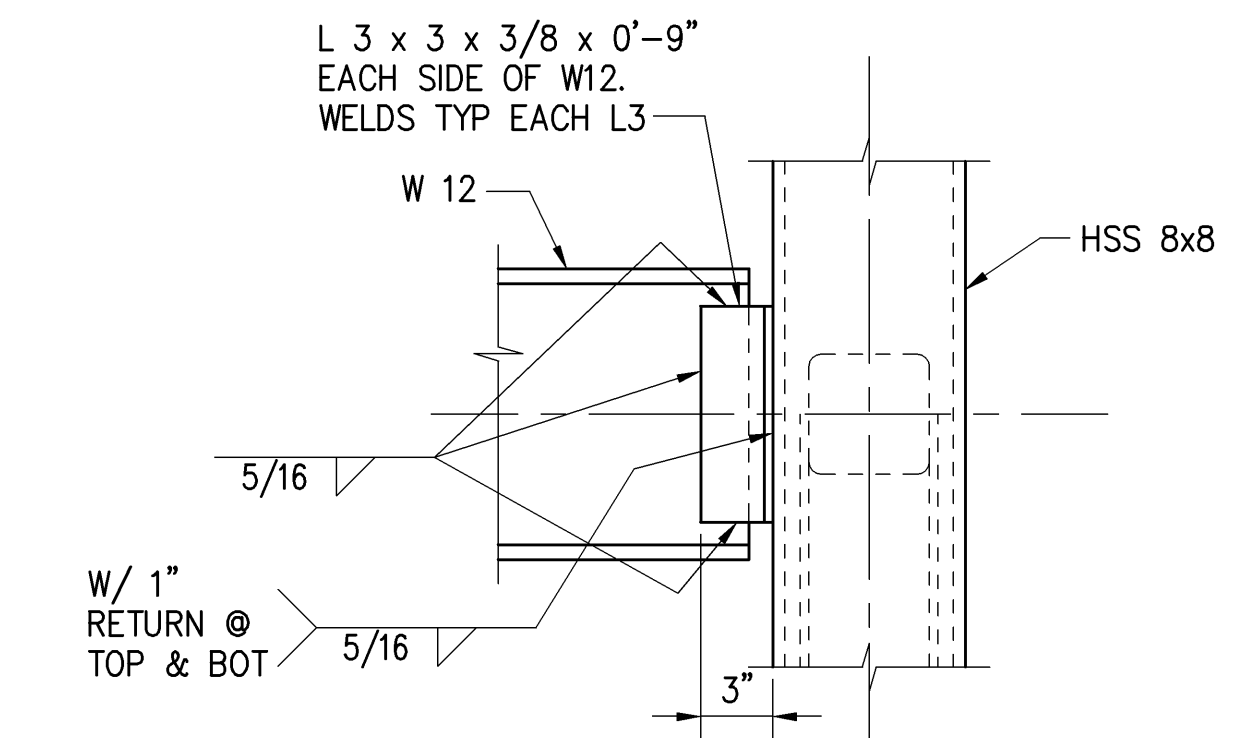
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTION AT GRID 1</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: PAB	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF ____ SHEETS



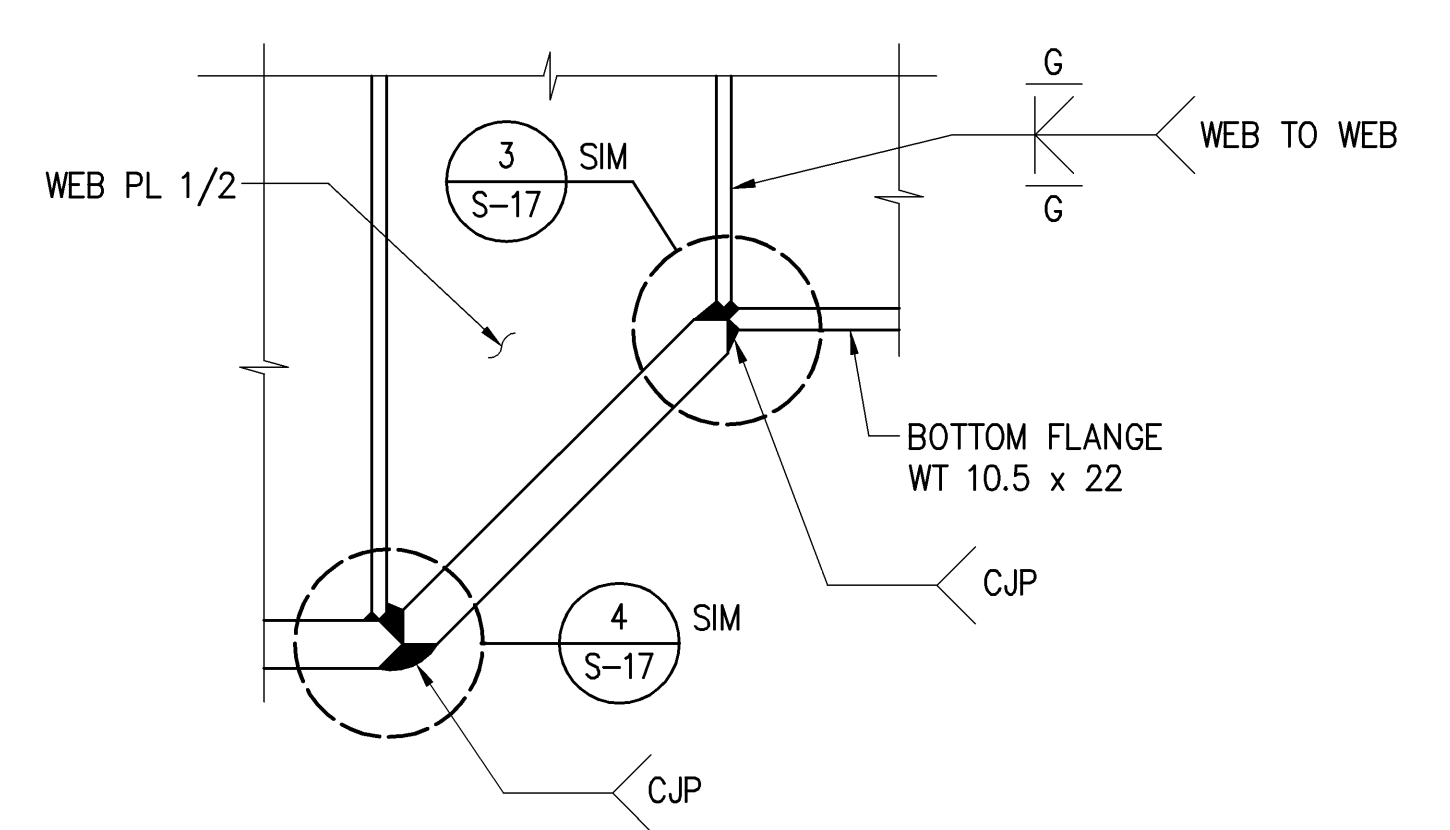
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(NOT TO SCALE)



SECTION AT GRID 2 (A) S-2  
SCALE: 3/4" = 1'-0"

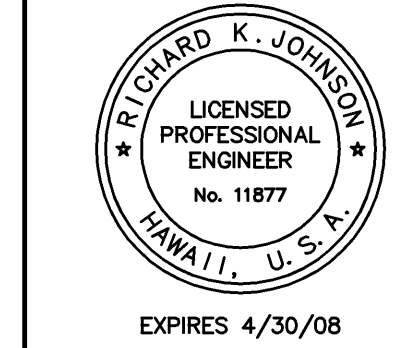


DETAIL 1  
SCALE: 1 1/2" = 1'-0"



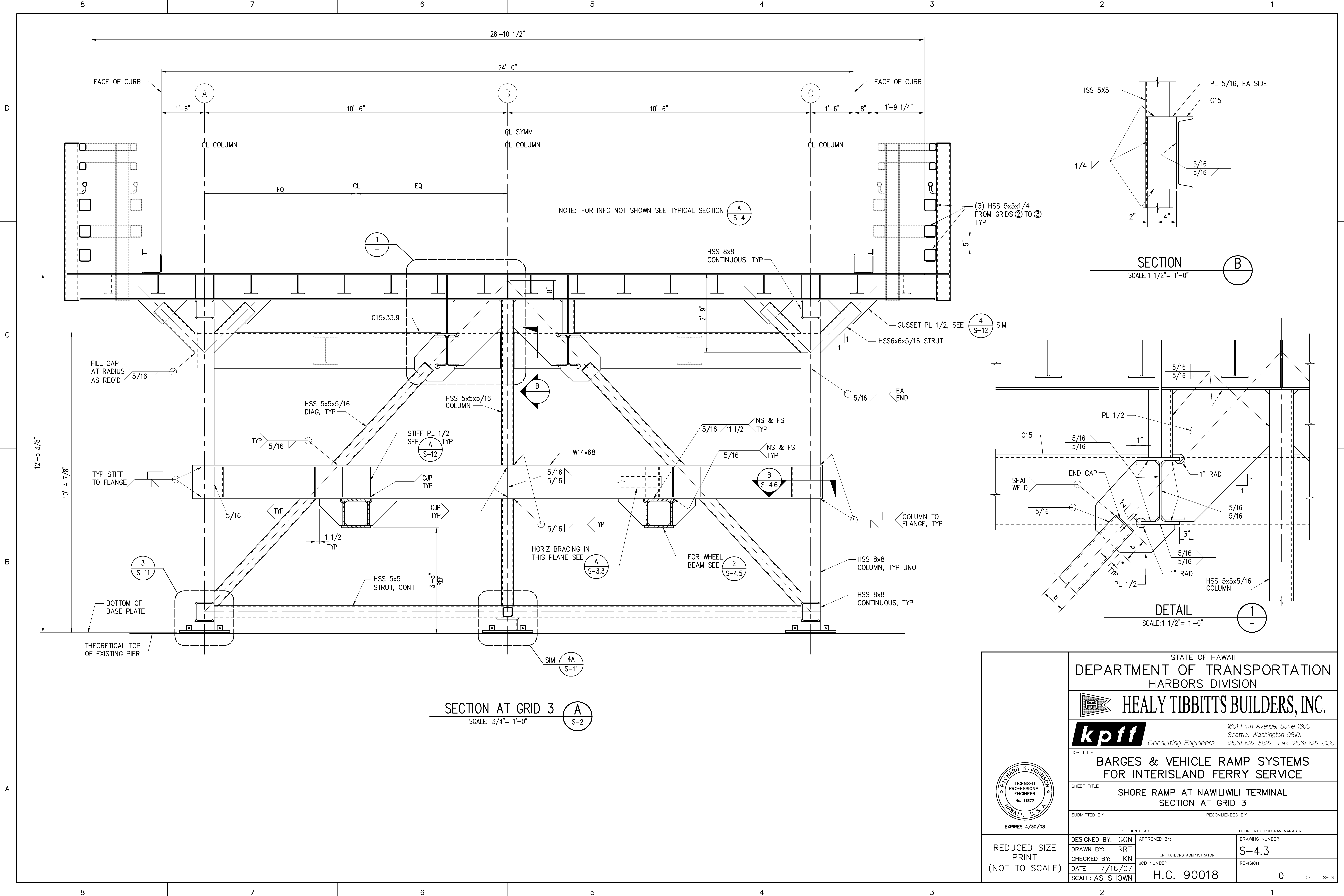
DETAIL 2  
SCALE: 3" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION		<b>HEALY TIBBITTS BUILDERS, INC.</b>	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers		JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS          FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL          SECTION AT GRID 2</b>		SUBMITTED BY: _____ RECOMMENDED BY: _____	
SECTION HEAD DESIGNED BY: PAB DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN		ENGINEERING PROGRAM MANAGER APPROVED BY: _____ FOR HARBORS ADMINISTRATOR H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>S-4.2</b> REVISION 0 OF ____ SHTS	



DESIGN RECORD DRAWINGS



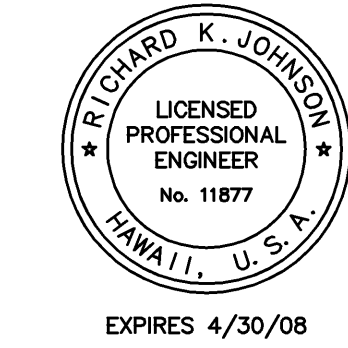


SECTION AT GRID 3 **A**  
SCALE: 3/4" = 1'-0"

SECTION **B**  
SCALE: 1 1/2" = 1'-0"

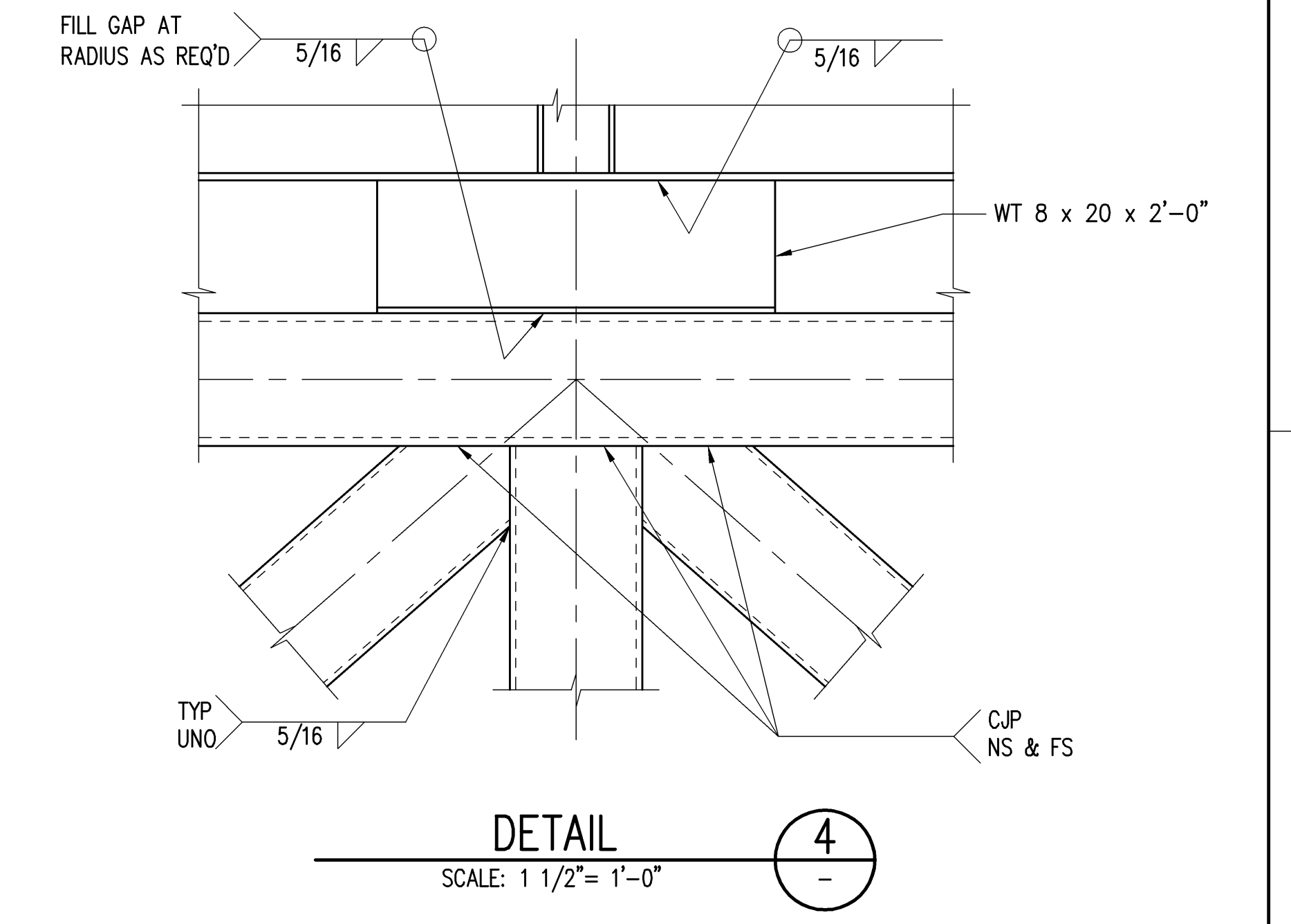
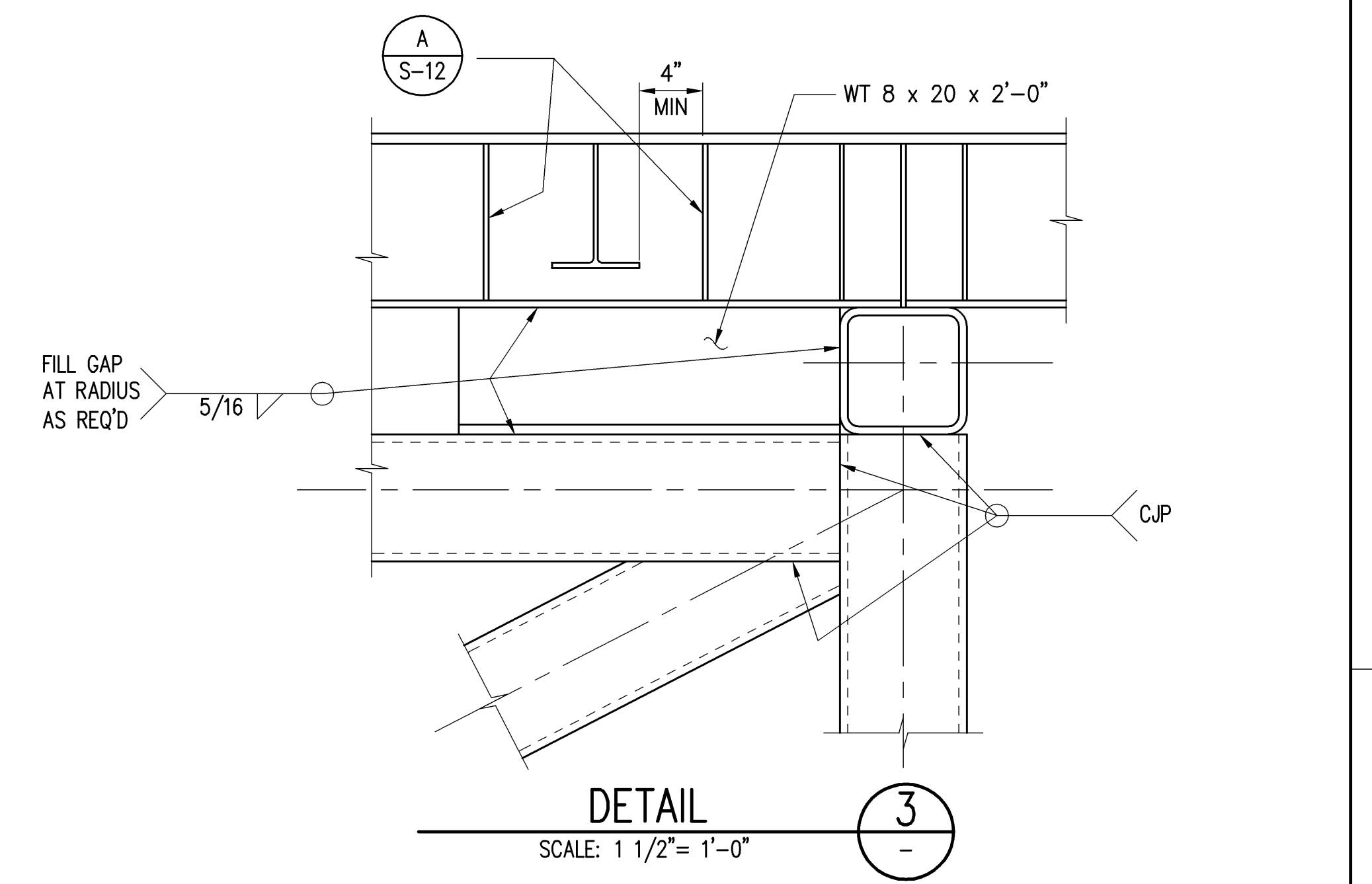
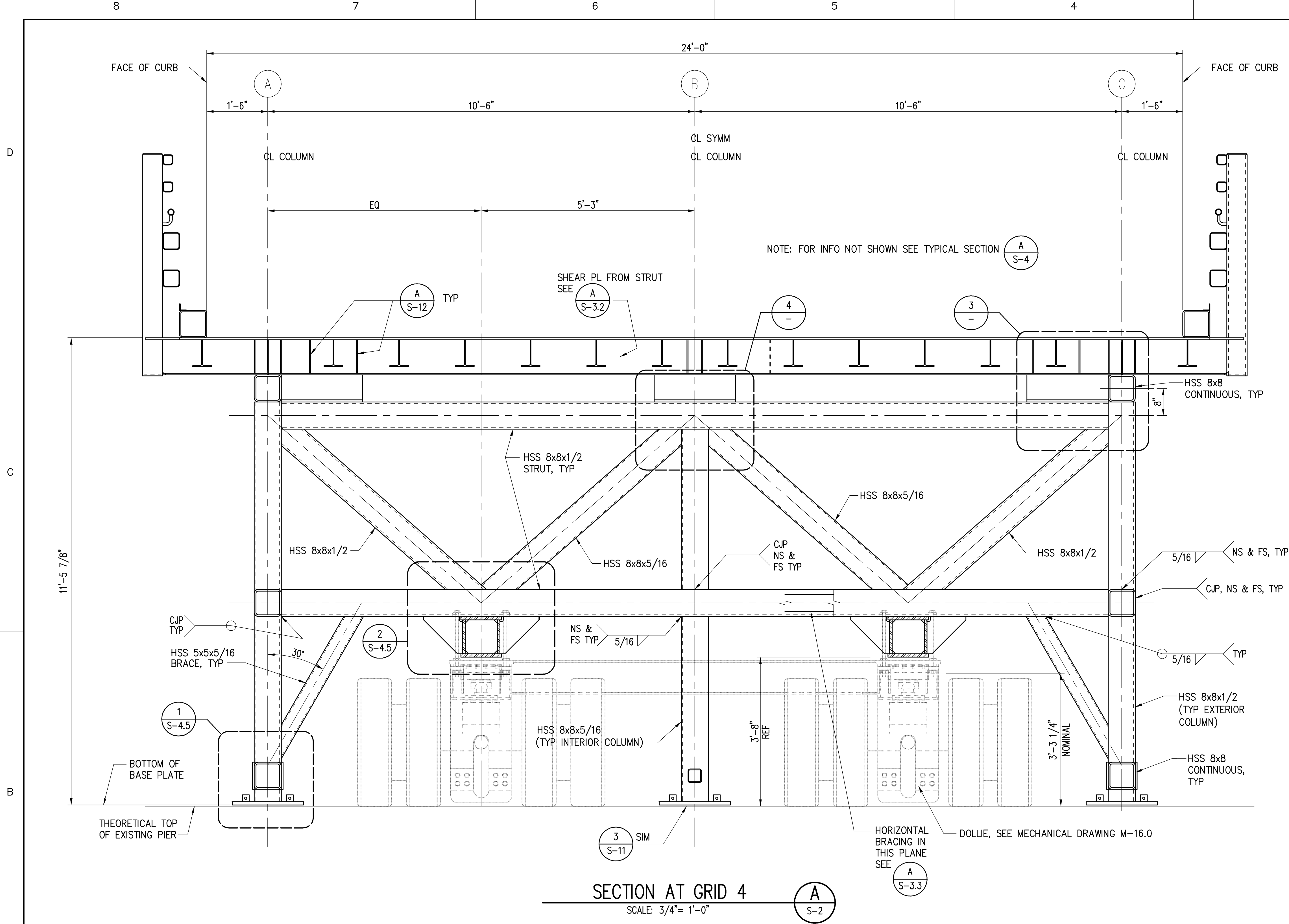
DETAIL **1**  
SCALE: 1 1/2" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTION AT GRID 3</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	DRAWING NUMBER <b>S-4.3</b>
CHECKED BY: KN	FOR HARBORS ADMINISTRATOR
DATE: 7/16/07	JOB NUMBER <b>H.C. 90018</b>
SCALE: AS SHOWN	REVISION <b>0</b>



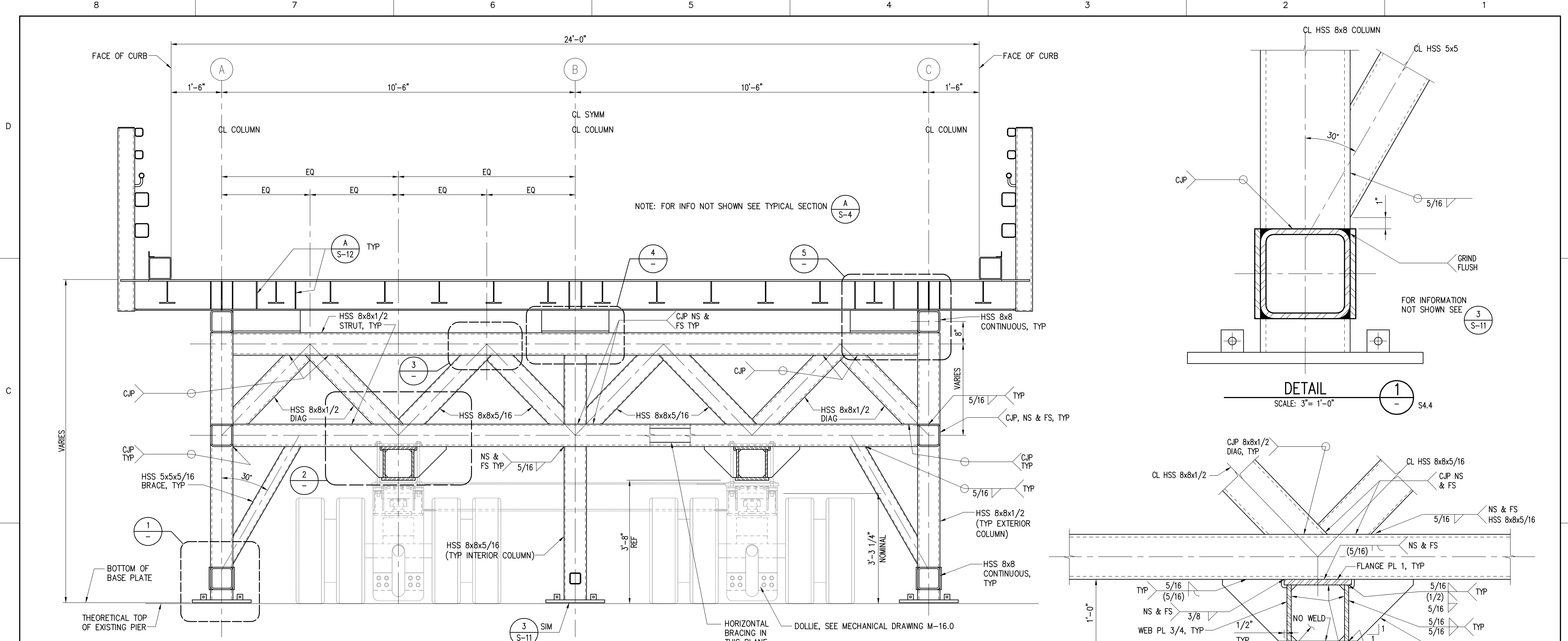
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(NOT TO SCALE)

DESIGN RECORD DRAWINGS

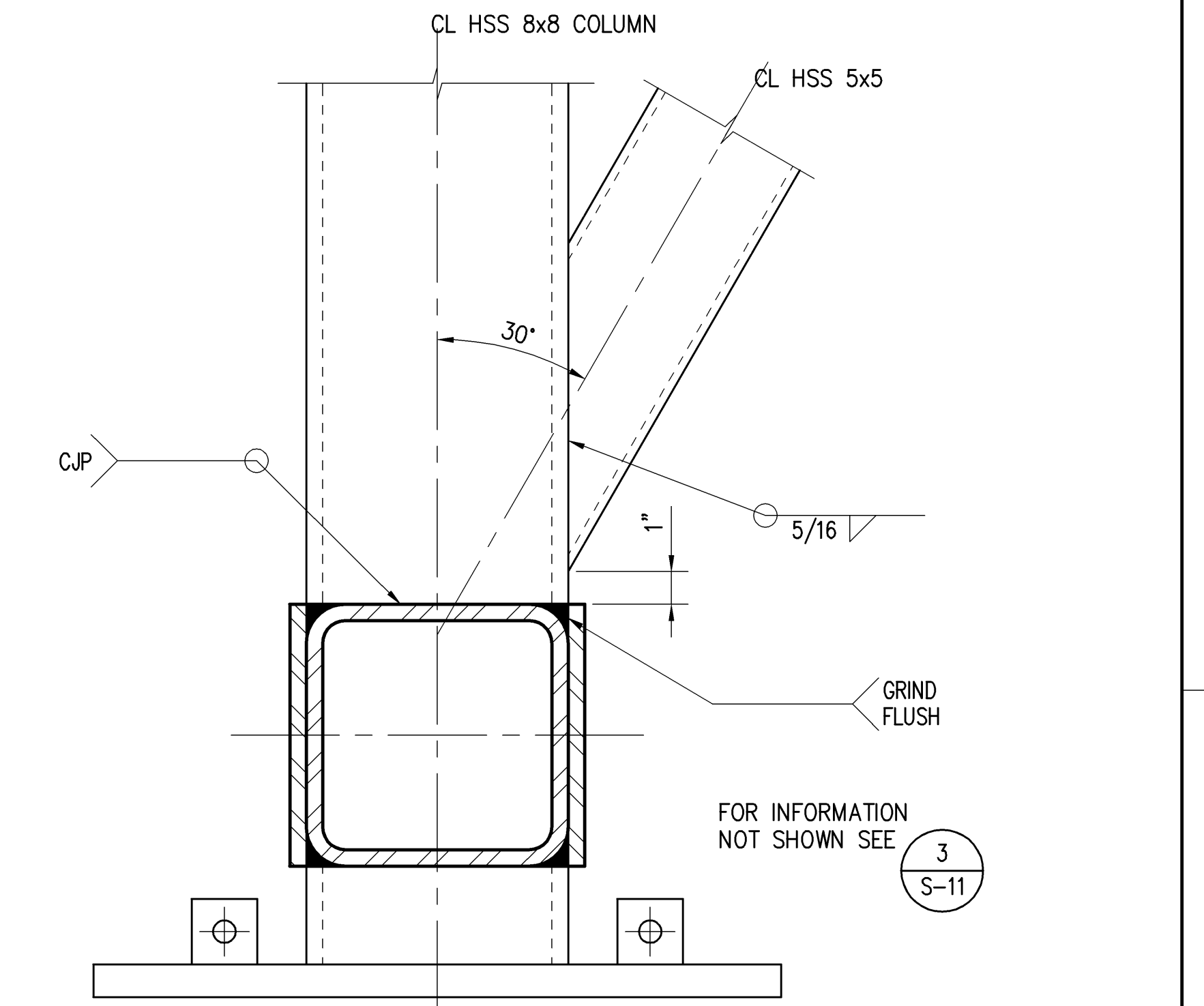


	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		
<b>kpff</b> Consulting Engineers		
<b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
<b>SHORE RAMP AT NAWILIWILI TERMINAL SECTION AT GRID 1</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER: S-4.4 REVISION: 0 OF ___ SHTS
H.C. 90018		0

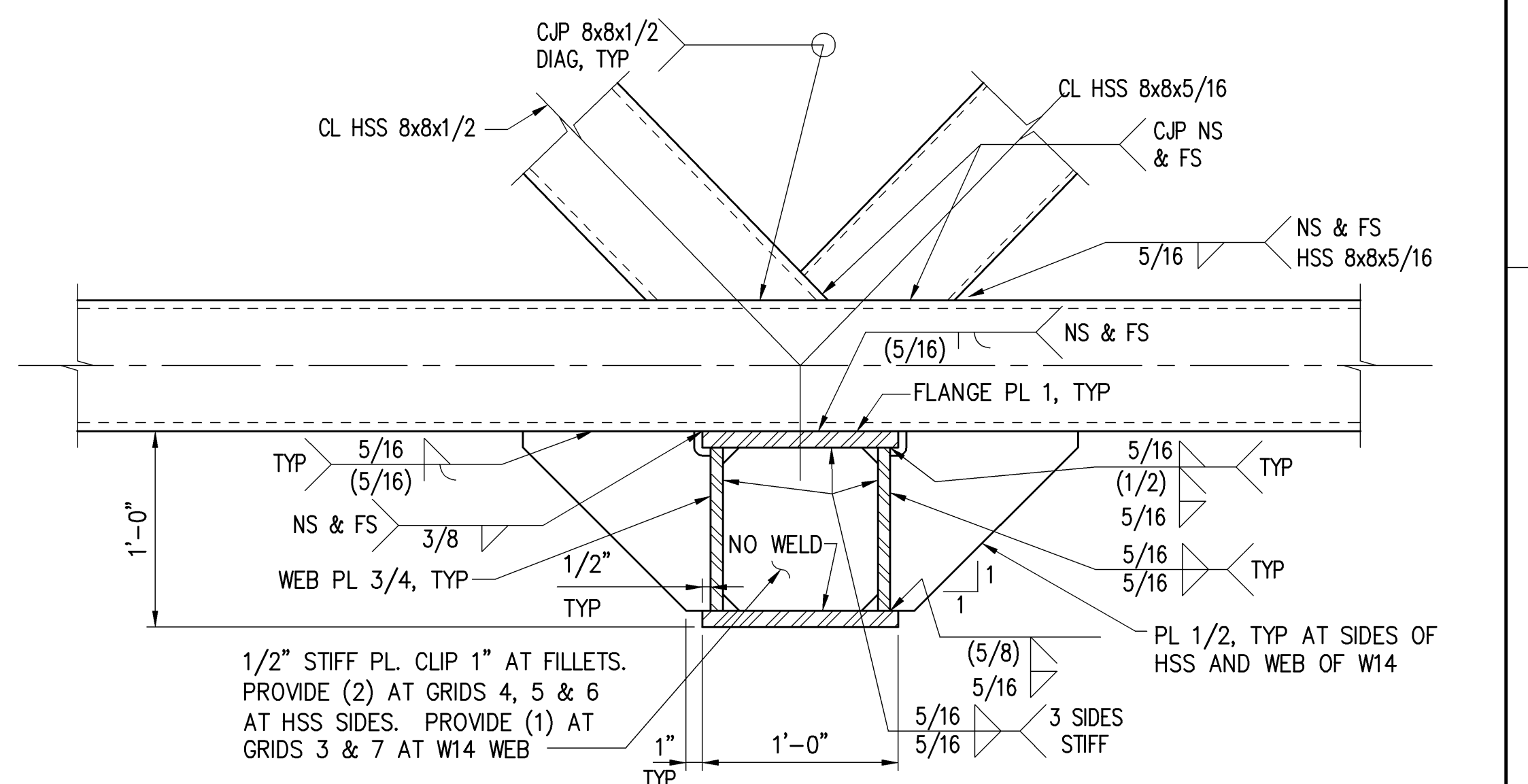
DESIGN RECORD DRAWINGS



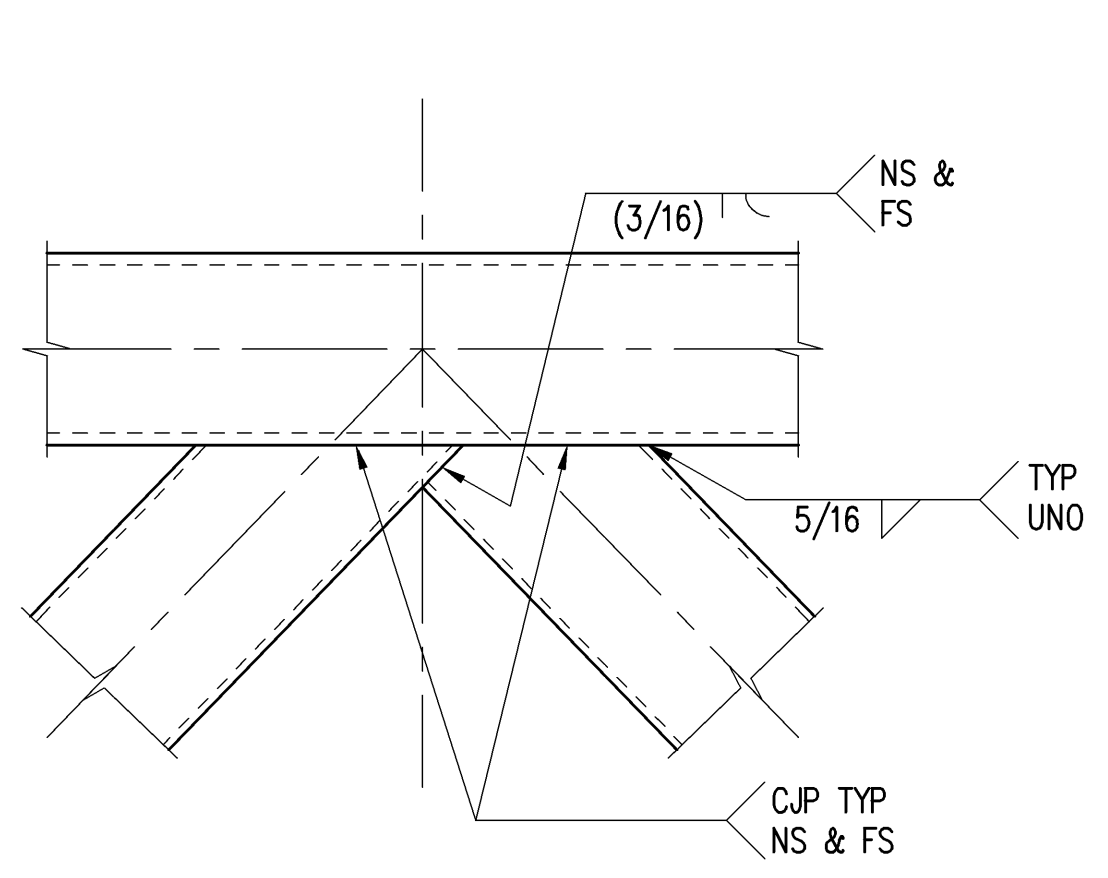
**SECTION AT GRIDS 5 & 6**  
SCALE: 3/4" = 1'-0"  
A S-2



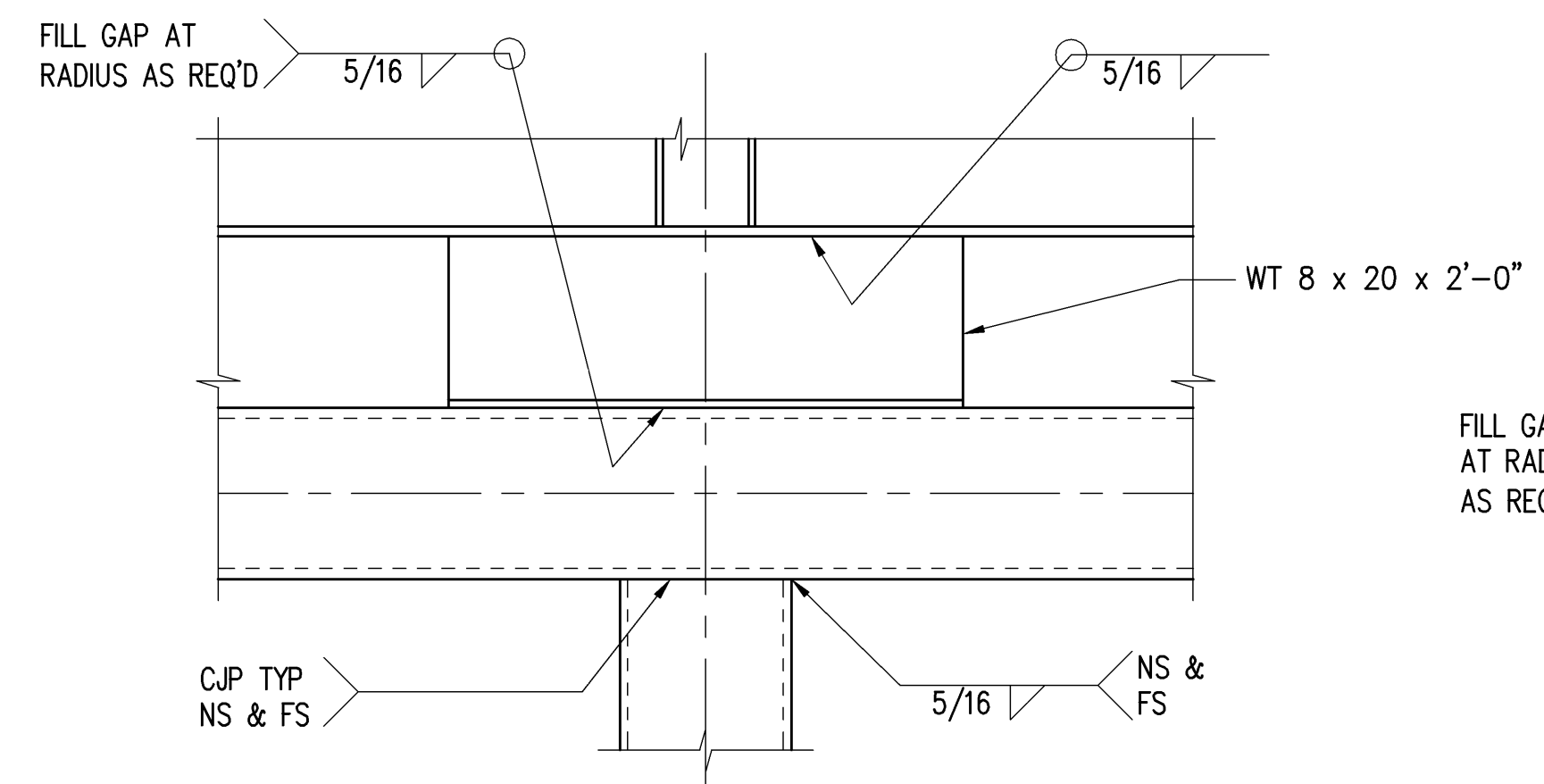
**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-4.4



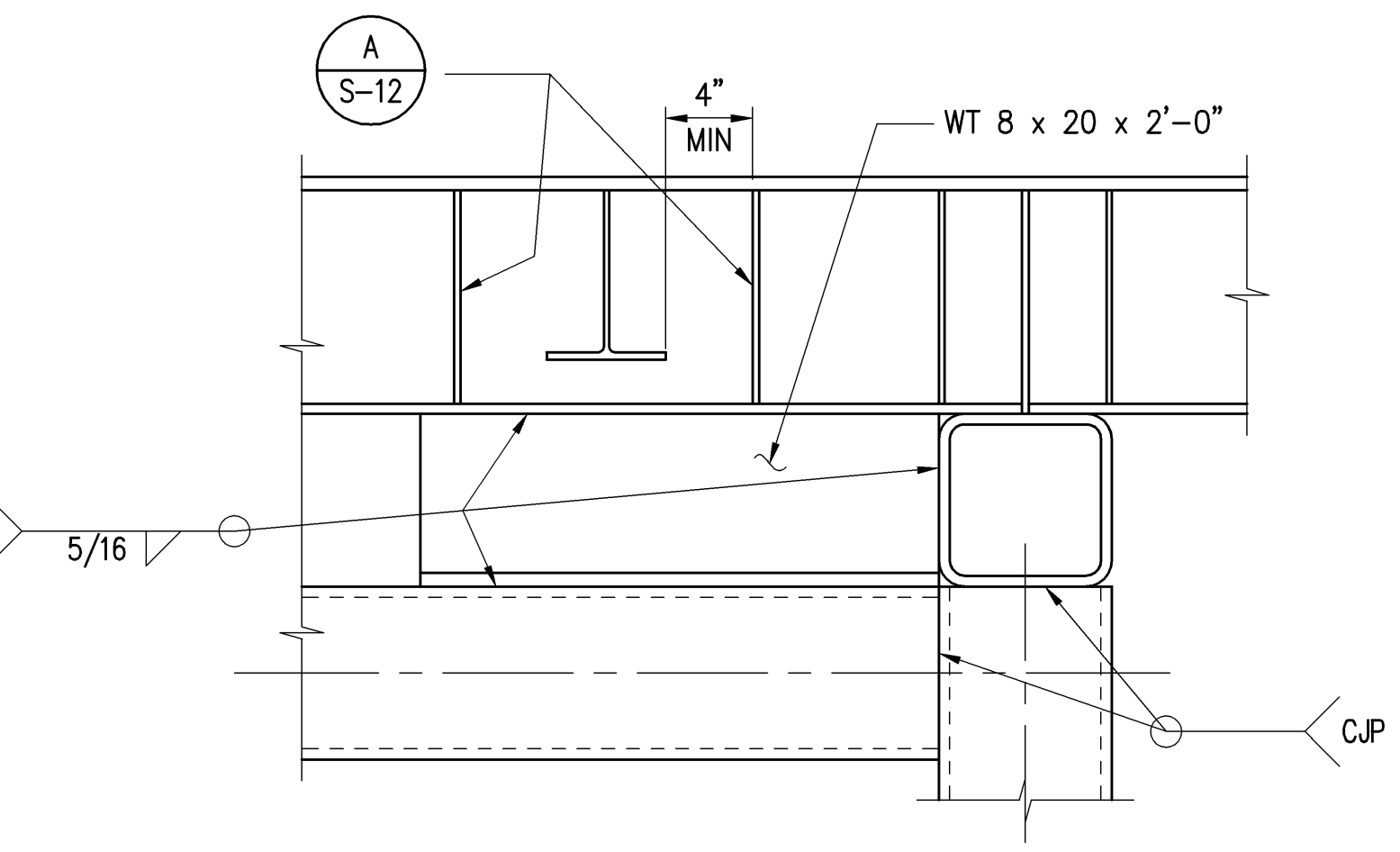
**DETAIL 2**  
SCALE: 1 1/2" = 1'-0"  
S-4.3, S-4.4, S-4.6



**DETAIL 3**  
SCALE: 1 1/2" = 1'-0"



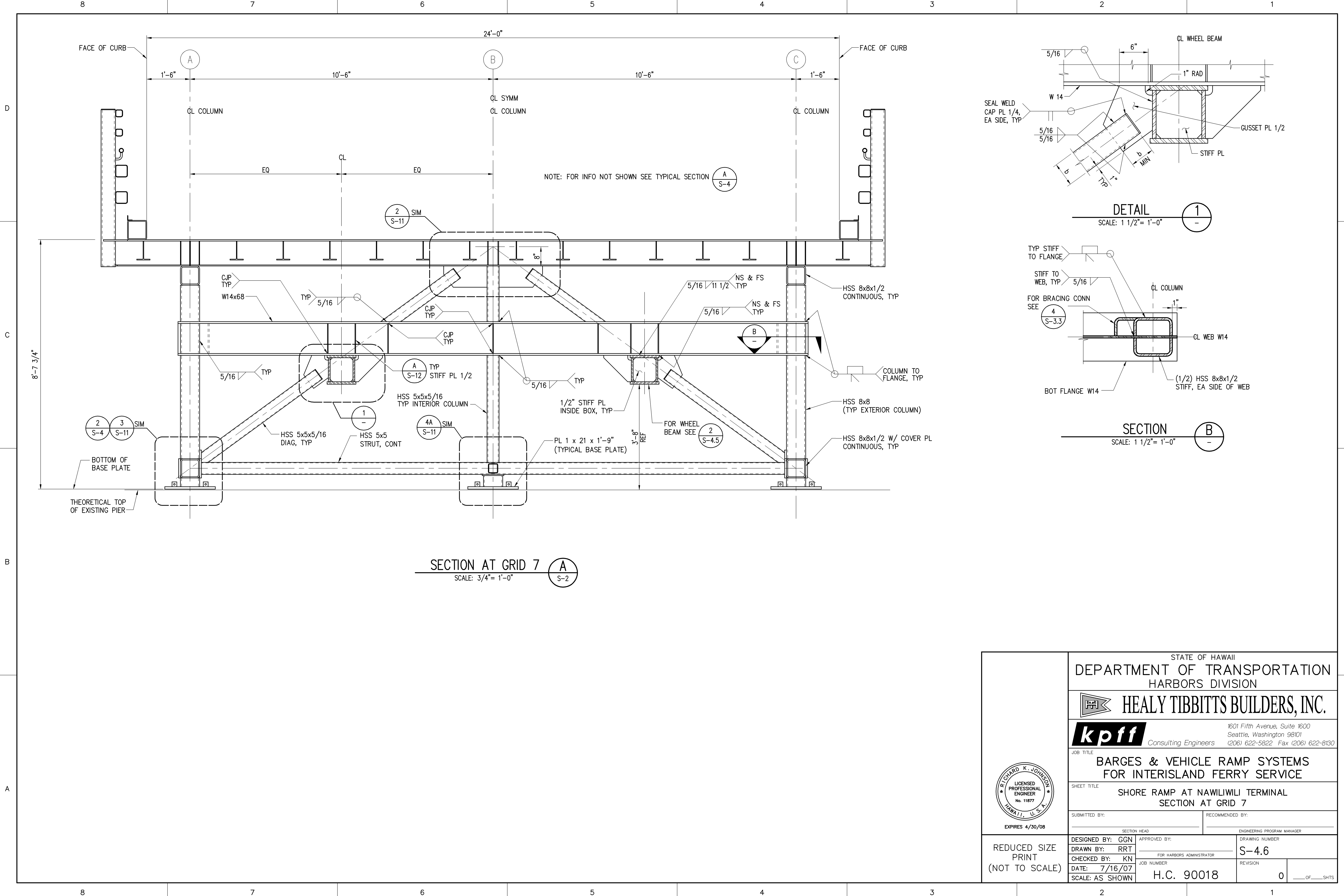
**DETAIL 4**  
SCALE: 1 1/2" = 1'-0"



**DETAIL 5**  
SCALE: 1 1/2" = 1'-0"

		STATE OF HAWAII <b>DEPARTMENT OF TRANSPORTATION</b> HARBORS DIVISION	
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN		SUBMITTED BY: RECOMMENDED BY: SECTION HEAD ENGINEERING PROGRAM MANAGER	
REDUCED SIZE PRINT (NOT TO SCALE)		JOB TITLE: <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE: <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTION AT GRID 1</b>		DRAWING NUMBER: <b>S-4.5</b>	
JOB NUMBER: <b>H.C. 90018</b>		REVISION: <b>0</b>	

DESIGN RECORD DRAWINGS



SECTION AT GRID 7 (A)  
SCALE: 3/4" = 1'-0"

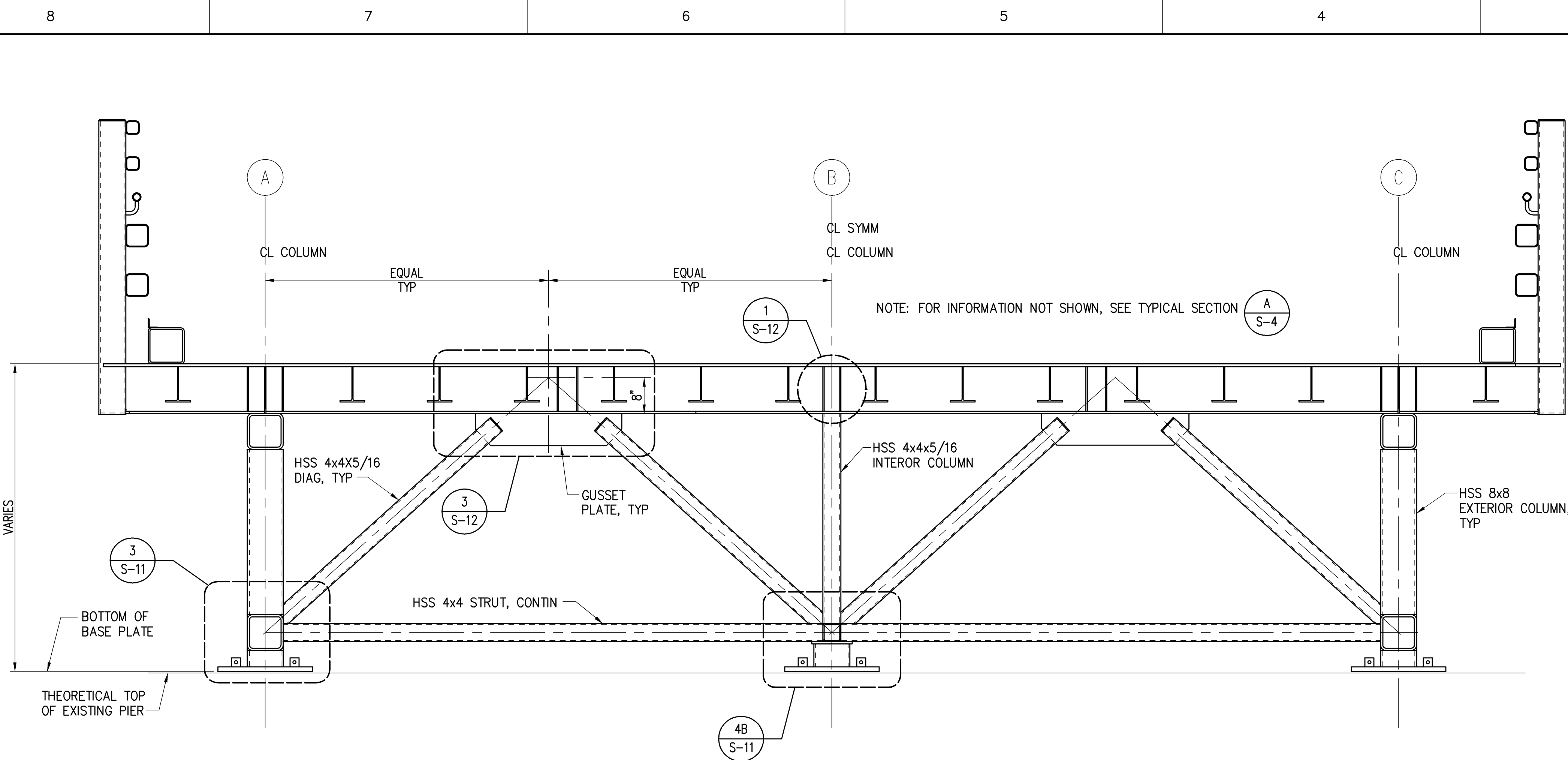
DETAIL 1  
SCALE: 1 1/2" = 1'-0"

SECTION B  
SCALE: 1 1/2" = 1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
<b>SHEET TITLE</b> SHORE RAMP AT NAWILIWILI TERMINAL SECTION AT GRID 7		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>S-4.6</b> REVISION 0 OF ____ SHTS
H.C. 90018		

REDUCED SIZE PRINT  
(NOT TO SCALE)

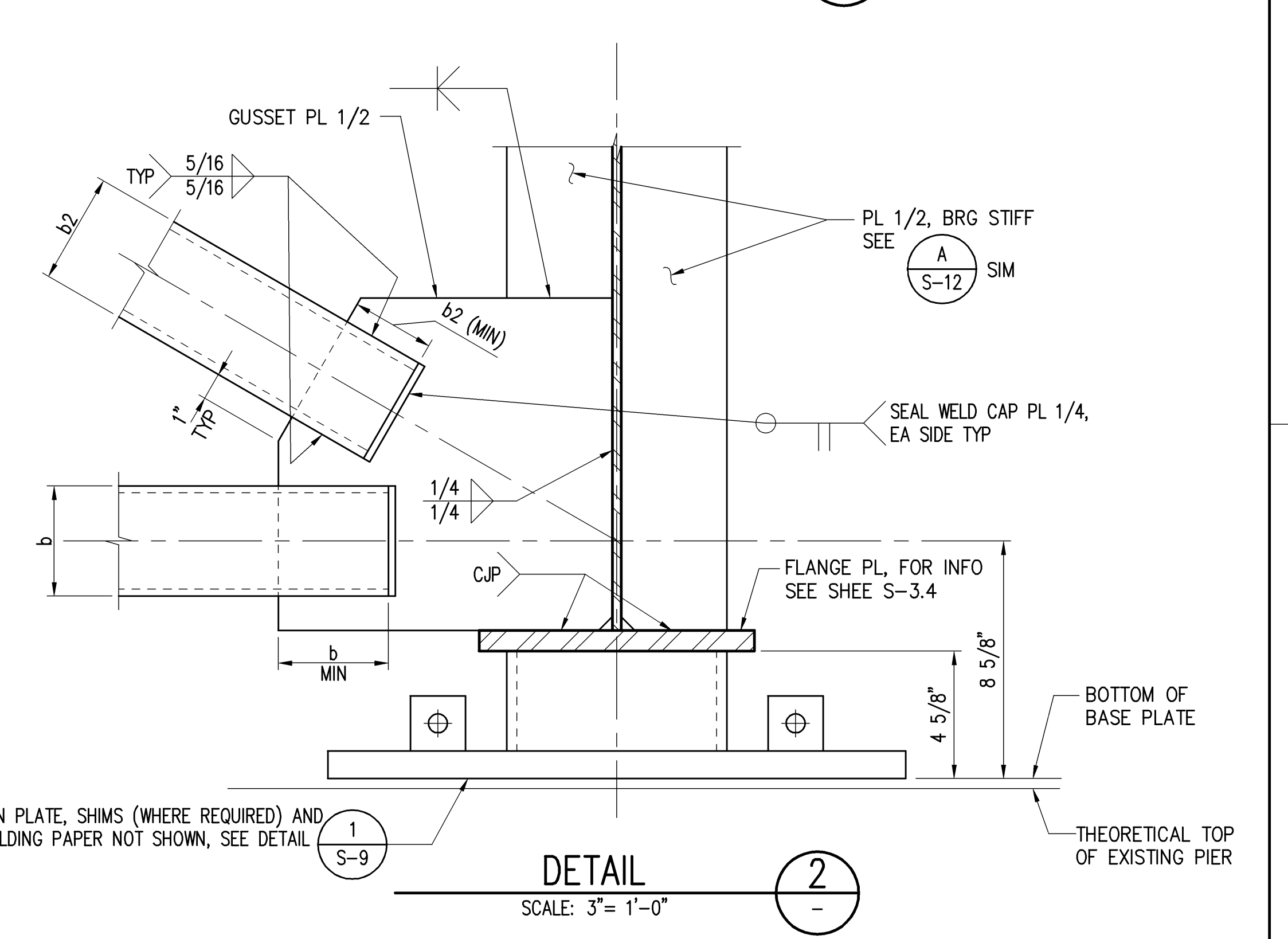
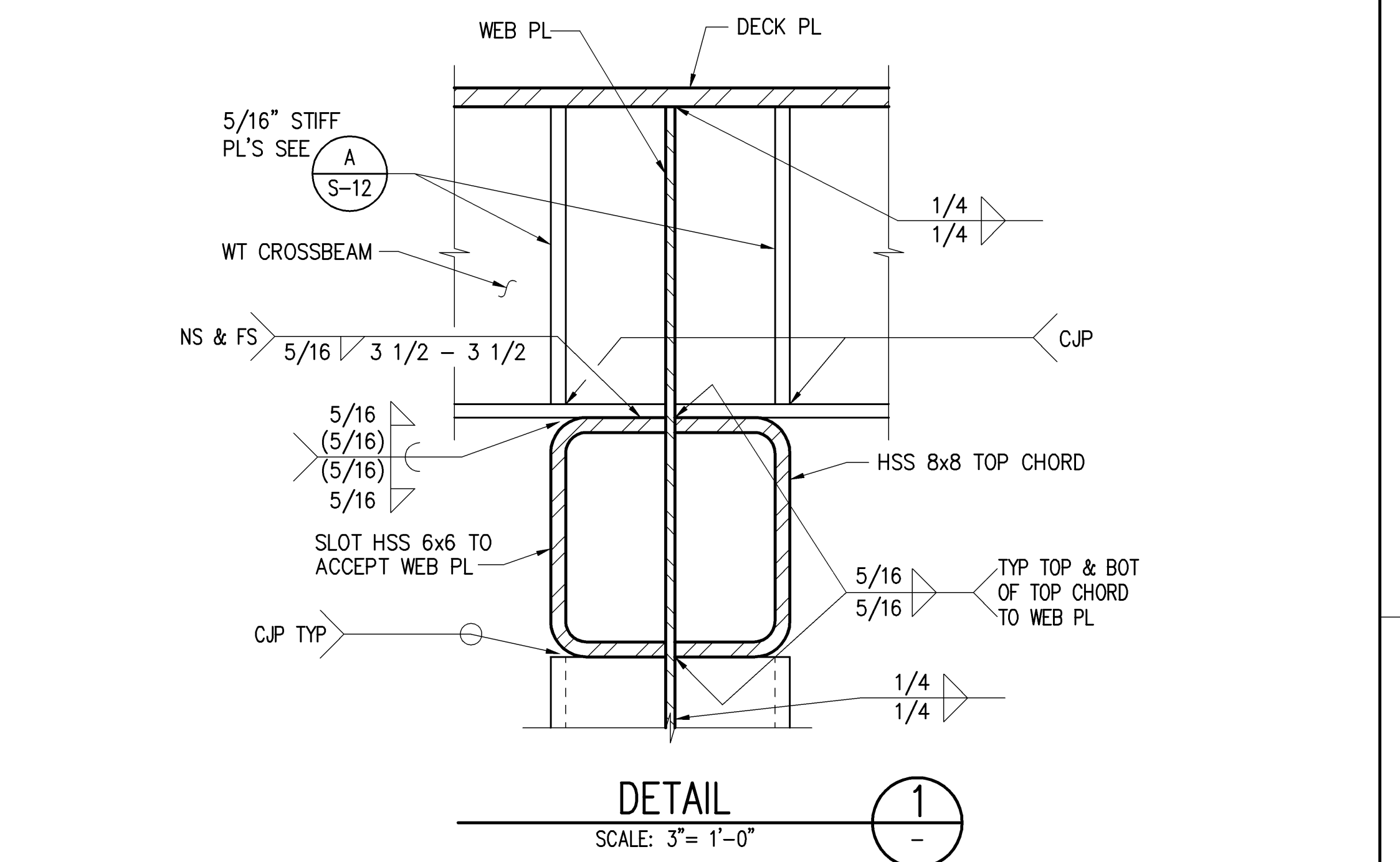
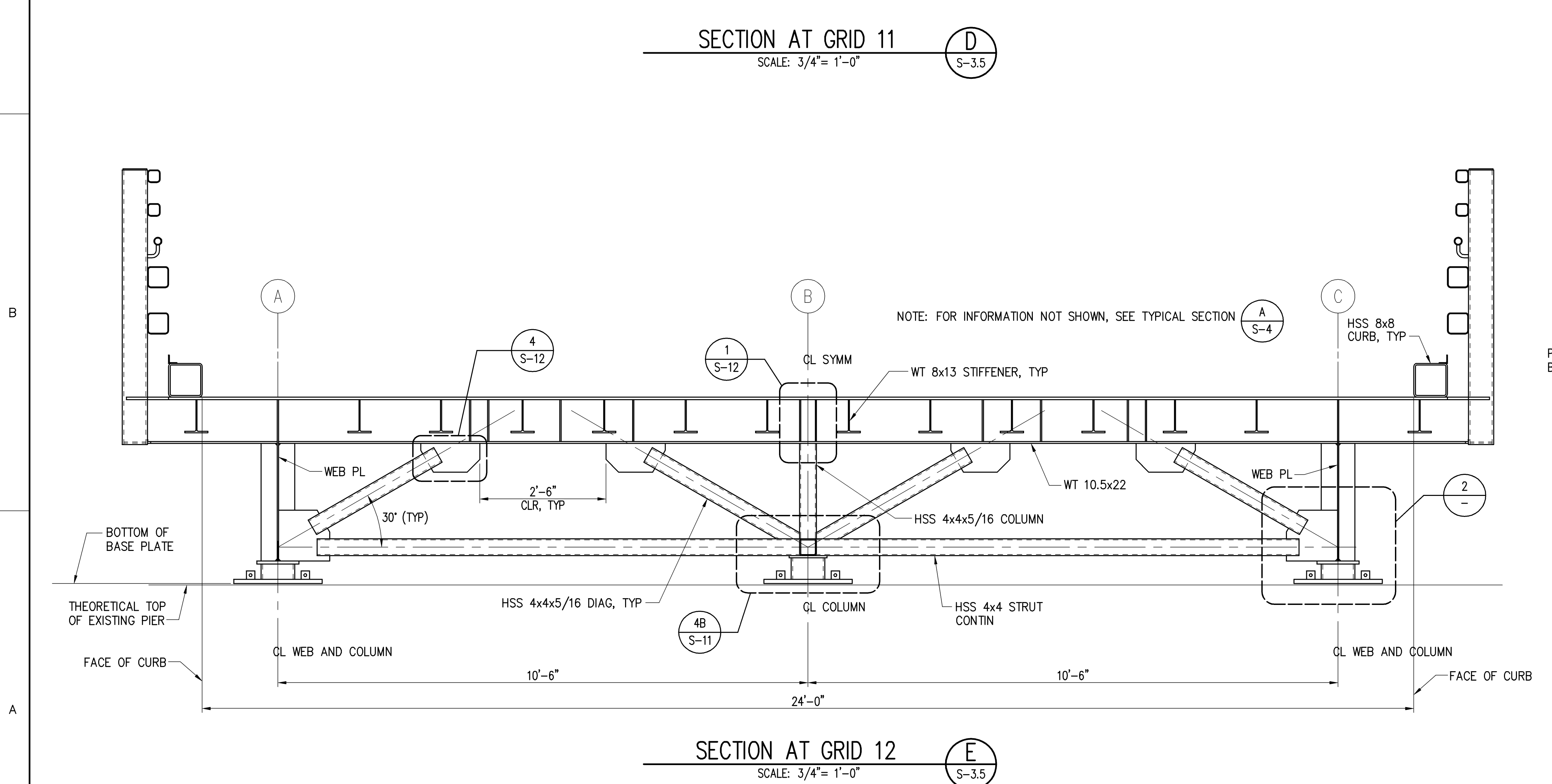
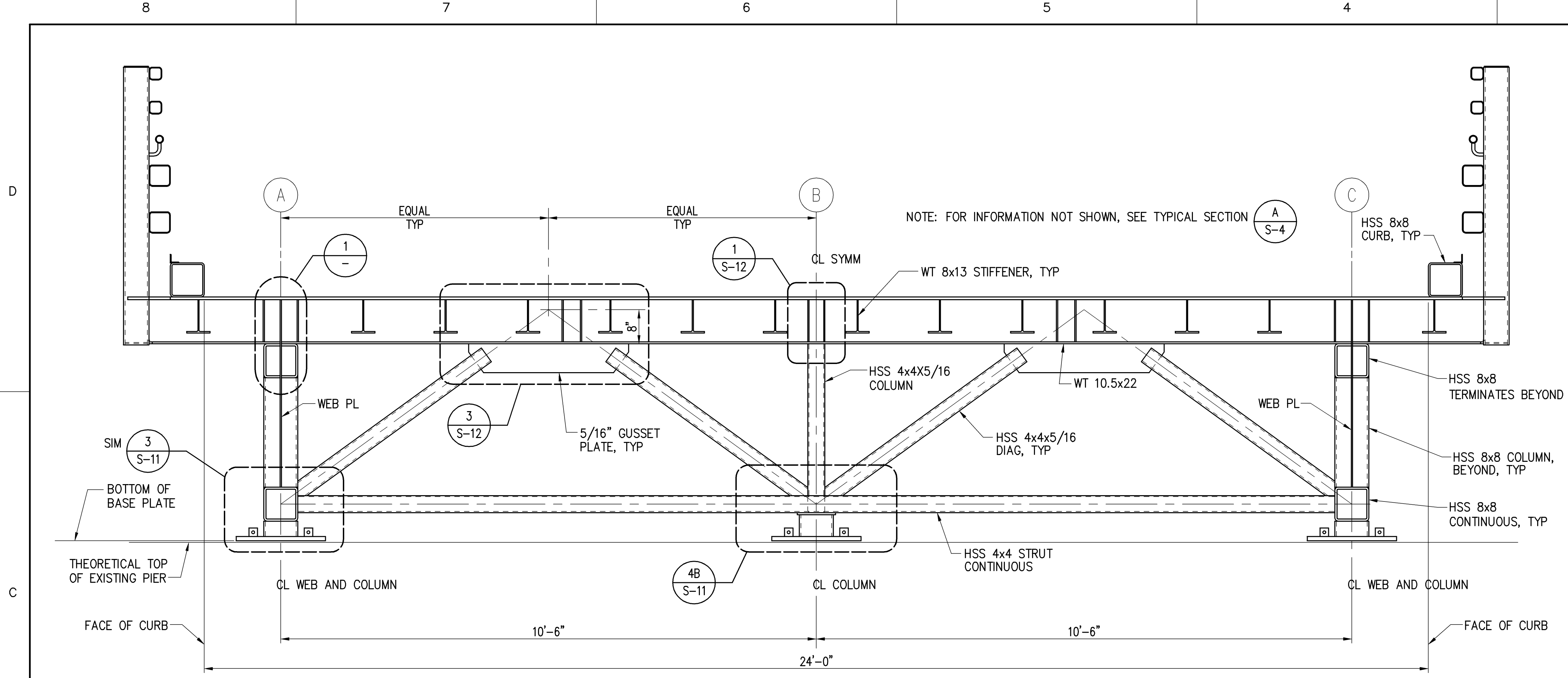
DESIGN RECORD DRAWINGS



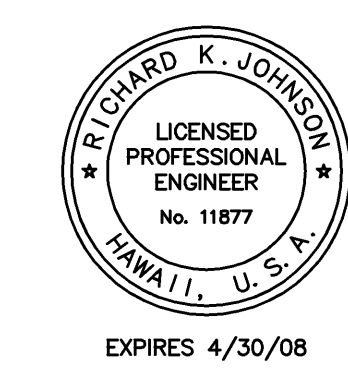
SECTION AT GRIDS 9 AND 10 A  
 SCALE: 3/4" = 1'-0" S-2

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	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
<b>SHEET TITLE</b> SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS 1		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN		APPROVED BY: FOR HARBORS ADMINISTRATOR JOB NUMBER H.C. 90018
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>S-5</b> REVISION 0 OF ____ SHTS

DESIGN RECORD DRAWINGS

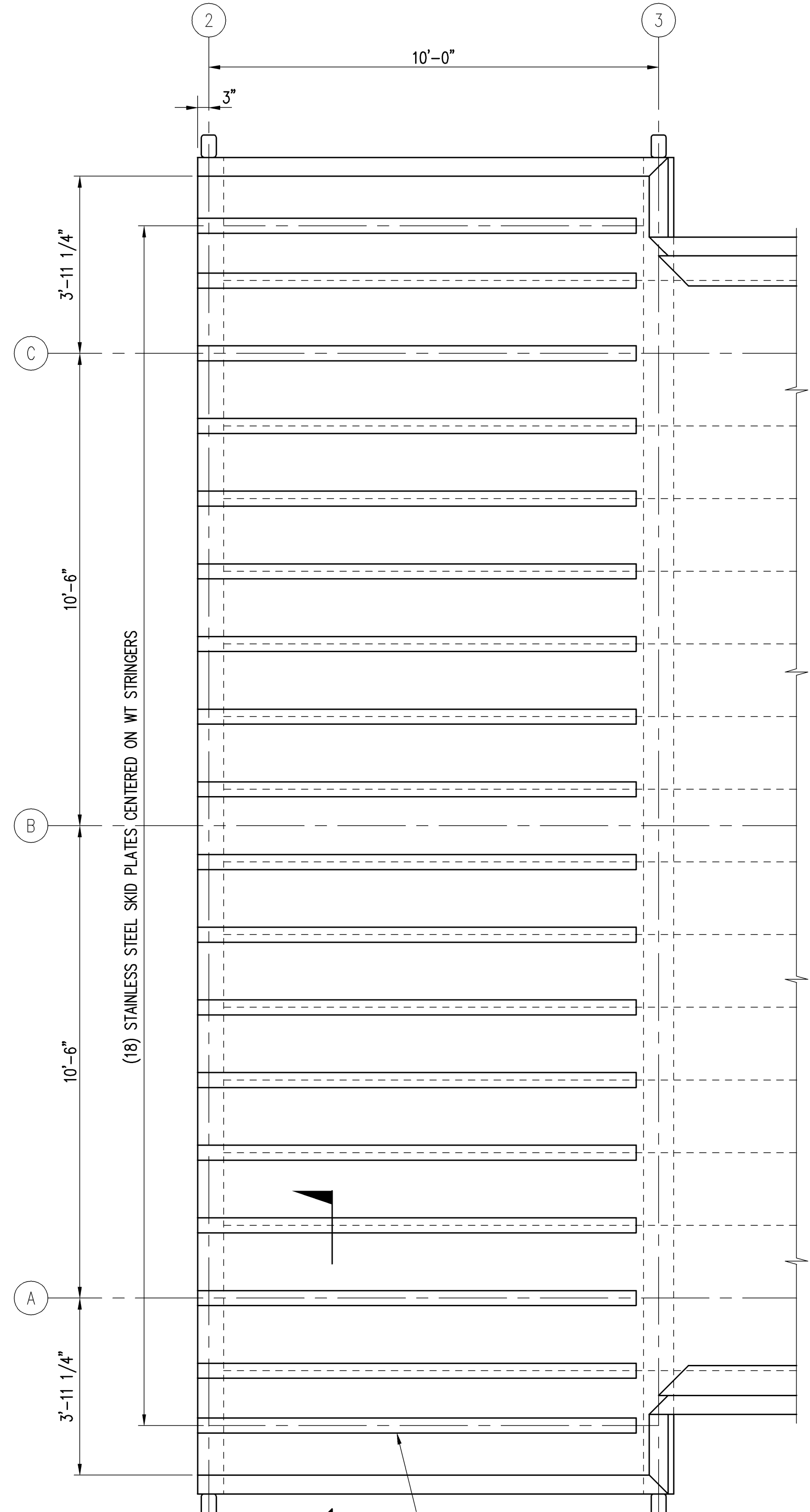
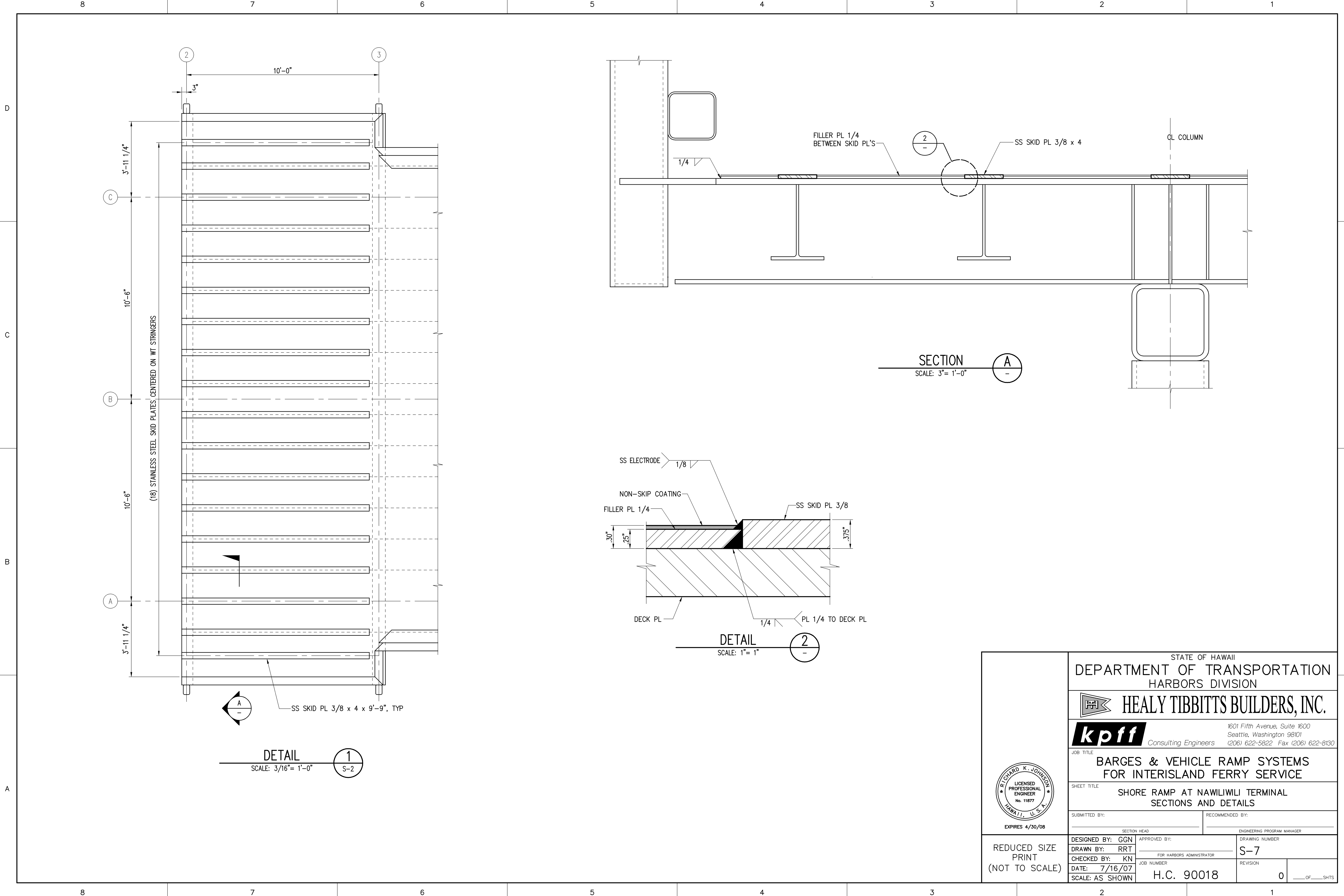


STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS 3</b>	
SUBMITTED BY:	RECOMMENDED BY:
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE:	0
REVISION	0
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DRAWING NUMBER	S-6
REVISION	0



REDUCED SIZE PRINT  
(NOT TO SCALE)

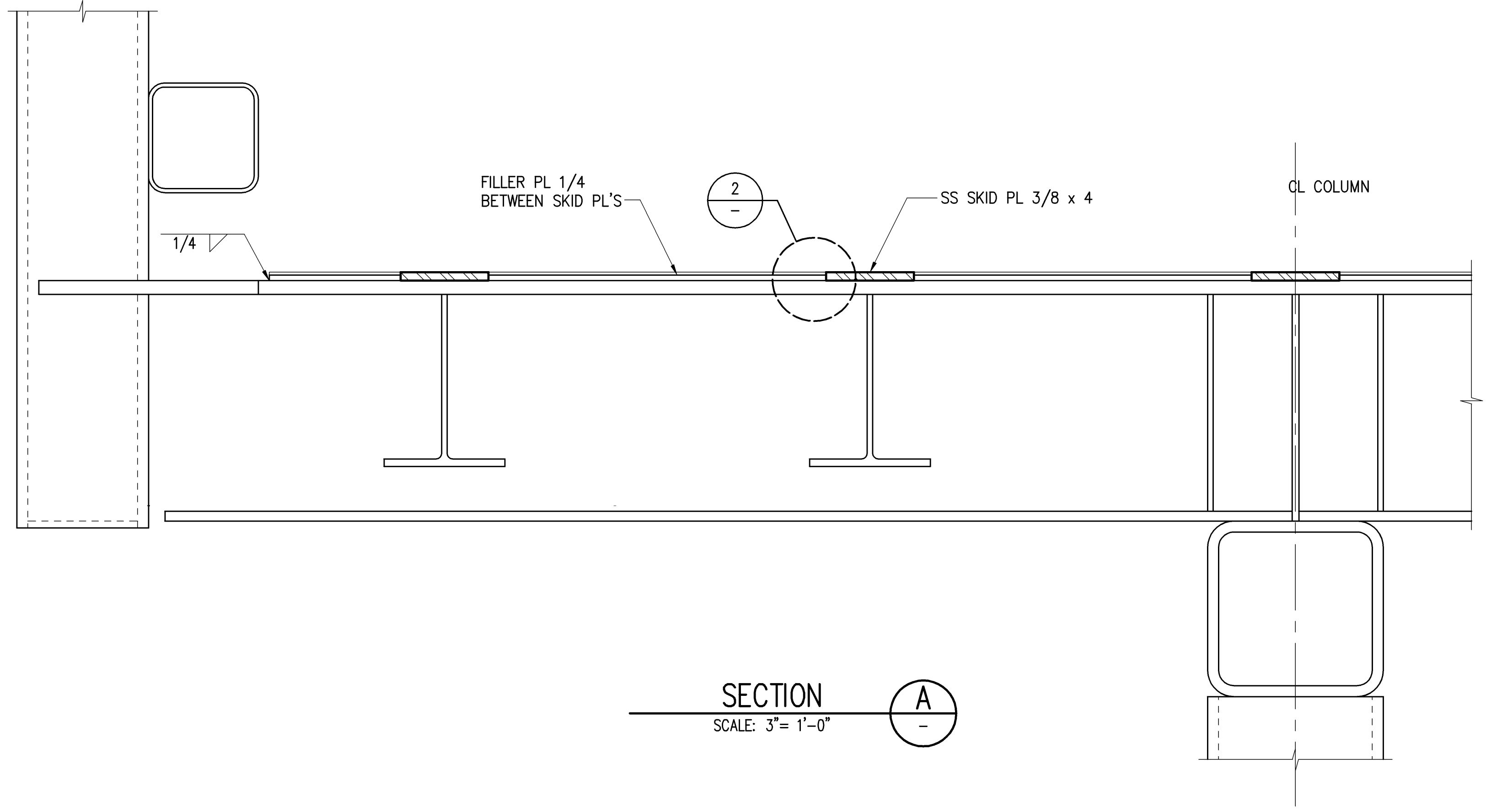
DESIGN RECORD DRAWINGS



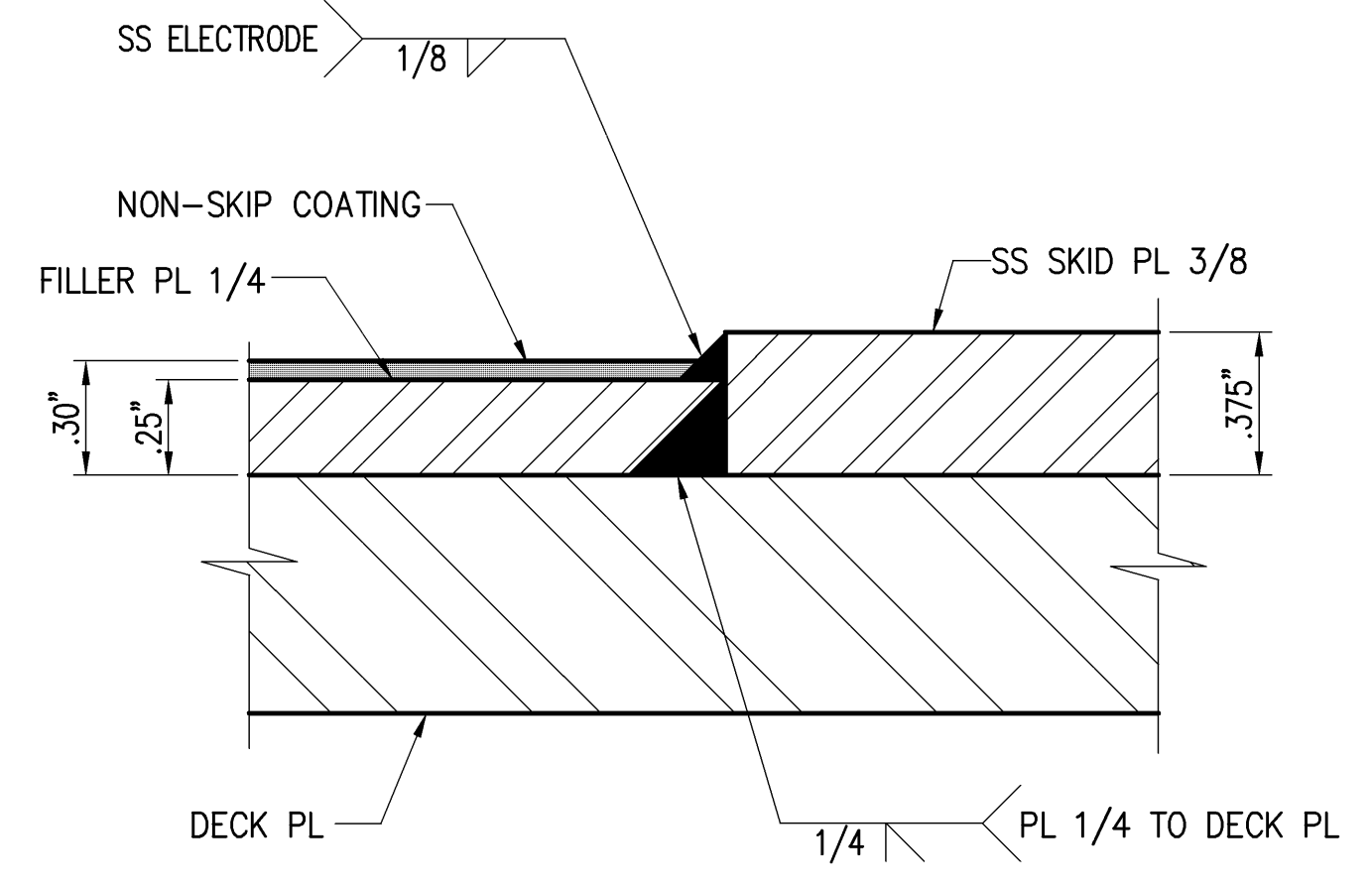
(18) STAINLESS STEEL SKID PLATES CENTERED ON WT STRINGERS

SS SKID PL 3/8 x 4 x 9'-9", TYP

DETAIL 1  
SCALE: 3/16" = 1'-0"

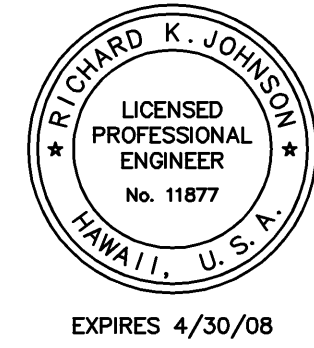


SECTION 2  
SCALE: 3" = 1'-0"



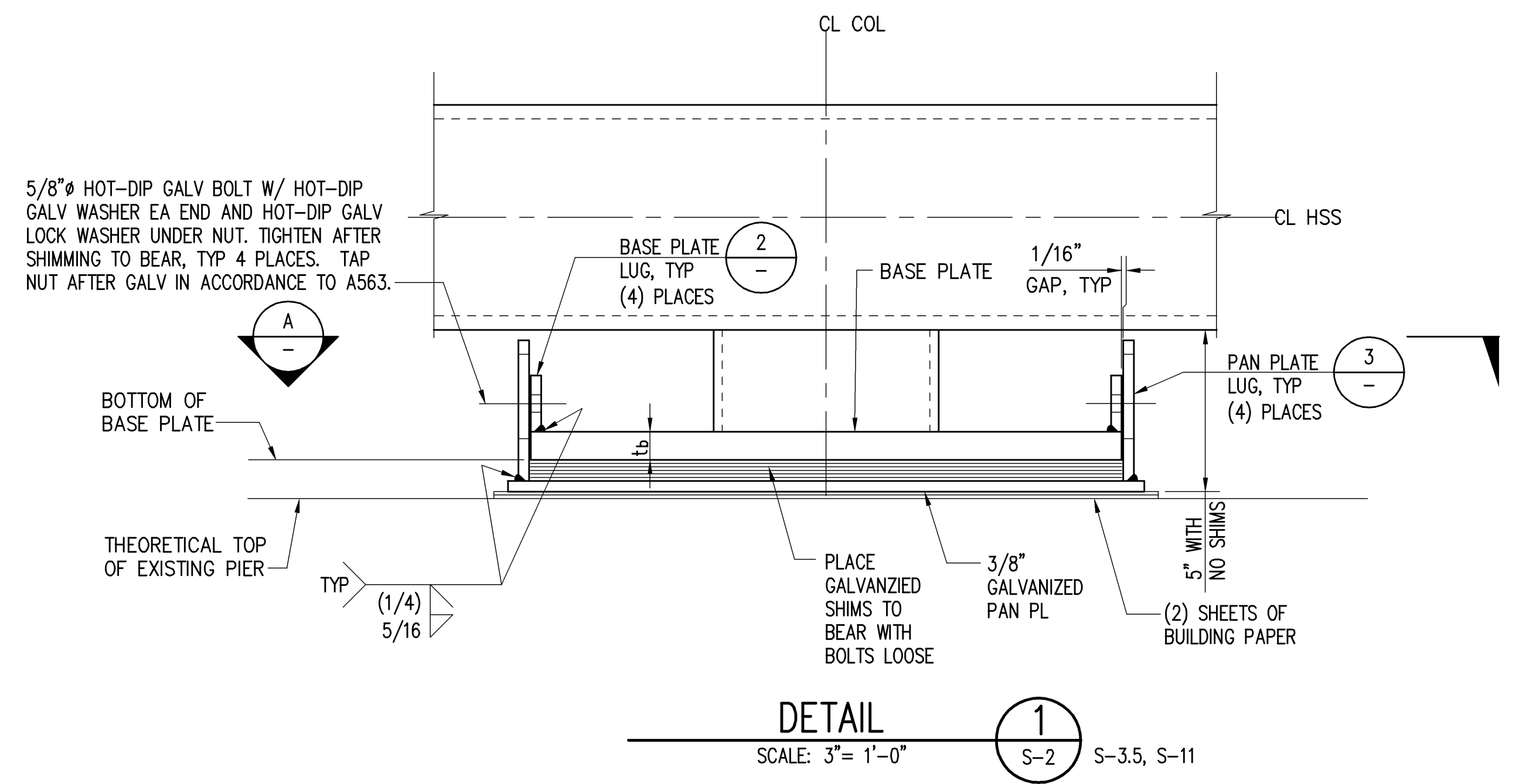
DETAIL 2  
SCALE: 1" = 1"

		STATE OF HAWAII	
		DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
		JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>		SUBMITTED BY: _____	
DESIGNED BY: GGN		RECOMMENDED BY: _____	
DRAWN BY: RRT		SECTION HEAD: _____	
CHECKED BY: KN		ENGINEERING PROGRAM MANAGER: _____	
DATE: 7/16/07		DRAWING NUMBER: S-7	
SCALE: AS SHOWN		JOB NUMBER: H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		REVISION: 0	

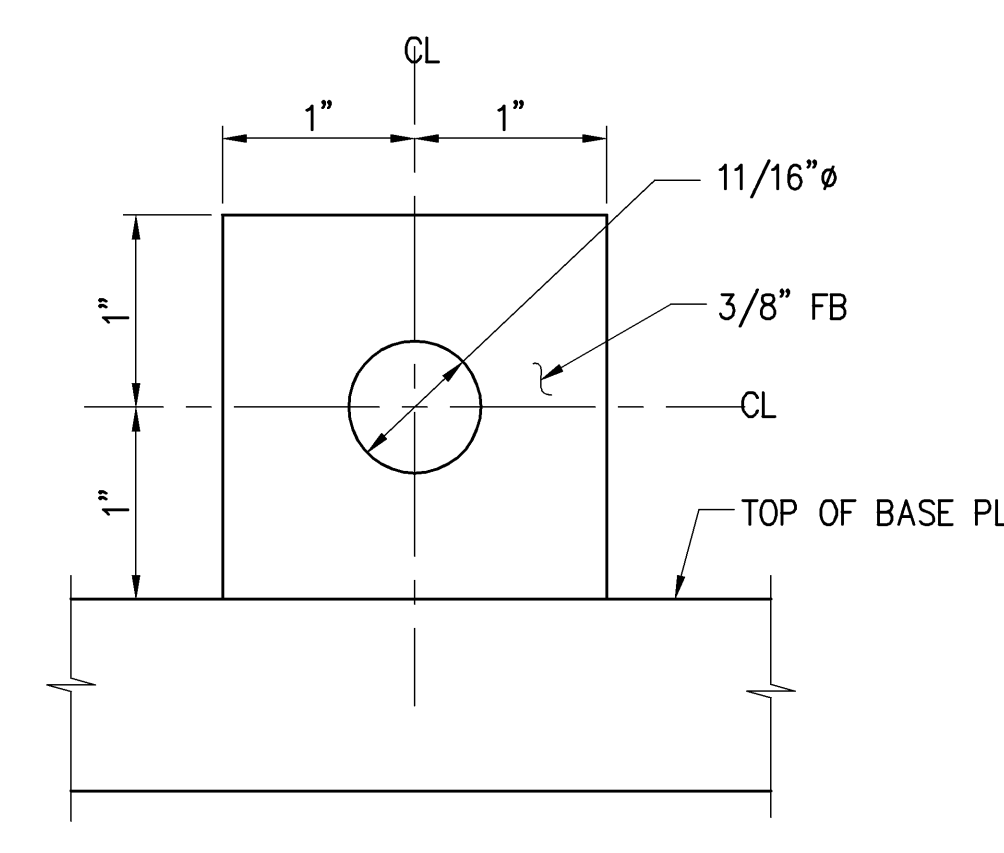


DESIGN RECORD DRAWINGS

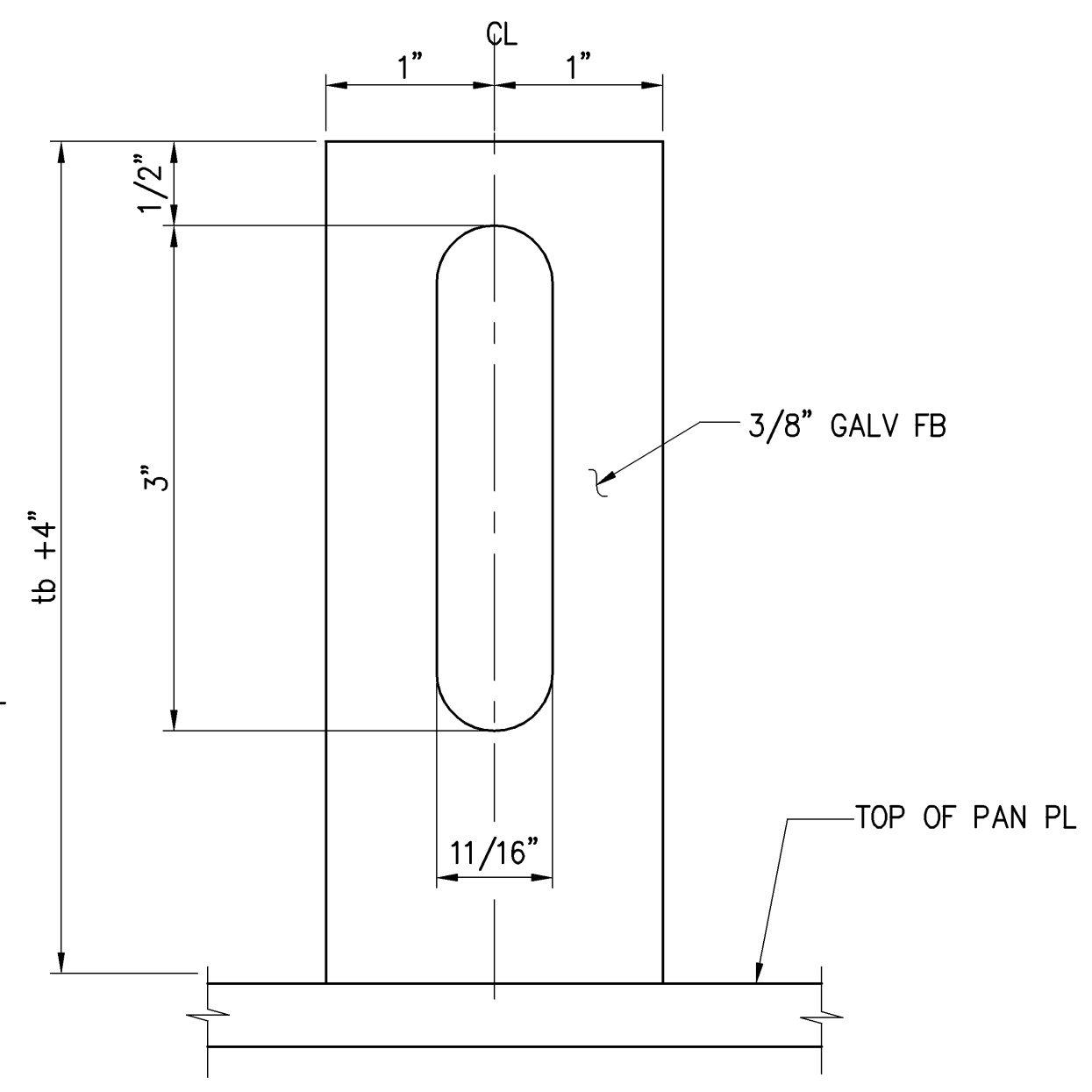
D



**DETAIL 1**  
SCALE: 3"=1'-0"  
S-2 S-3.5, S-11

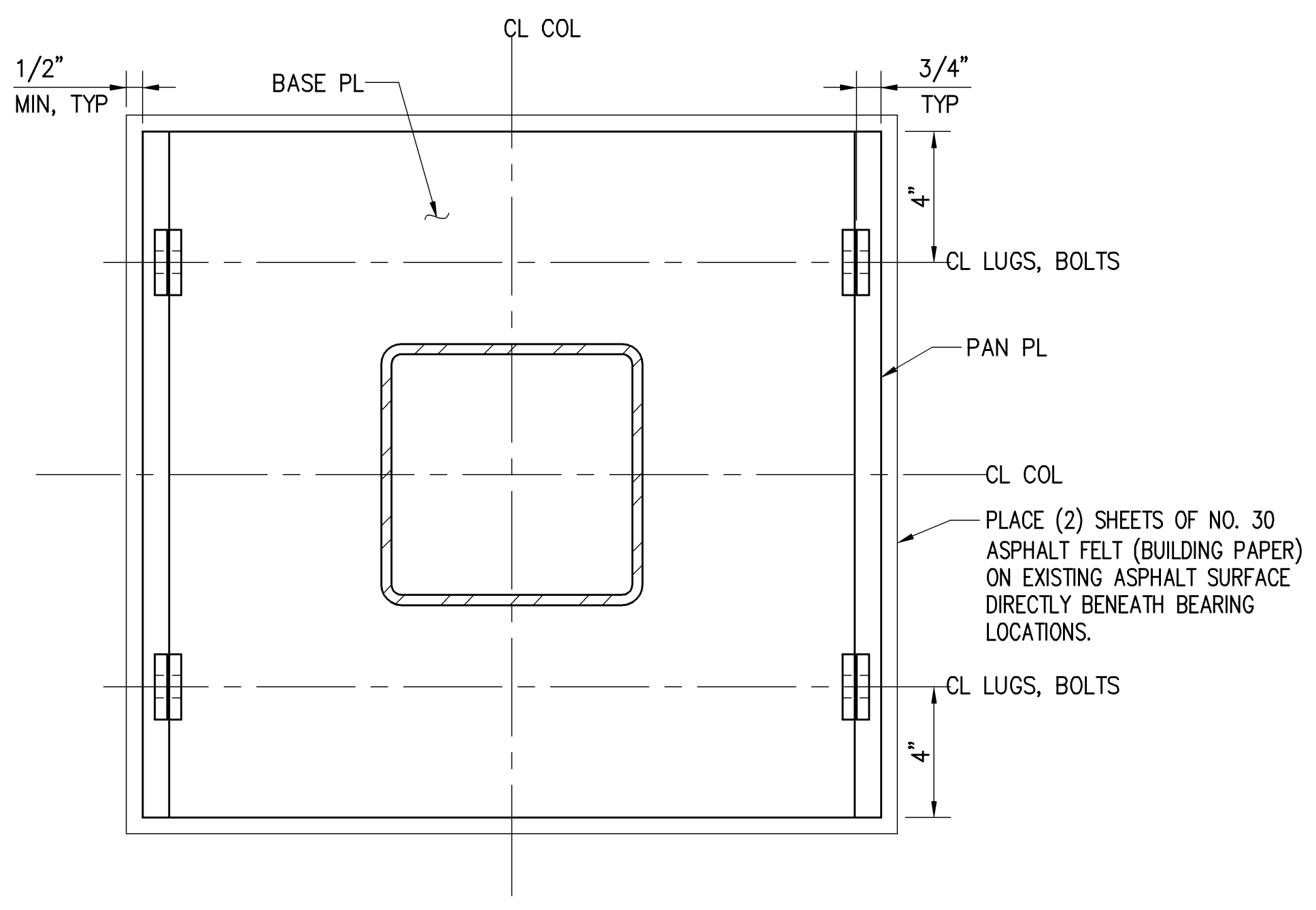


**BASE PLATE LUG DETAIL 2**  
SCALE: 1"=1"



**PAN PLATE LUG DETAIL 3**  
SCALE: 1"=1"

C

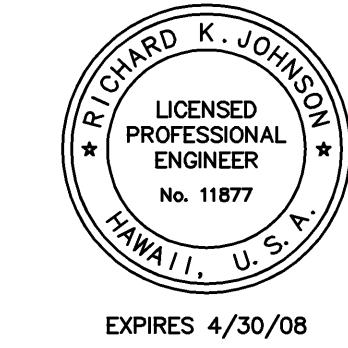


**SECTION A**  
SCALE: 3"=1'-0"

B

A

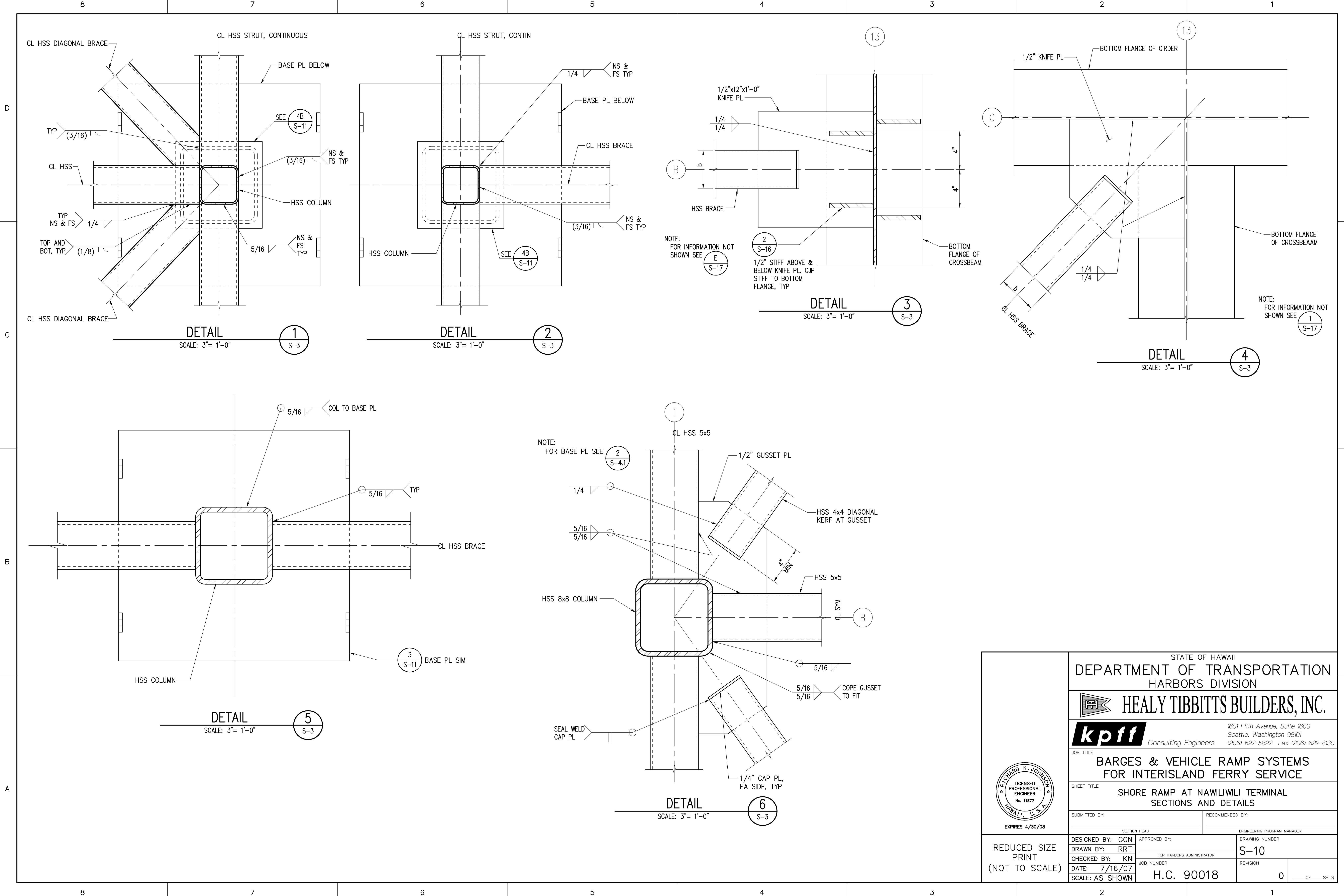
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
DRAWING NUMBER <b>S-9</b>	
REVISION 0	



REDUCED SIZE  
PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWINGS





**DETAIL 1**  
SCALE: 3" = 1'-0"

**DETAIL 2**  
SCALE: 3" = 1'-0"

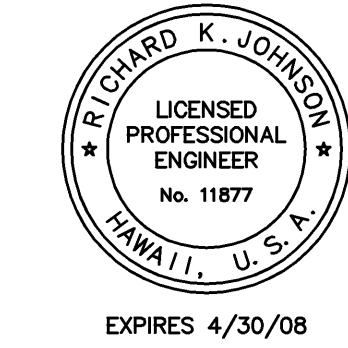
**DETAIL 3**  
SCALE: 3" = 1'-0"

**DETAIL 4**  
SCALE: 3" = 1'-0"

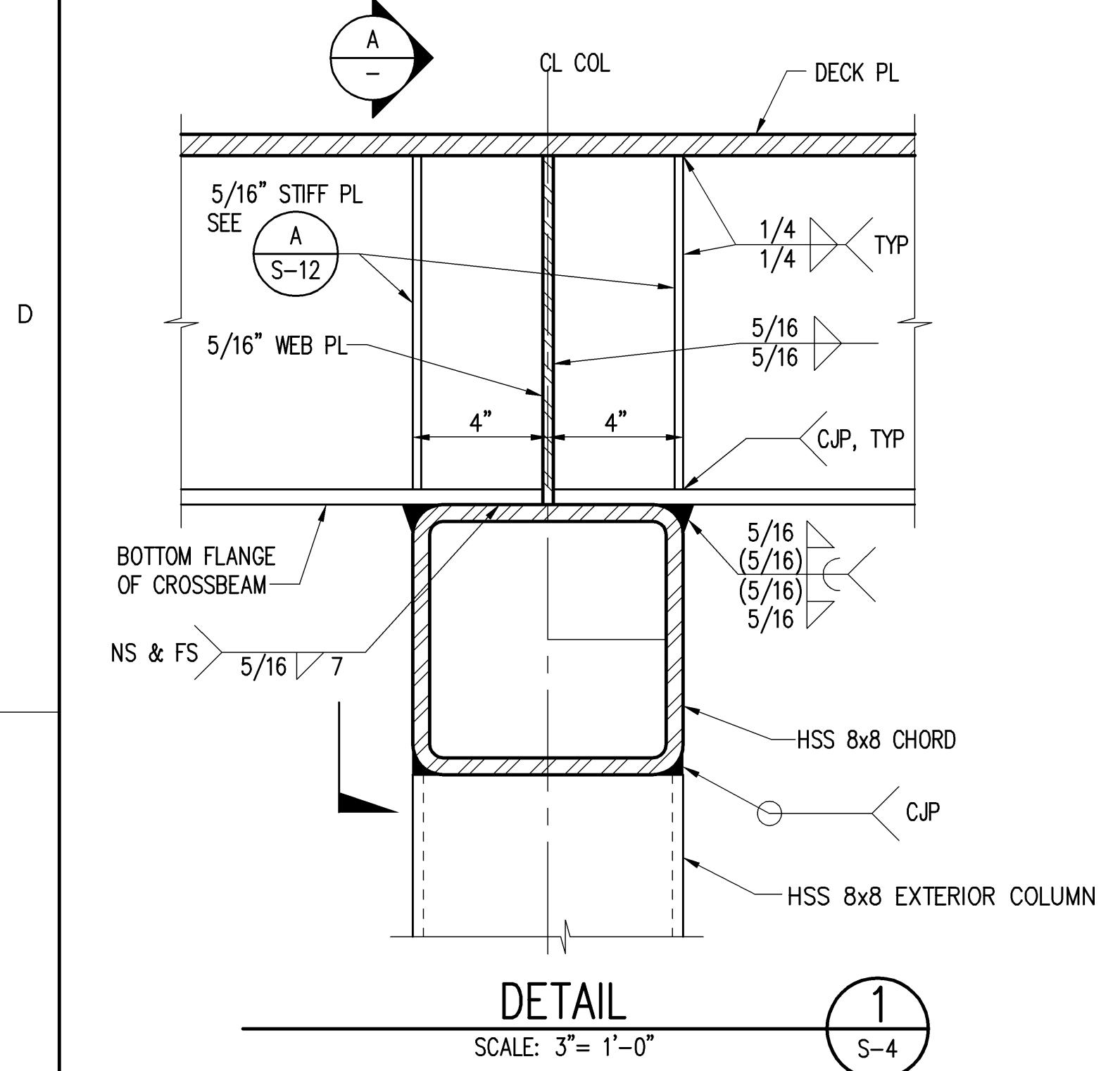
**DETAIL 5**  
SCALE: 3" = 1'-0"

**DETAIL 6**  
SCALE: 3" = 1'-0"

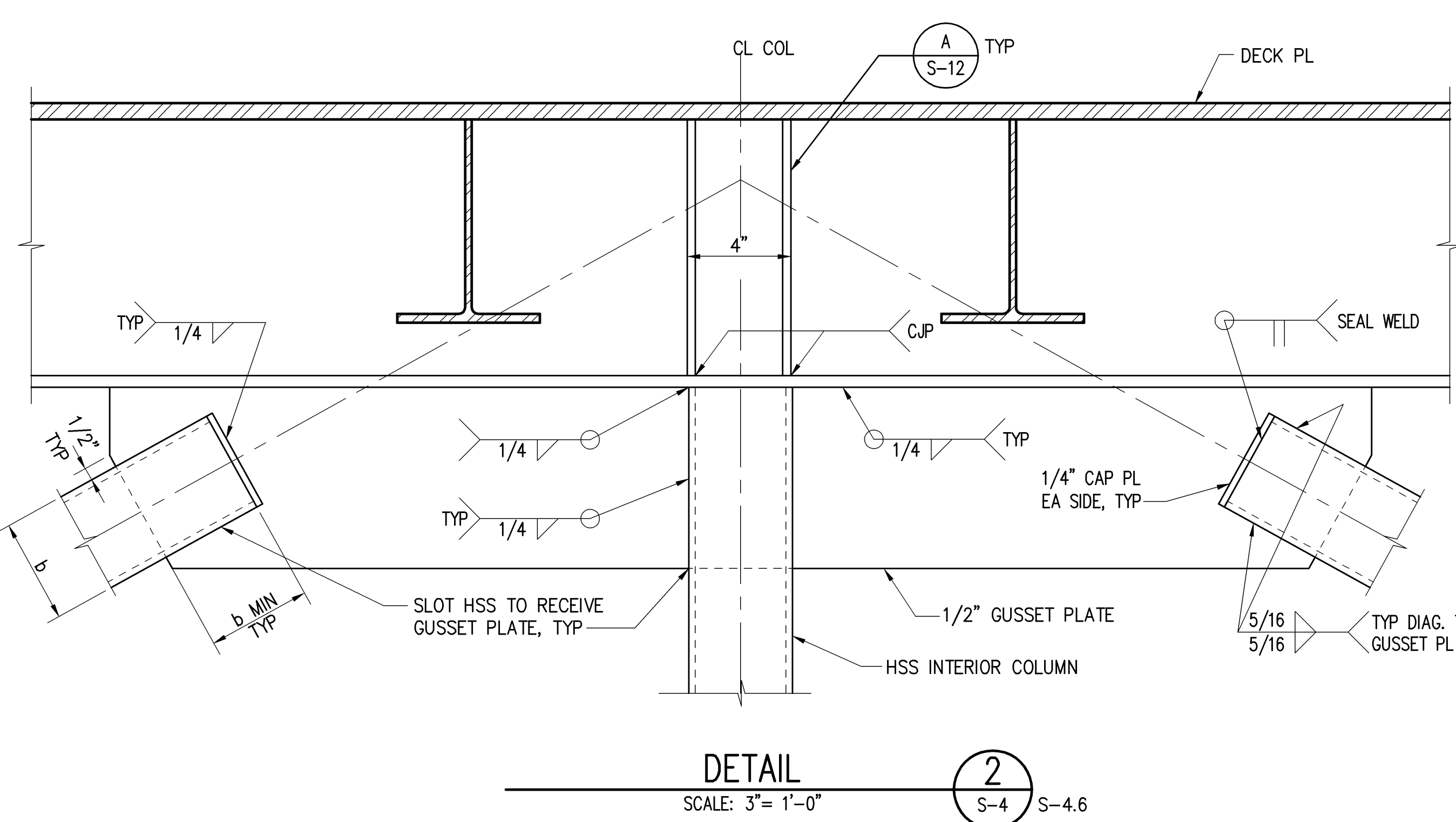
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF ____ SHEETS



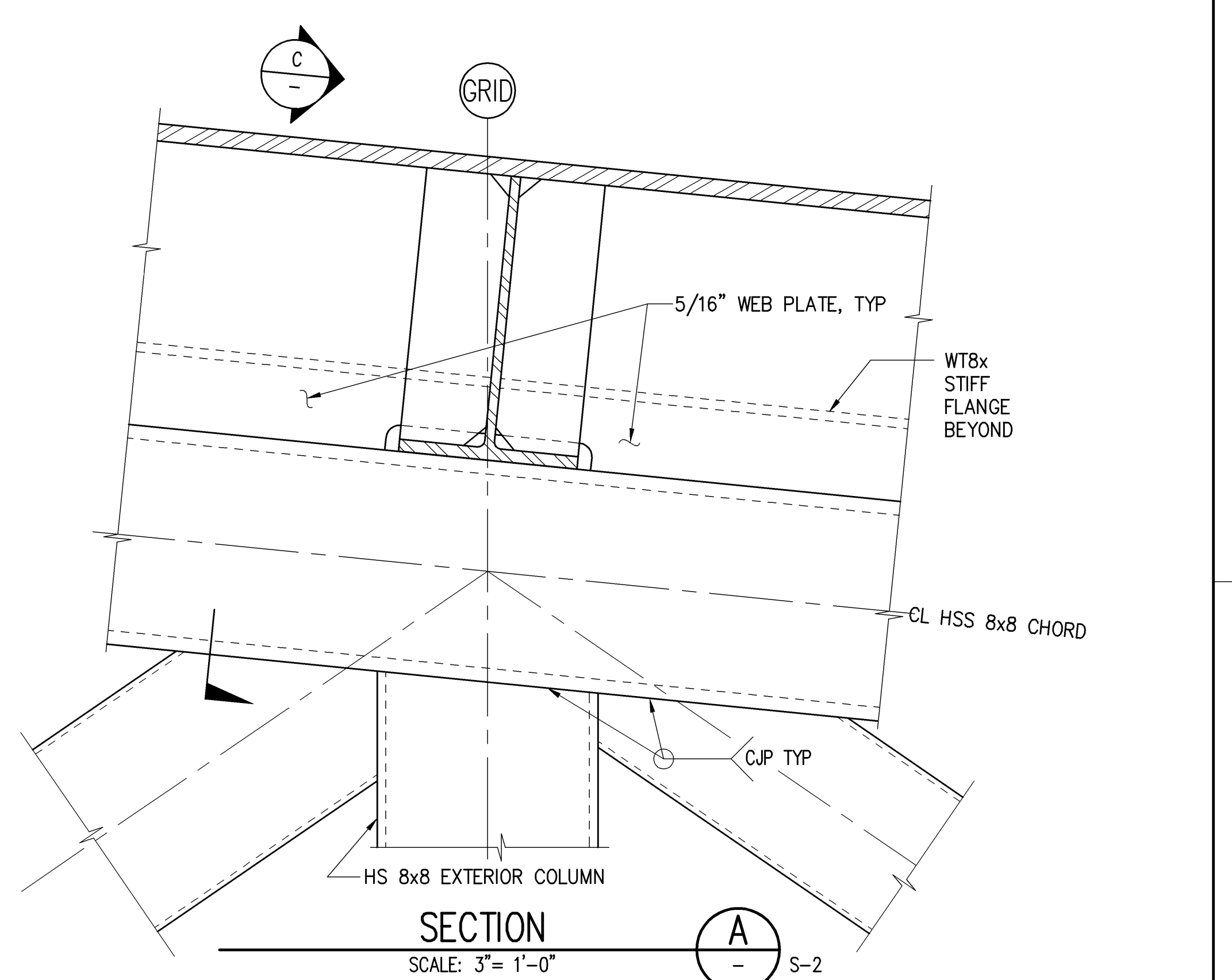
DESIGN RECORD DRAWINGS



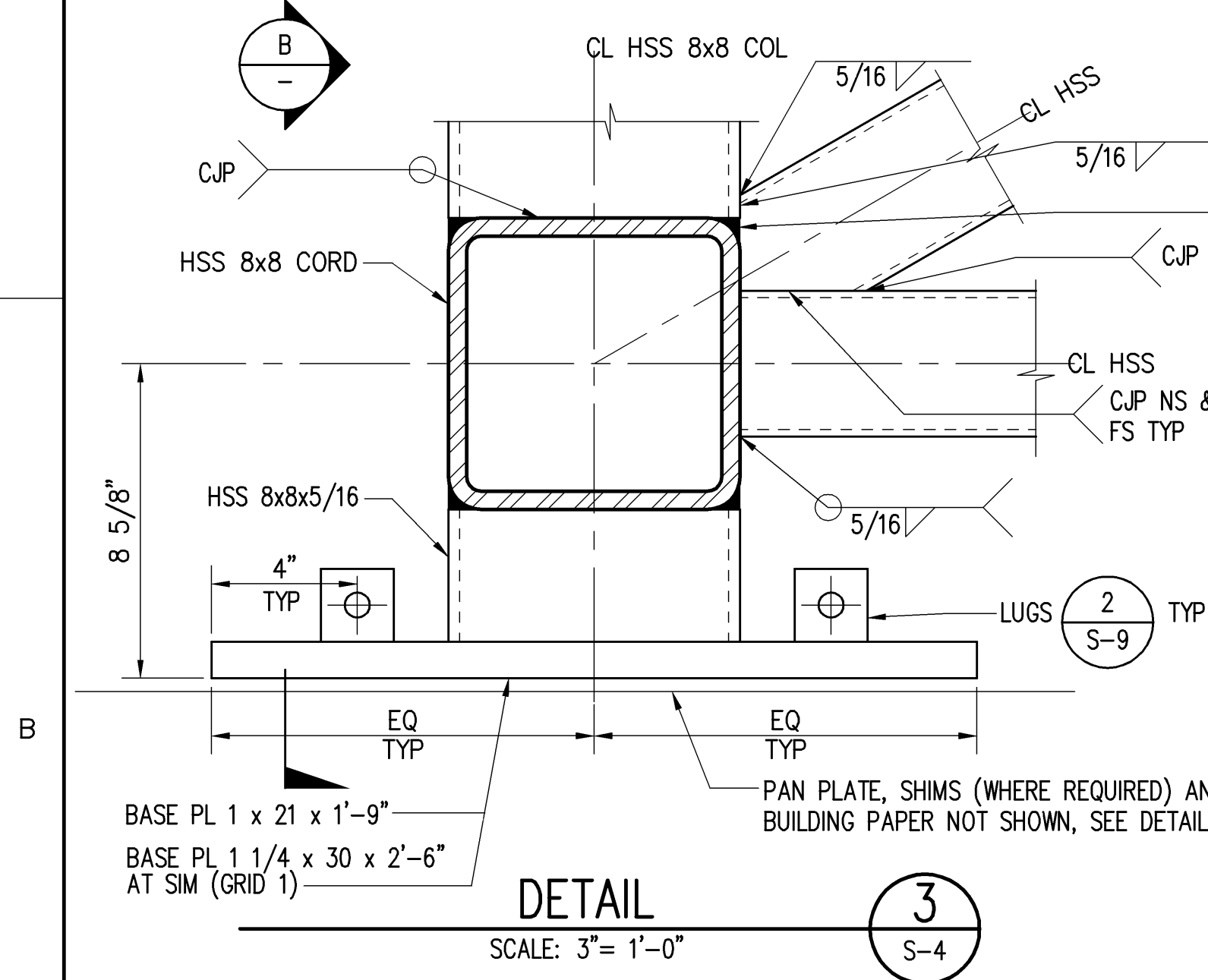
**DETAIL 1**  
SCALE: 3"=1'-0"  
S-4



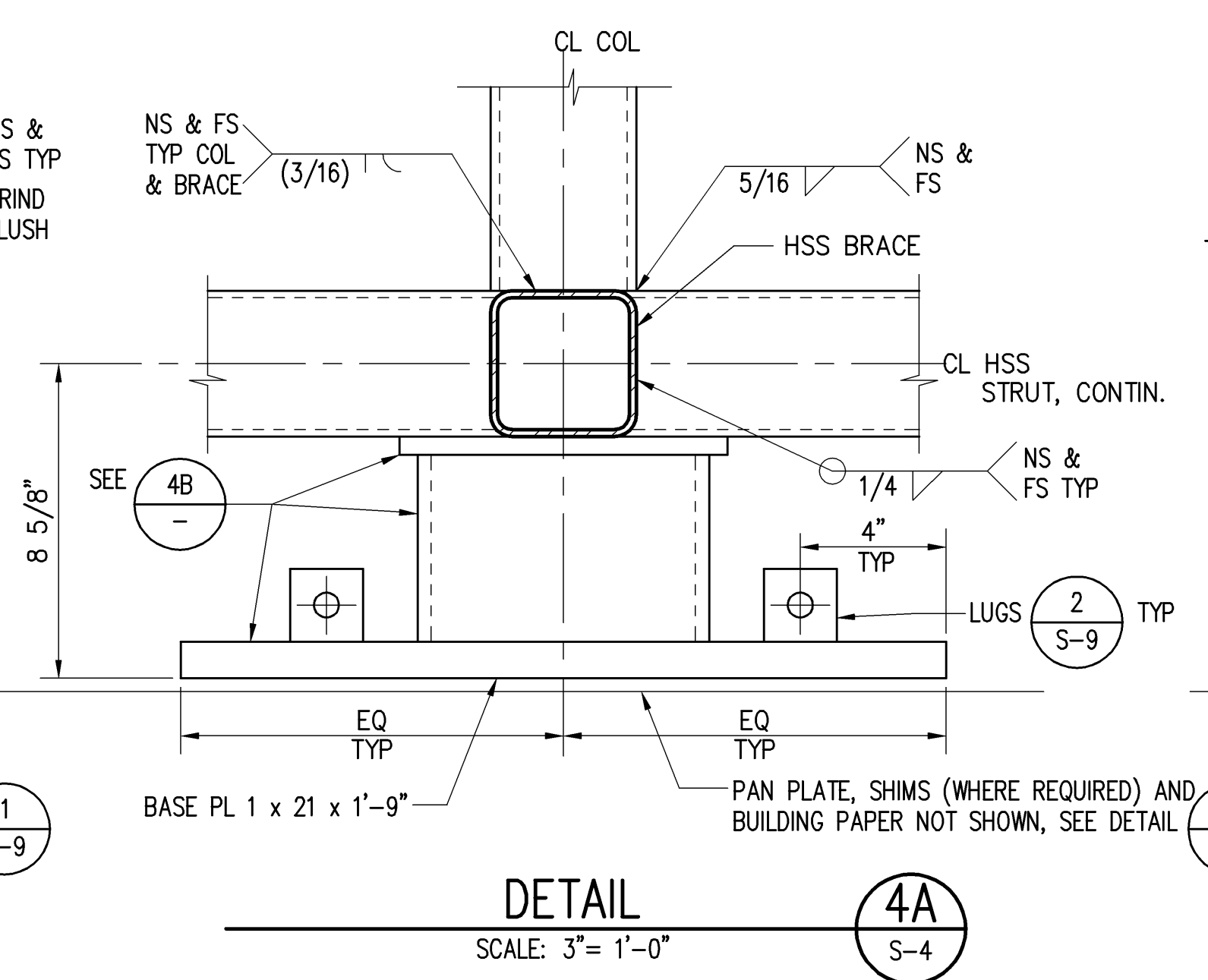
**DETAIL 2**  
SCALE: 3"=1'-0"  
S-4 S-4.6



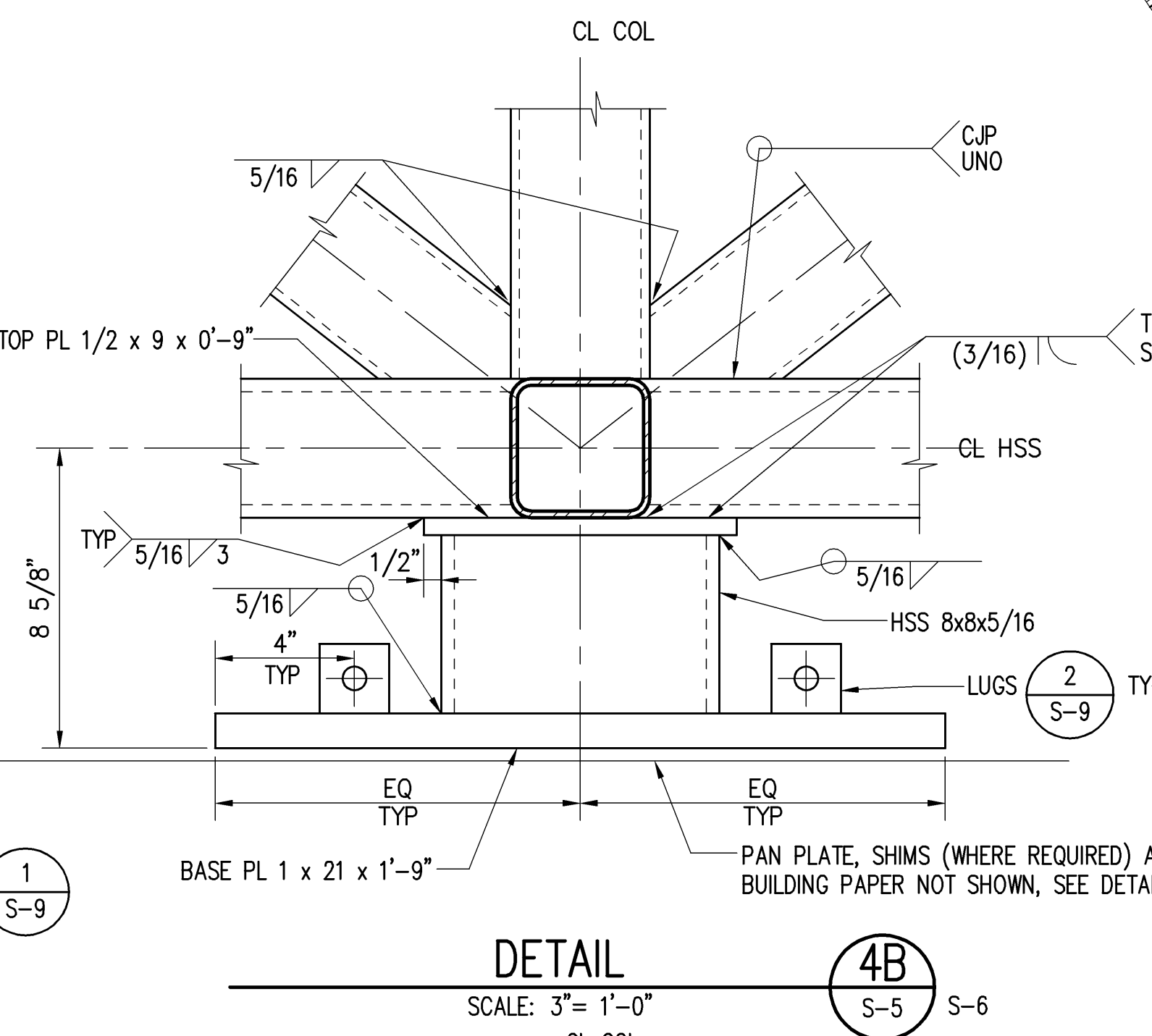
**SECTION A**  
SCALE: 3"=1'-0"  
S-2



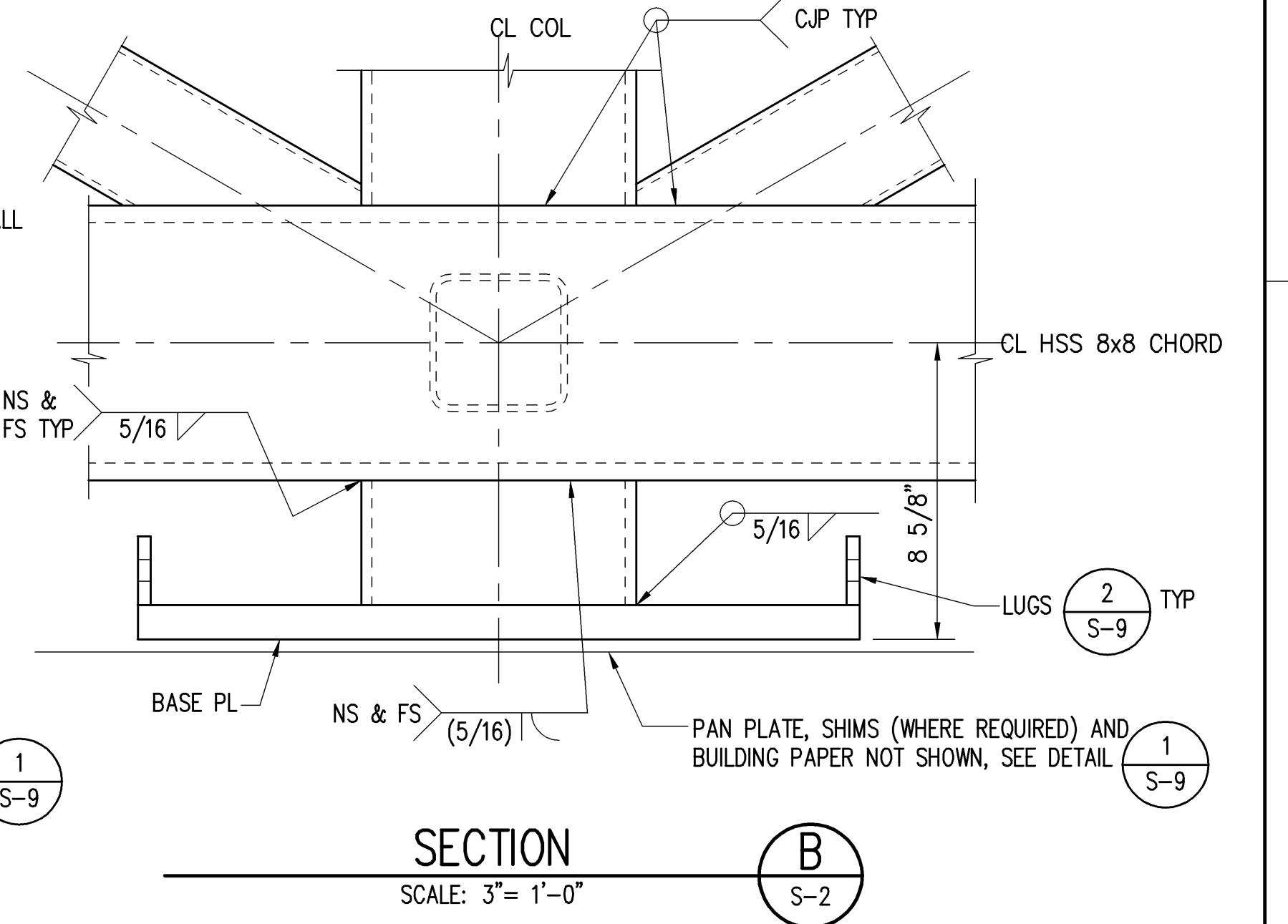
**DETAIL 3**  
SCALE: 3"=1'-0"  
S-4



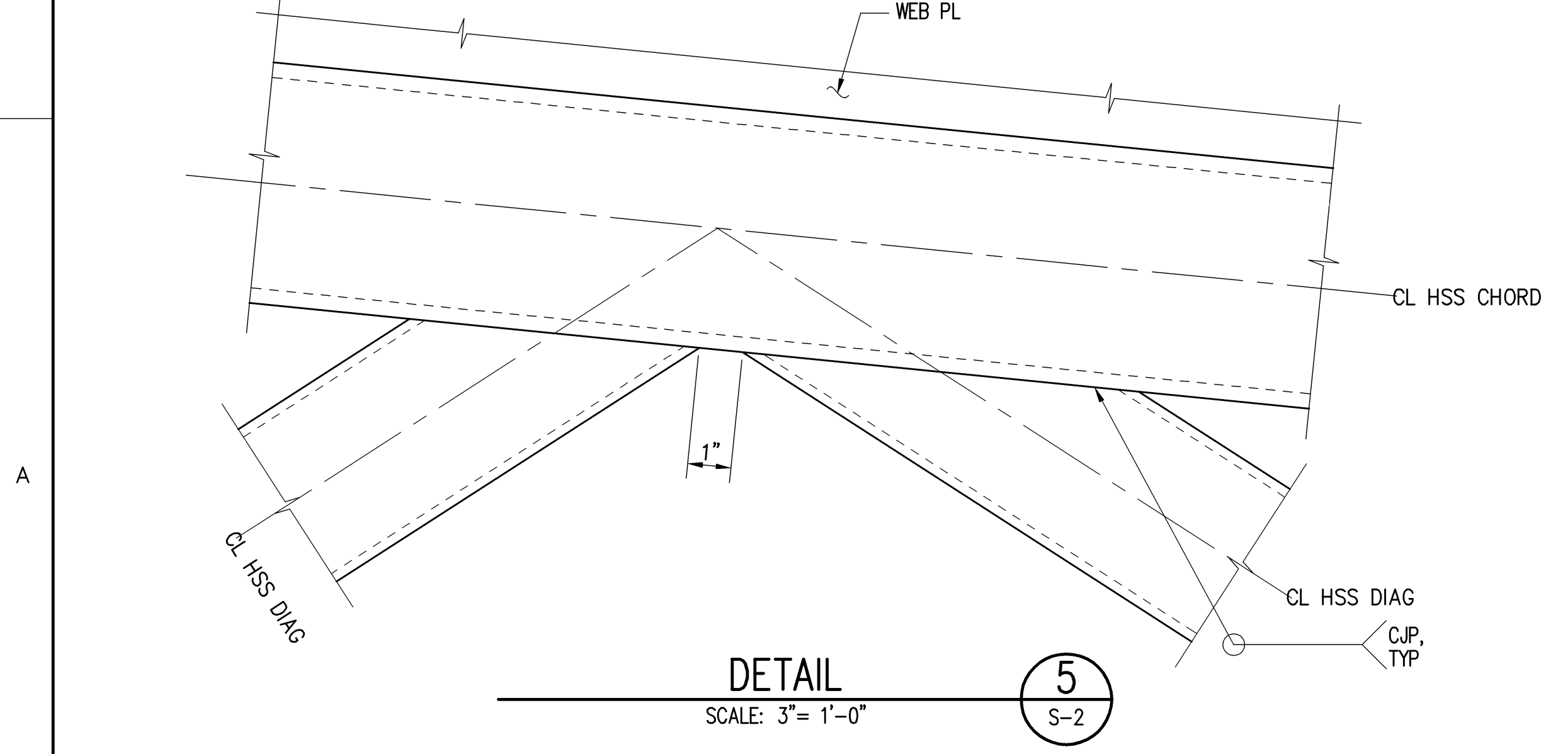
**DETAIL 4A**  
SCALE: 3"=1'-0"  
S-4



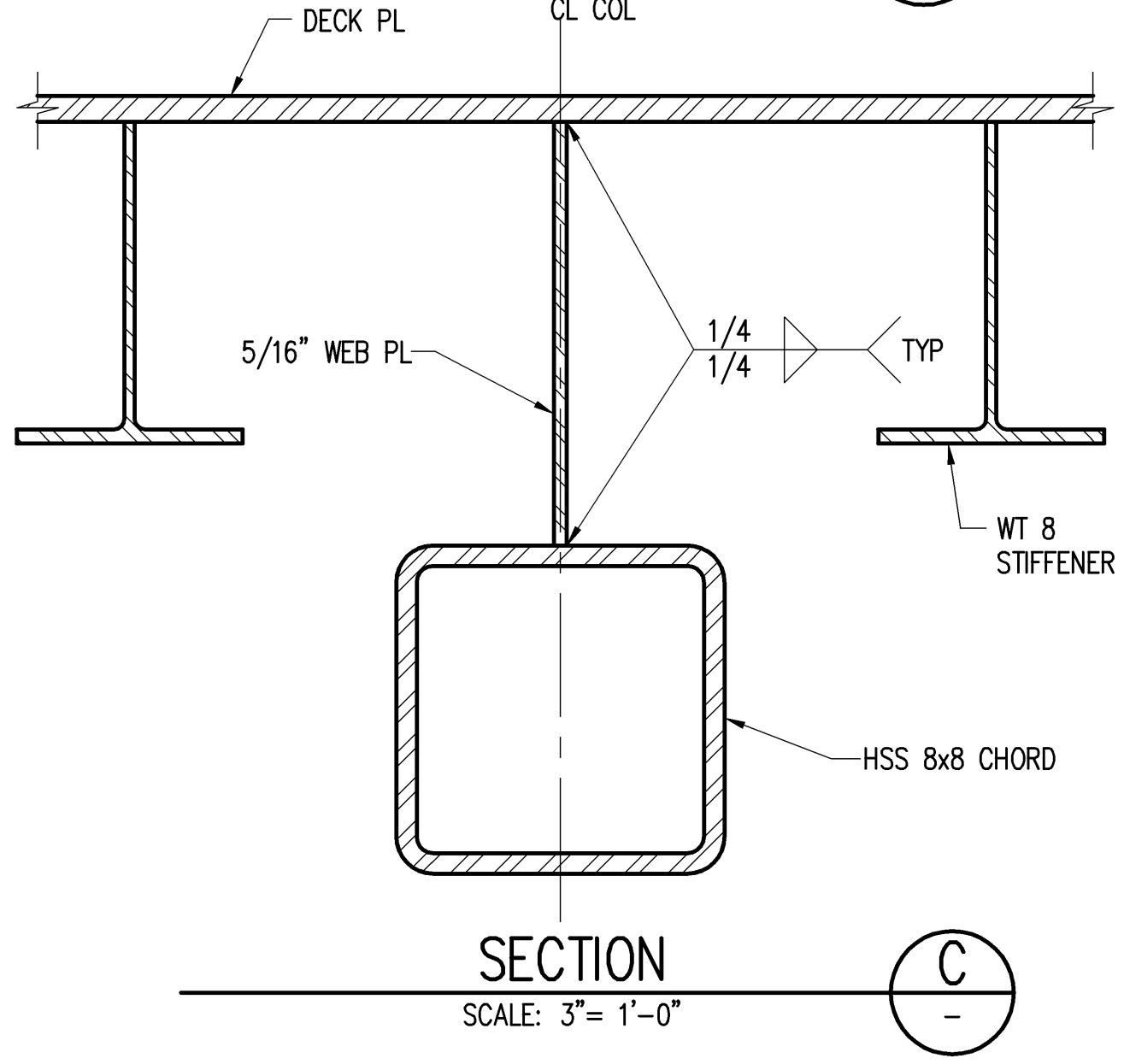
**DETAIL 4B**  
SCALE: 3"=1'-0"  
S-5 S-6



**SECTION B**  
SCALE: 3"=1'-0"  
S-2

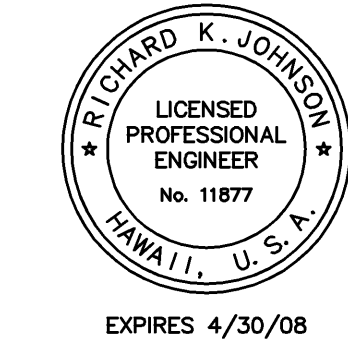


**DETAIL 5**  
SCALE: 3"=1'-0"  
S-2

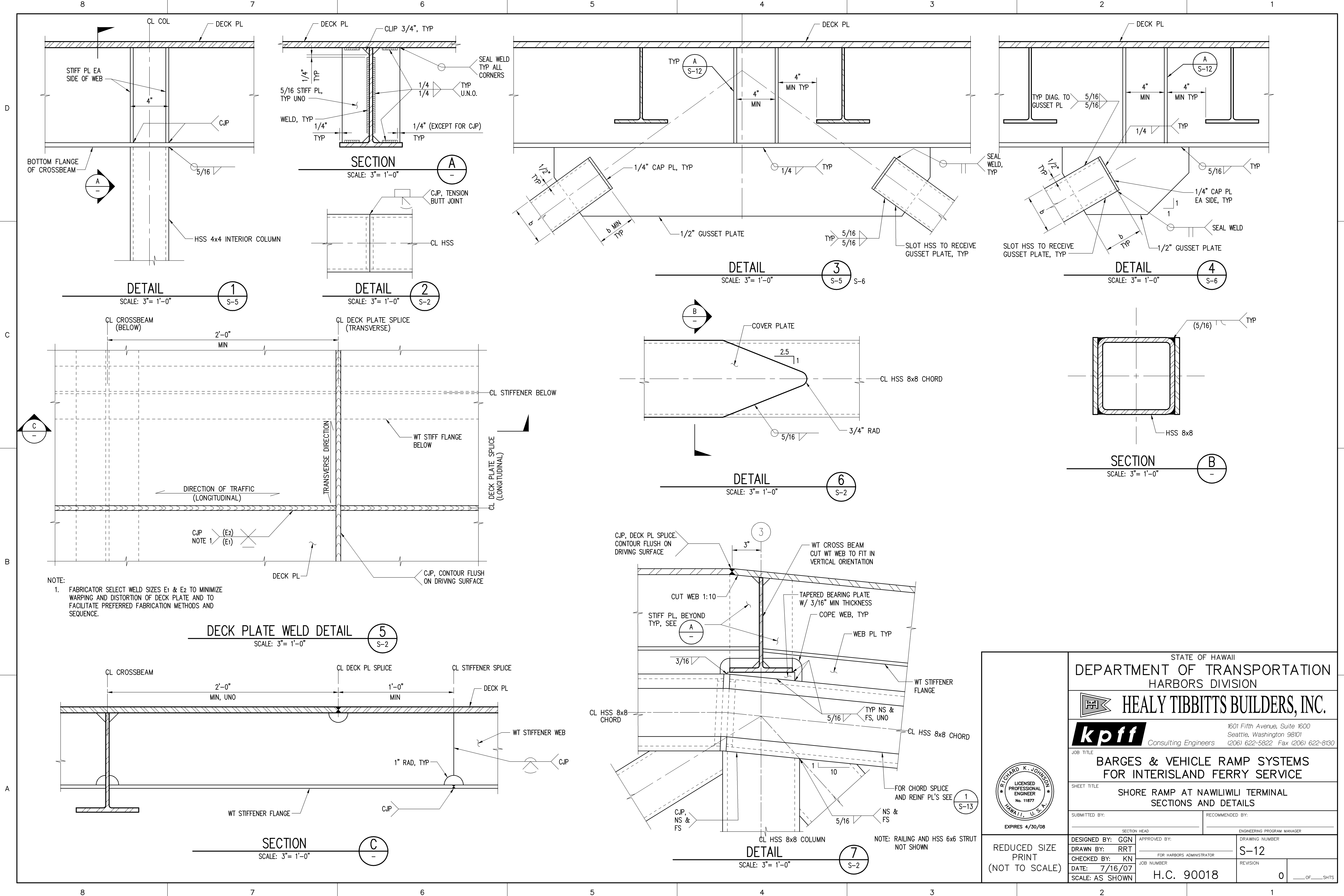


**SECTION C**  
SCALE: 3"=1'-0"  
-

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	DRAWING NUMBER <b>S-11</b>
CHECKED BY: KN	FOR HARBORS ADMINISTRATOR
DATE: 7/16/07	JOB NUMBER <b>H.C. 90018</b>
SCALE: AS SHOWN	REVISION <b>0</b>



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(NOT TO SCALE)



**DETAIL 1**  
SCALE: 3"= 1'-0"  
S-5

**DETAIL 2**  
SCALE: 3"= 1'-0"  
S-2

**DETAIL 3**  
SCALE: 3"= 1'-0"  
S-5 S-6

**DETAIL 4**  
SCALE: 3"= 1'-0"  
S-6

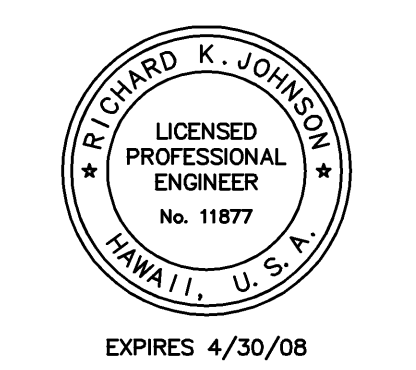
**DETAIL 6**  
SCALE: 3"= 1'-0"  
S-2

**DECK PLATE WELD DETAIL 5**  
SCALE: 3"= 1'-0"  
S-2

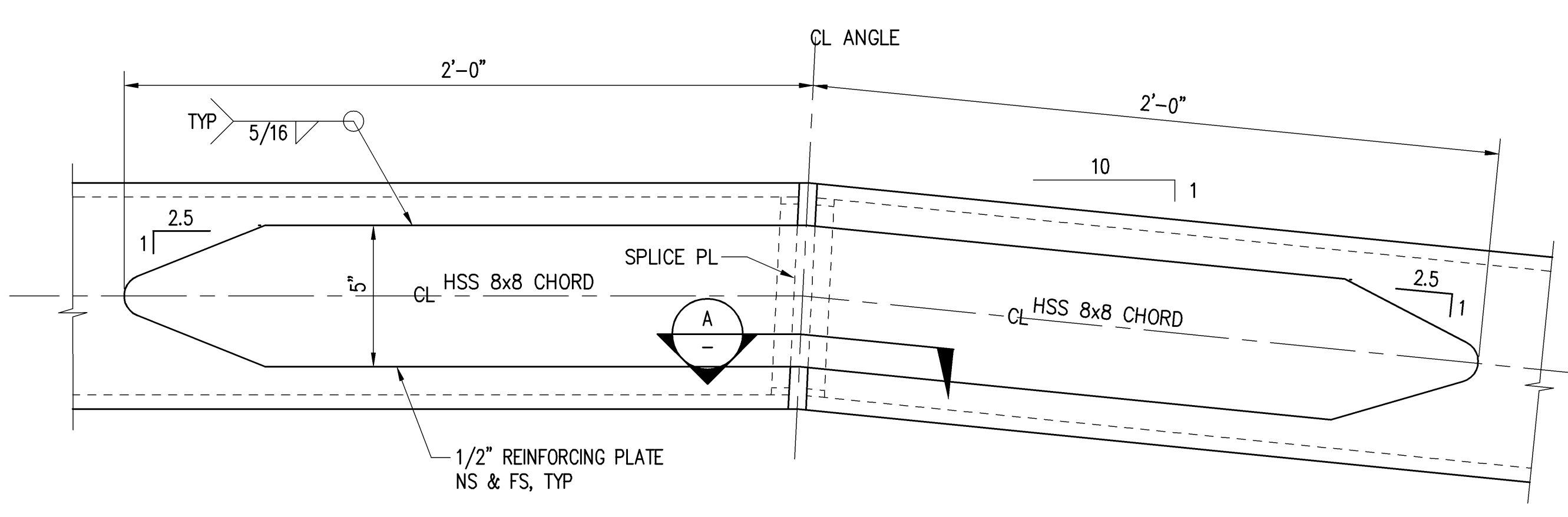
**DETAIL 7**  
SCALE: 3"= 1'-0"  
S-2

NOTE:  
1. FABRICATOR SELECT WELD SIZES E1 & E2 TO MINIMIZE WARPING AND DISTORTION OF DECK PLATE AND TO FACILITATE PREFERRED FABRICATION METHODS AND SEQUENCE.

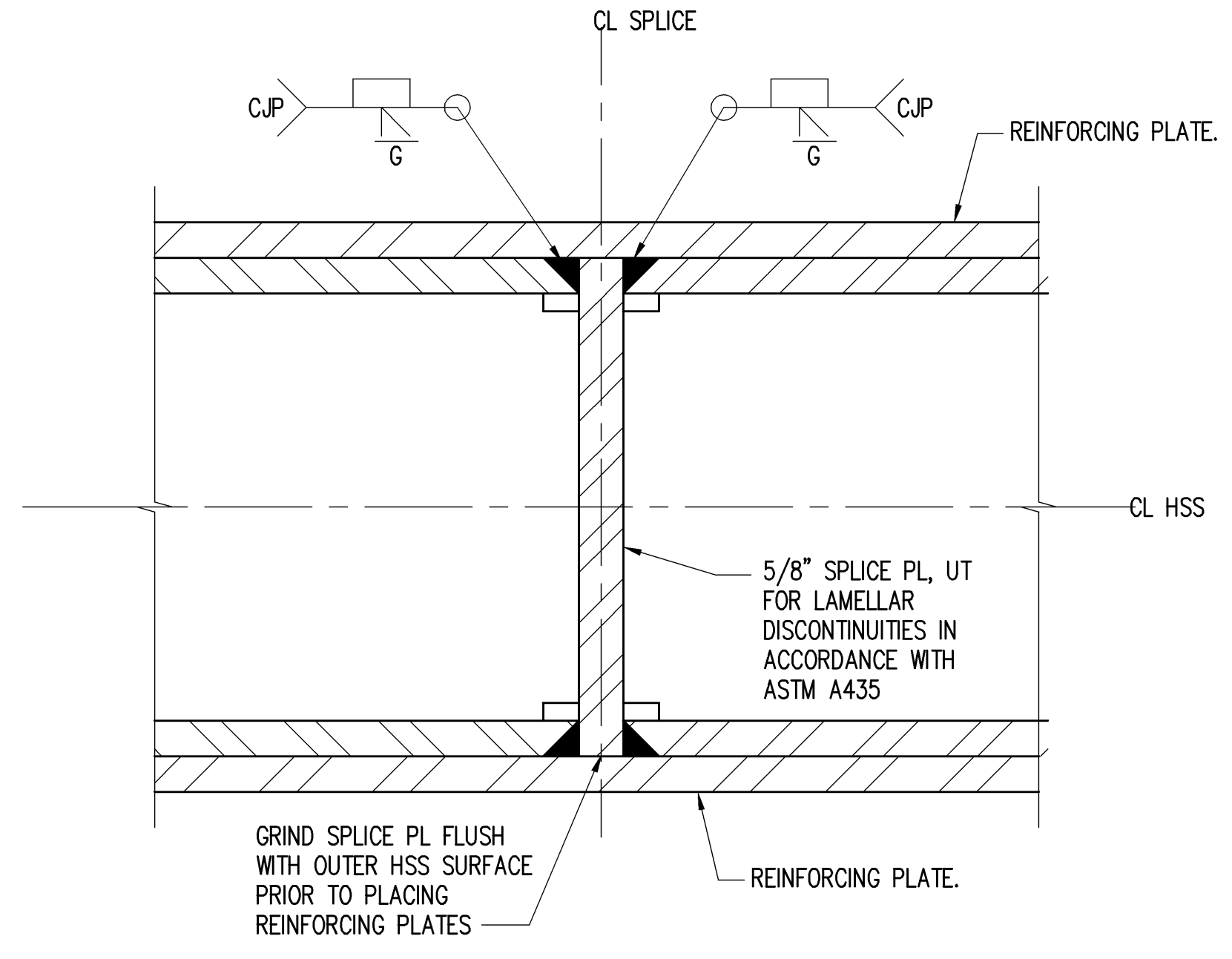
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF ___ SHTS



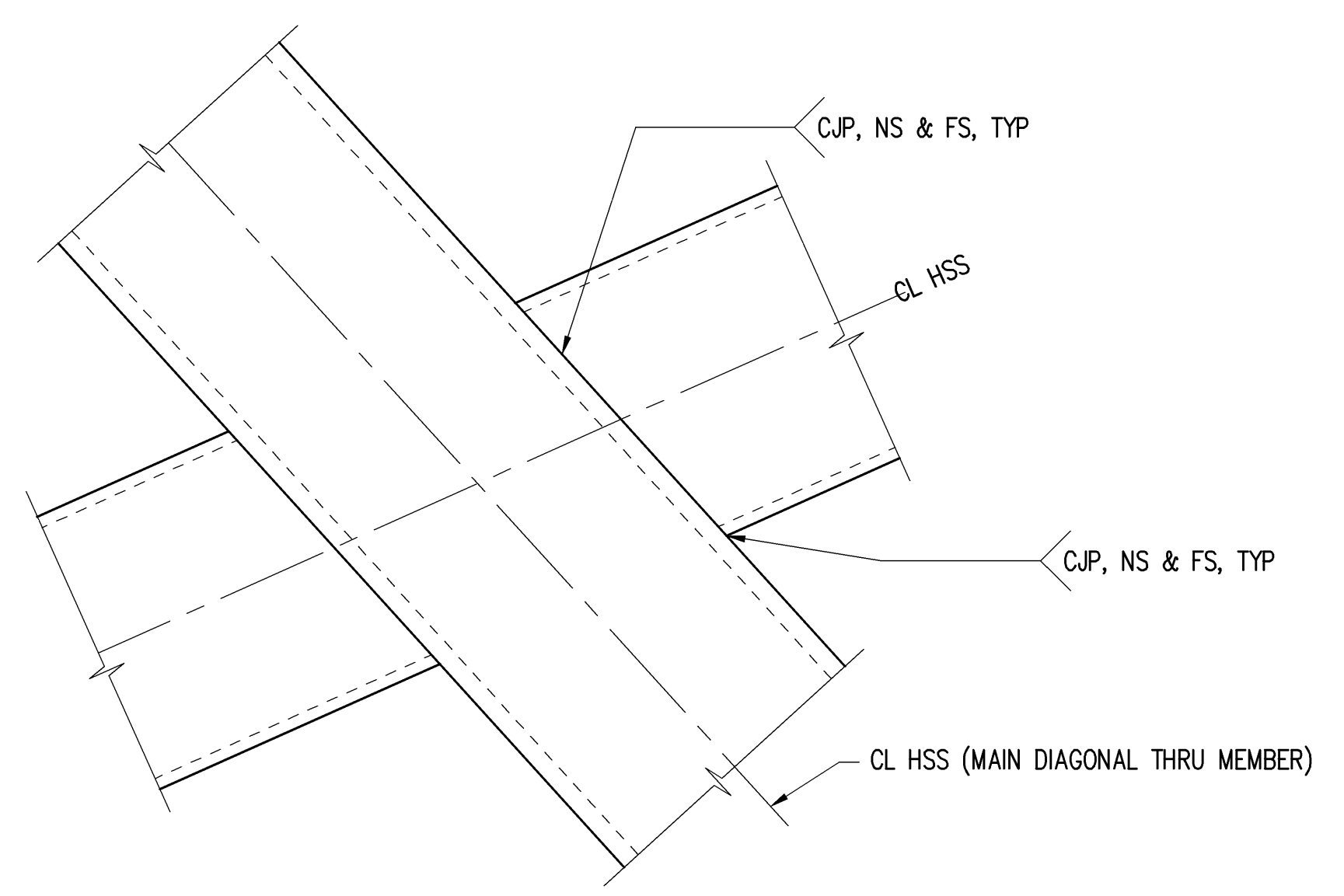
DESIGN RECORD DRAWINGS



**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-12



**SECTION A**  
SCALE: 6" = 1'-0"

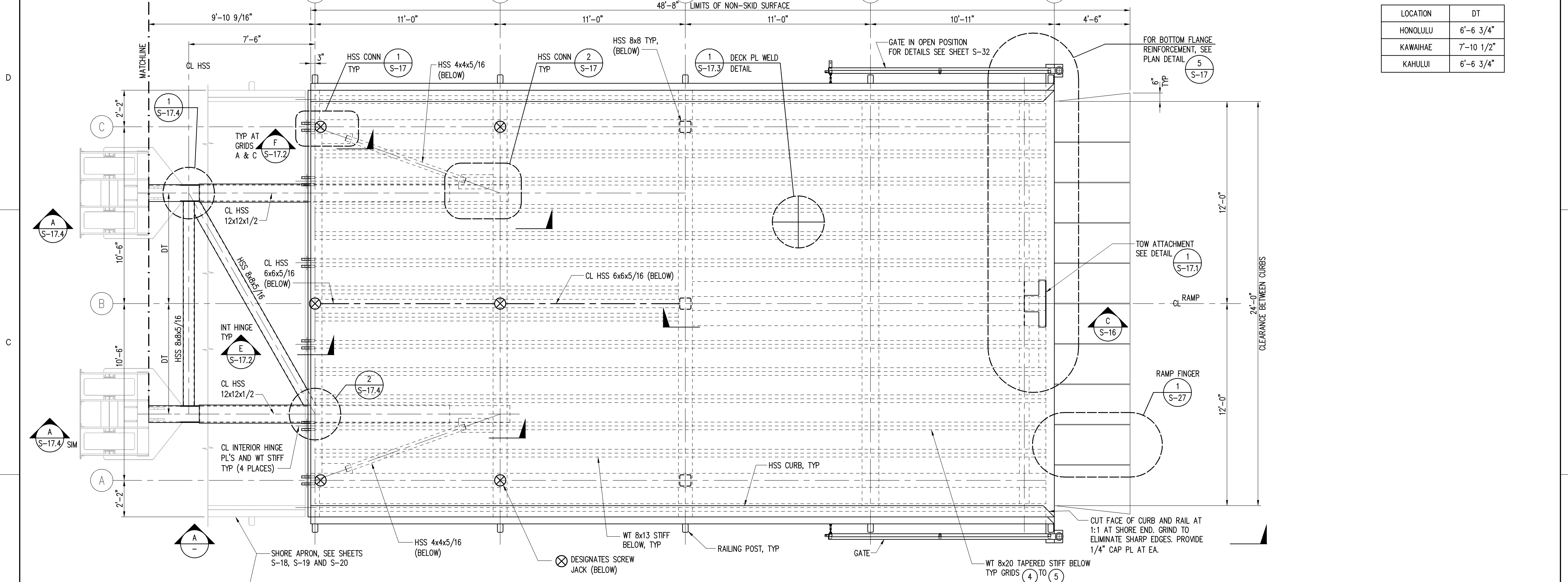


**DETAIL 2**  
SCALE: 3" = 1'-0"  
S-2

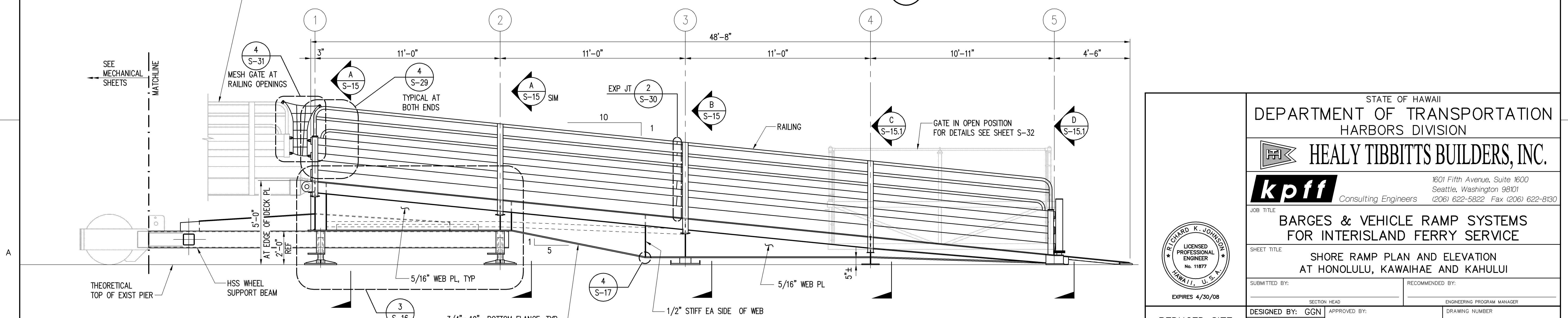
	STATE OF HAWAII <b>DEPARTMENT OF TRANSPORTATION</b> HARBORS DIVISION	
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
<b>SHEET TITLE</b> SHORE RAMP AT NAWILIWILI TERMINAL SECTIONS AND DETAILS 2		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN		APPROVED BY: _____ FOR HARBORS ADMINISTRATOR JOB NUMBER <b>H.C. 90018</b>
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>S-13</b> REVISION 0 OF ____ SHEETS

DESIGN RECORD DRAWINGS

LOCATION	DT
HONOLULU	6'-6 3/4"
KAWAHAE	7'-10 1/2"
KAHALUI	6'-6 3/4"

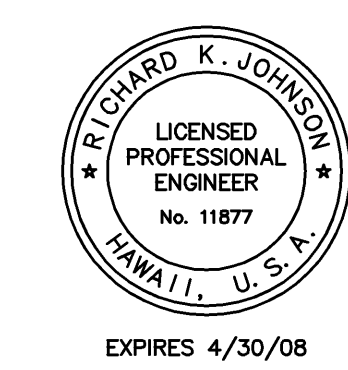


SHORE RAMP PLAN AT HONOLULU, KAWAHAE AND KAHULUI  
SCALE: 3/8" = 1'-0"



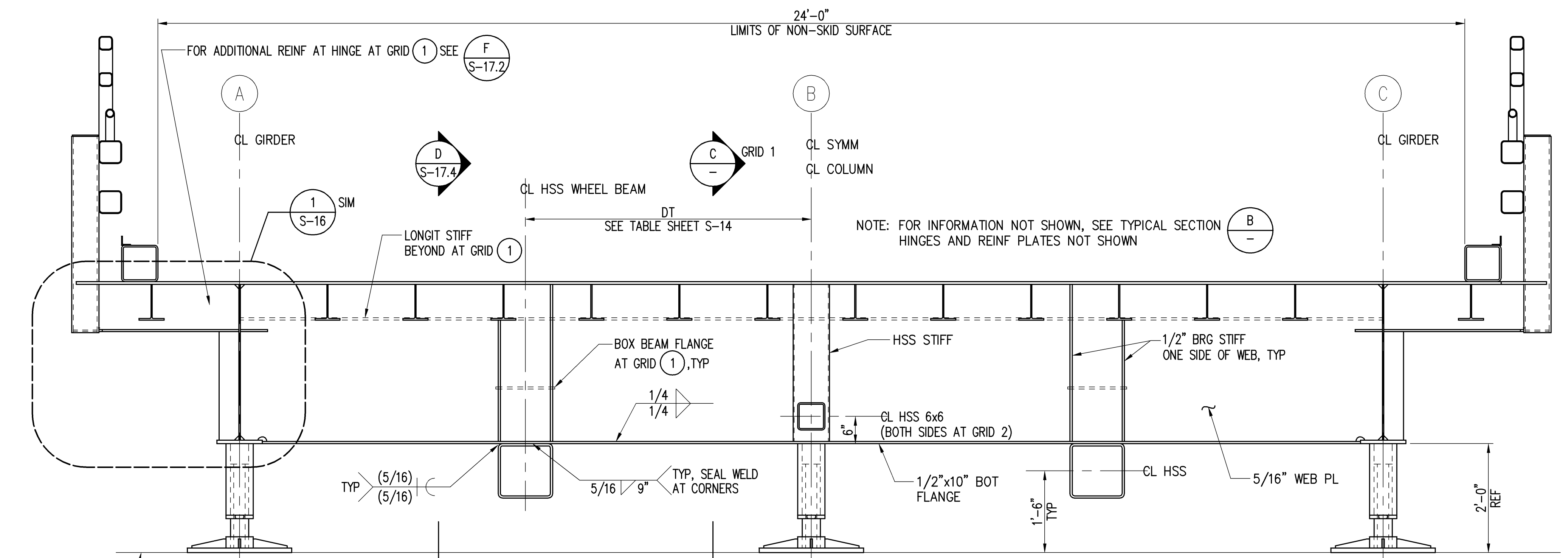
SHORE RAMP ELEVATION  
SCALE: 3/8" = 1'-0"

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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP PLAN AND ELEVATION AT HONOLULU, KAWAHAE AND KAHULUI</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
	0

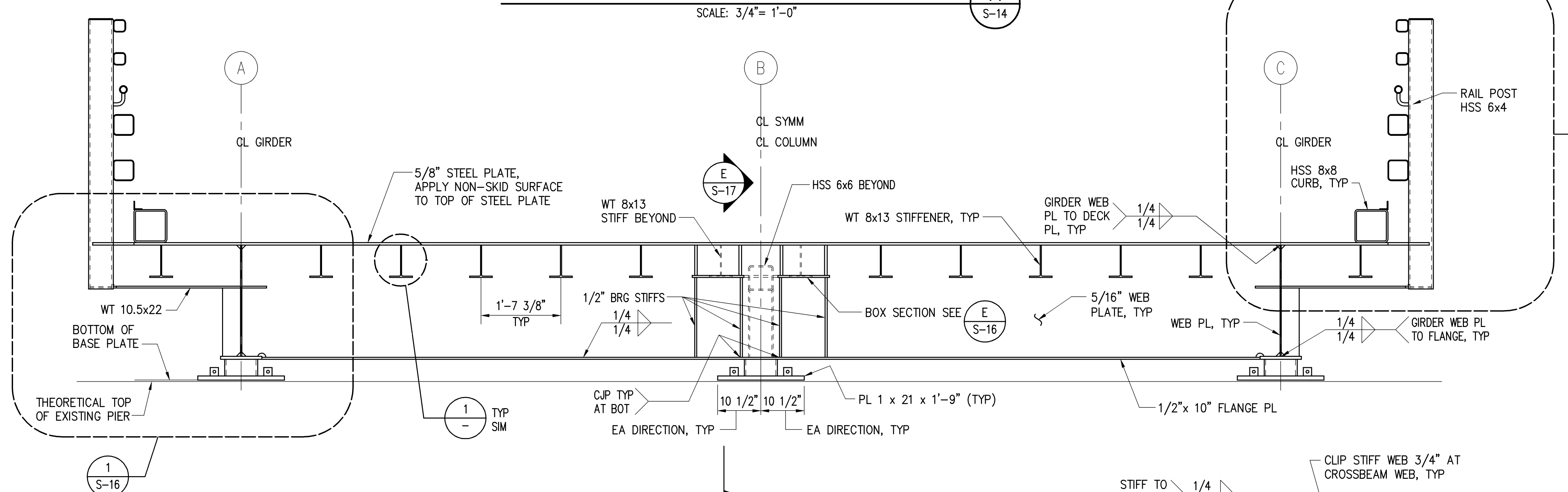


REDUCED SIZE PRINT  
(NOT TO SCALE)

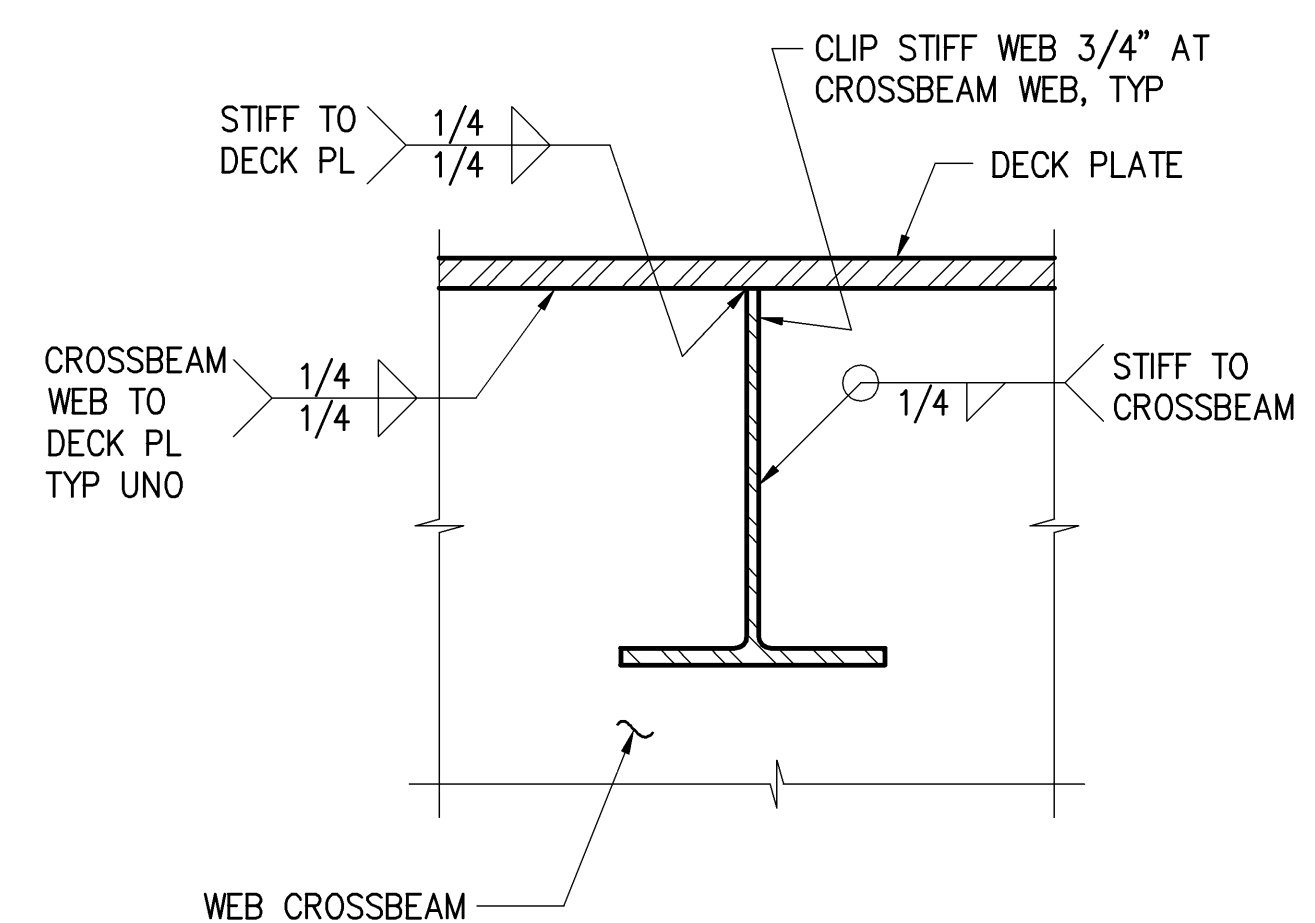
DESIGN RECORD DRAWINGS



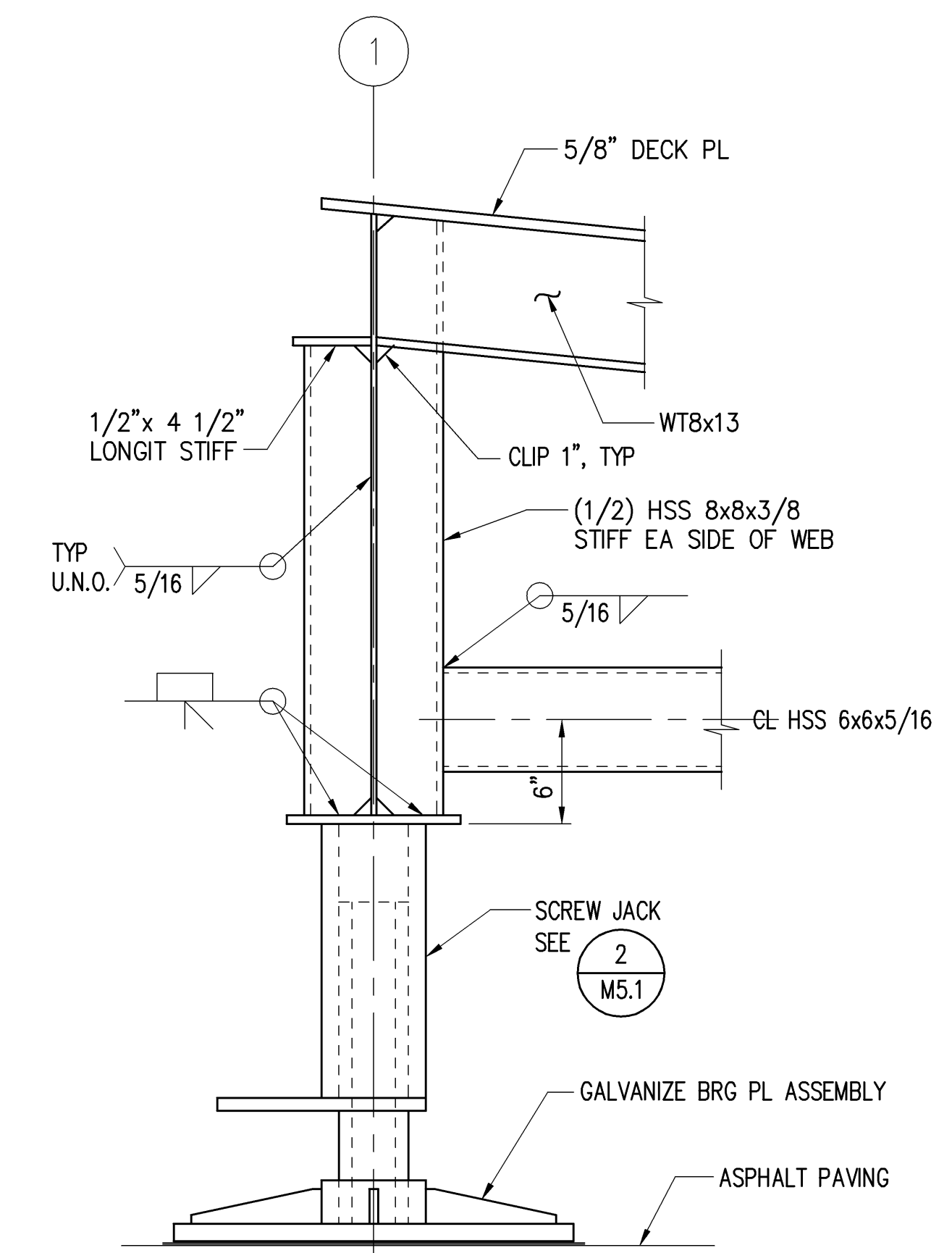
SHORE RAMP SECTION AT GRIDS 1 & 2  
SCALE: 3/4" = 1'-0"



SHORE RAMP SECTION AT GRID 3  
SCALE: 3/4" = 1'-0"



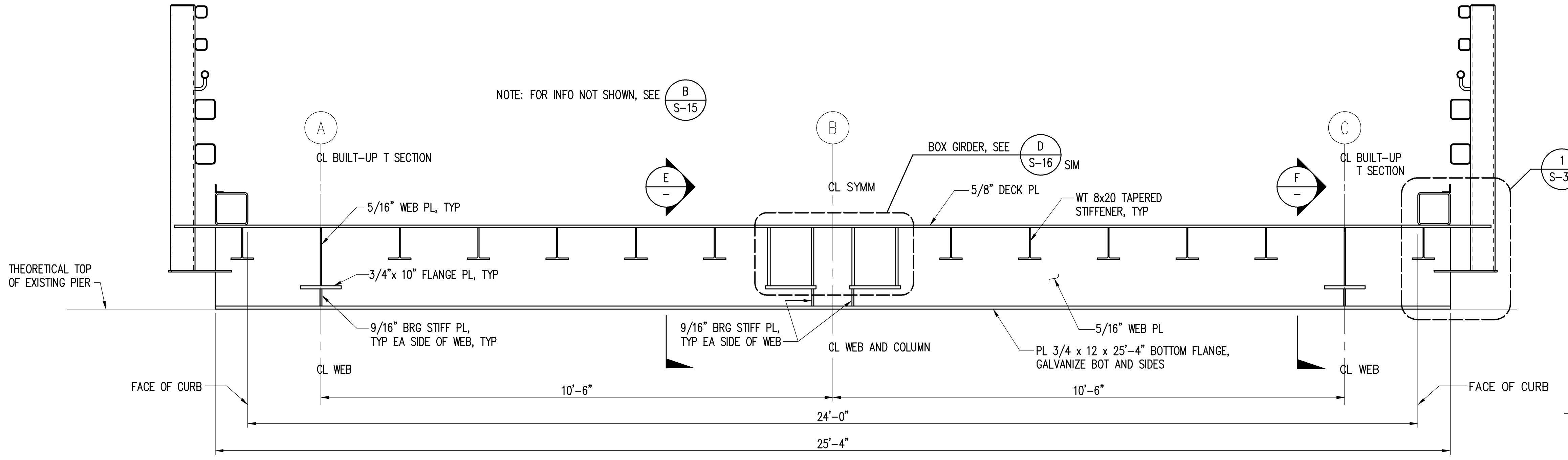
STIFFENER TO CROSSBEAM CONNECTION DETAIL  
SCALE: 3" = 1'-0"



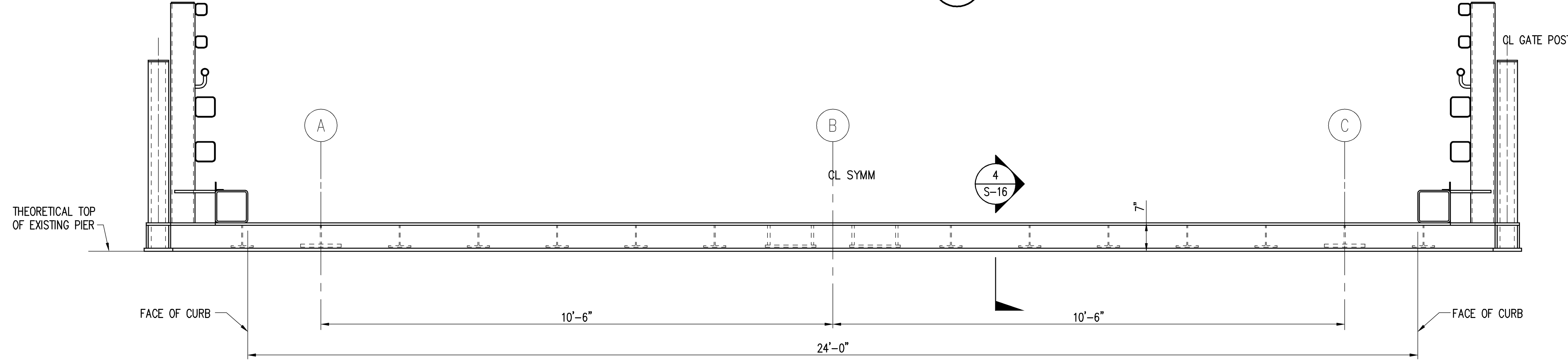
SECTION C  
SCALE: 1 1/2" = 1'-0"

SEE TRAFFIC AND BICYCLE RAIL DETAIL 1 S-29

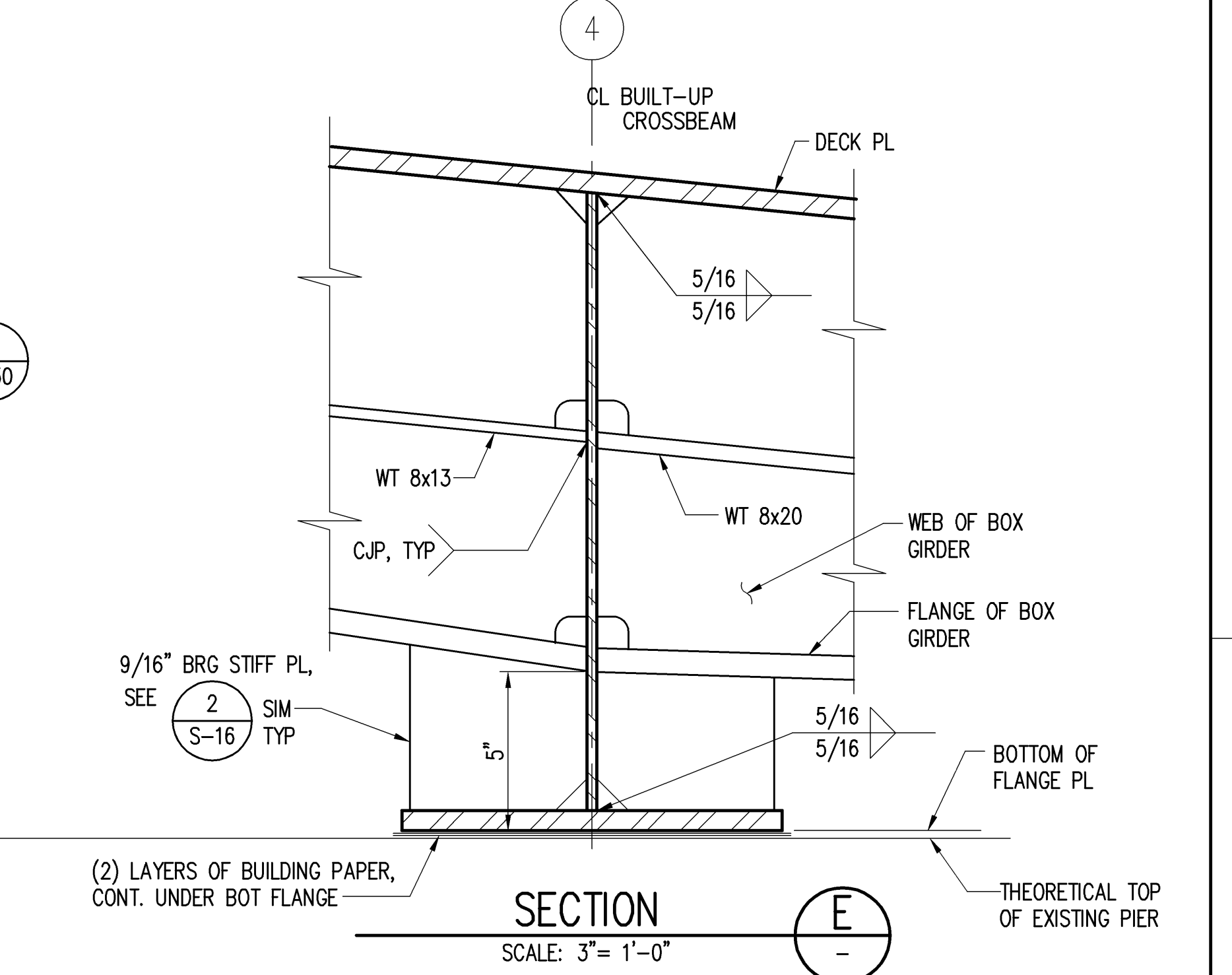
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE RAMP TYPICAL SECTION AT HONOLULU, KAWAIHAE AND KAHULUI</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
REDUCED SIZE PRINT (NOT TO SCALE)	DRAWING NUMBER S-15
	0 OF ___ SHTS



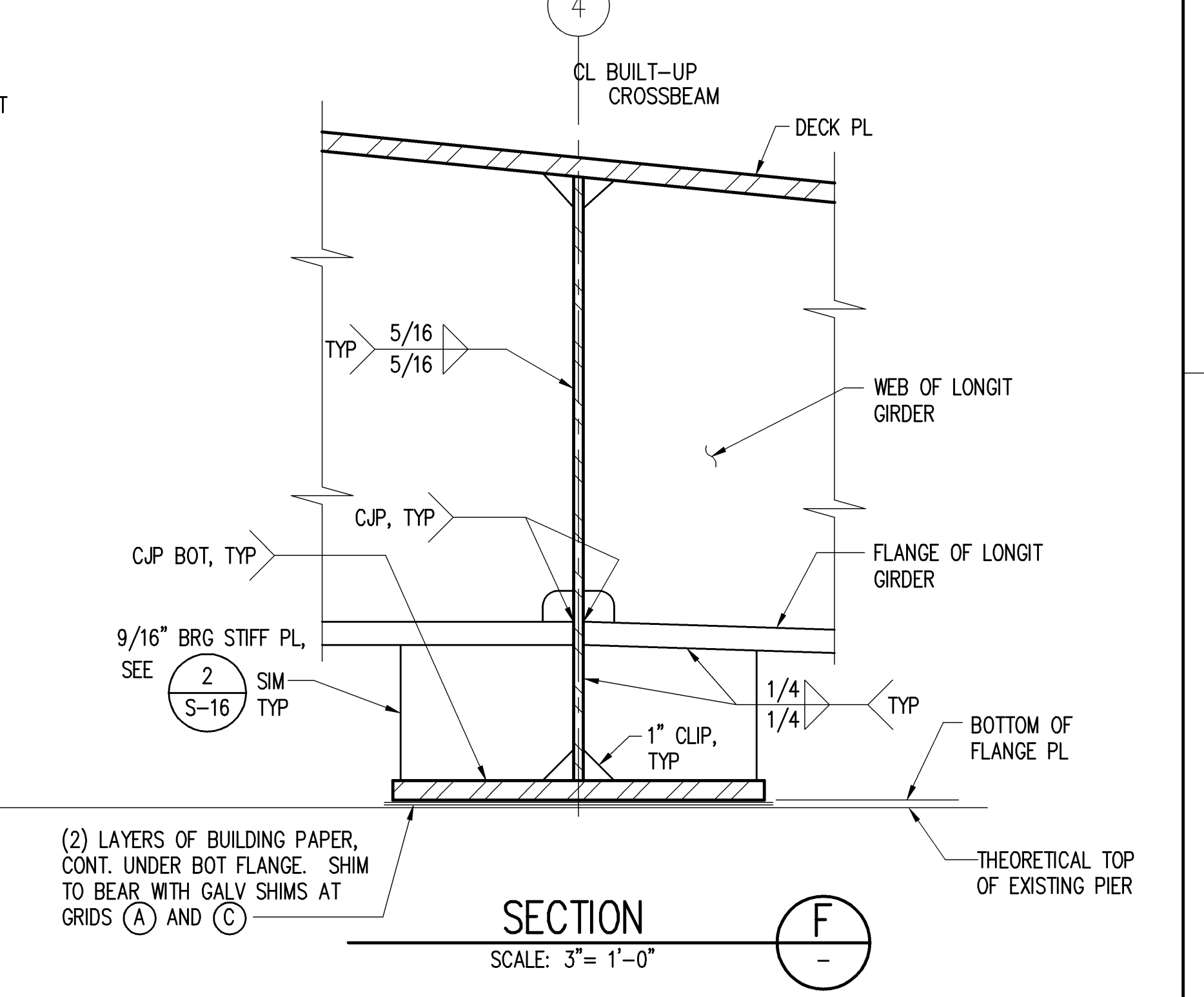
SECTION AT GRID 4 (C)  
SCALE: 3/4" = 1'-0"  
S-3.5 S-14



SECTION AT GRID 5 (D)  
SCALE: 3/4" = 1'-0"  
S-3.5 S-14



SECTION (E)  
SCALE: 3" = 1'-0"



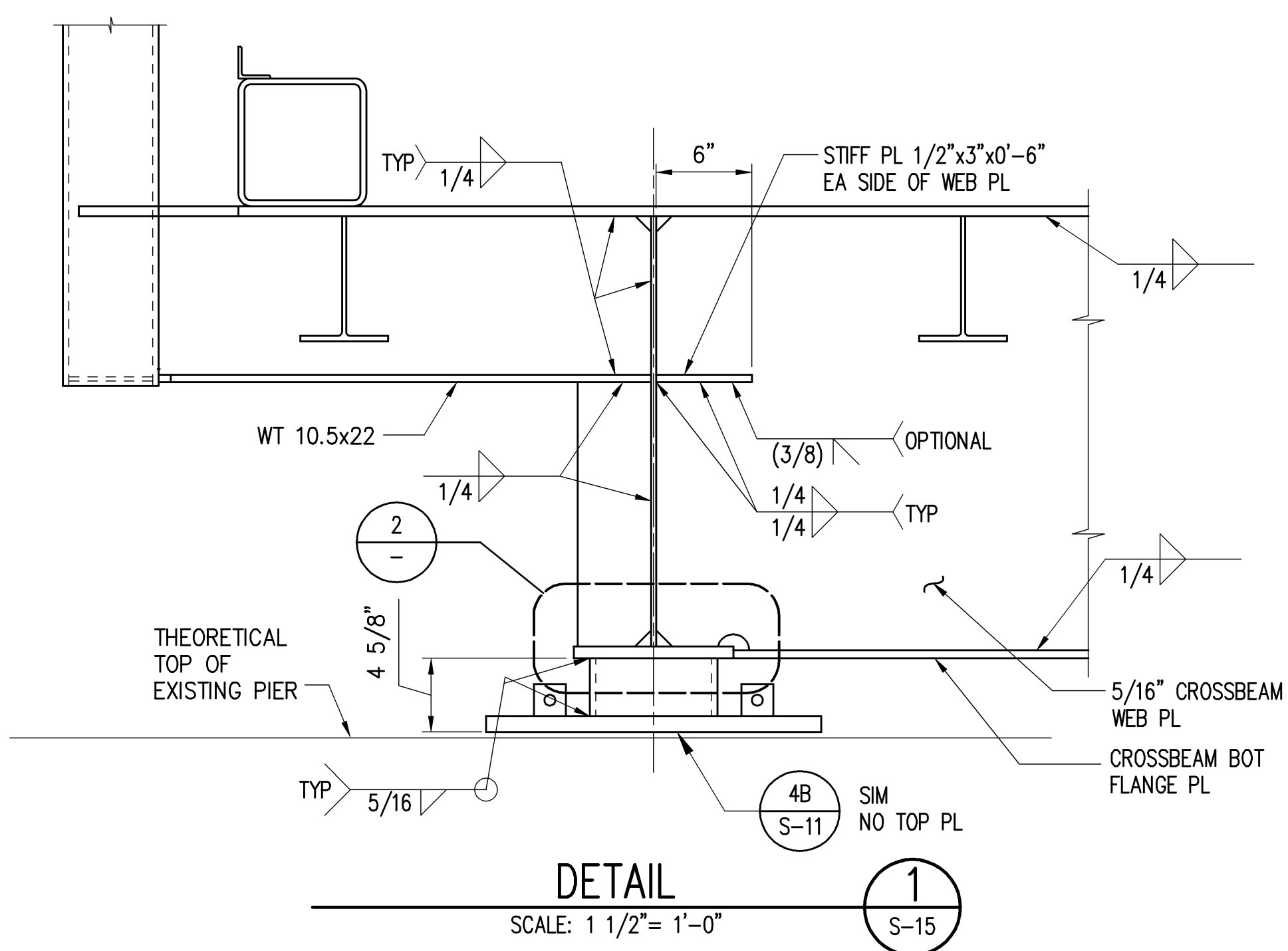
SECTION (F)  
SCALE: 3" = 1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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Consulting Engineers		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS                  FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SHORE RAMP TYPICAL SECTION                  AT HONOLULU, KAWAIHAE AND KAHULUI</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR H.C. 90018	DRAWING NUMBER <b>S-15.1</b> REVISION 0 OF ____ SHEETS

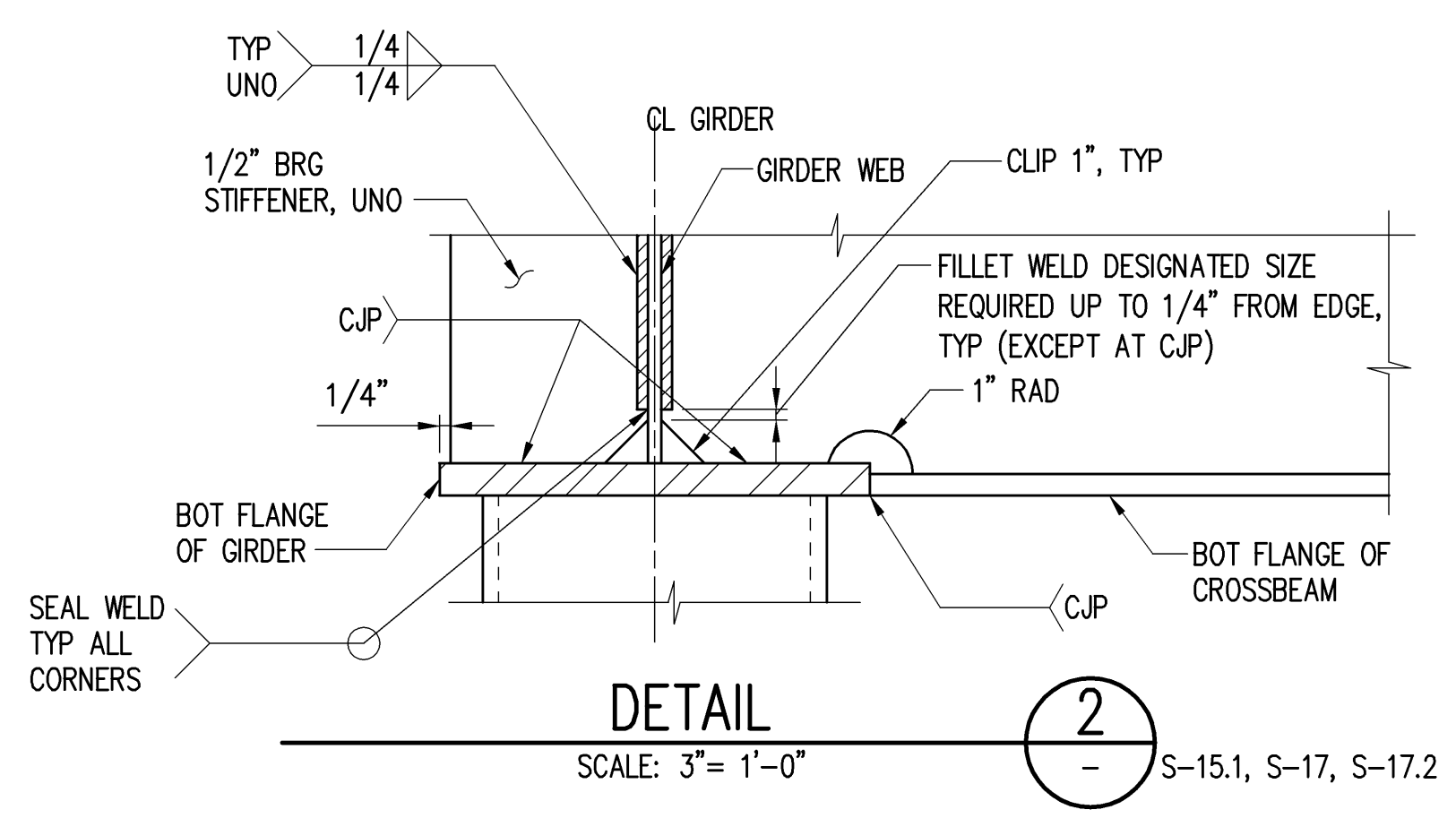
DESIGN RECORD DRAWINGS

REDUCED SIZE PRINT  
(NOT TO SCALE)

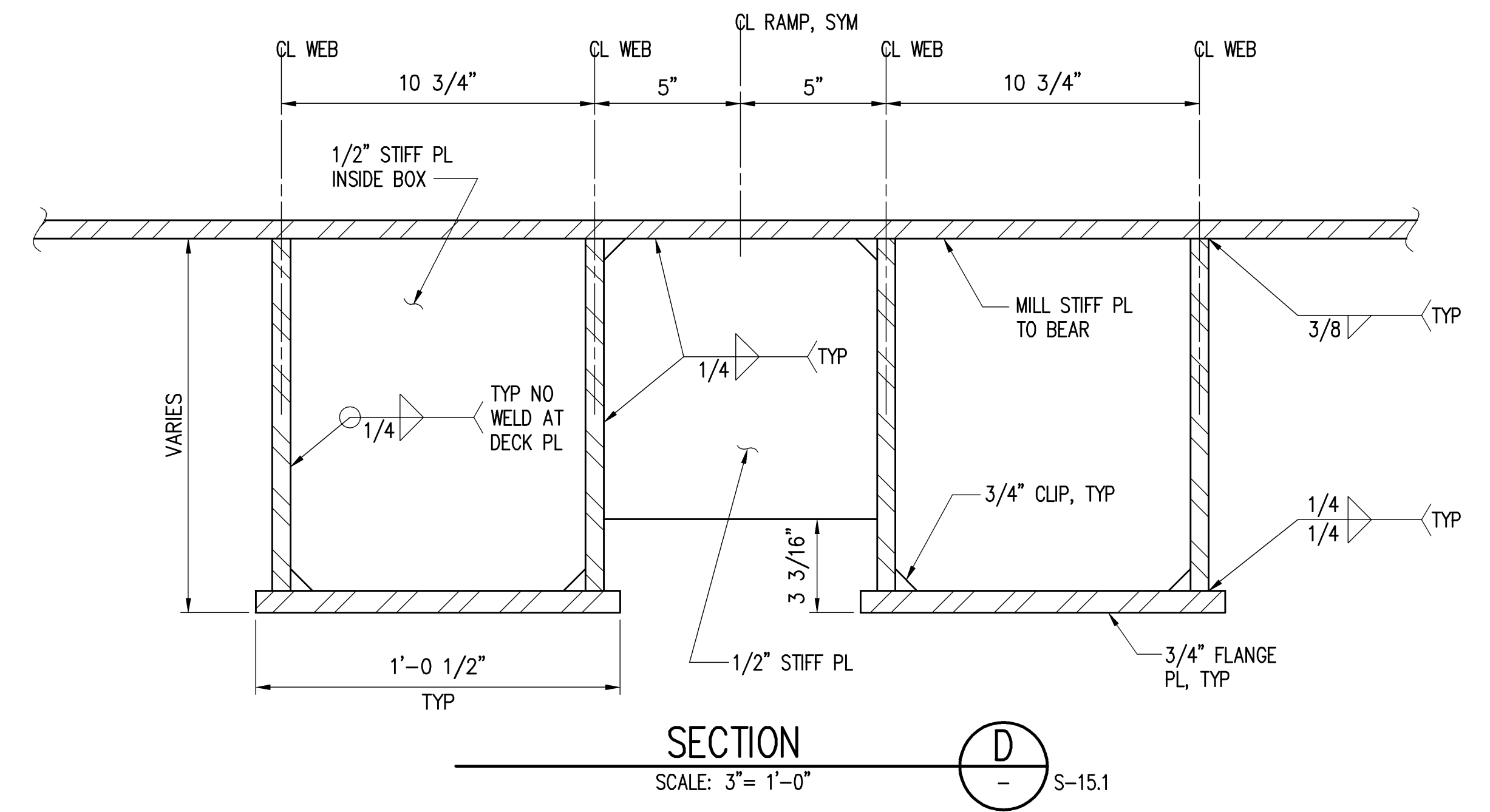
D



DETAIL 1  
SCALE: 1 1/2" = 1'-0"  
S-15

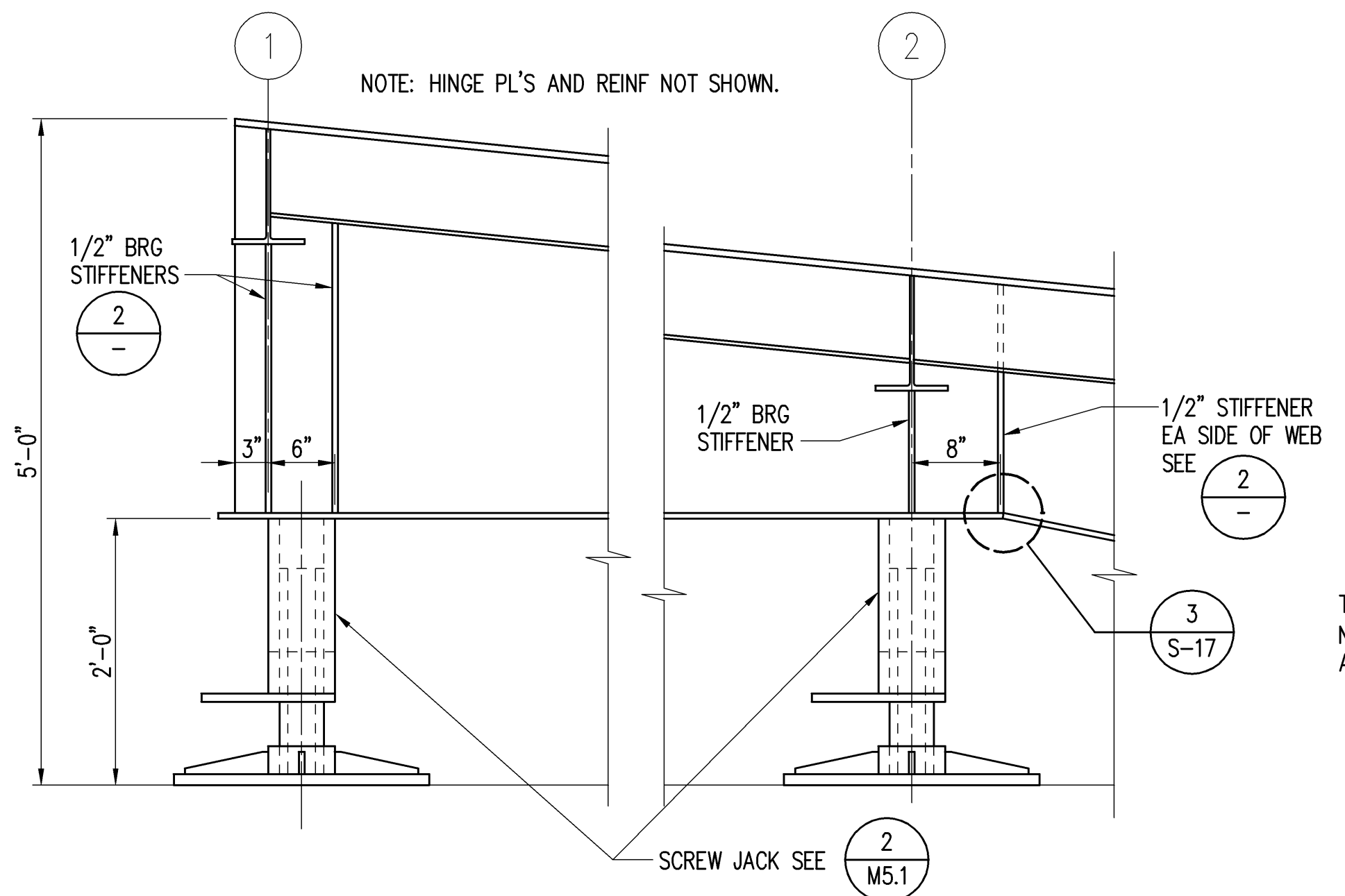


DETAIL 2  
SCALE: 3" = 1'-0"  
S-15.1, S-17, S-17.2

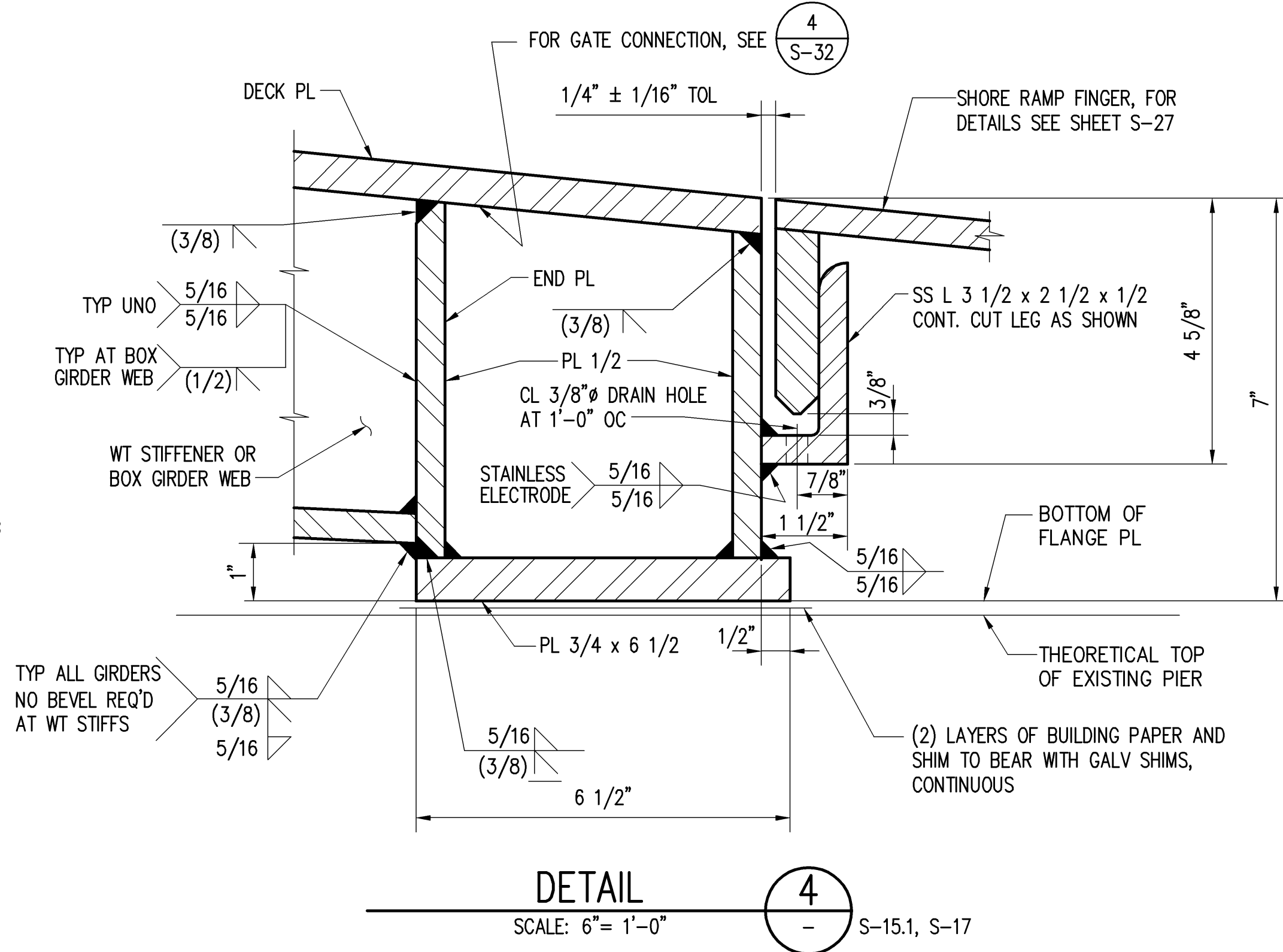


SECTION D  
SCALE: 3" = 1'-0"  
S-15.1

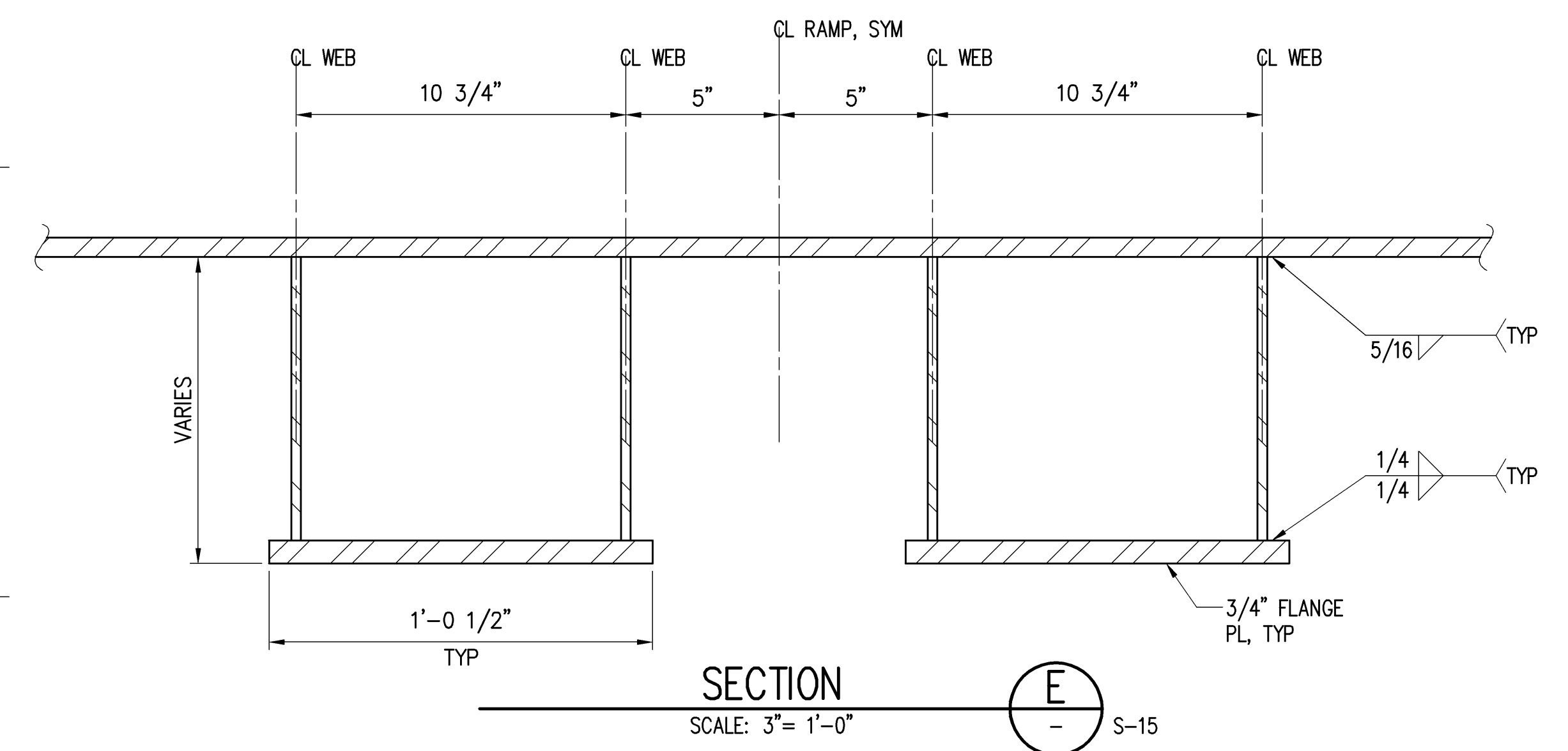
C



DETAIL 3  
SCALE: 1" = 1'-0"  
S-14

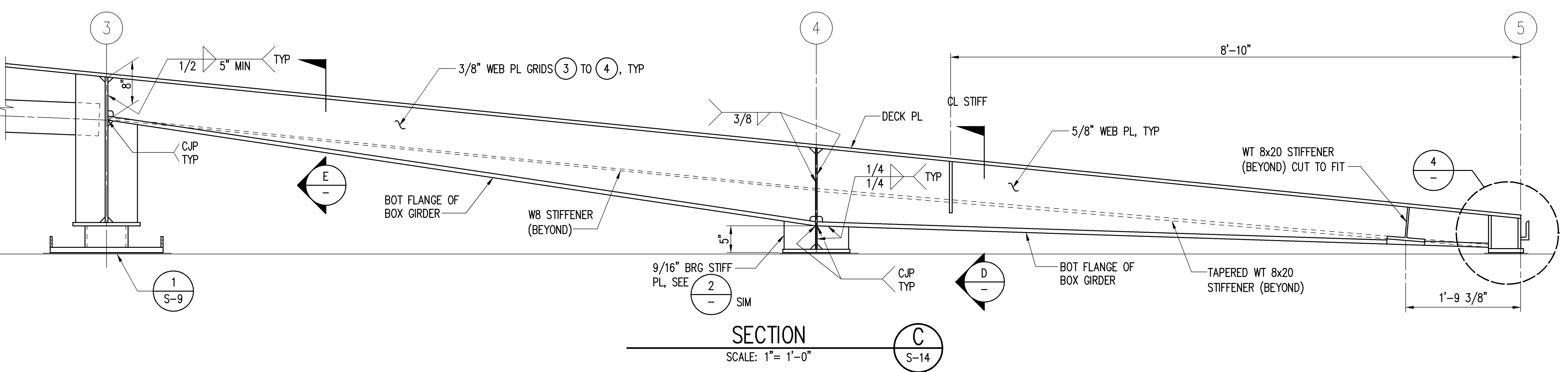


DETAIL 4  
SCALE: 6" = 1'-0"  
S-15.1, S-17



SECTION E  
SCALE: 3" = 1'-0"  
S-15

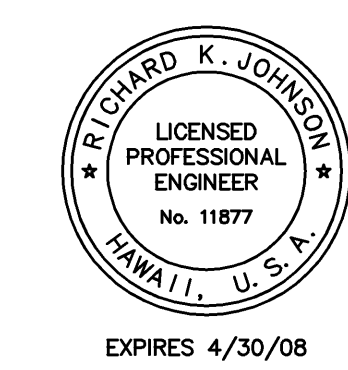
B



SECTION C  
SCALE: 1" = 1'-0"  
S-14

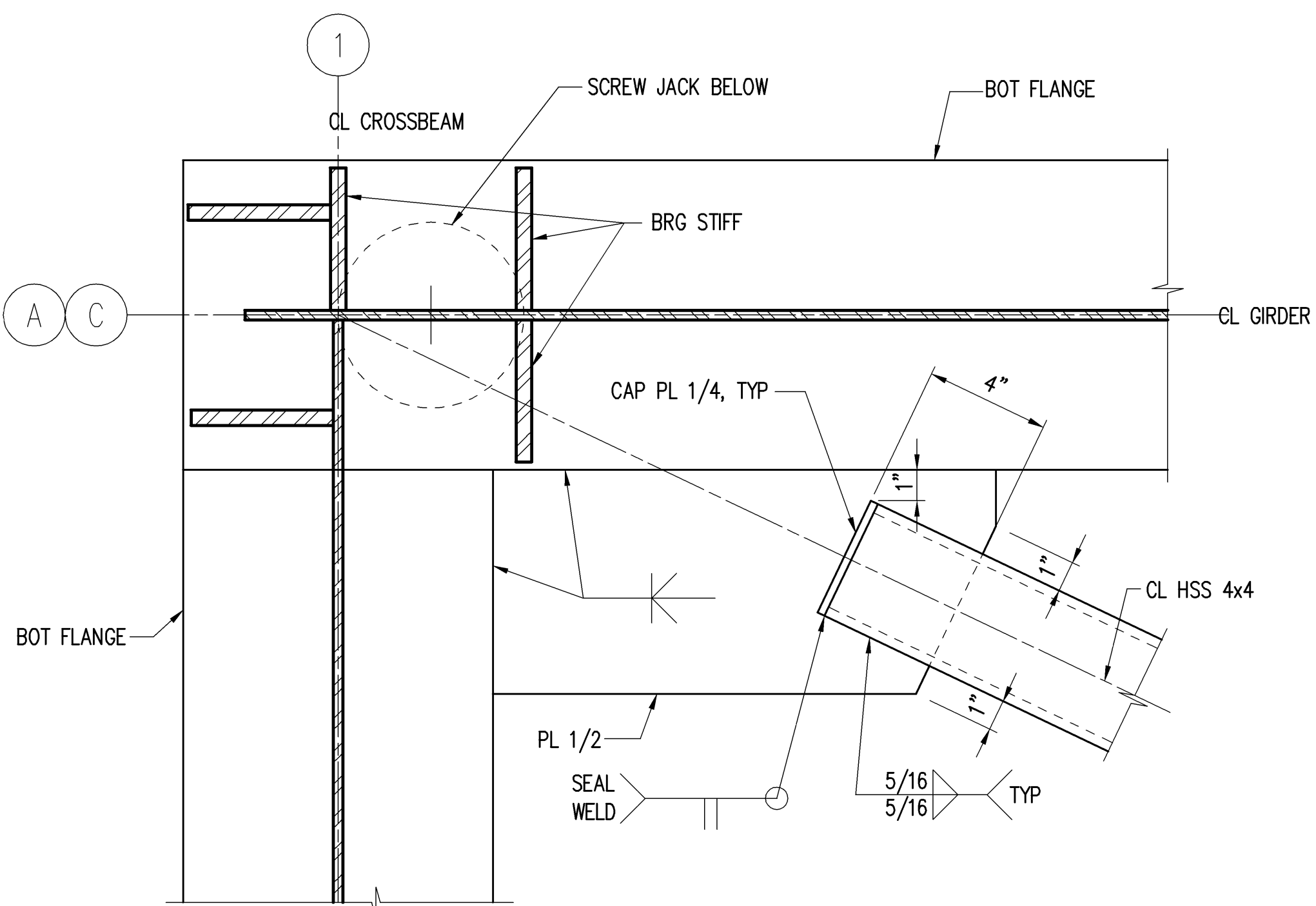
A

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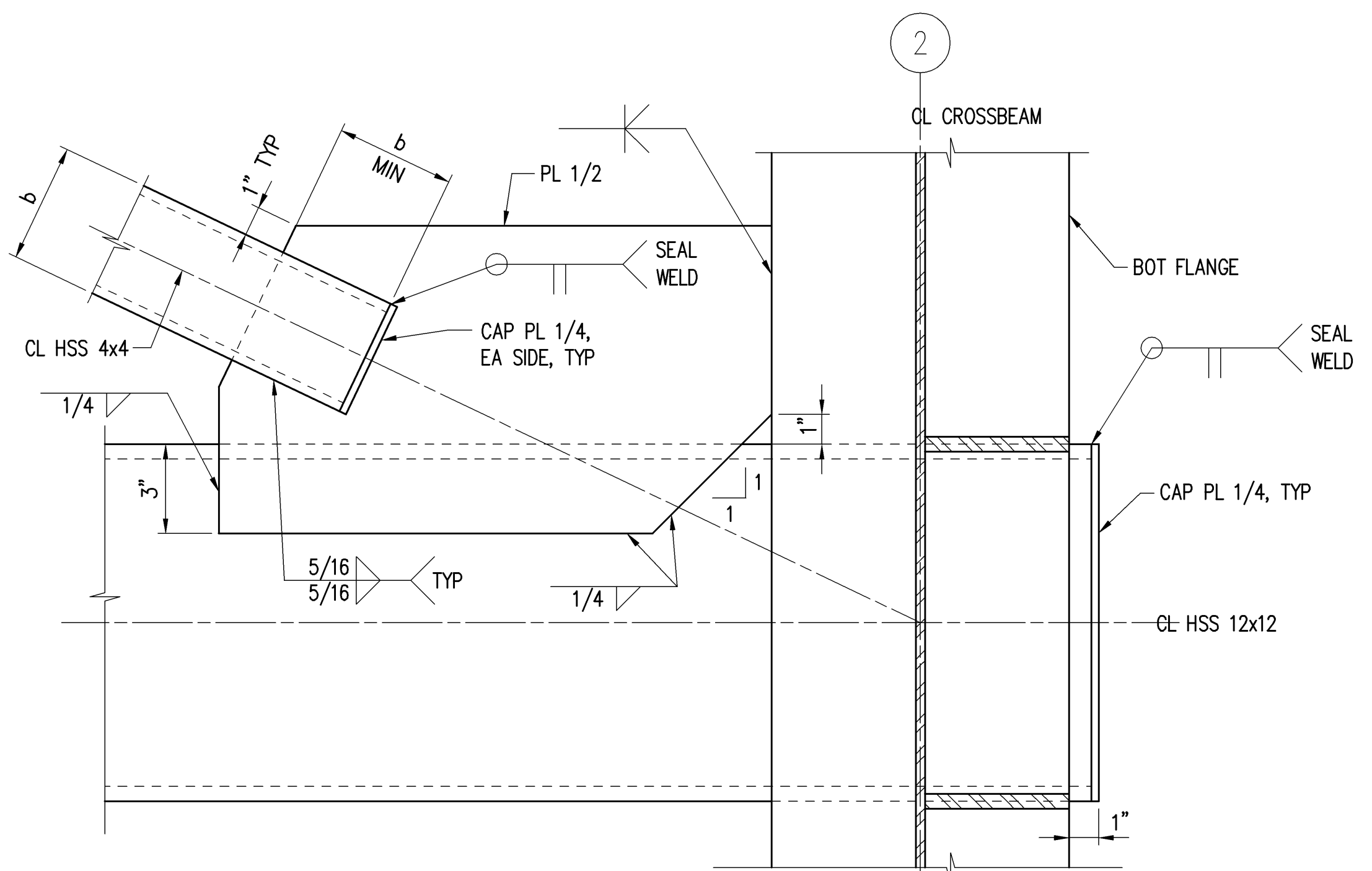


DESIGN RECORD DRAWINGS

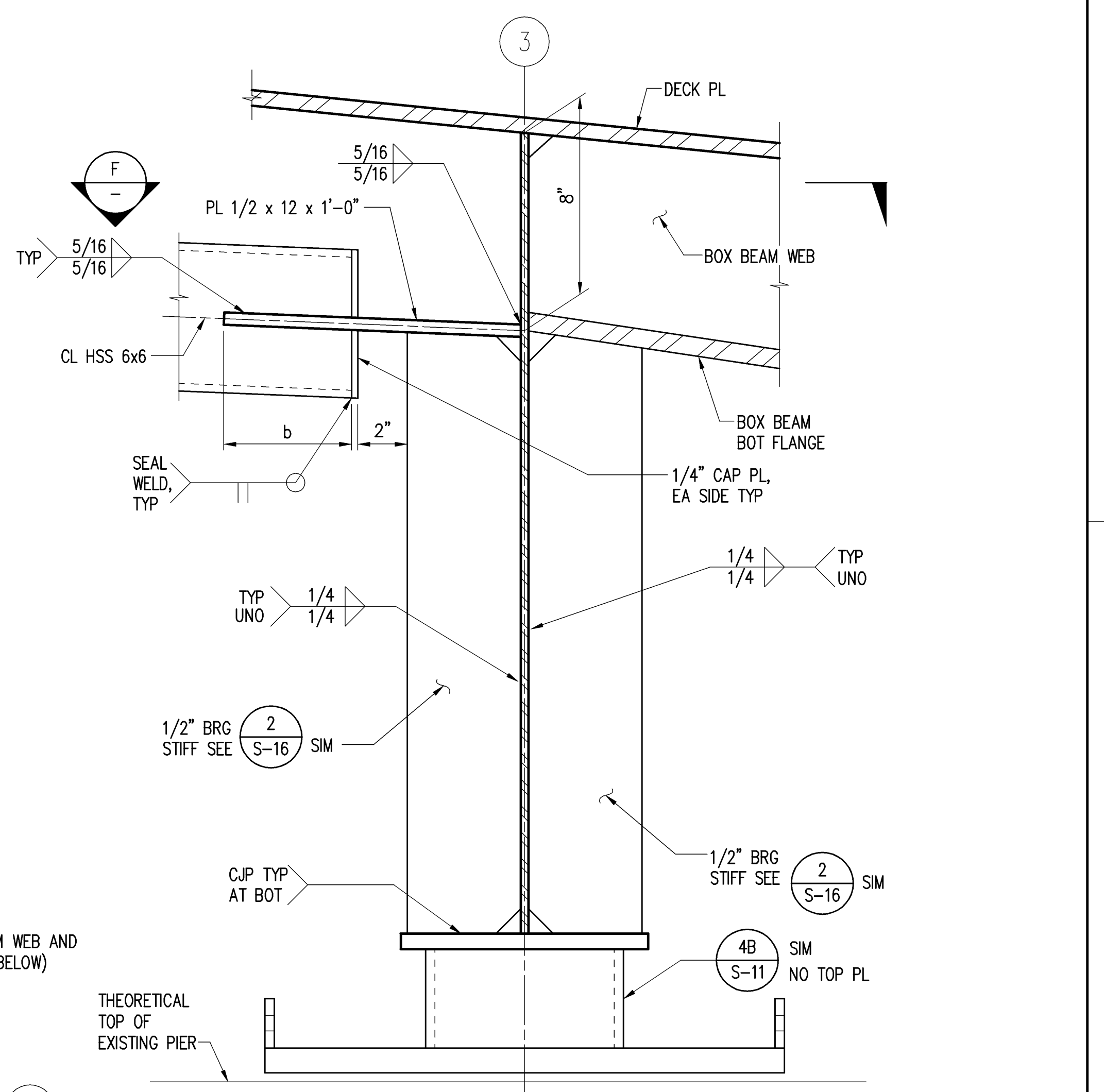




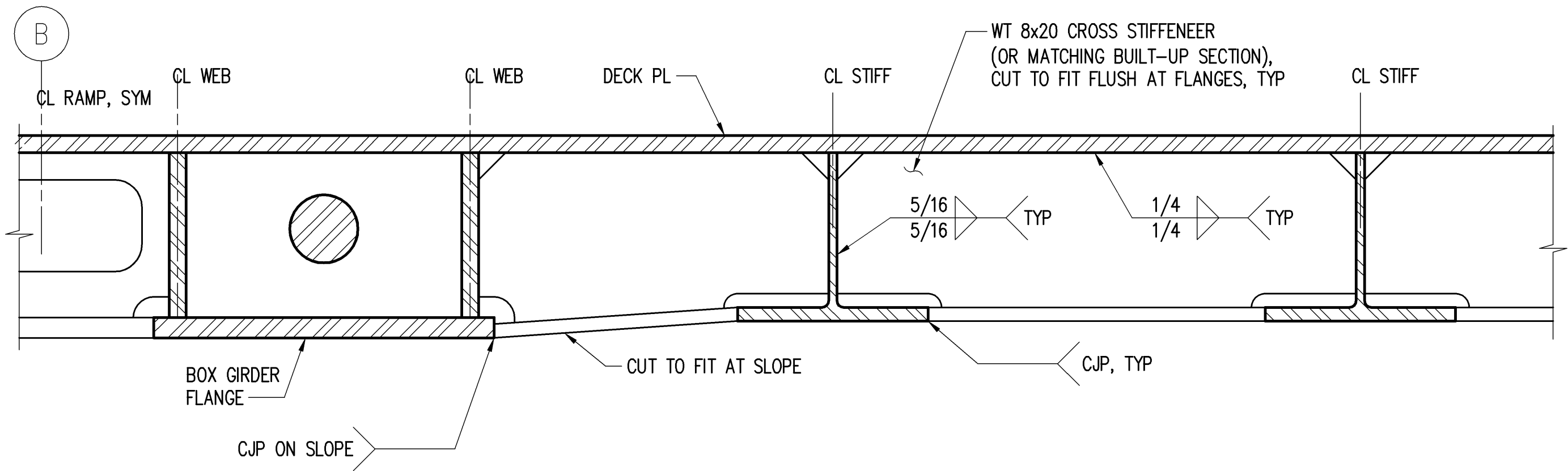
**DETAIL 1**  
SCALE: 3"=1'-0"  
S-14



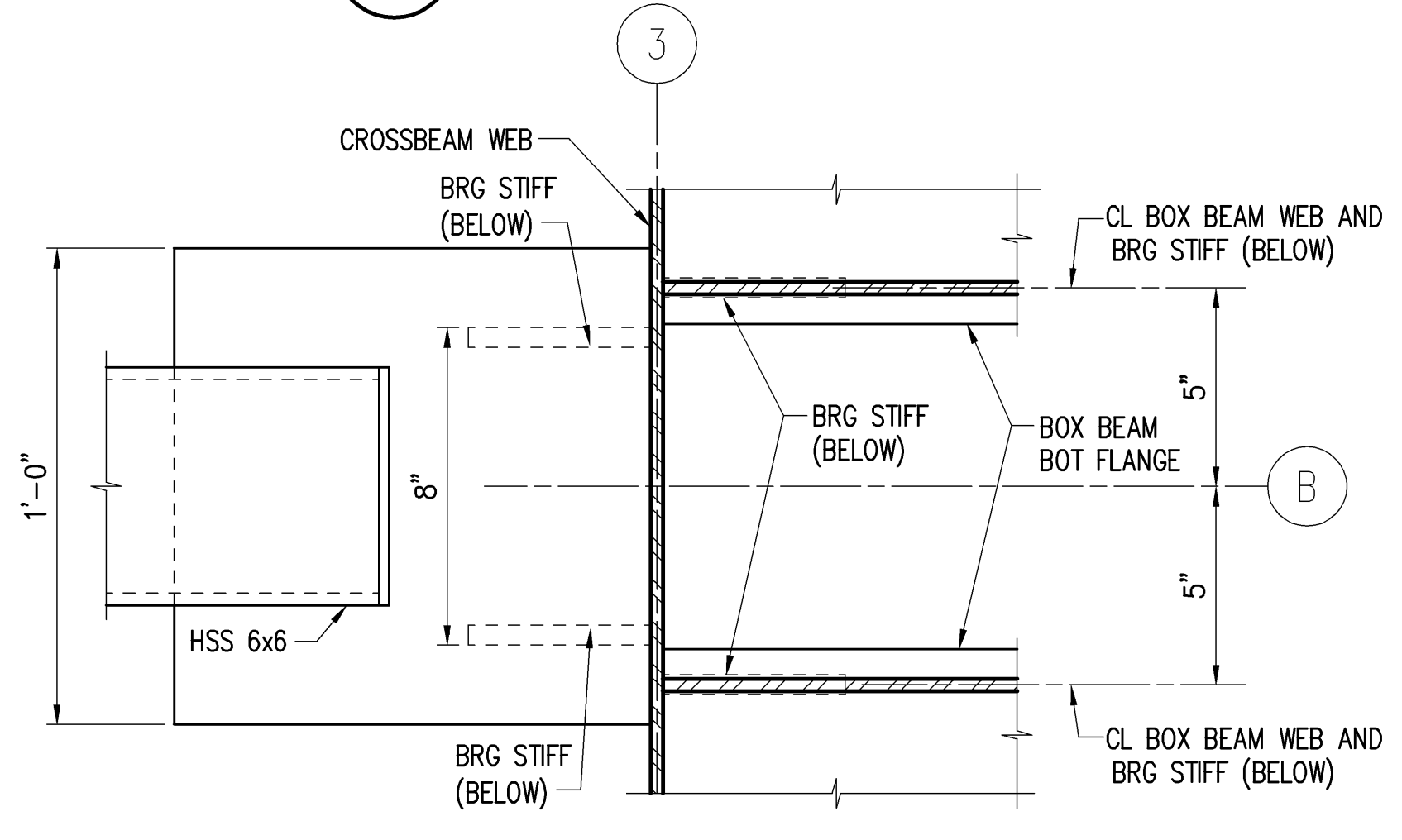
**DETAIL 2**  
SCALE: 3"=1'-0"  
S-14



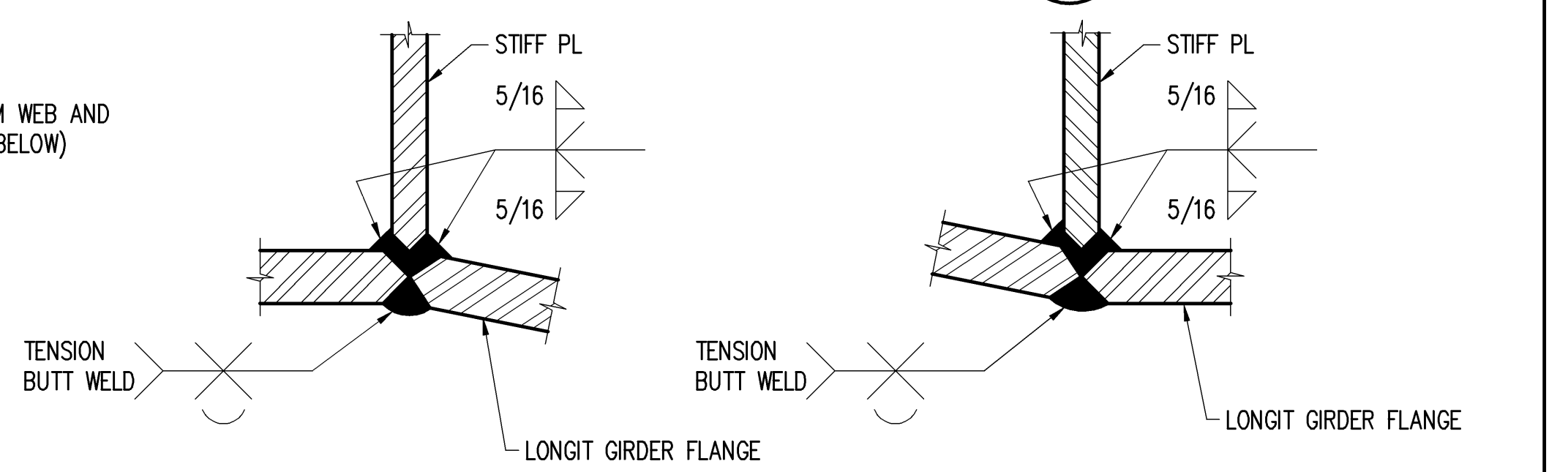
**SECTION E**  
SCALE: 3"=1'-0"  
S-15



**SECTION B**  
SCALE: 3"=1'-0"  
S-14

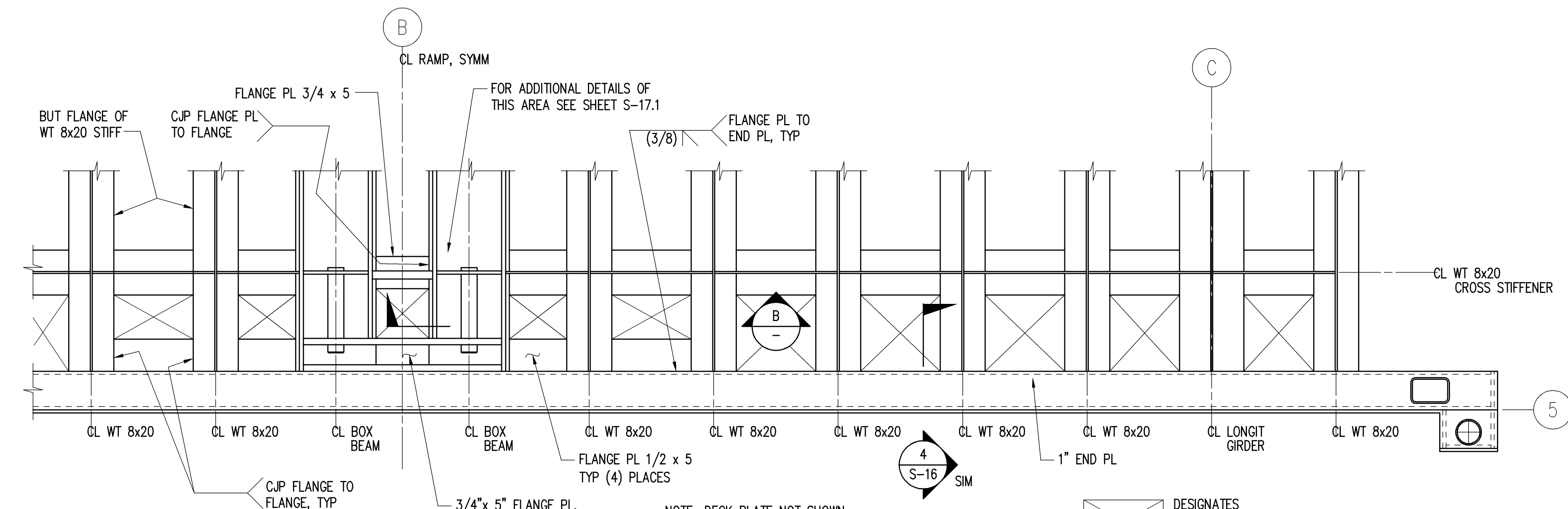


**SECTION F**  
SCALE: 3"=1'-0"  
S-14

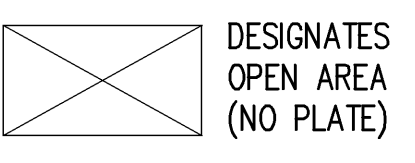


**DETAIL 3**  
SCALE: 6"=1'-0"  
S-16

**DETAIL 4**  
SCALE: 6"=1'-0"  
S-14

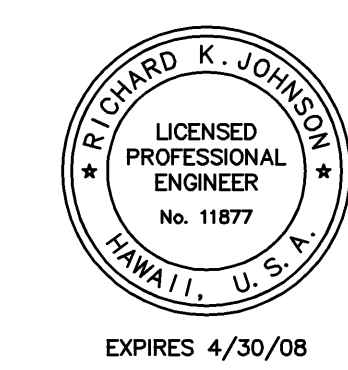


**BOTTOM FLANGE REINFORCING DETAIL**  
SCALE: 1"=1'-0"  
S-14 S-2



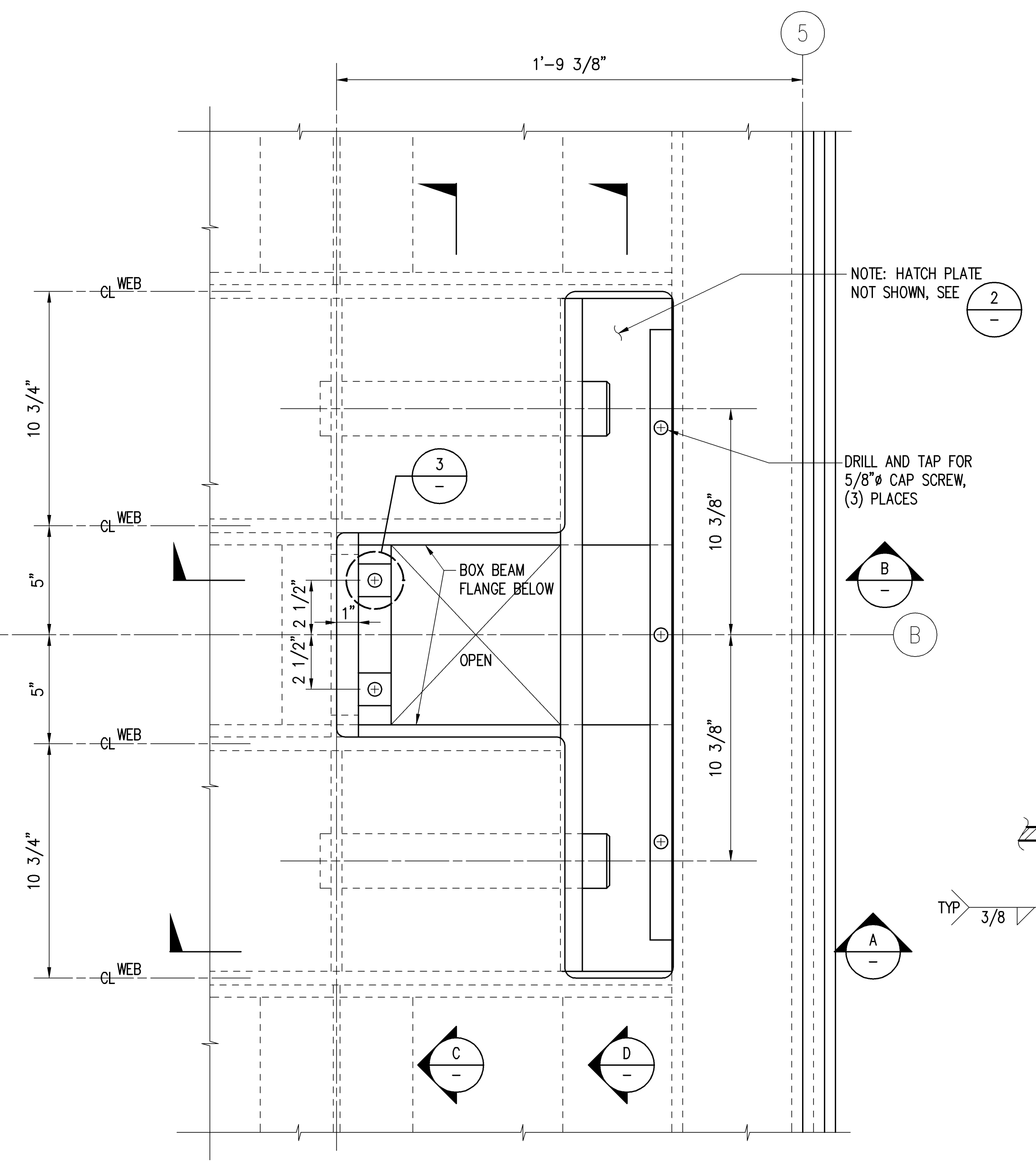
DESIGNATES OPEN AREA (NO PLATE)

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CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
REDUCED SIZE PRINT (NOT TO SCALE)	DRAWING NUMBER <b>S-17</b>
	0 OF _____ SHEETS

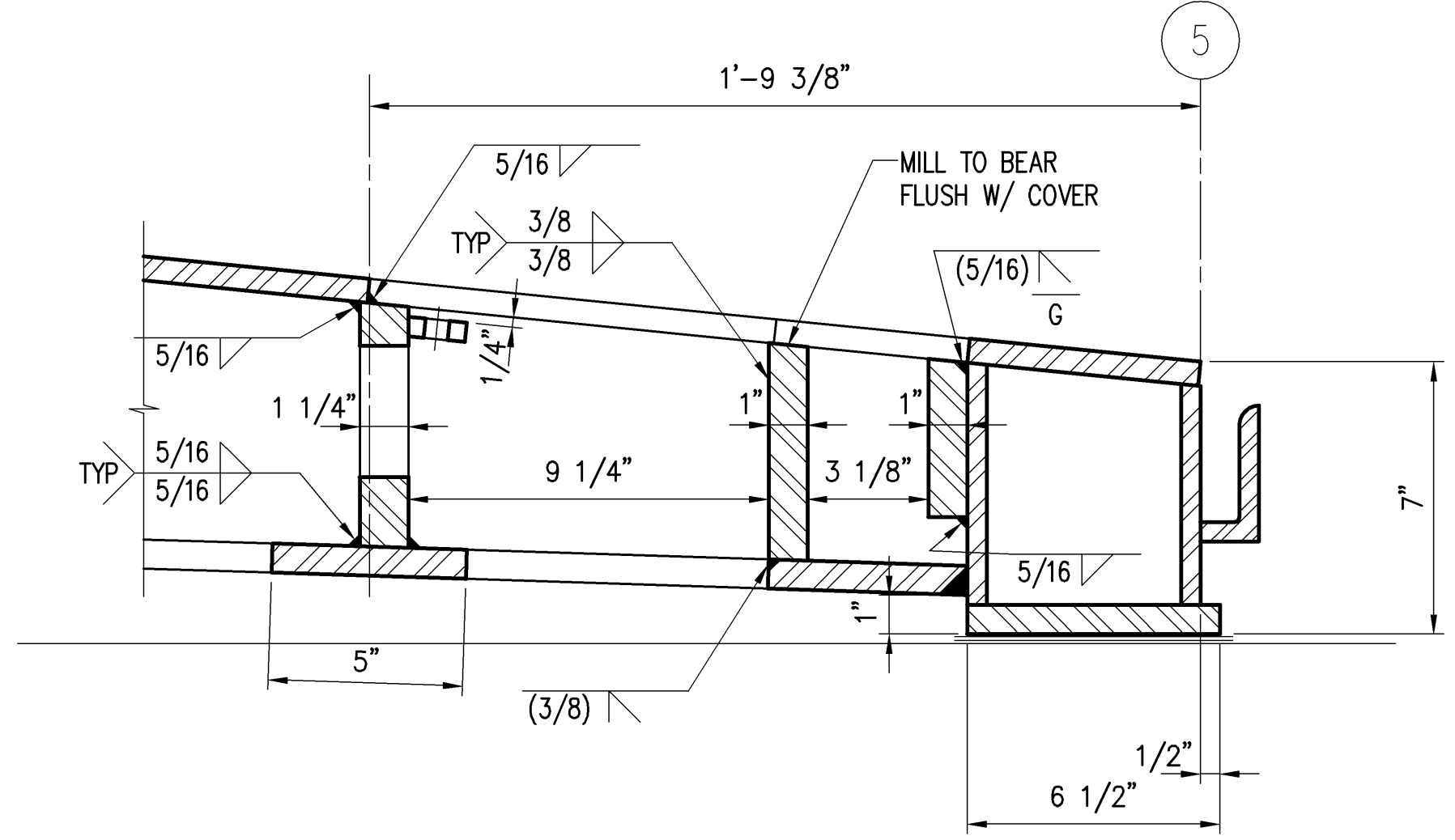


EXPIRES 4/30/08

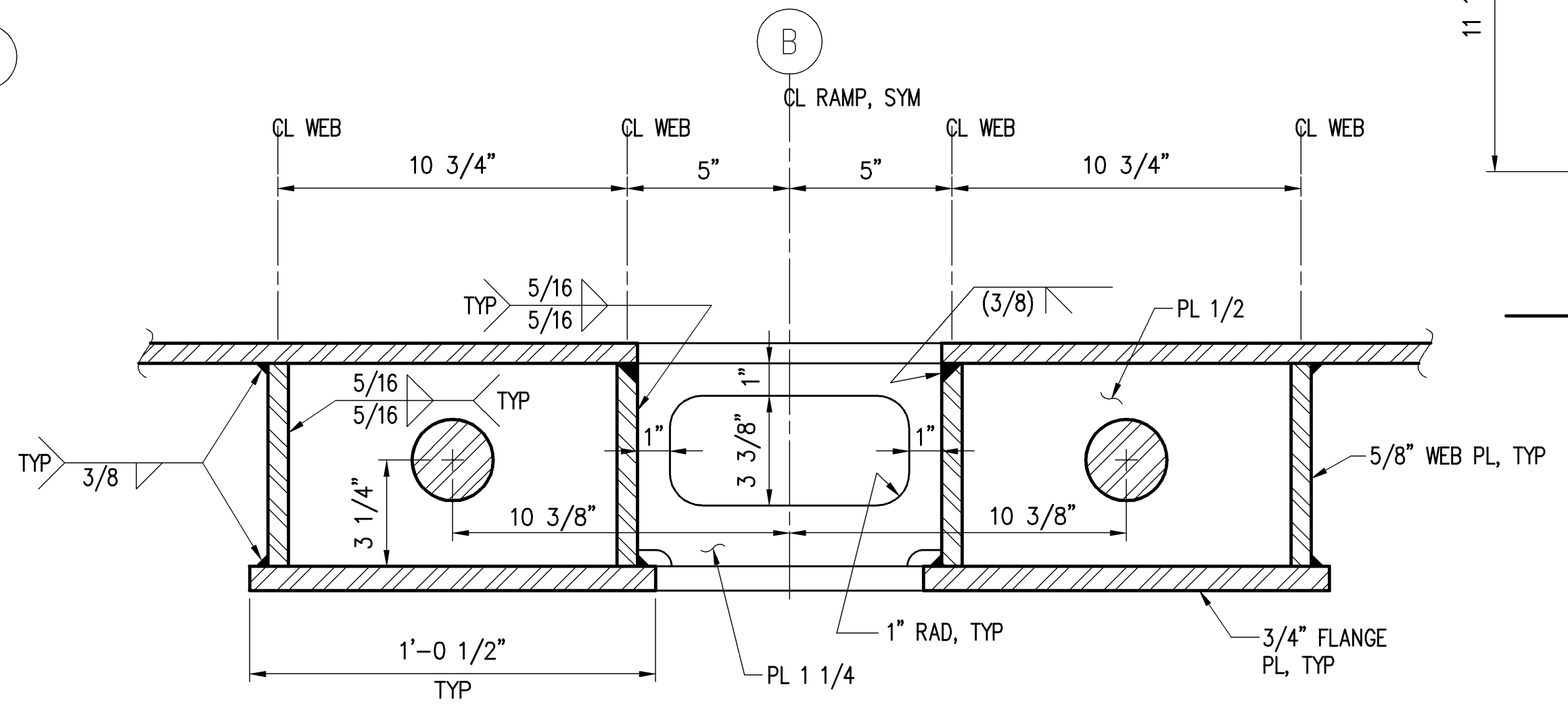
DESIGN RECORD DRAWINGS



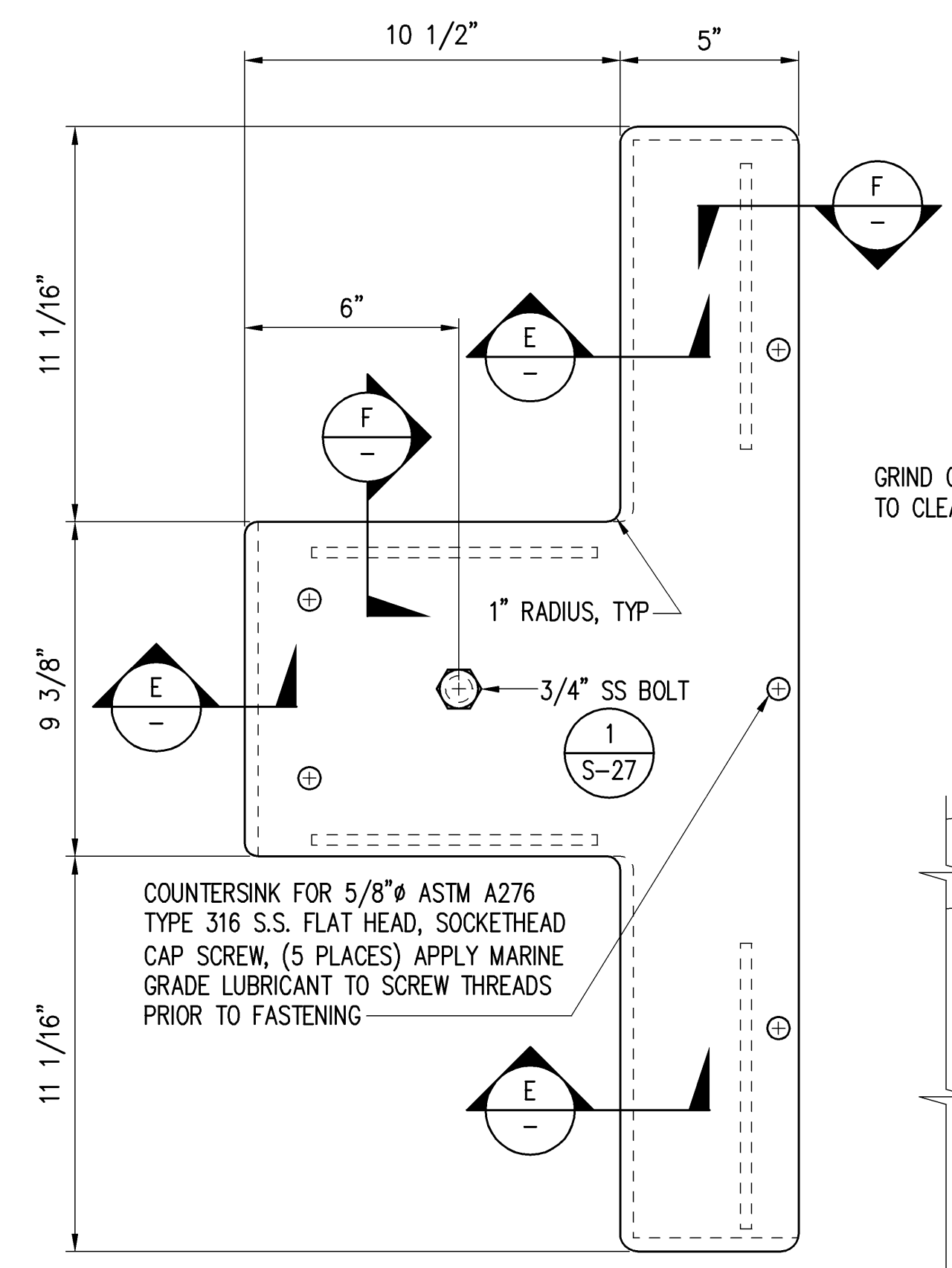
**TOW ATTACHMENT DETAIL** (1)  
SCALE: 3"= 1'-0"  
S-14 S-2



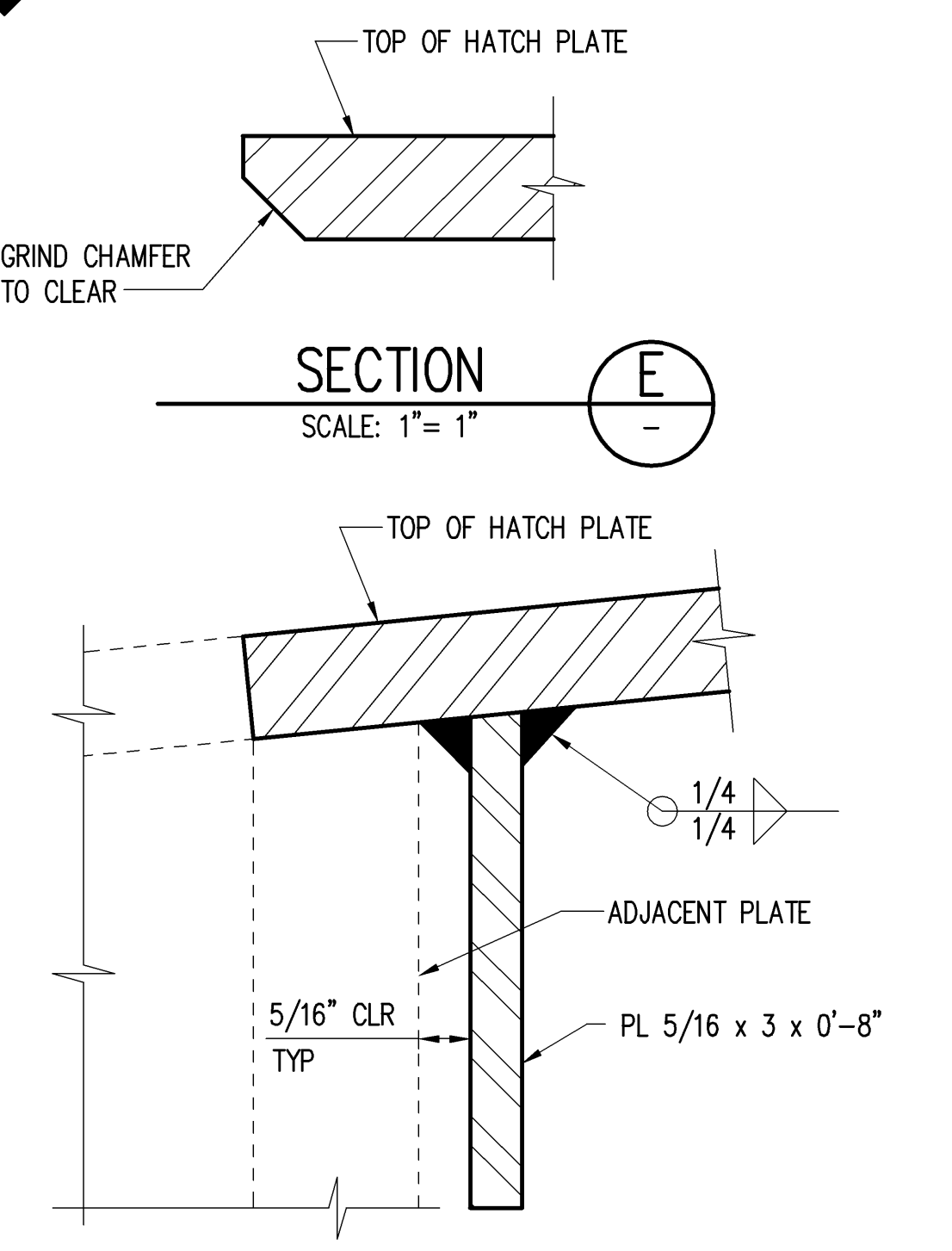
**SECTION B**  
SCALE: 3"= 1'-0"



**SECTION C**  
SCALE: 3"= 1'-0"

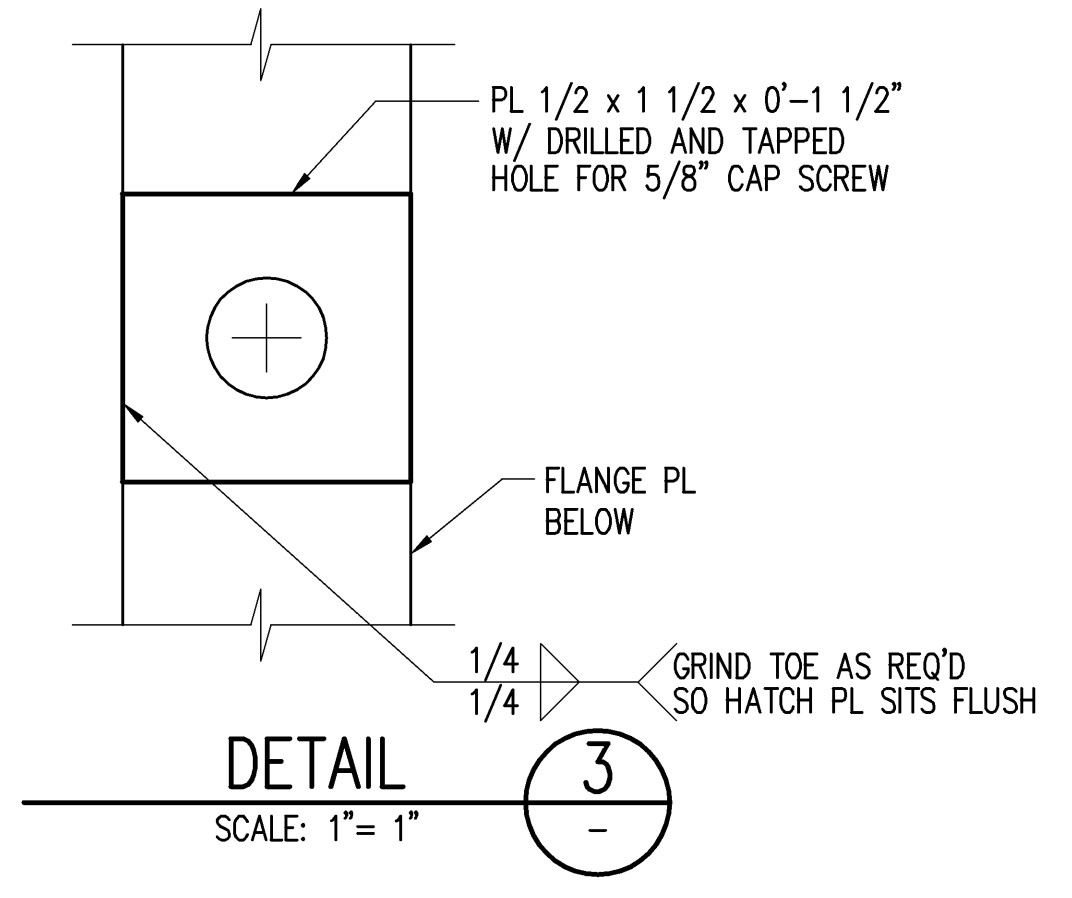


**HATCH PLATE DETAIL** (2)  
SCALE: 3"= 1'-0"

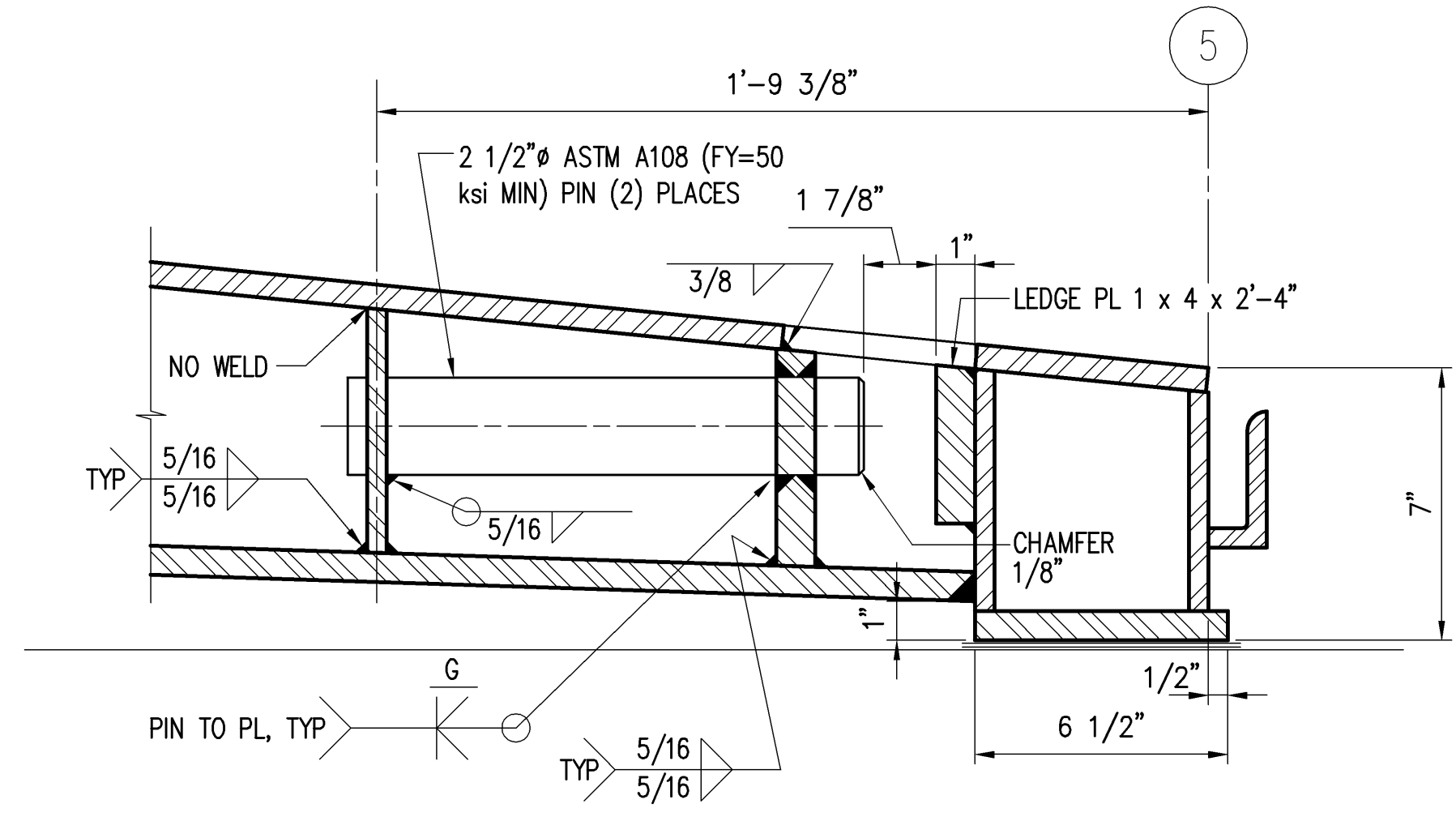


**SECTION E**  
SCALE: 1"= 1"

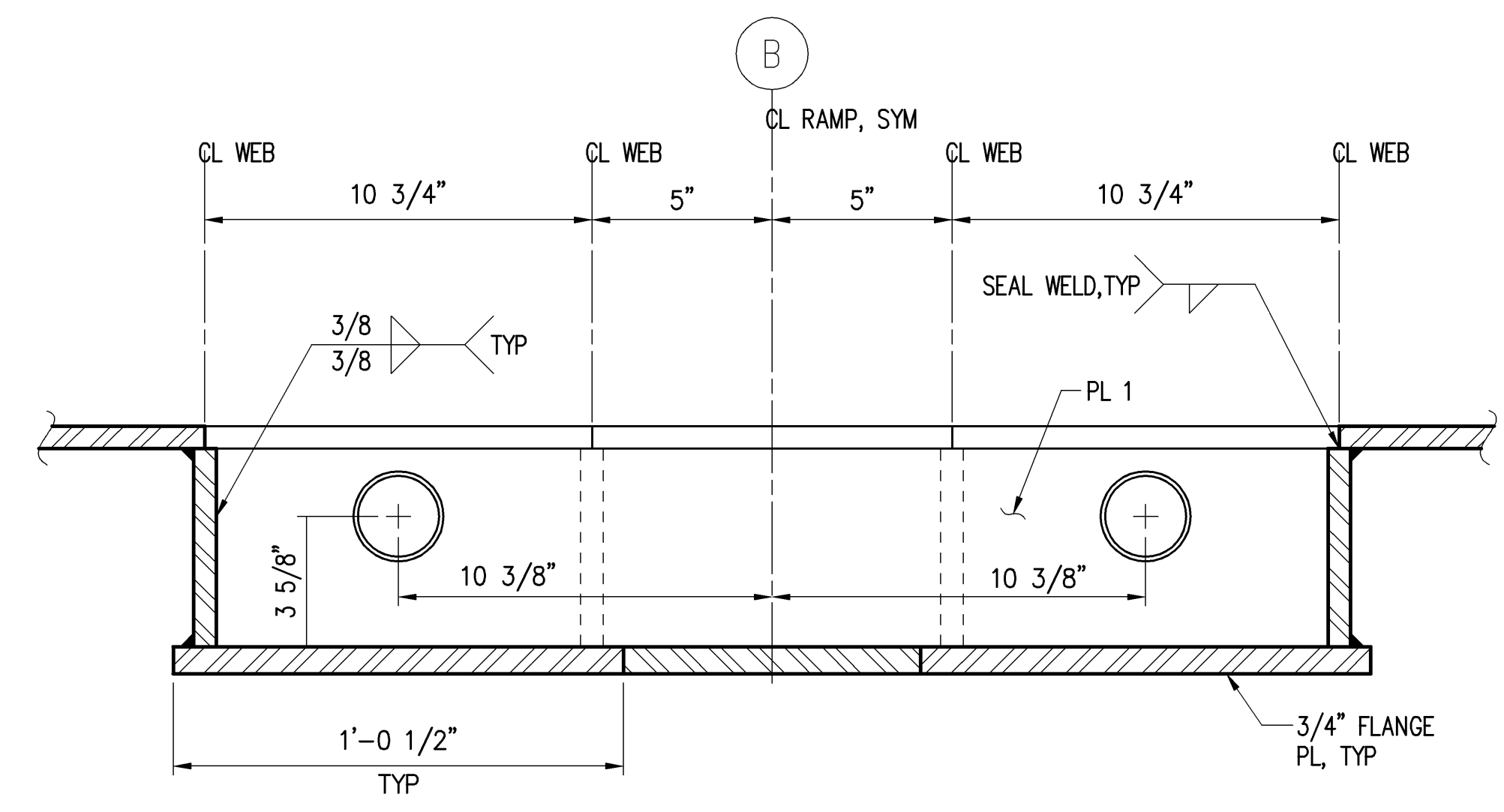
**SECTION F**  
SCALE: 1"= 1"



**DETAIL** (3)  
SCALE: 1"= 1"

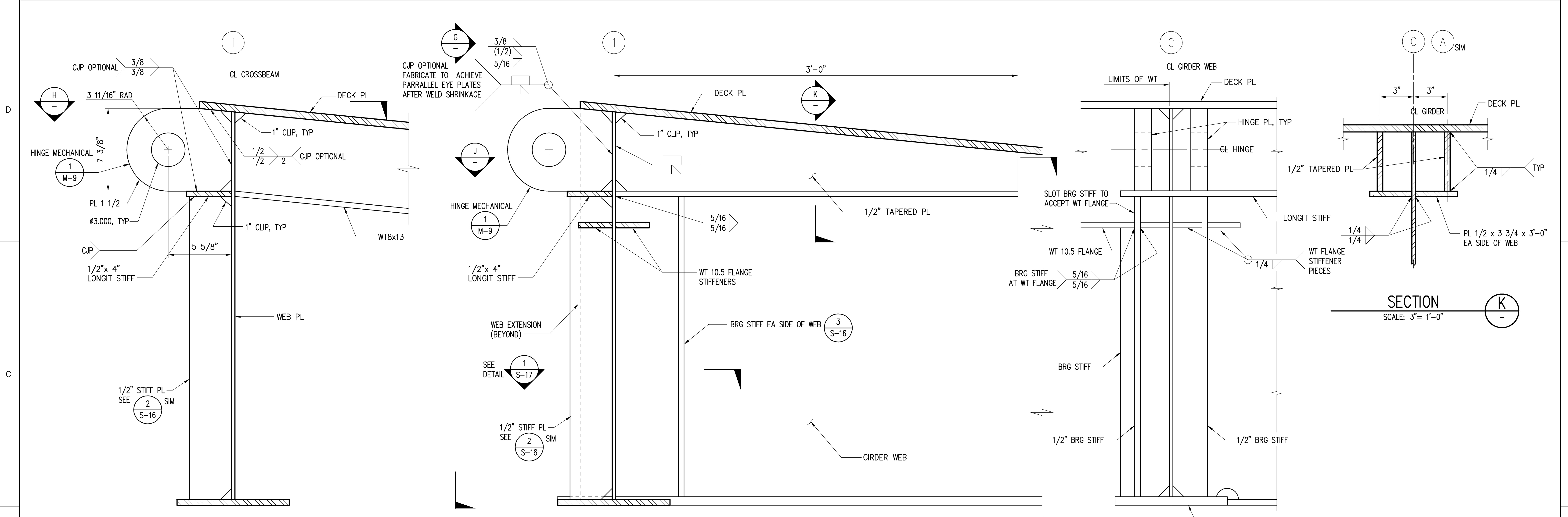


**SECTION A**  
SCALE: 3"= 1'-0"



**SECTION D**  
SCALE: 3"= 1'-0"

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SHEET TITLE <b>SHORE RAMP SECTIONS AND DETAILS AT HONOLULU, KAWAIHAE AND KAHULUI</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR: _____ H.C. 90018	DRAWING NUMBER <b>S-17.1</b> REVISION 0 OF ____ SHEETS



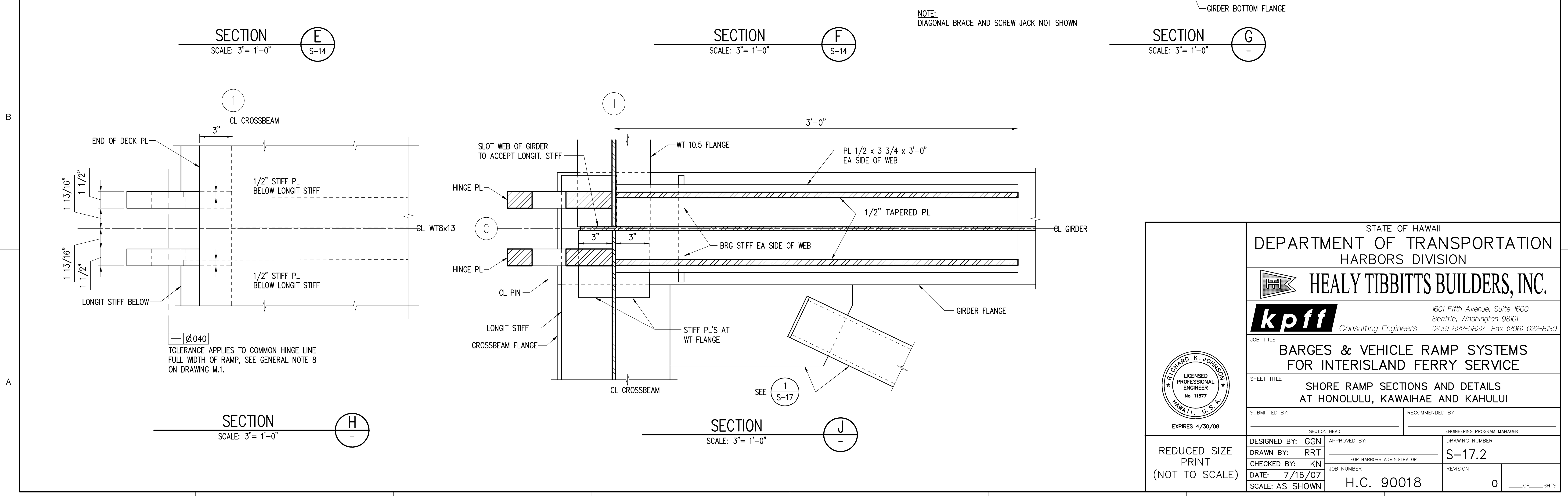
SECTION E  
SCALE: 3" = 1'-0"

SECTION F  
SCALE: 3" = 1'-0"

SECTION G  
SCALE: 3" = 1'-0"

SECTION K  
SCALE: 3" = 1'-0"

NOTE: DIAGONAL BRACE AND SCREW JACK NOT SHOWN

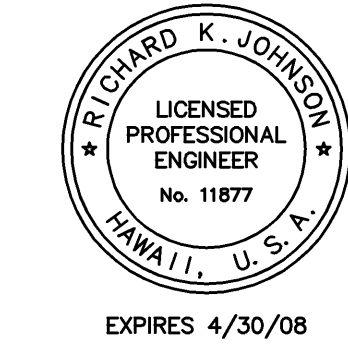


SECTION H  
SCALE: 3" = 1'-0"

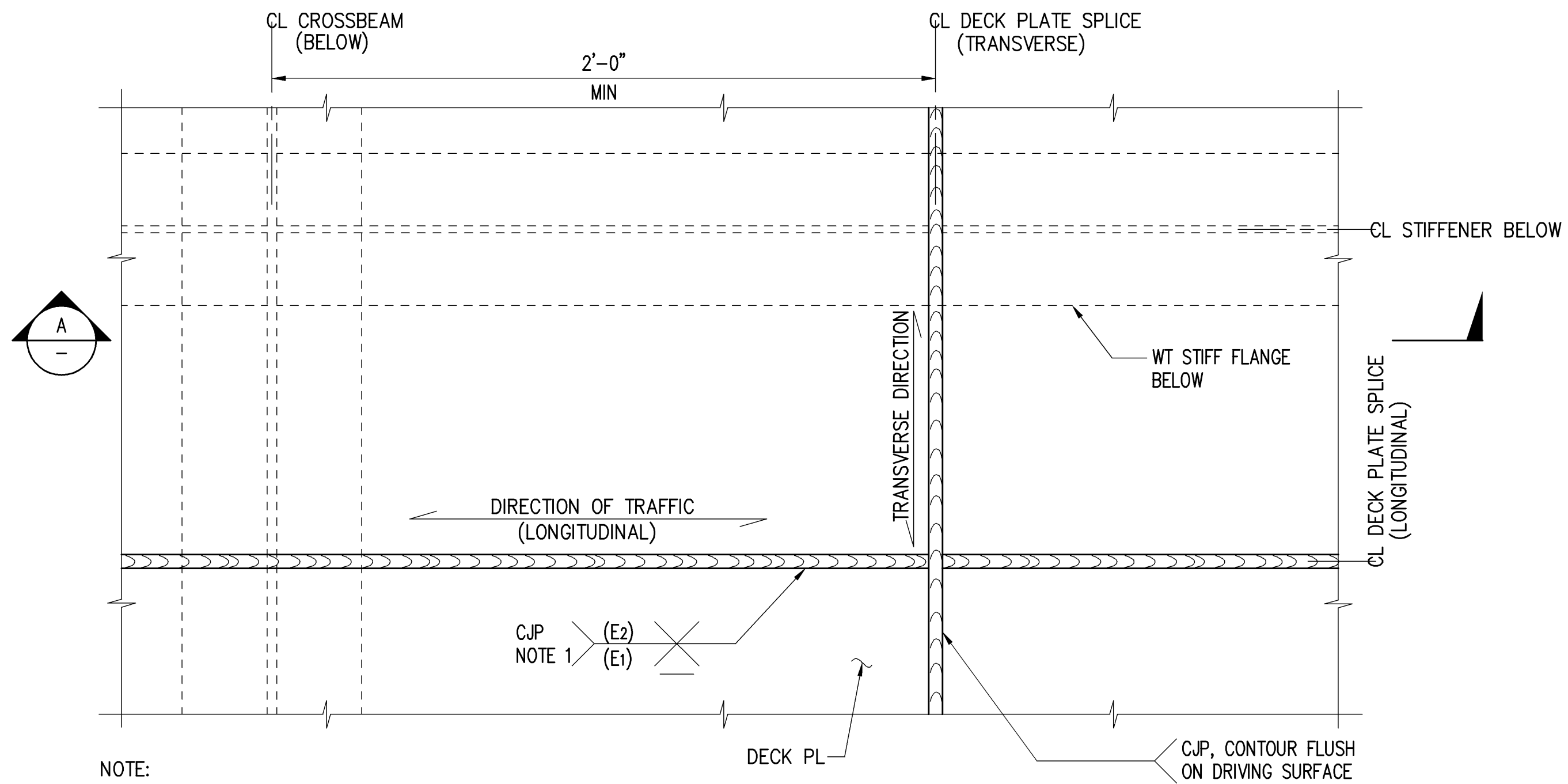
SECTION J  
SCALE: 3" = 1'-0"

∅.040  
TOLERANCE APPLIES TO COMMON HINGE LINE FULL WIDTH OF RAMP, SEE GENERAL NOTE 8 ON DRAWING M.1.

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CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF ____ SHTS

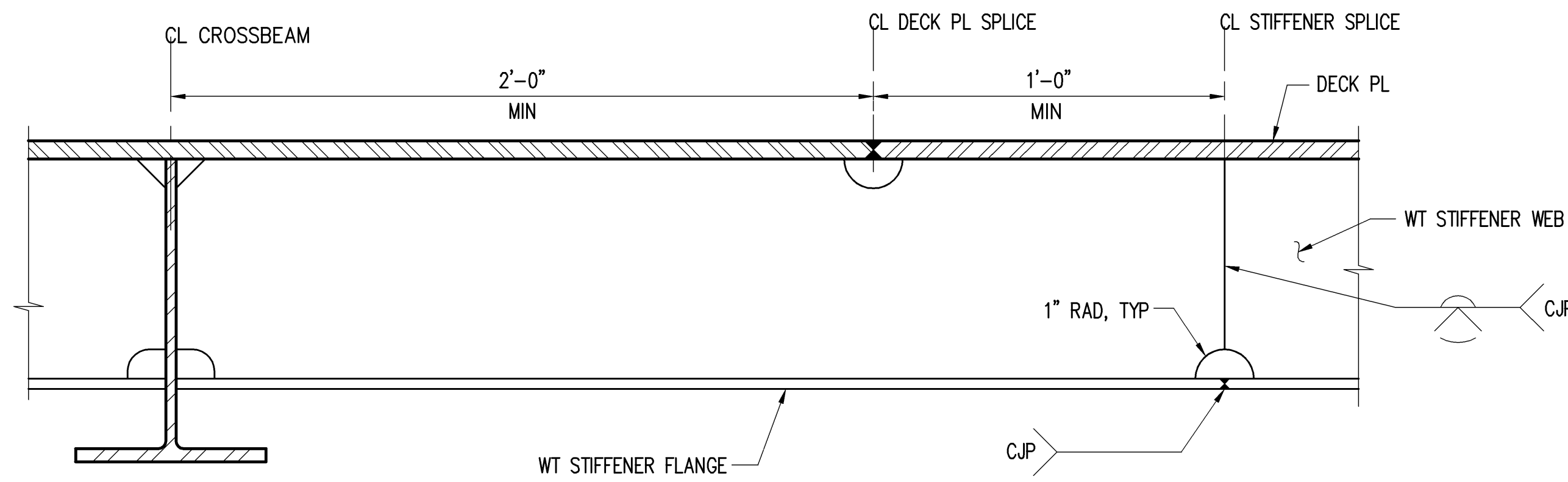


DESIGN RECORD DRAWINGS



NOTE:  
 1. FABRICATOR SELECT WELD SIZES E1 & E2 TO MINIMIZE WARPING AND DISTORTION OF DECK PLATE AND TO FACILITATE PREFERRED FABRICATION METHODS AND SEQUENCE.

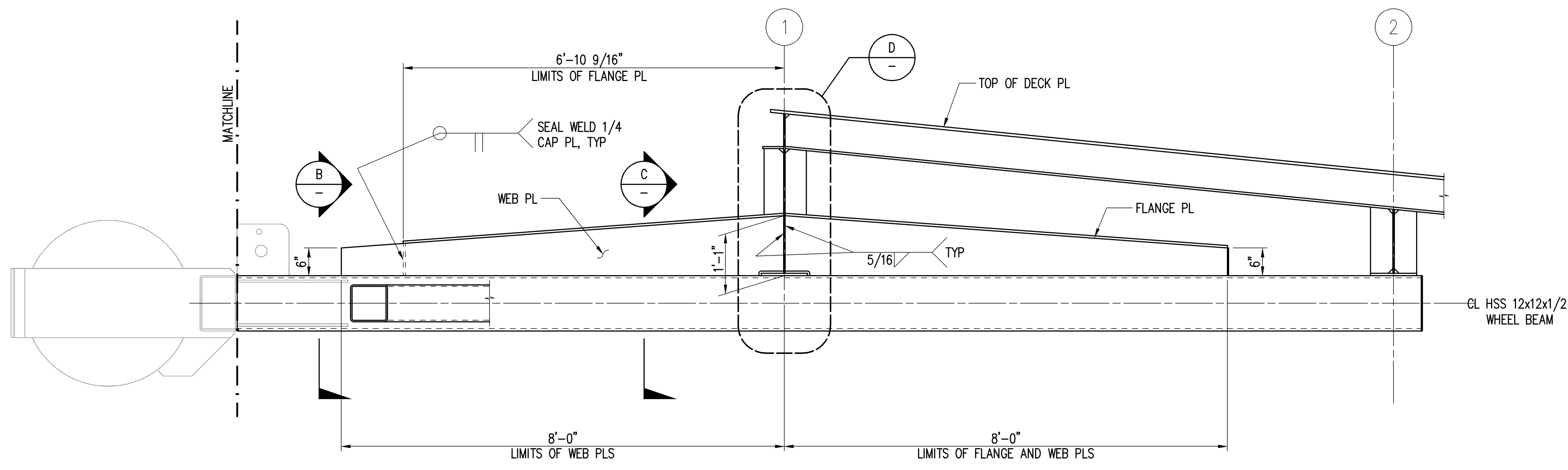
DECK PLATE WELD DETAIL 1  
 SCALE: 3" = 1'-0" S-14



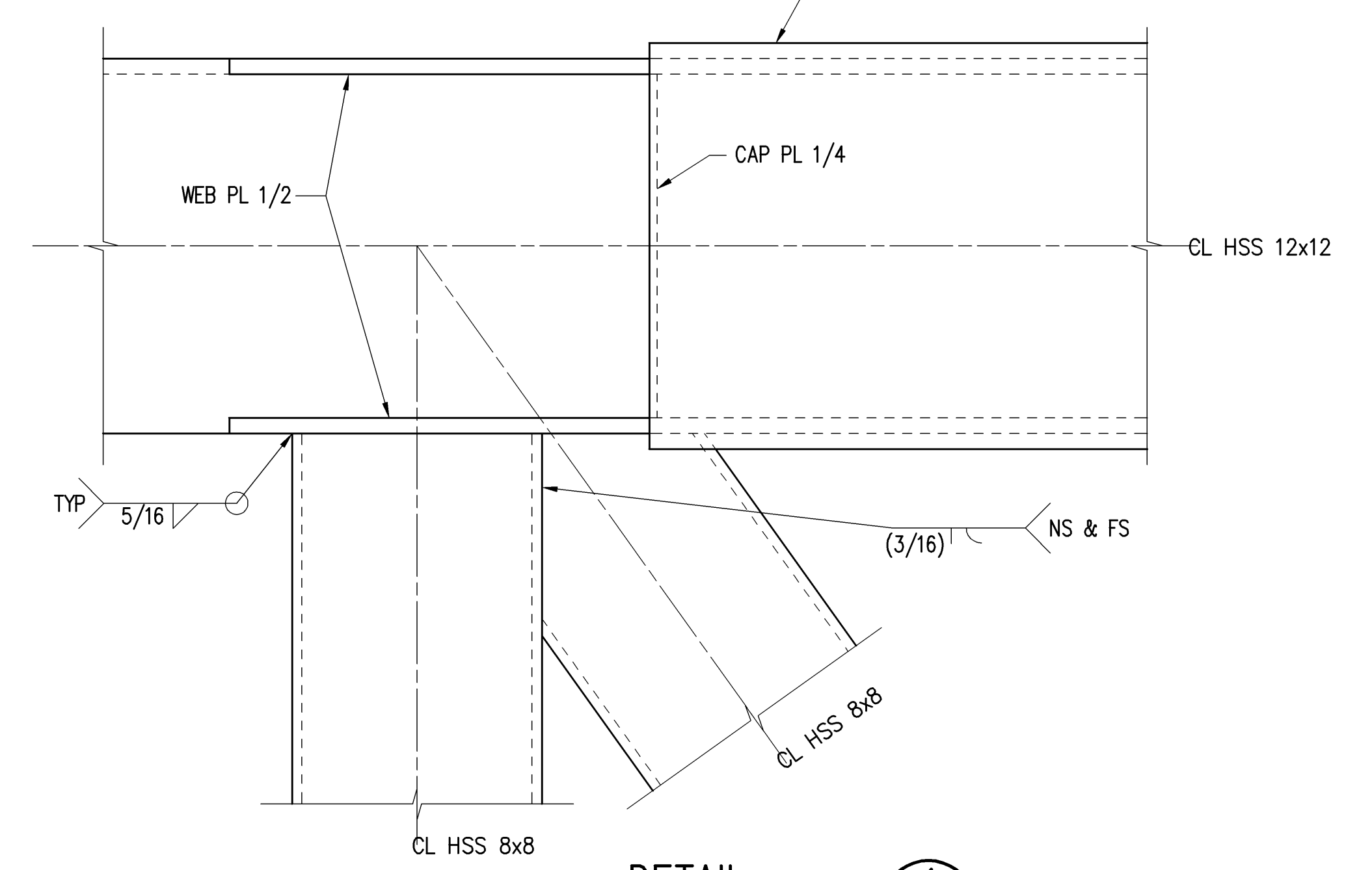
SECTION A  
 SCALE: 3" = 1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD _____		ENGINEERING PROGRAM MANAGER _____
REDUCED SIZE PRINT (NOT TO SCALE)	DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR JOB NUMBER <b>H.C. 90018</b>
	DRAWING NUMBER <b>S-17.3</b>	
	REVISION 0 OF ____ SHTS	
	_____	

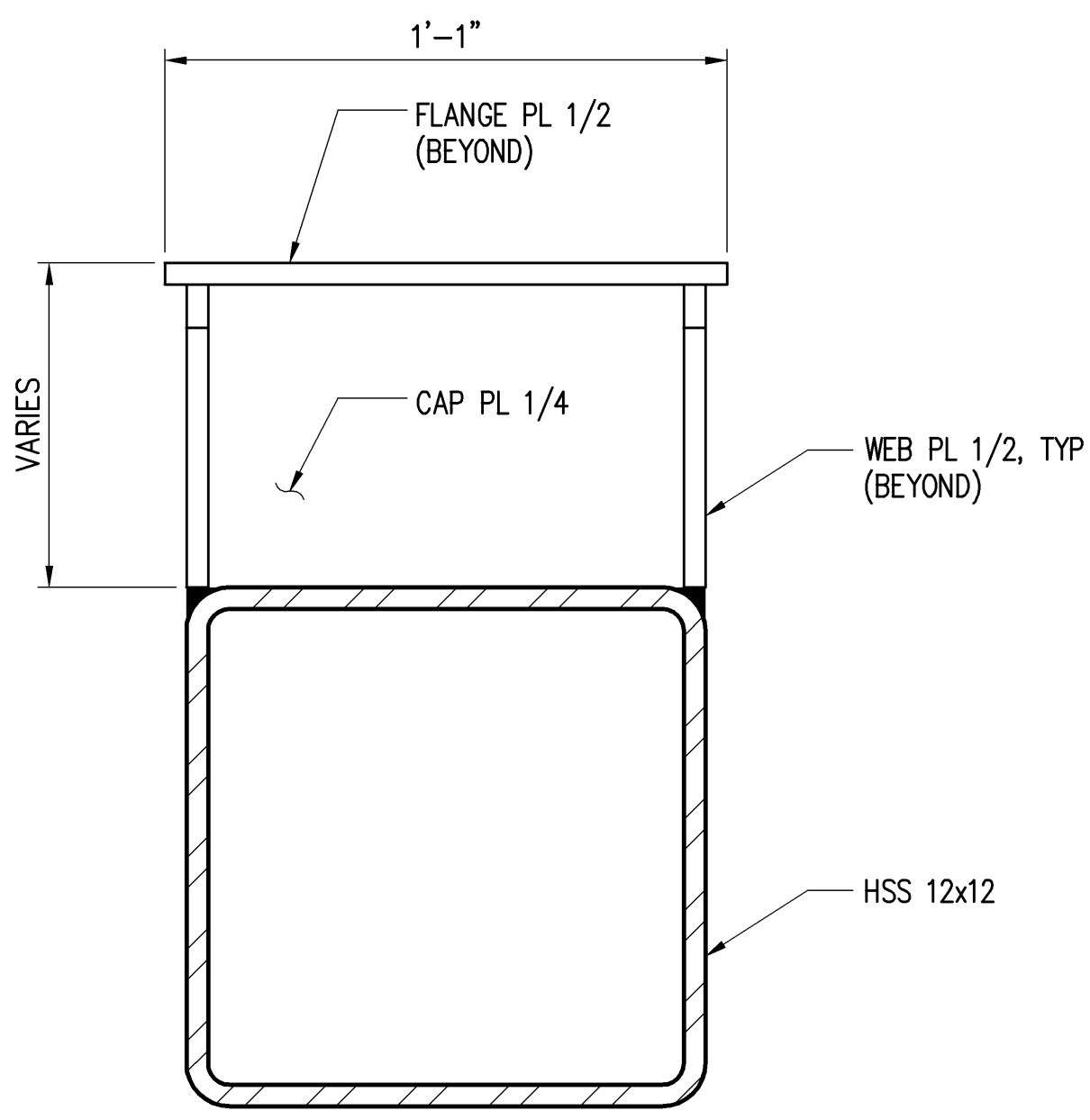
DESIGN RECORD DRAWINGS



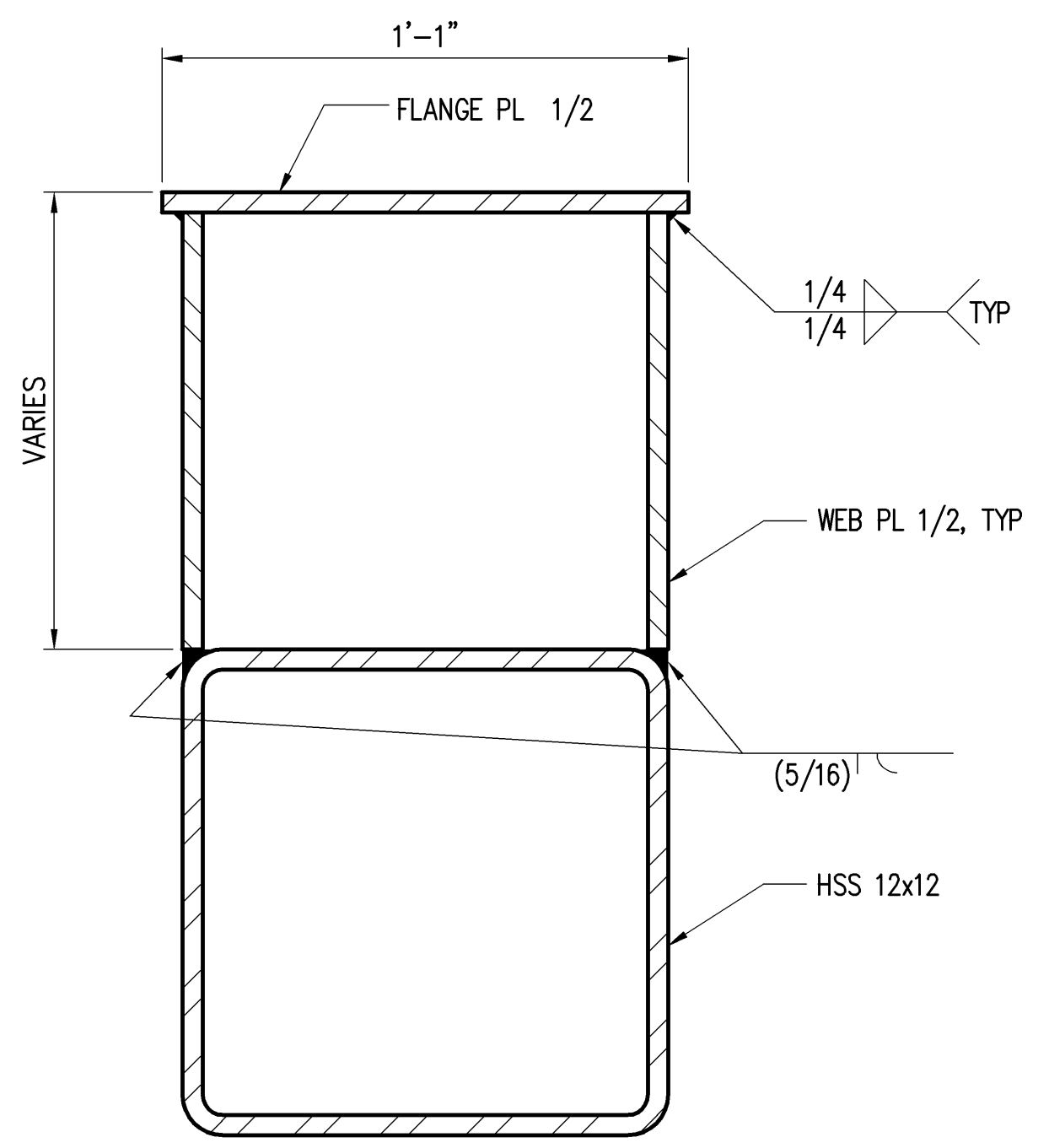
**SECTION A**  
SCALE: 3/4" = 1'-0"  
S-14



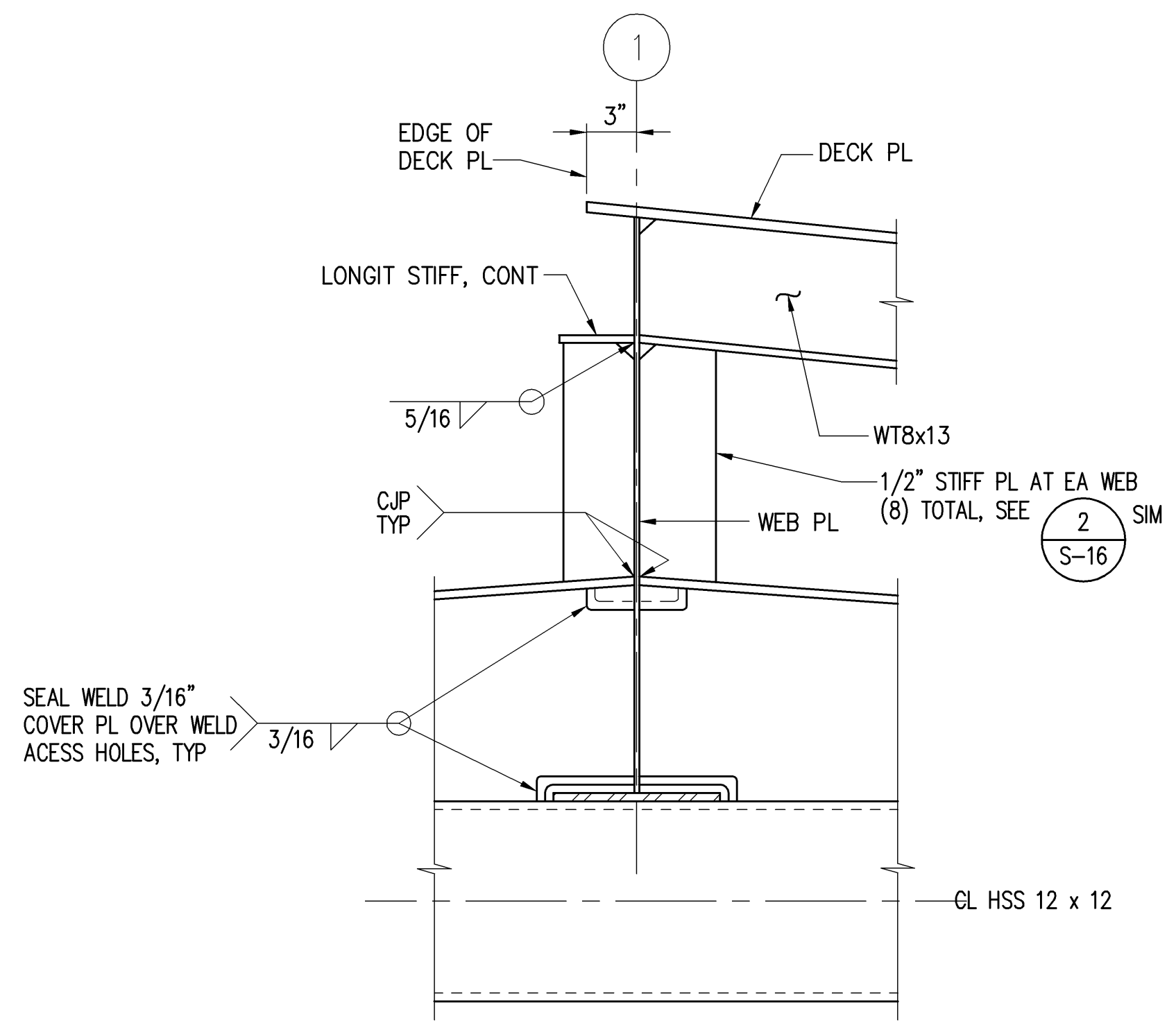
**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-14



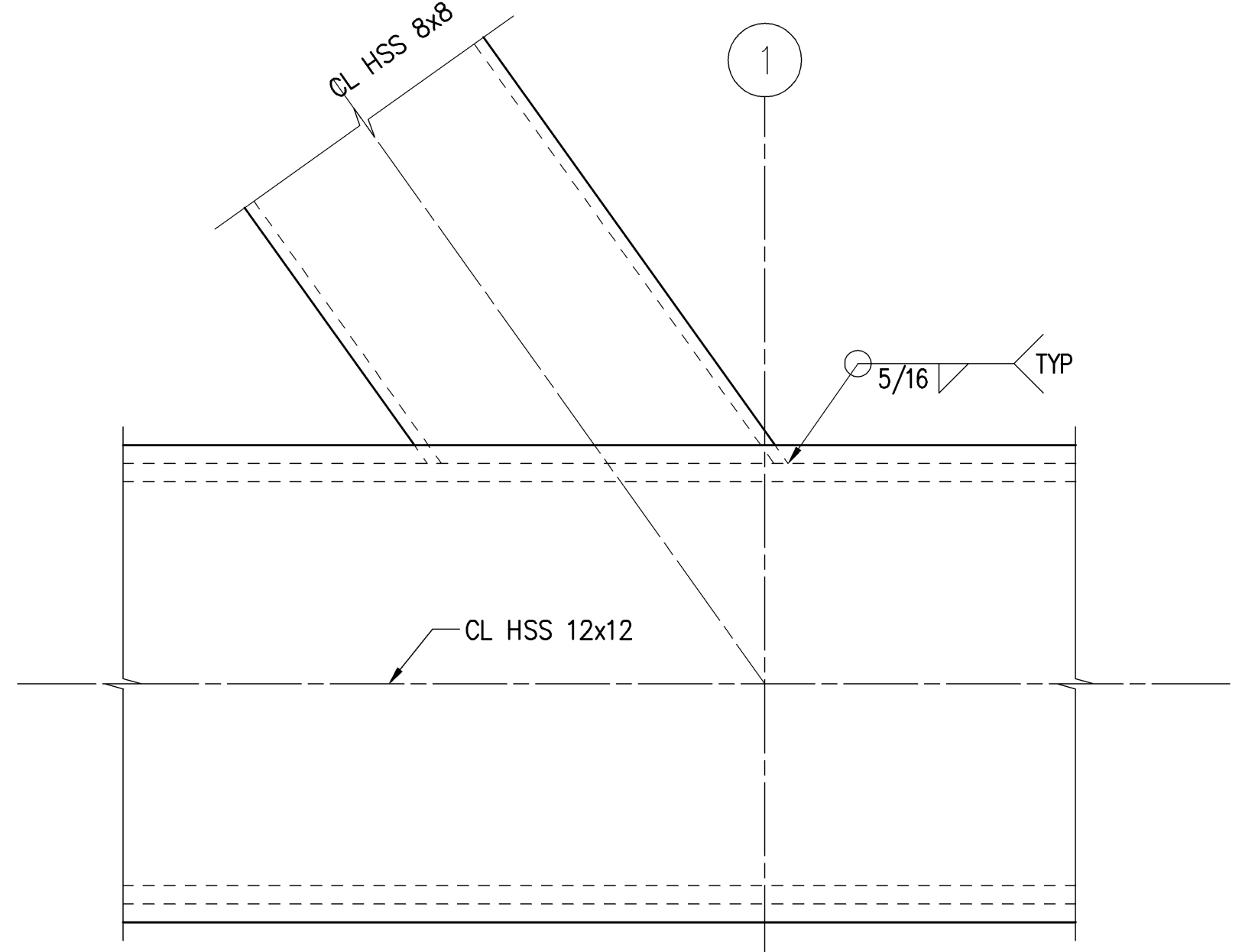
**SECTION B**  
SCALE: 3" = 1'-0"  
-



**SECTION C**  
SCALE: 3" = 1'-0"  
-



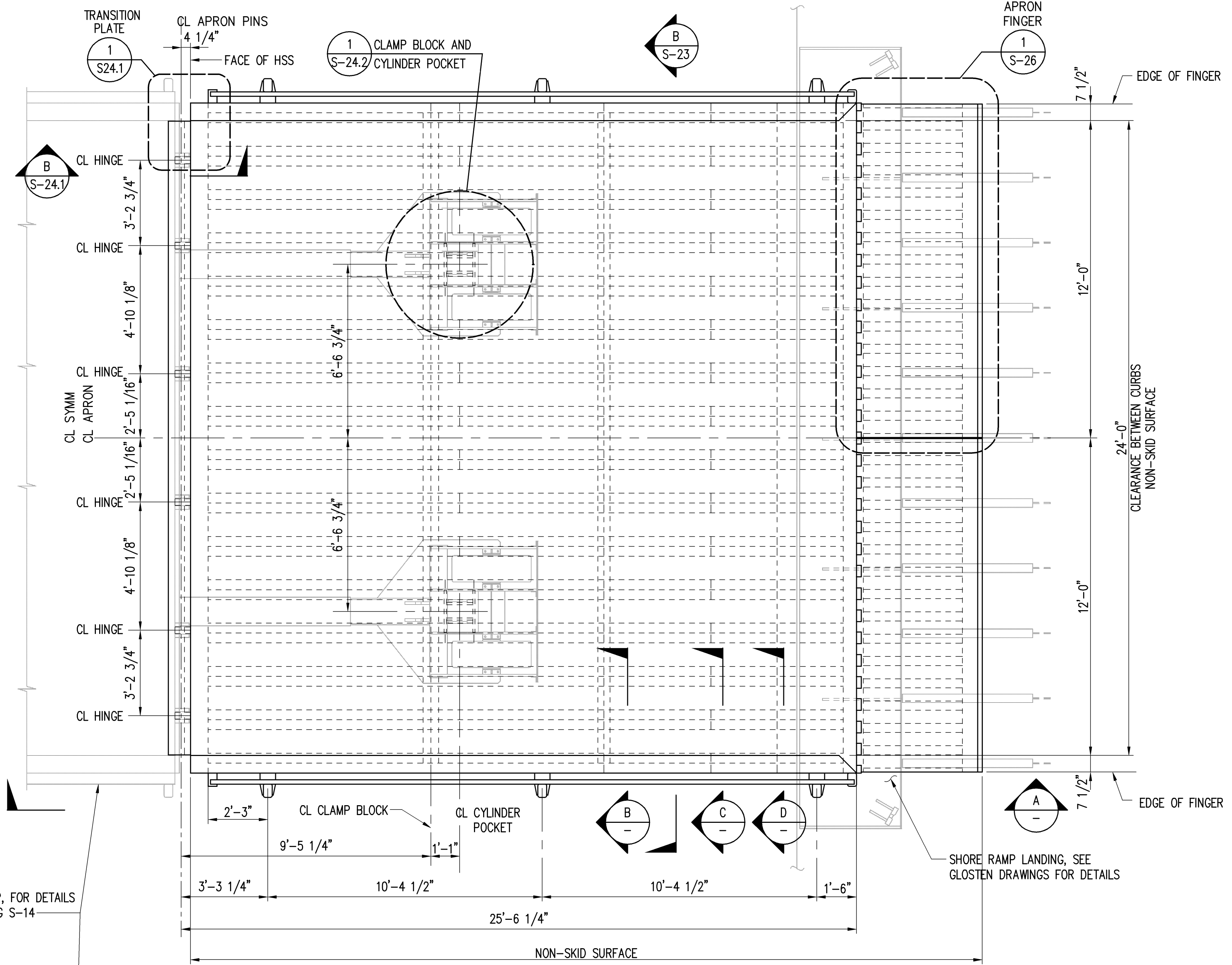
**SECTION D**  
SCALE: 1 1/2" = 1'-0"  
S-15



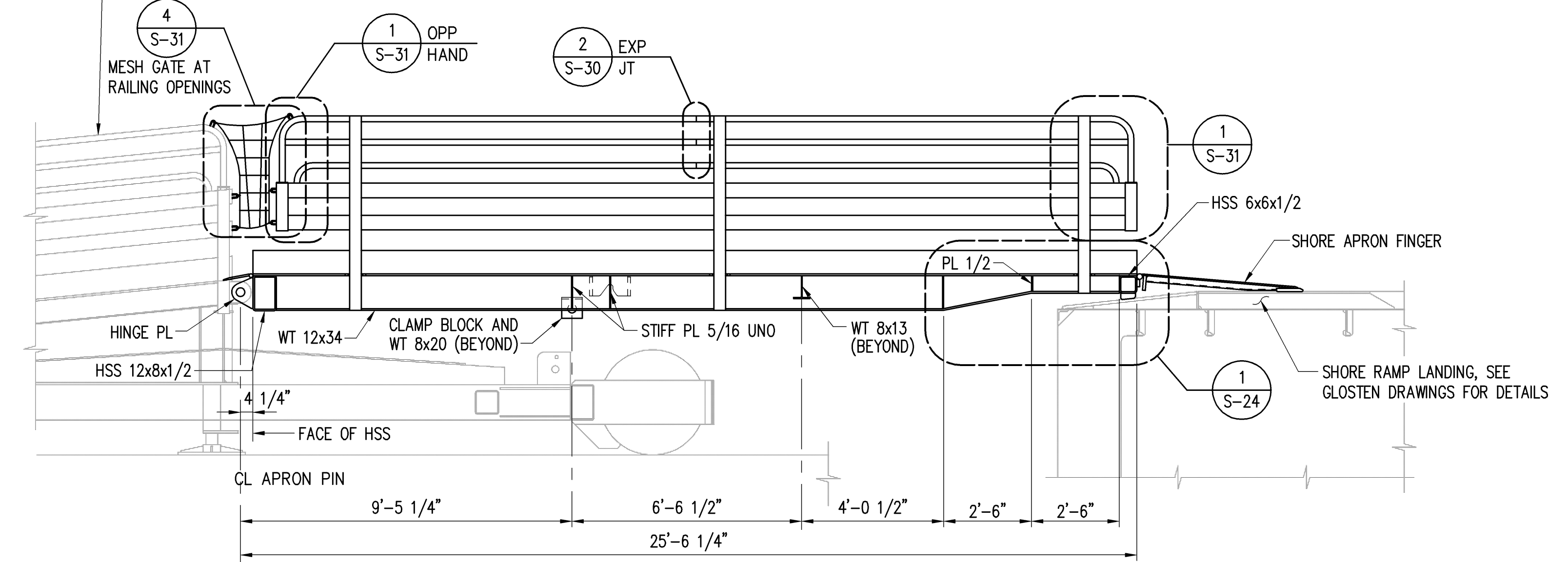
**DETAIL 2**  
SCALE: 3" = 1'-0"  
S-14

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SHEET TITLE <b>SHORE RAMP TYPICAL SECTION AT HONOLULU, KAWAIHAE AND KAHULUI</b>		DRAWING NUMBER <b>S-17.4</b>	
DESIGNED BY: GGN		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		REVISION	
SCALE: AS SHOWN		H.C. 90018	
REduced SIZE PRINT (NOT TO SCALE)		0 OF ___ SHTS	

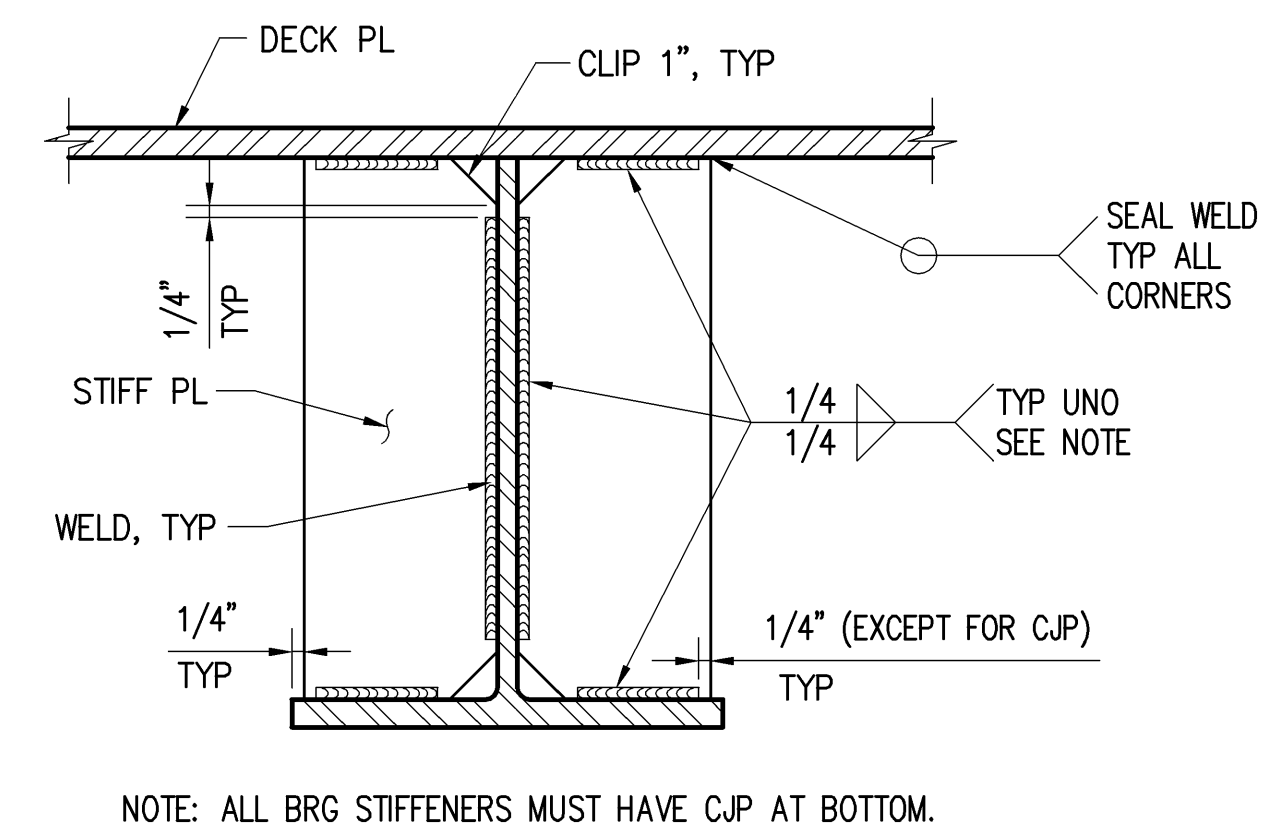
DESIGN RECORD DRAWINGS



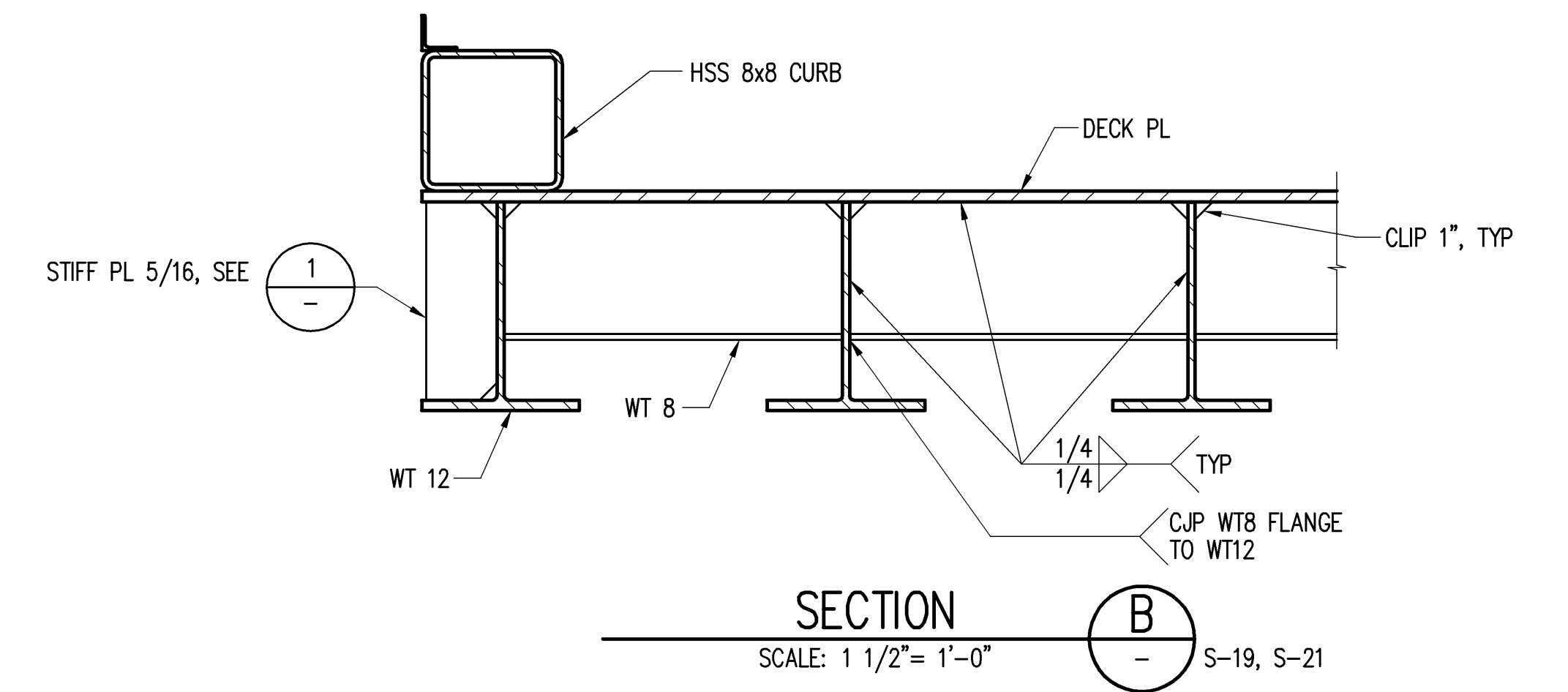
**25 FOOT SHORE APRON PLAN**  
SCALE: 3/8" = 1'-0" (1)



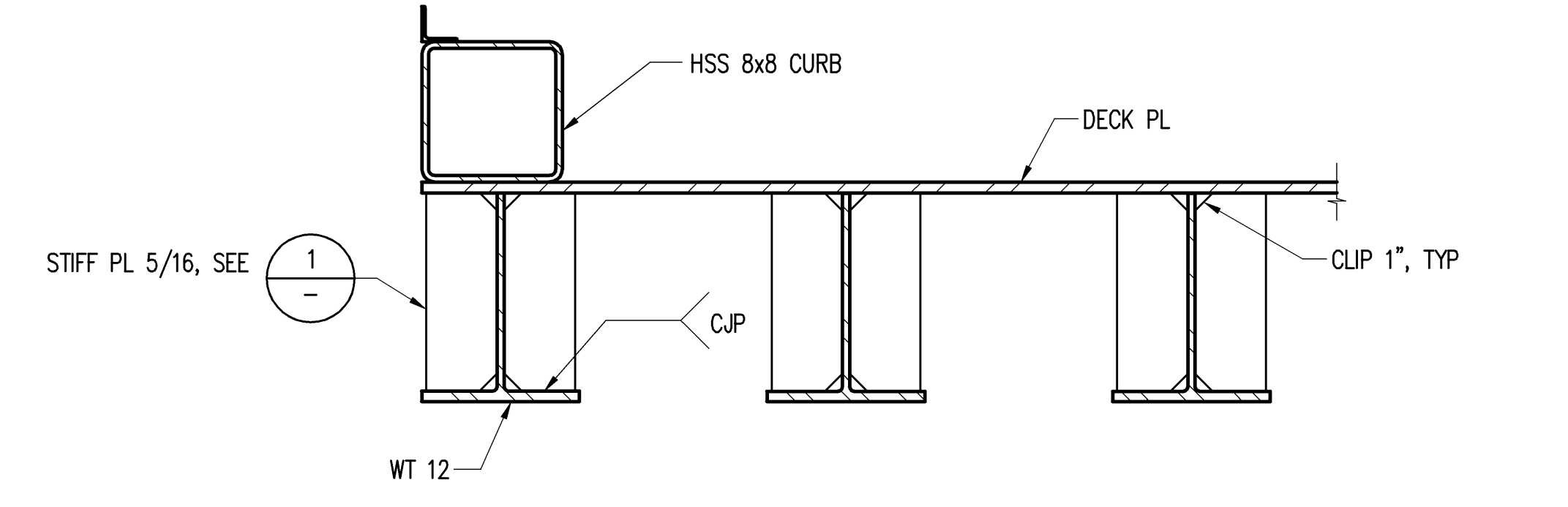
**25 FOOT SHORE APRON ELEVATION**  
SCALE: 3/8" = 1'-0" (A)



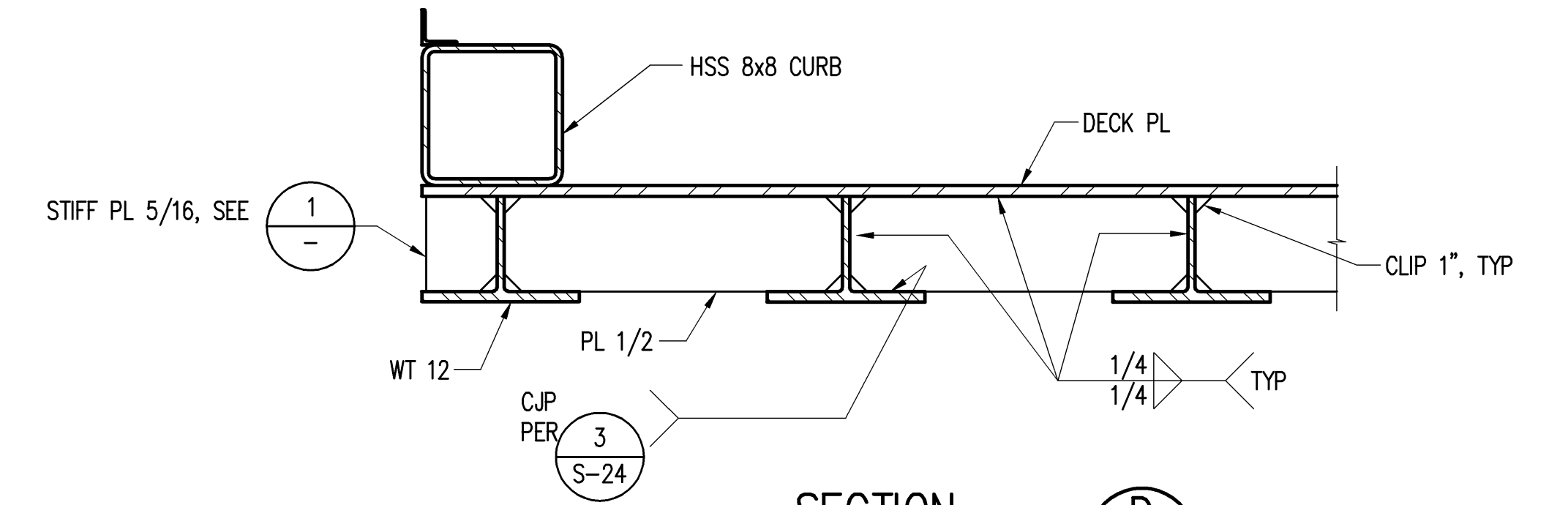
**TYPICAL APRON STIFFENER DETAIL**  
SCALE: 3" = 1'-0" (1) S-20



**SECTION B**  
SCALE: 1 1/2" = 1'-0" (B) S-19, S-21

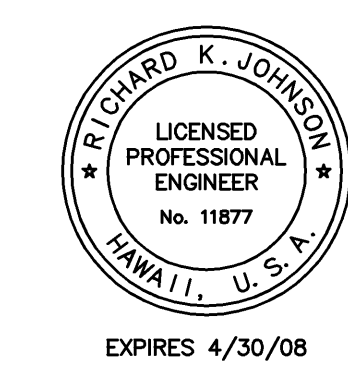


**SECTION C**  
SCALE: 1 1/2" = 1'-0" (C) S-19, S-21

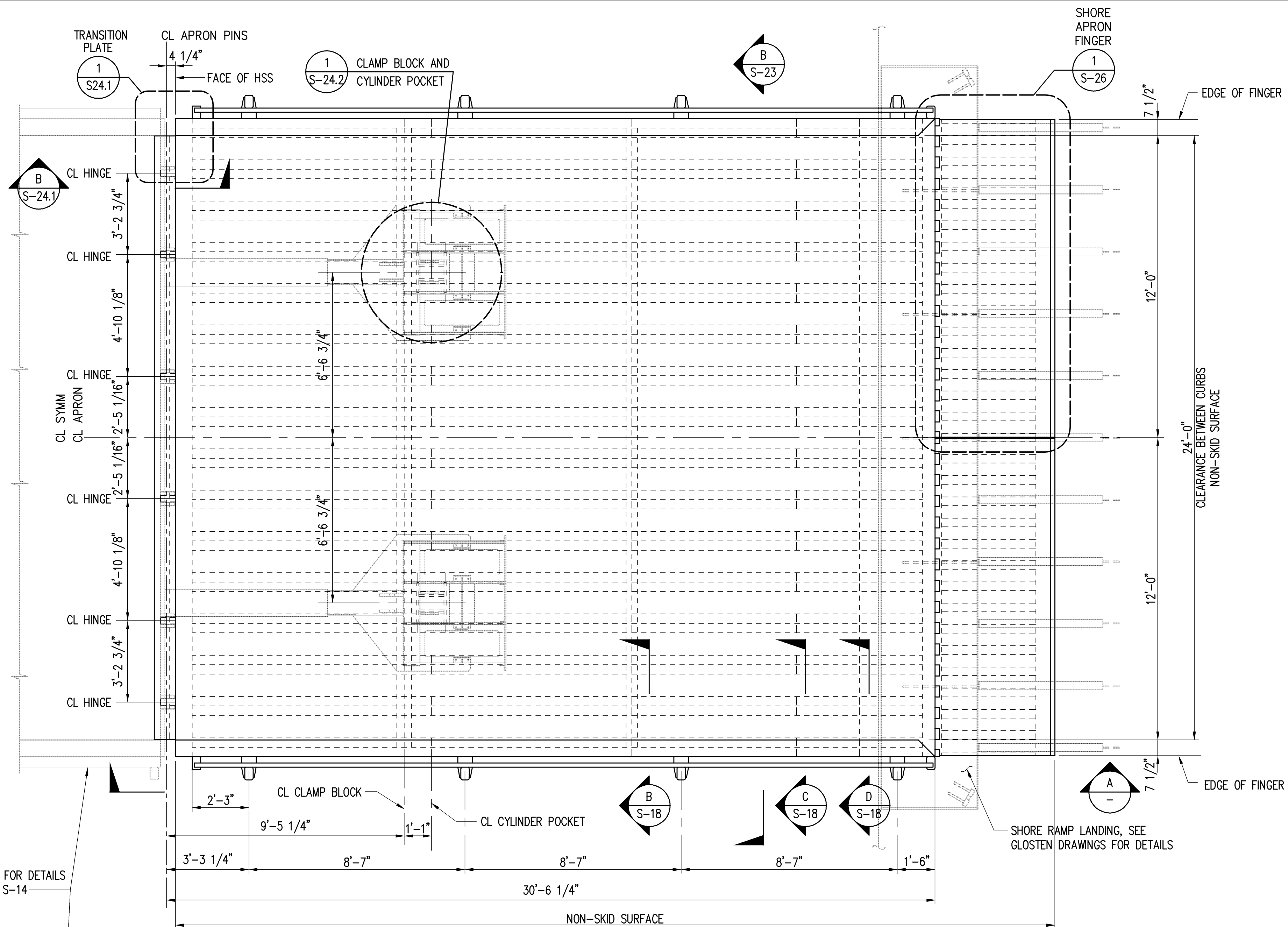


**SECTION D**  
SCALE: 1 1/2" = 1'-0" (D) S-19, S-21

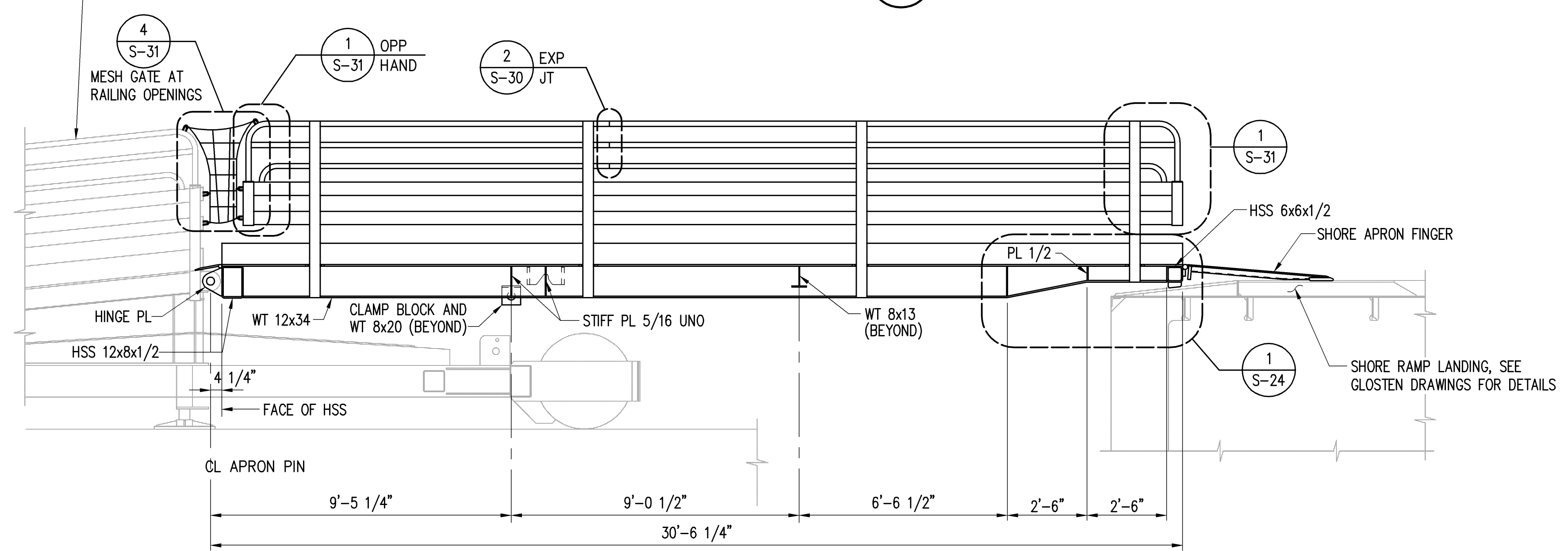
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>25 FOOT SHORE APRON AT HONOLULU PLAN AND ELEVATION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
	0
	OF SHTS



DESIGN RECORD DRAWINGS

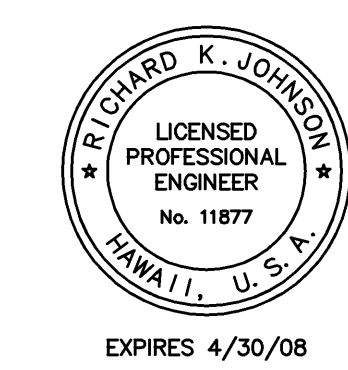


30 FOOT SHORE APRON PLAN (1)  
SCALE: 3/8" = 1'-0"

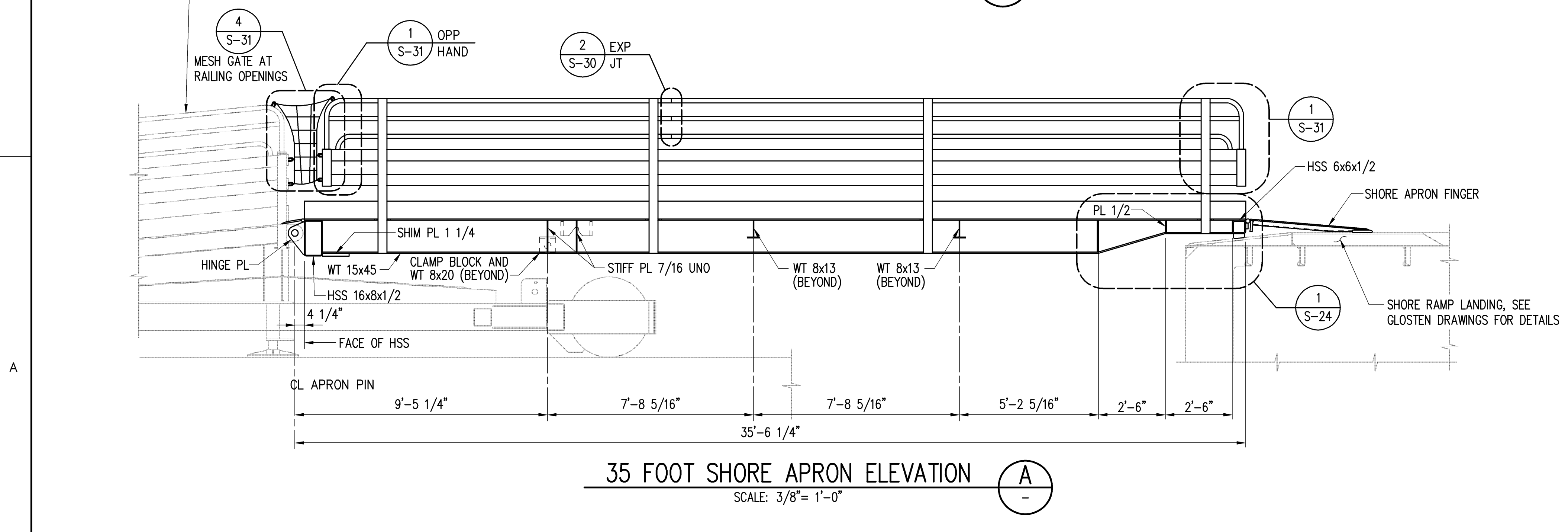
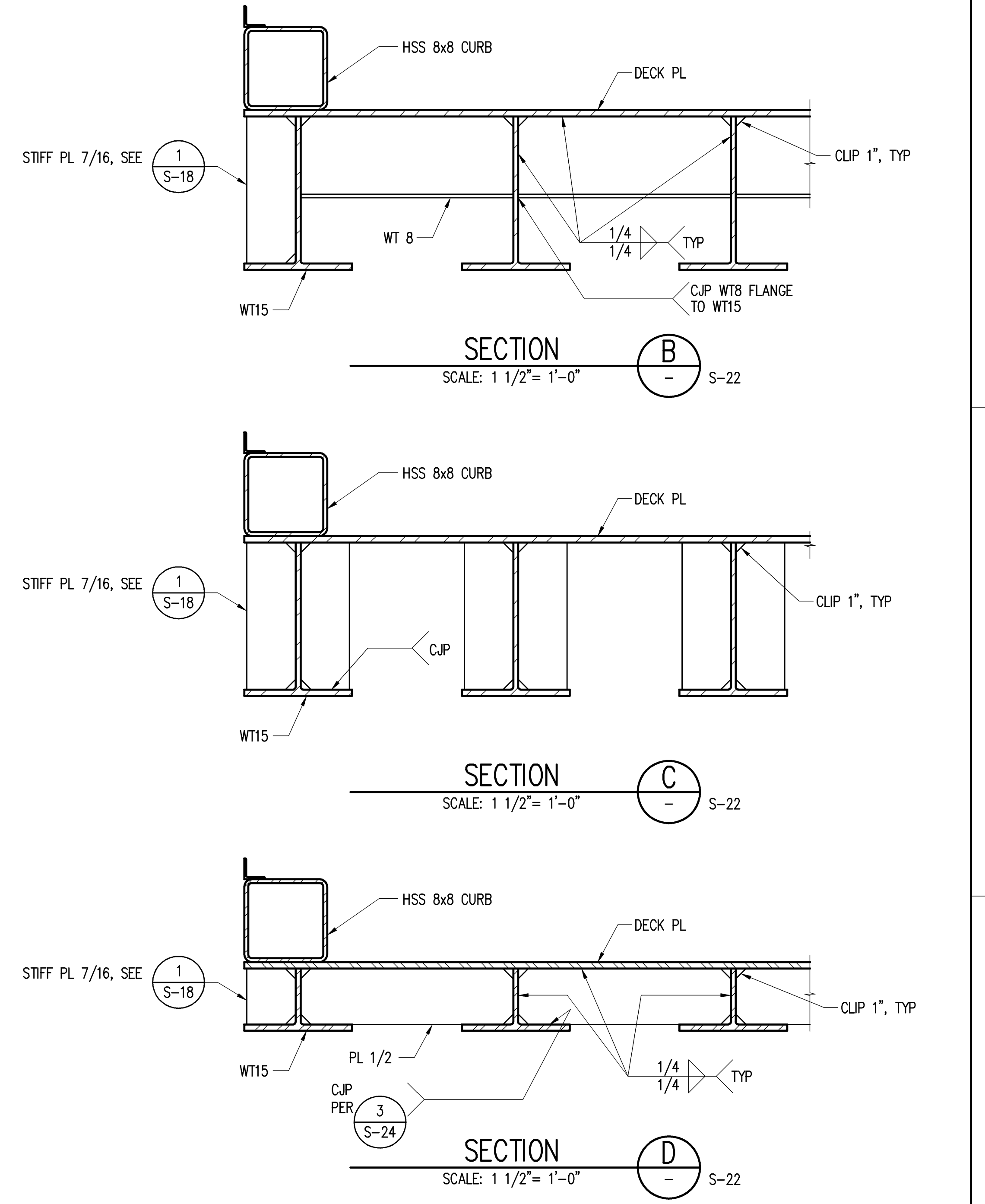
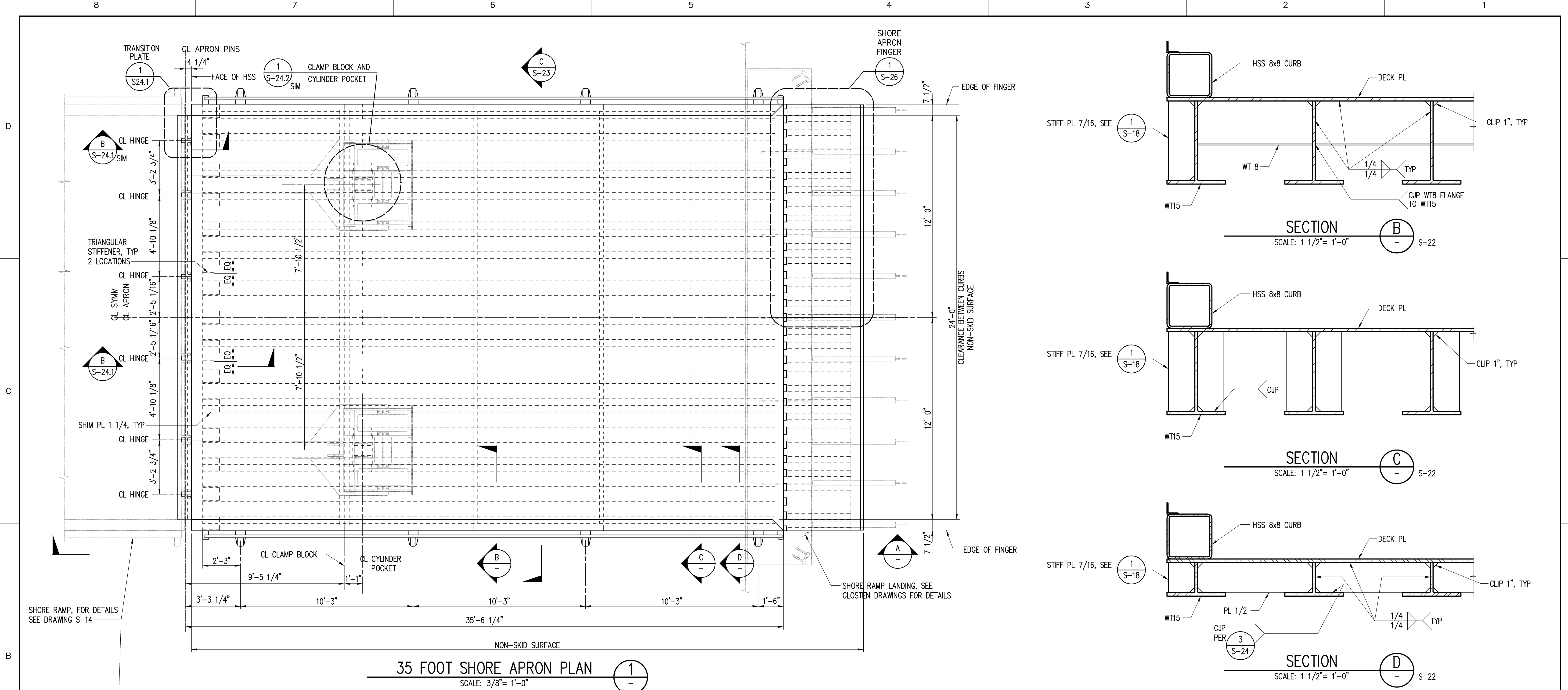


30 FOOT SHORE APRON ELEVATION (A)  
SCALE: 3/8" = 1'-0"

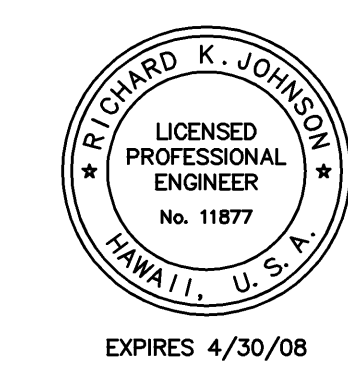
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>30 FOOT SHORE APRON AT KAHULUI PLAN AND ELEVATION</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: WGH	APPROVED BY:	DRAWING NUMBER <b>S-19</b>	
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR	REVISION	
CHECKED BY: KN	JOB NUMBER	H.C. 90018	
DATE: 7/16/07	SCALE: AS SHOWN	0 OF ___ SHEETS	



DESIGN RECORD DRAWINGS

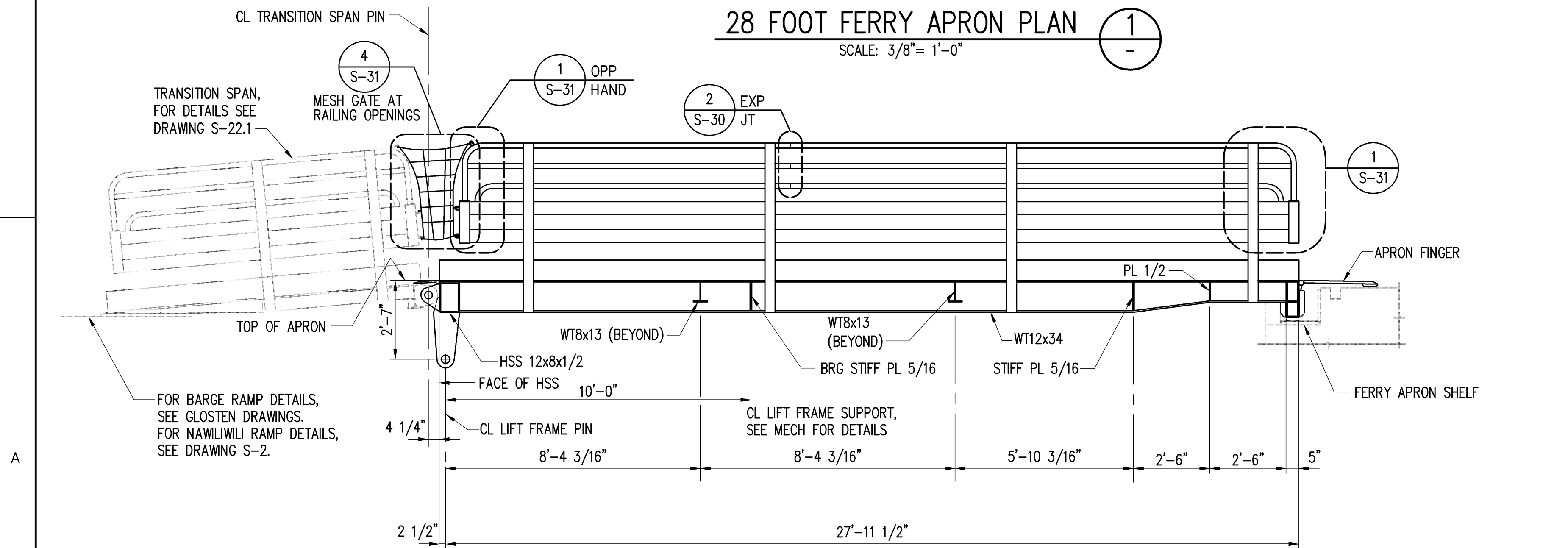
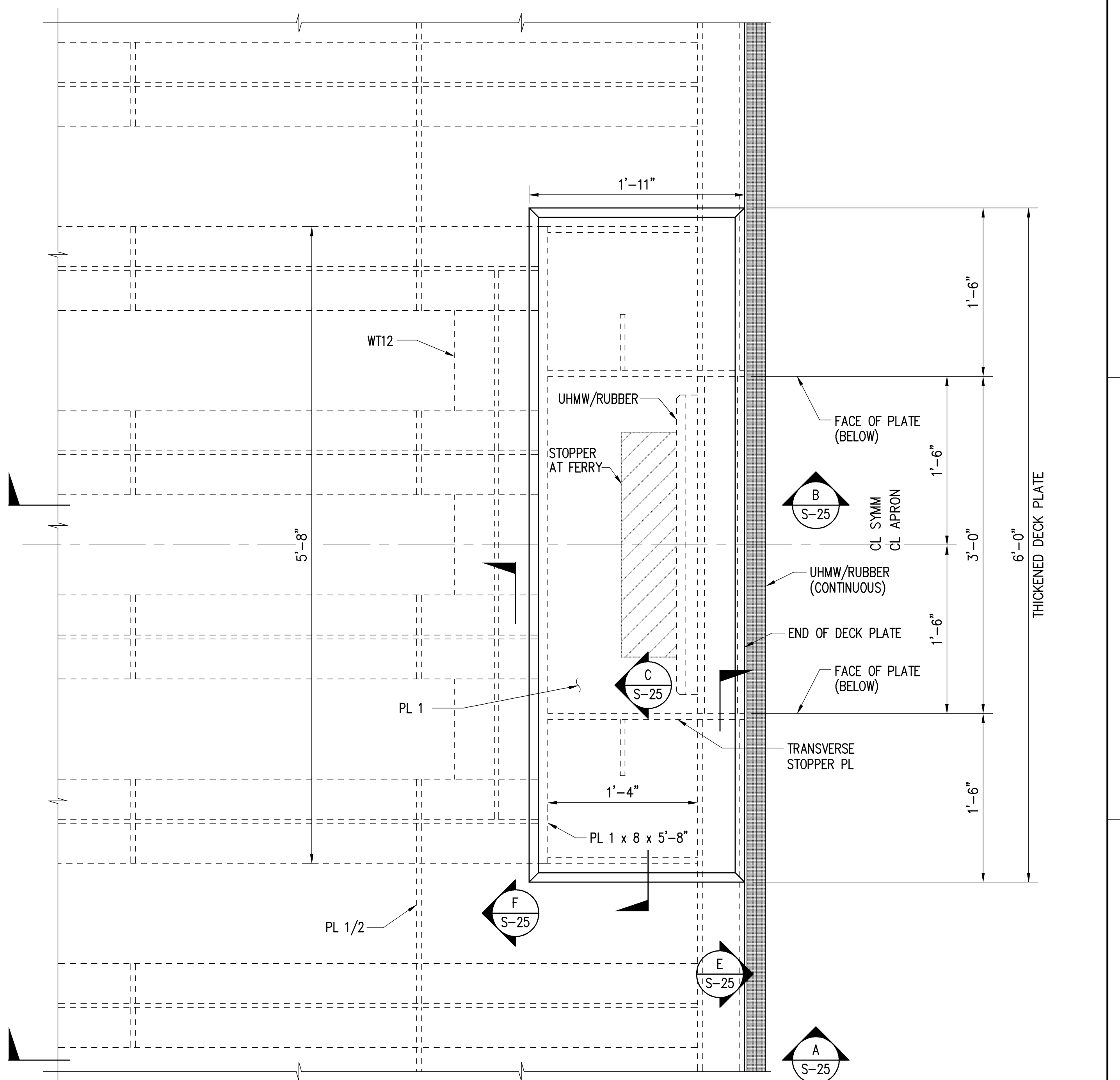
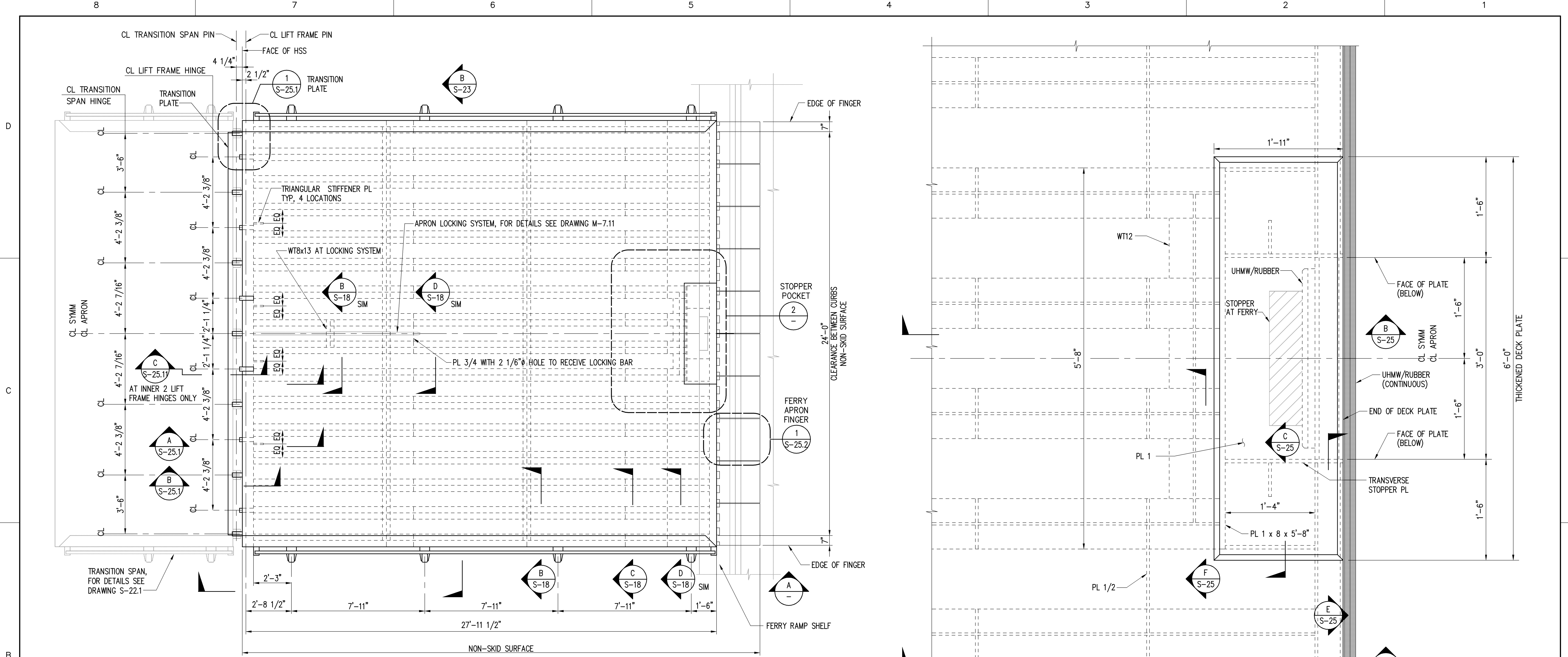


STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>35 FOOT SHORE APRON AT KAWAIIHAE PLAN AND ELEVATION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF _____ SHEETS

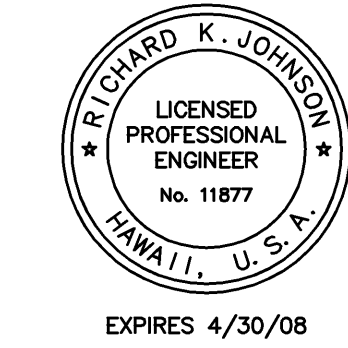


DESIGN RECORD DRAWINGS



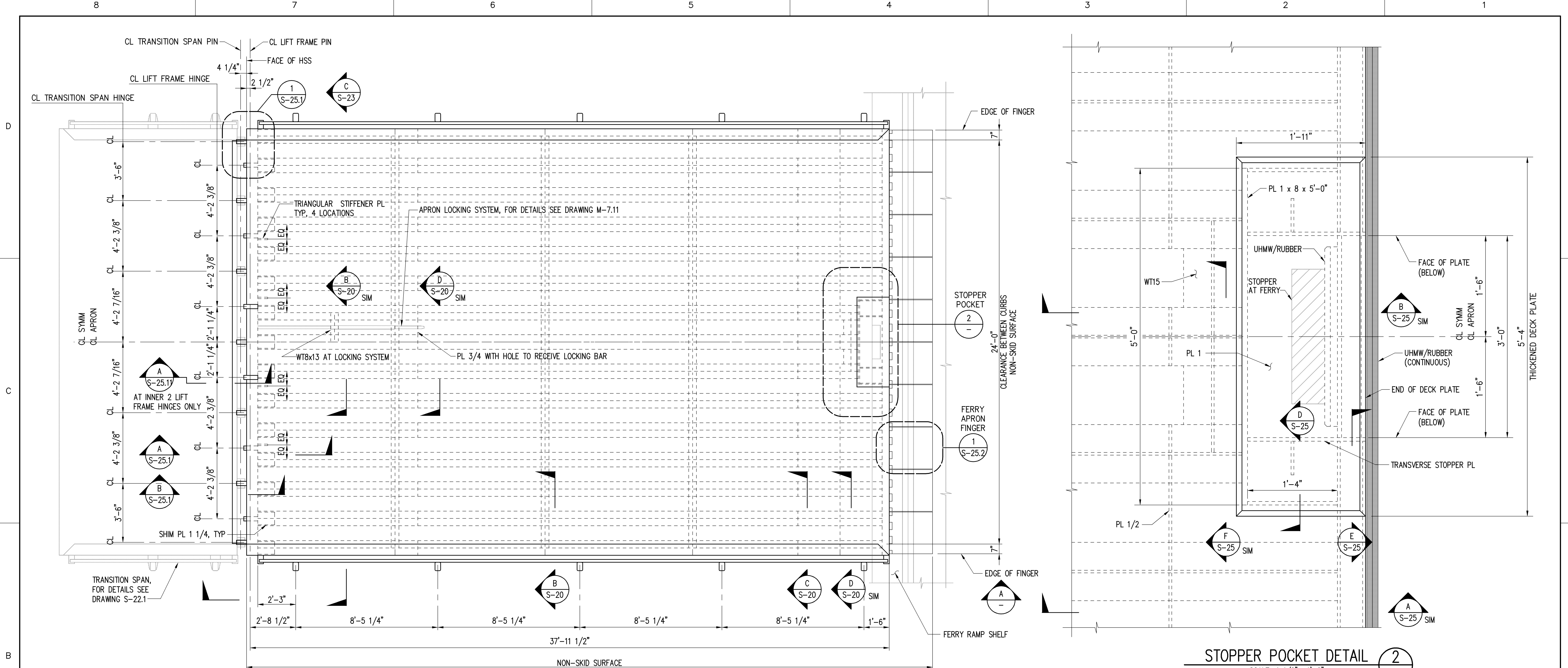


STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>28 FOOT FERRY APRON AT HONOLULU, KAHULUI AND NAWILIWILI - PLAN AND ELEVATION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
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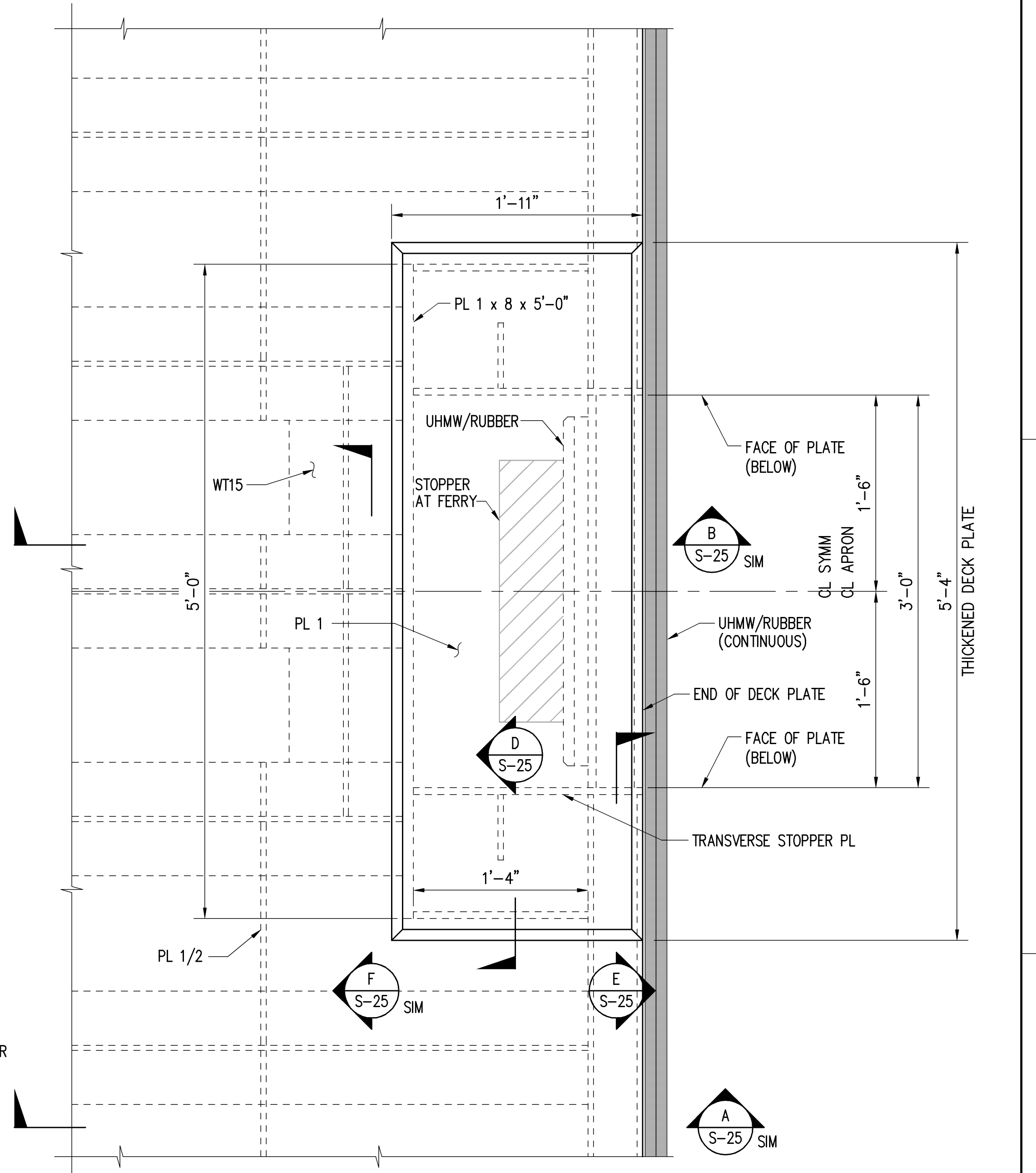


REDUCED SIZE PRINT  
(NOT TO SCALE)

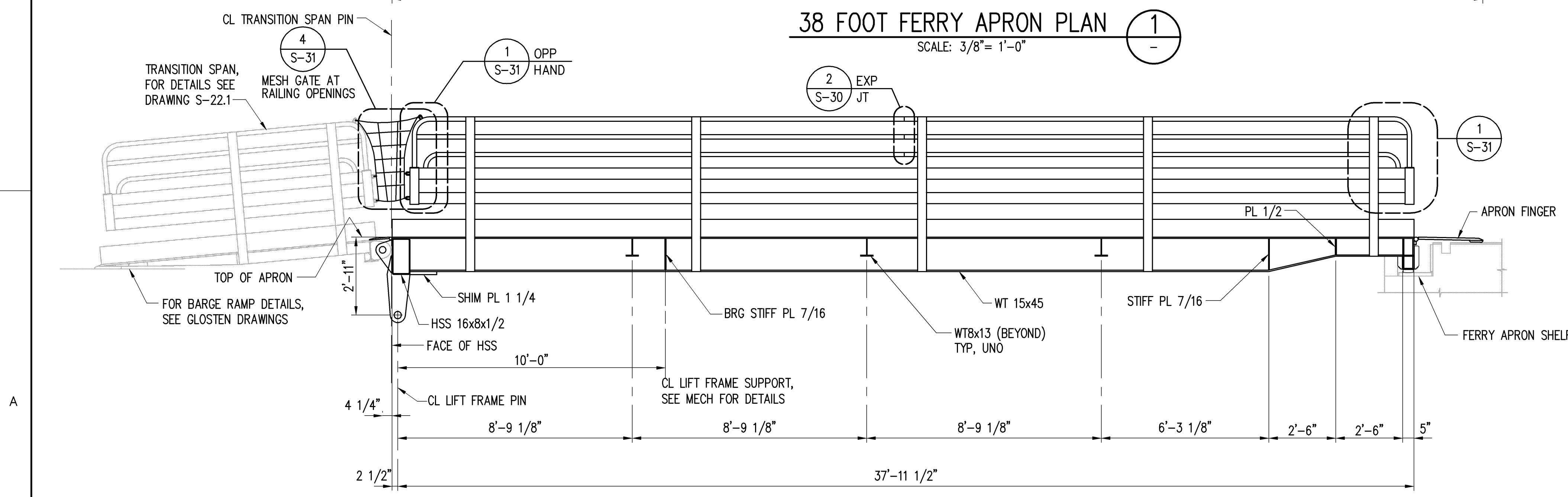
DESIGN RECORD DRAWINGS



**38 FOOT FERRY APRON PLAN (1)**  
SCALE: 3/8" = 1'-0"

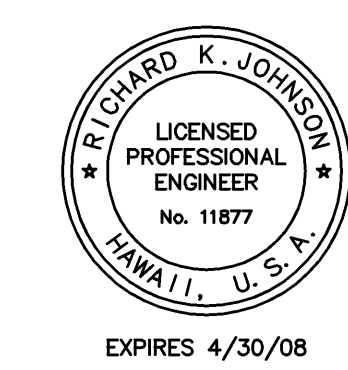


**STOPPER POCKET DETAIL (2)**  
SCALE: 1 1/2" = 1'-0"



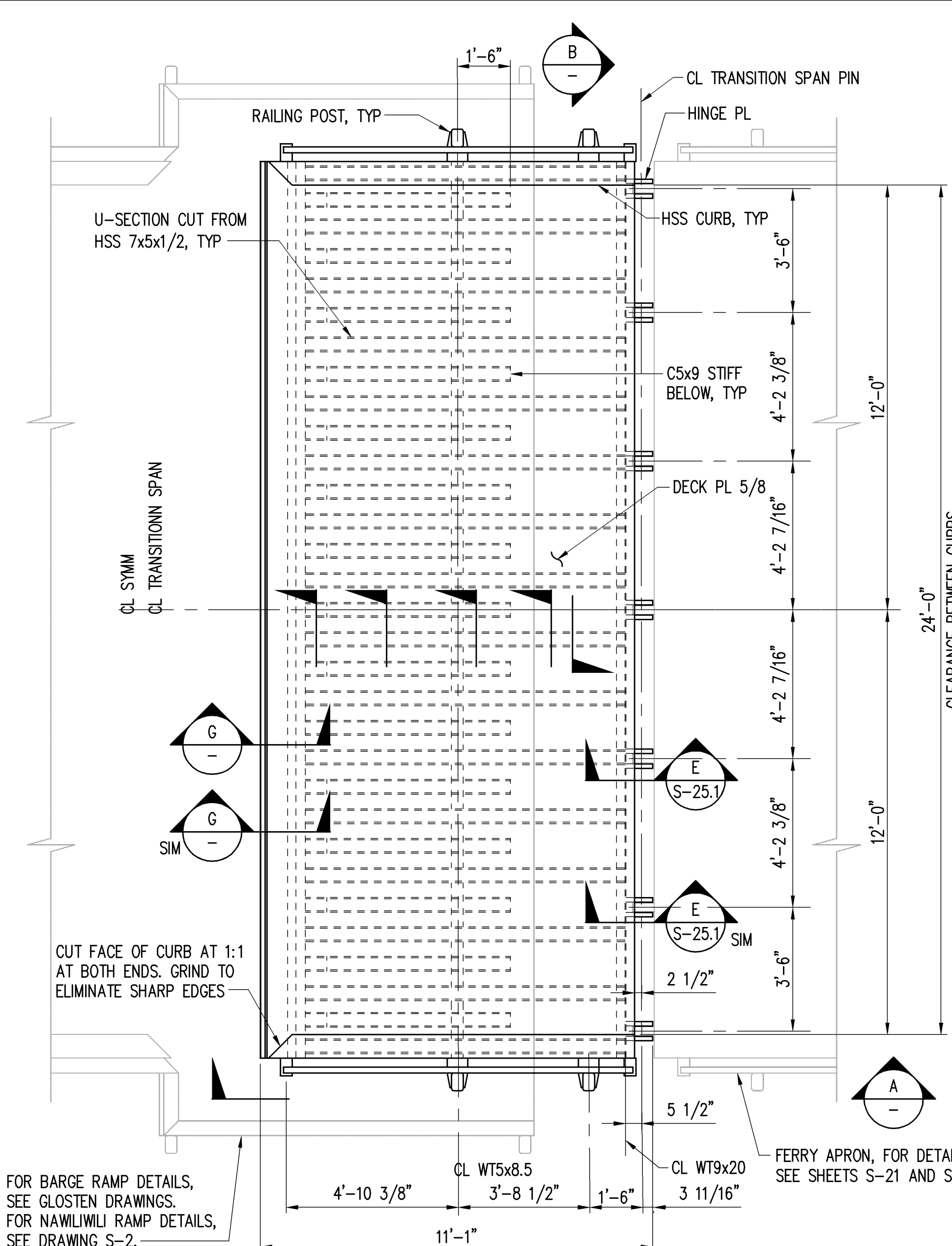
**38 FOOT FERRY APRON ELEVATION (A)**  
SCALE: 3/8" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>38 FOOT FERRY APRON AT KAWAIHAE PLAN AND ELEVATION</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0

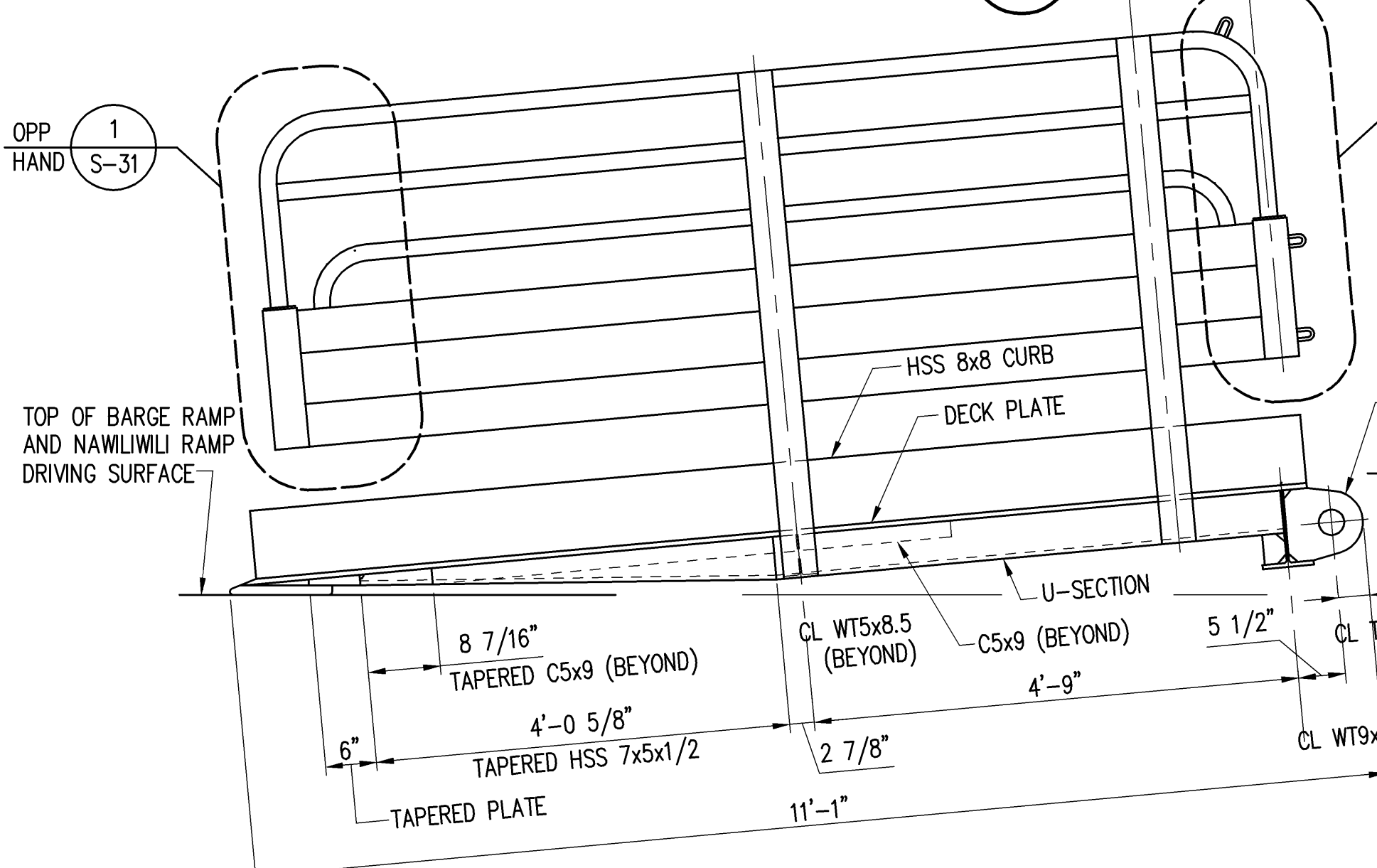


REDUCED SIZE PRINT  
(NOT TO SCALE)

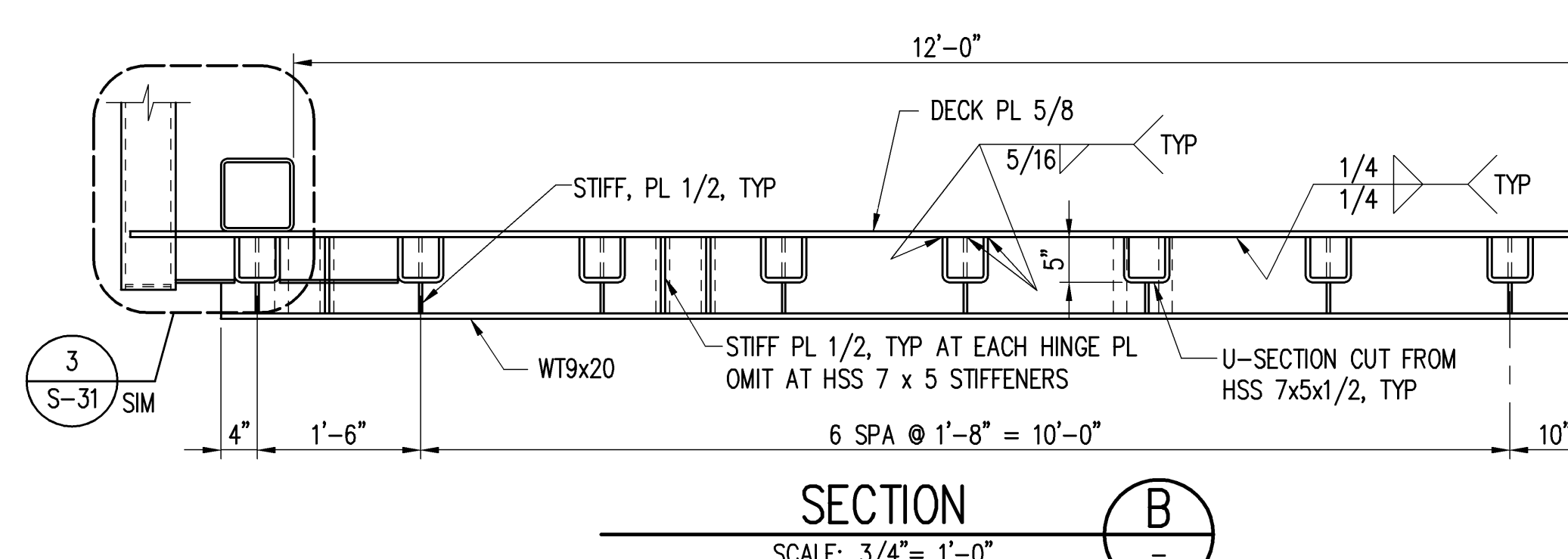
DESIGN RECORD DRAWINGS



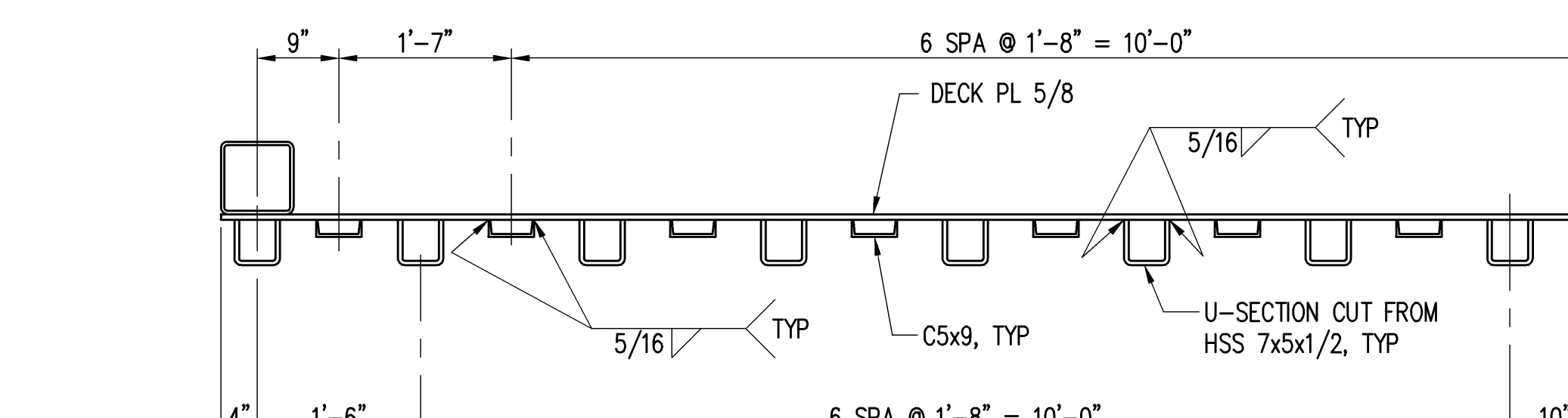
**TRANSITION SPAN PLAN**  
SCALE: 3/8" = 1'-0" (1)



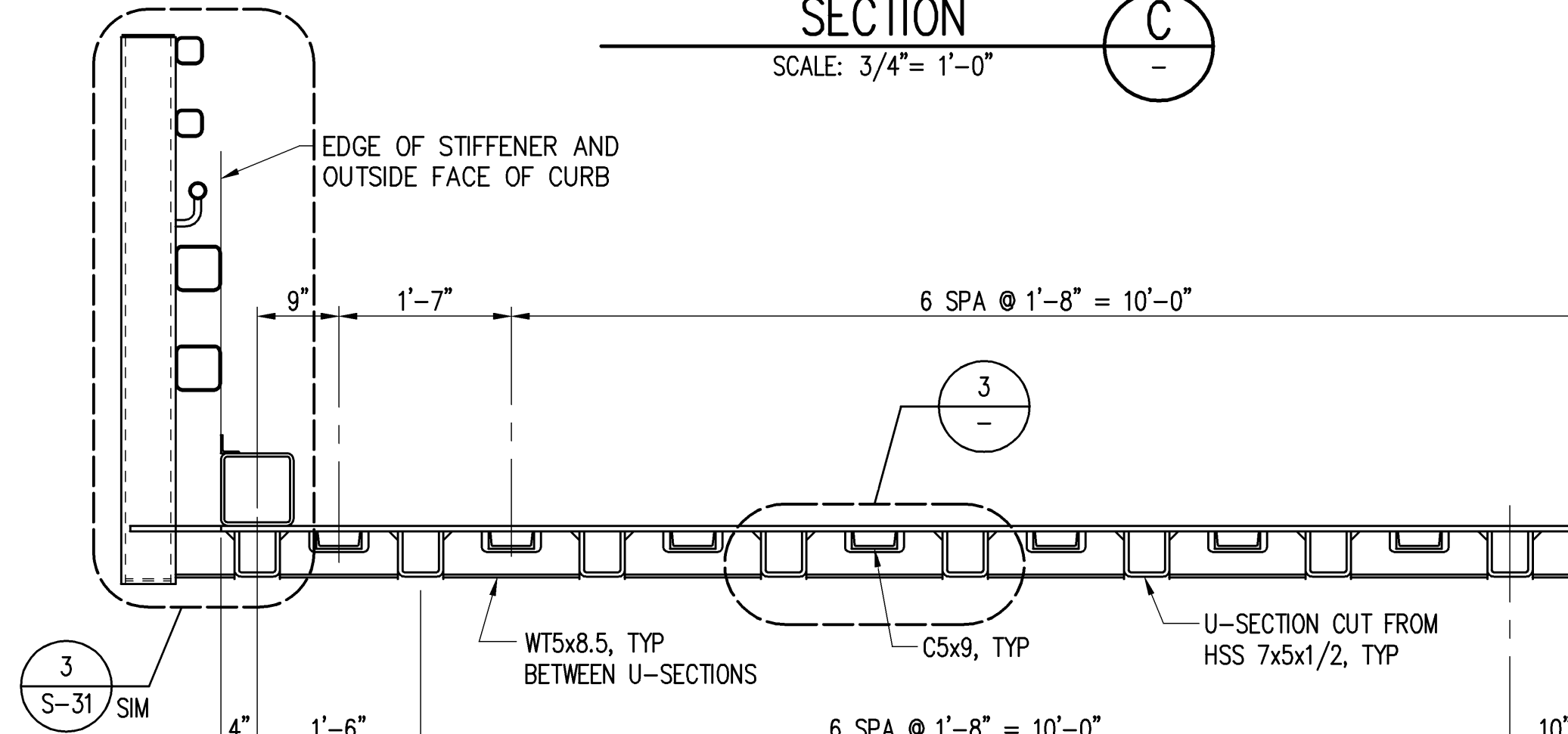
**TRANSITION SPAN ELEVATION**  
SCALE: 3/4" = 1'-0" (A)



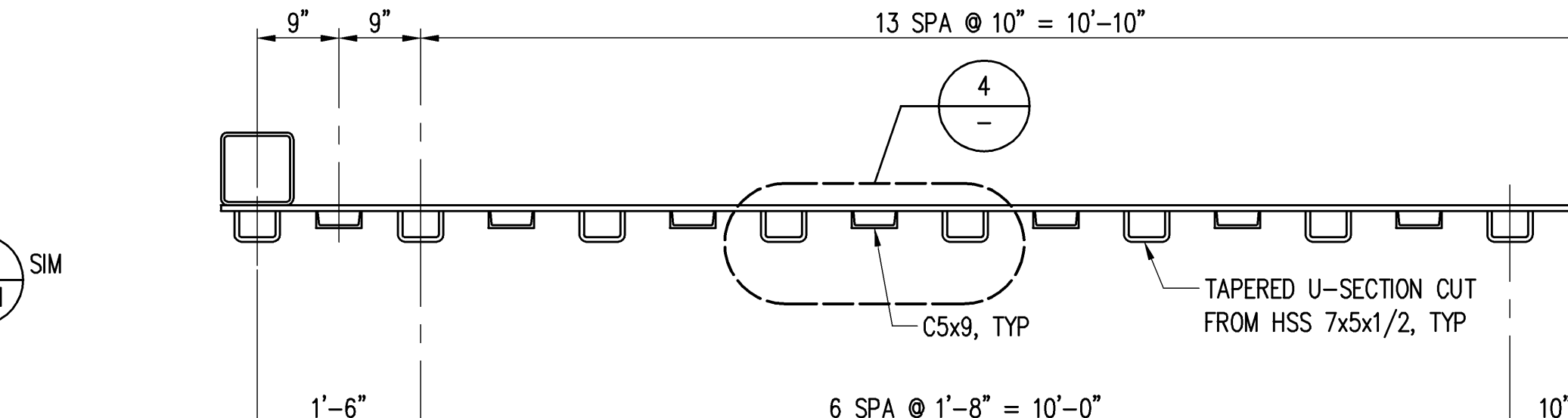
**SECTION B**  
SCALE: 3/4" = 1'-0" (B)



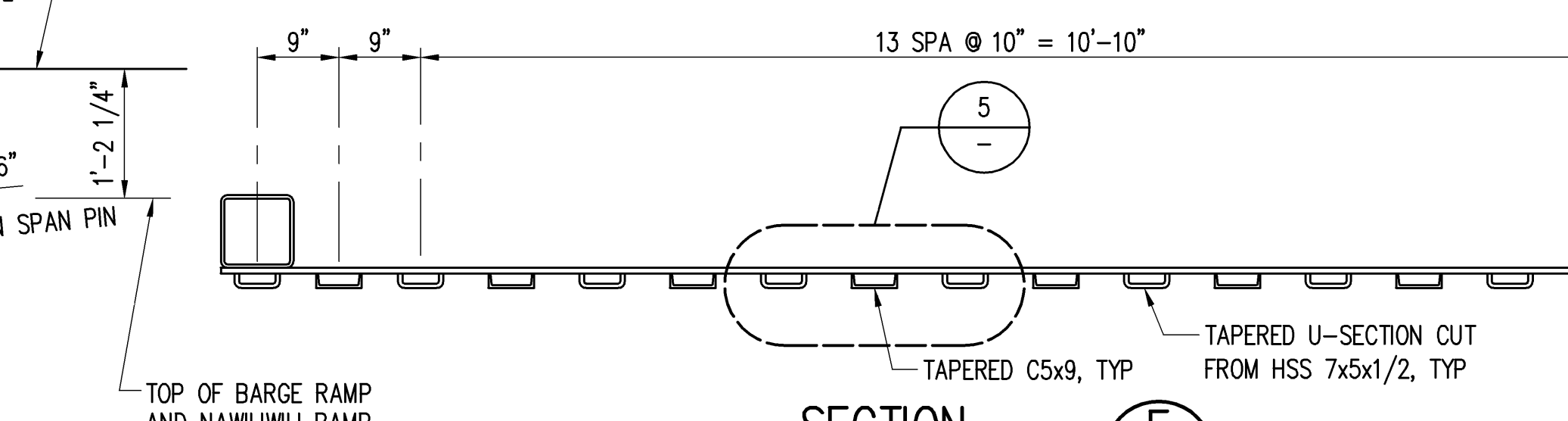
**SECTION C**  
SCALE: 3/4" = 1'-0" (C)



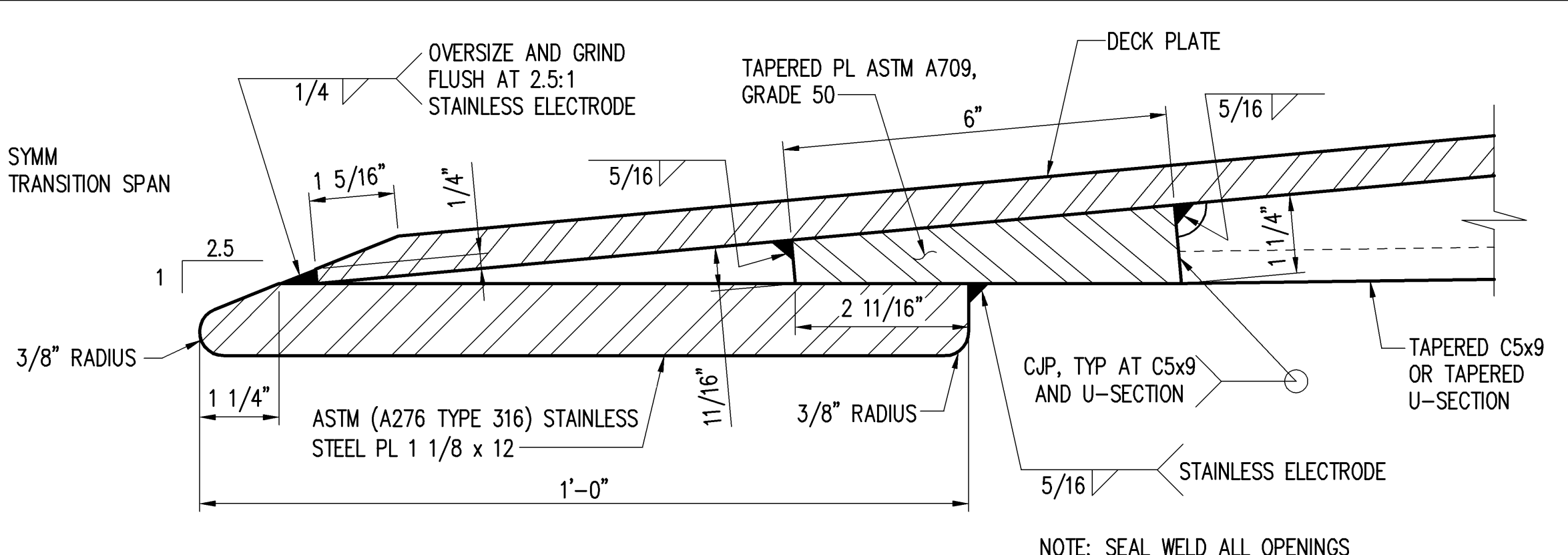
**SECTION D**  
SCALE: 3/4" = 1'-0" (D)



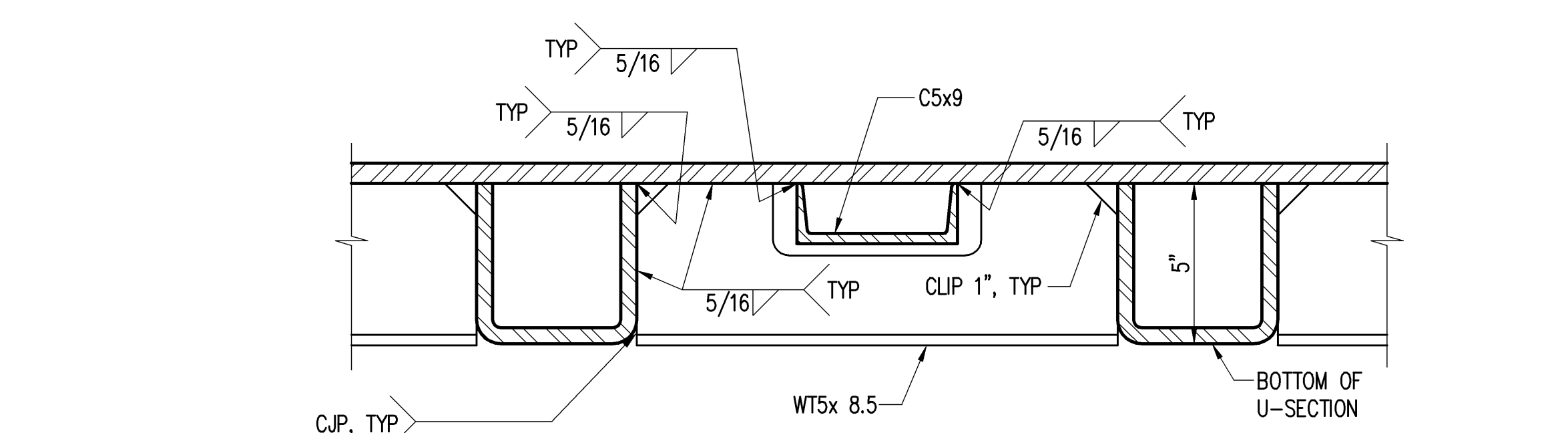
**SECTION E**  
SCALE: 3/4" = 1'-0" (E)



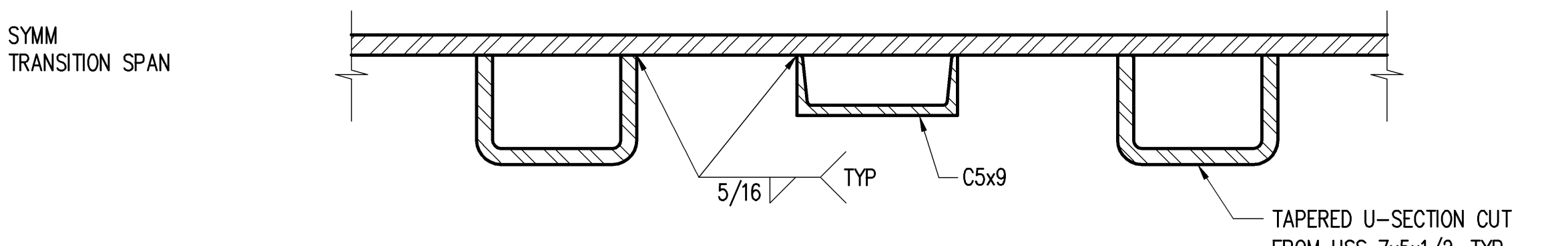
**SECTION F**  
SCALE: 3/4" = 1'-0" (F)



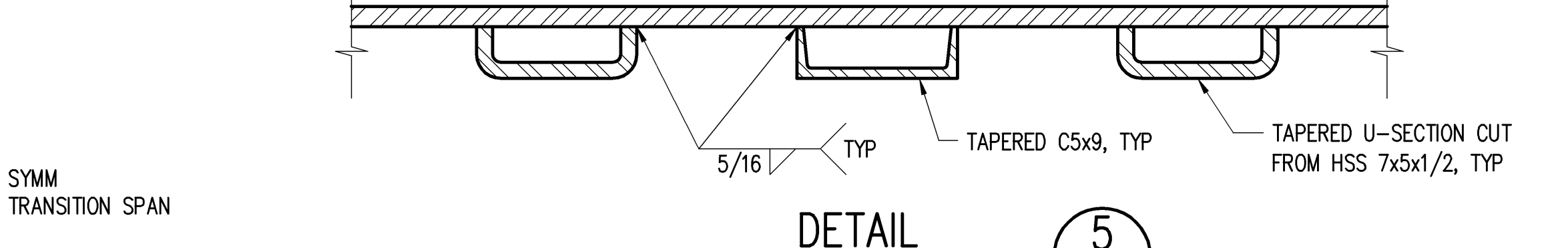
**SECTION G**  
SCALE: 6" = 1'-0" (G)



**DETAIL 3**  
SCALE: 3" = 1'-0" (3)

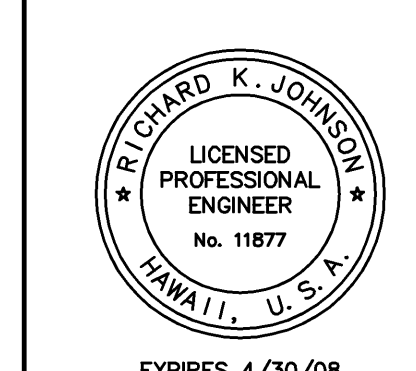


**DETAIL 4**  
SCALE: 3" = 1'-0" (4)

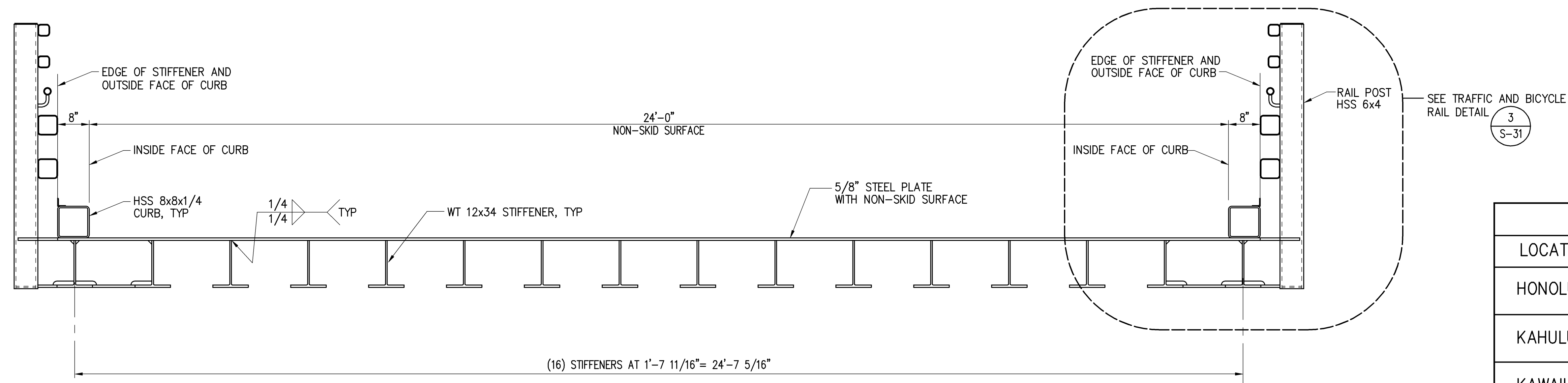


**DETAIL 5**  
SCALE: 3" = 1'-0" (5)

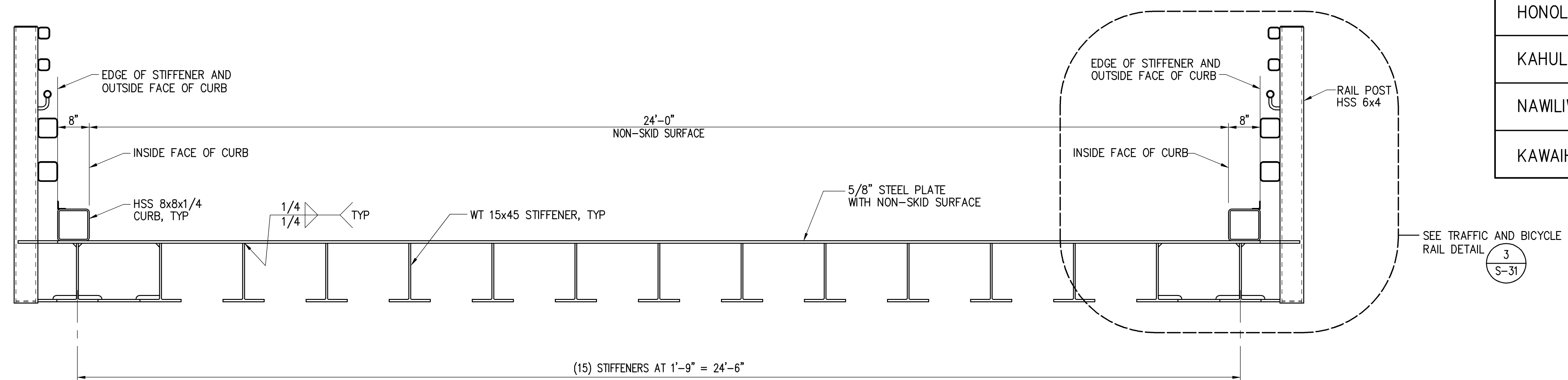
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE			
<b>SHEET TITLE</b> TRANSITION SPAN PLAN AND ELEVATION			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: WGH		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		H.C. 90018	
SCALE: AS SHOWN		REVISION	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER S-22.1 REVISION 0	



DESIGN RECORD DRAWINGS



**TYPICAL APRON SECTION**  
SCALE: 3/4" = 1'-0"  
B S-18 S-19, S-21



**TYPICAL APRON SECTION**  
SCALE: 3/4" = 1'-0"  
C S-20 S-22

SHORE APRONS			
LOCATION	APRON LENGTH	STIFFENER	SECTION
HONOLULU	25'-0"	WT 12x34	B
KAHULUI	30'-0"	WT 12x34	B
KAWAIHAE	35'-0"	WT 15x45	C

FERRY APRONS			
LOCATION	APRON LENGTH	STIFFENER	SECTION
HONOLULU	28'-0"	WT 12x34	B
KAHULUI	28'-0"	WT 12x34	B
NAWILIWILI	28'-0"	WT 12x34	B
KAWAIHAE	38'-0"	WT 15x45	C

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**  
1601 Fifth Avenue, Suite 1600  
Seattle, Washington 98101  
(206) 622-5822 Fax (206) 622-8130

**kpff** Consulting Engineers

JOB TITLE  
**BARGES & VEHICLE RAMP SYSTEMS  
FOR INTERISLAND FERRY SERVICE**

SHEET TITLE  
**APRON  
SECTIONS AND DETAILS**

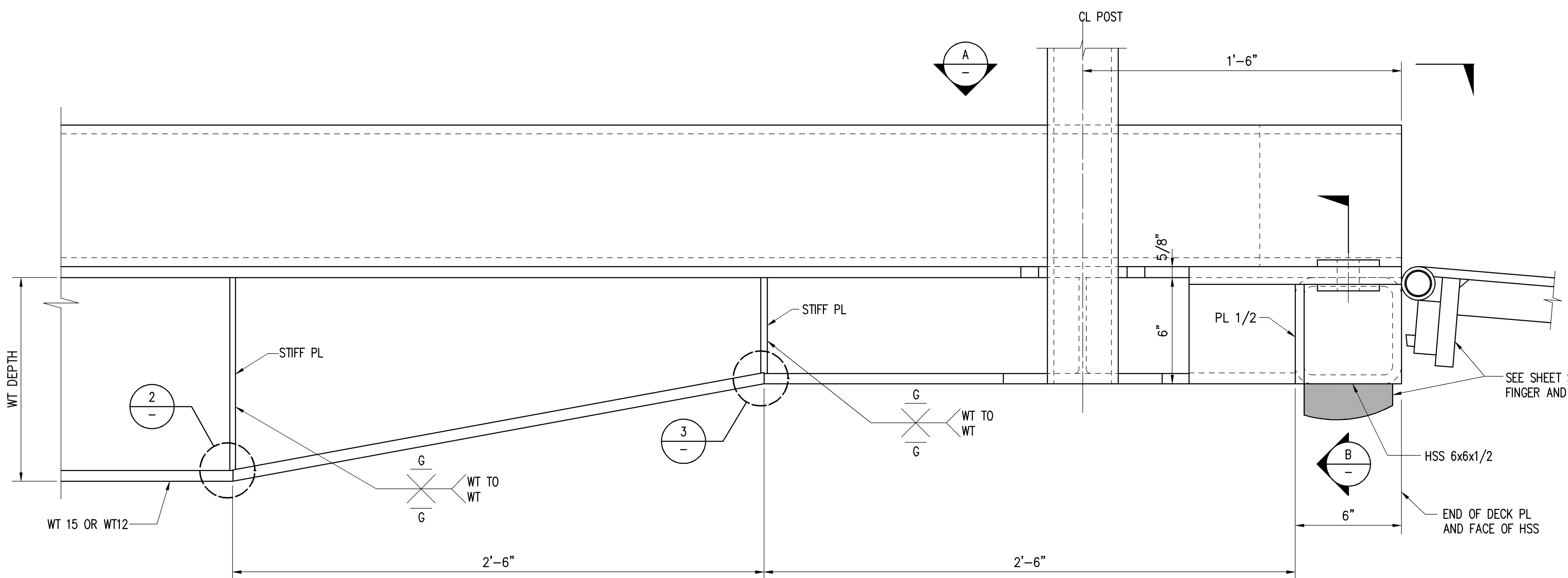
SUBMITTED BY: \_\_\_\_\_ RECOMMENDED BY: \_\_\_\_\_

SECTION HEAD: \_\_\_\_\_ ENGINEERING PROGRAM MANAGER: \_\_\_\_\_

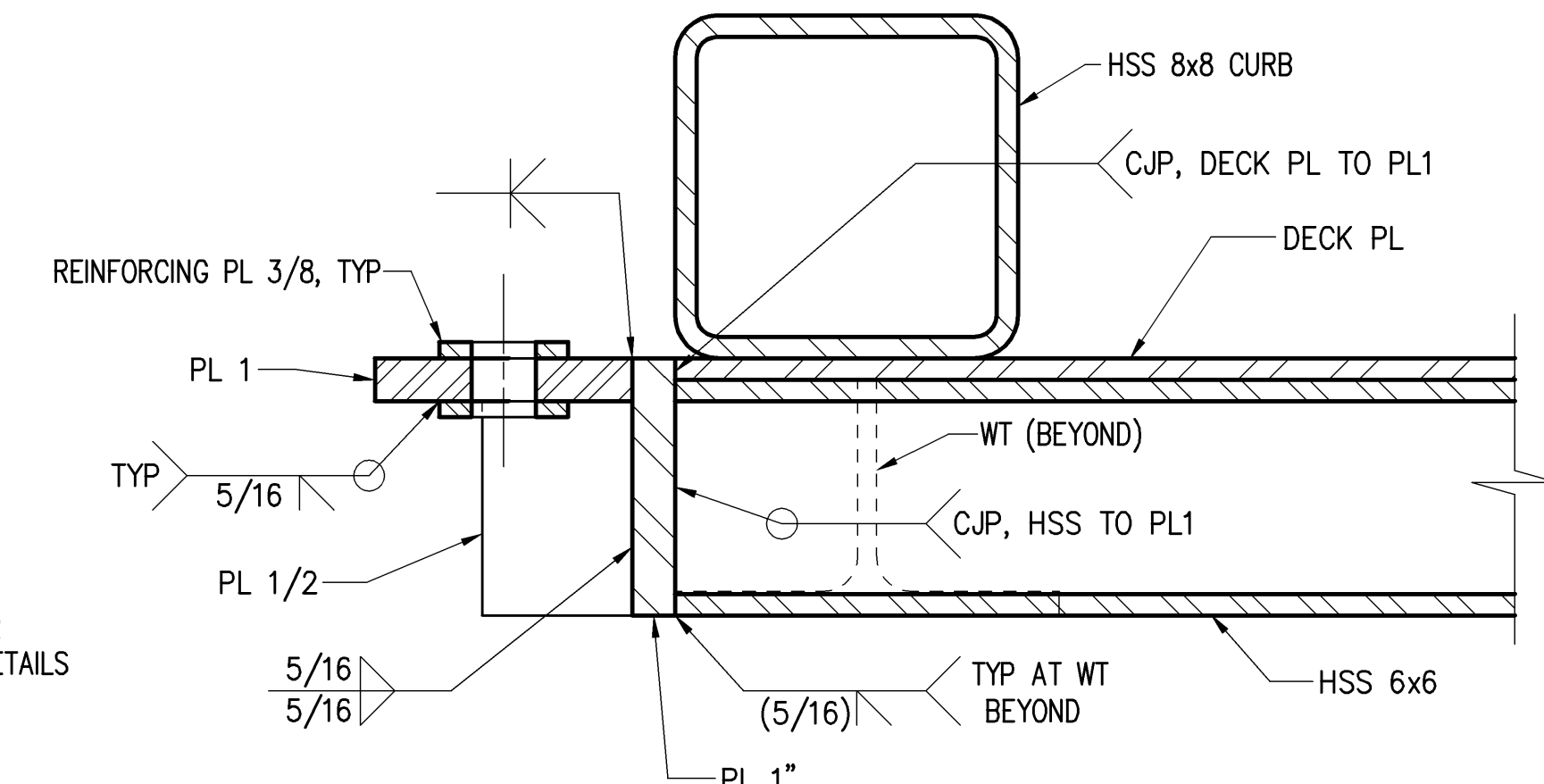
DESIGNED BY: WGH APPROVED BY: \_\_\_\_\_  
DRAWN BY: RRT FOR HARBORS ADMINISTRATOR: \_\_\_\_\_  
CHECKED BY: KN JOB NUMBER: H.C. 90018  
DATE: 7/16/07 REVISION: 0  
SCALE: AS SHOWN

REDUCED SIZE PRINT  
(NOT TO SCALE)

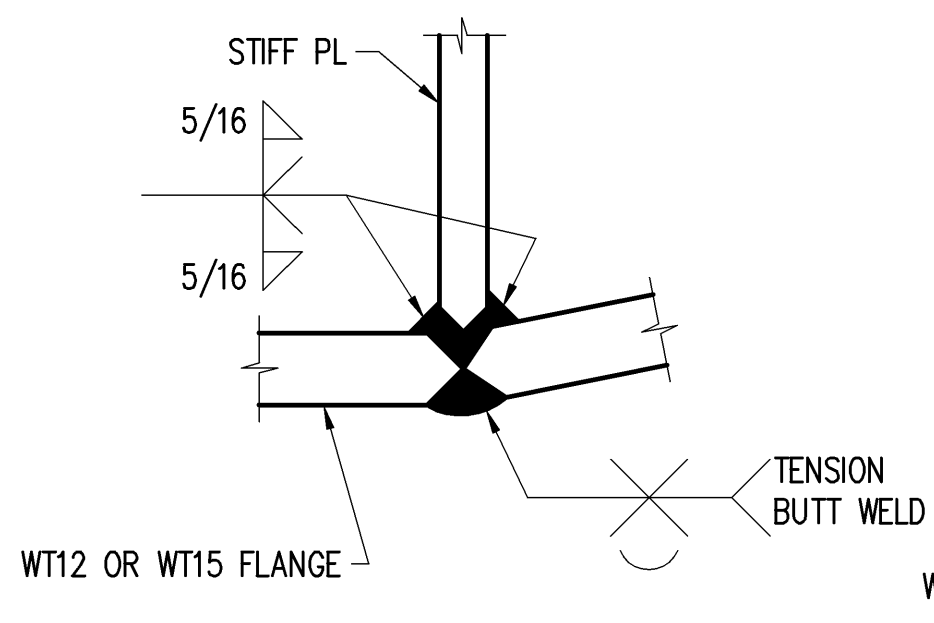
DESIGN RECORD DRAWINGS



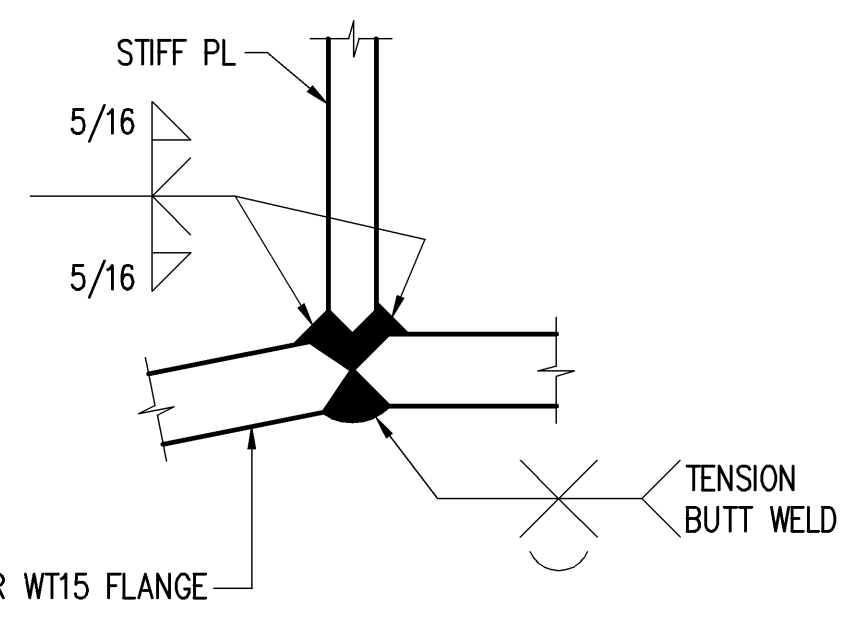
**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-18 S-19, S-20



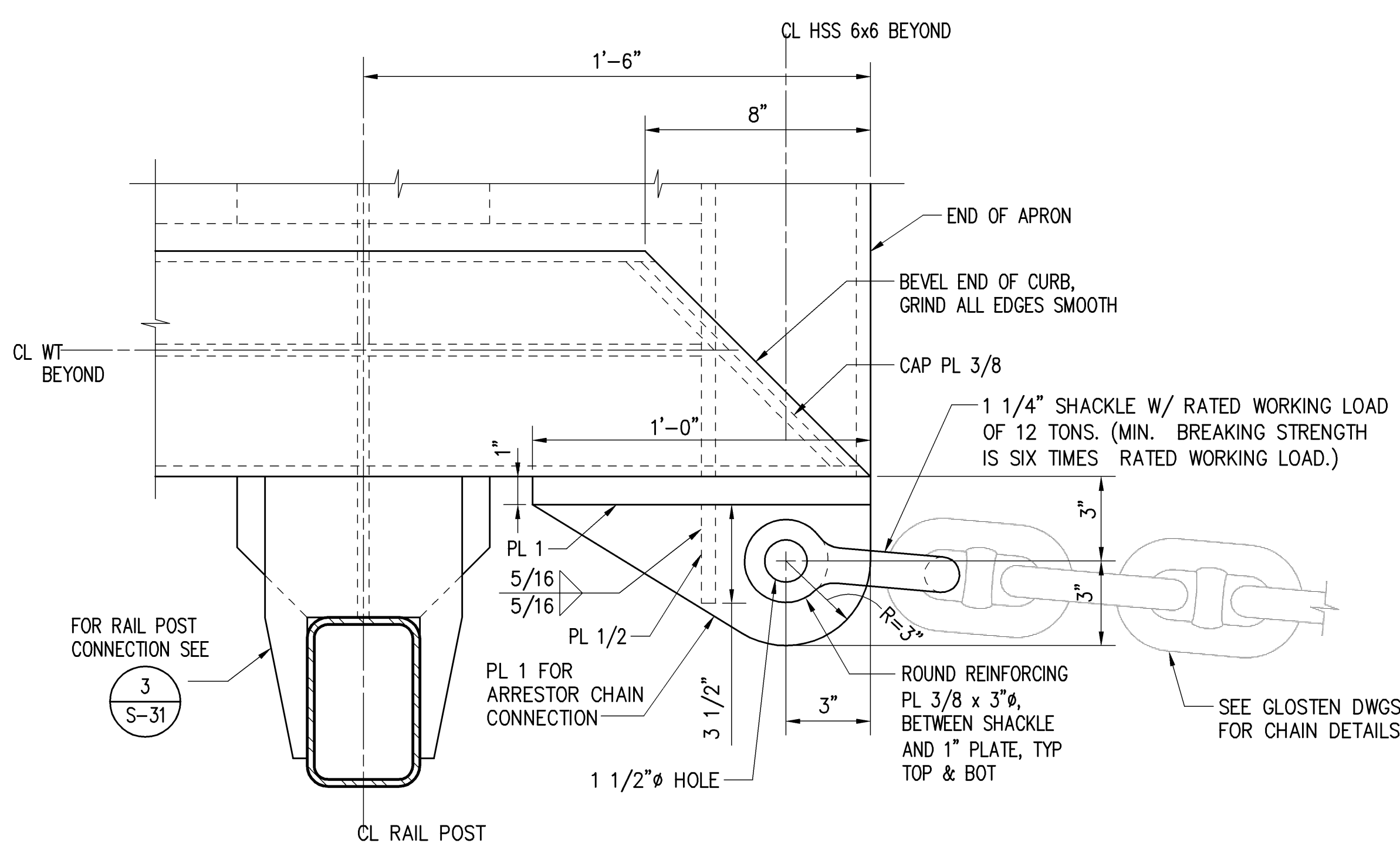
**SECTION B**  
SCALE: 3" = 1'-0"



**DETAIL 2**  
SCALE: 6" = 1'-0"  
S-25

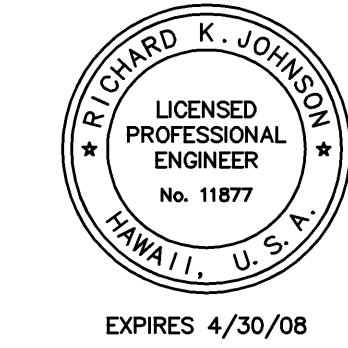


**DETAIL 3**  
SCALE: 6" = 1'-0"  
S-25



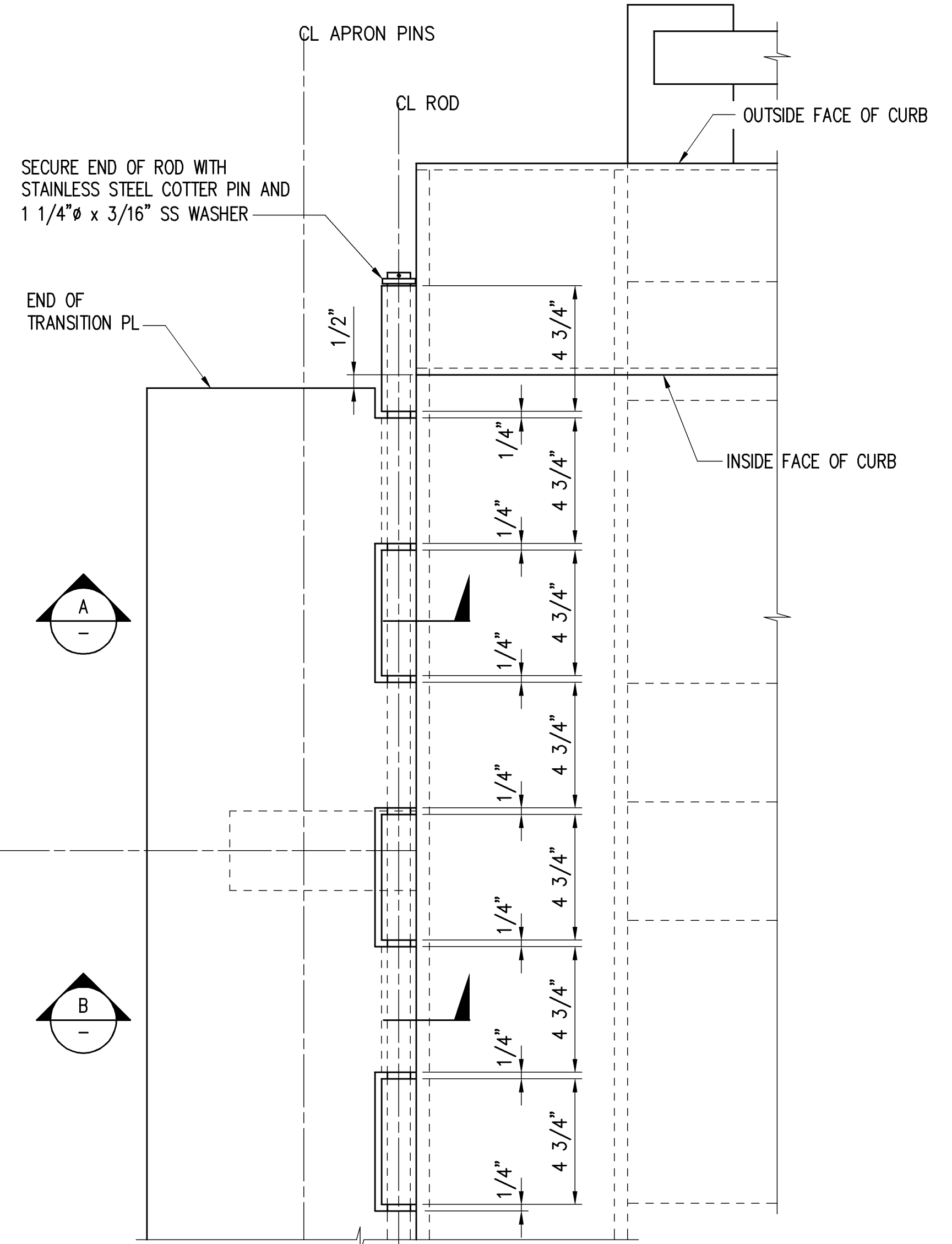
**SECTION A**  
SCALE: 3" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE APRON SECTIONS AND DETAILS 1</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0 OF 1 SHEETS

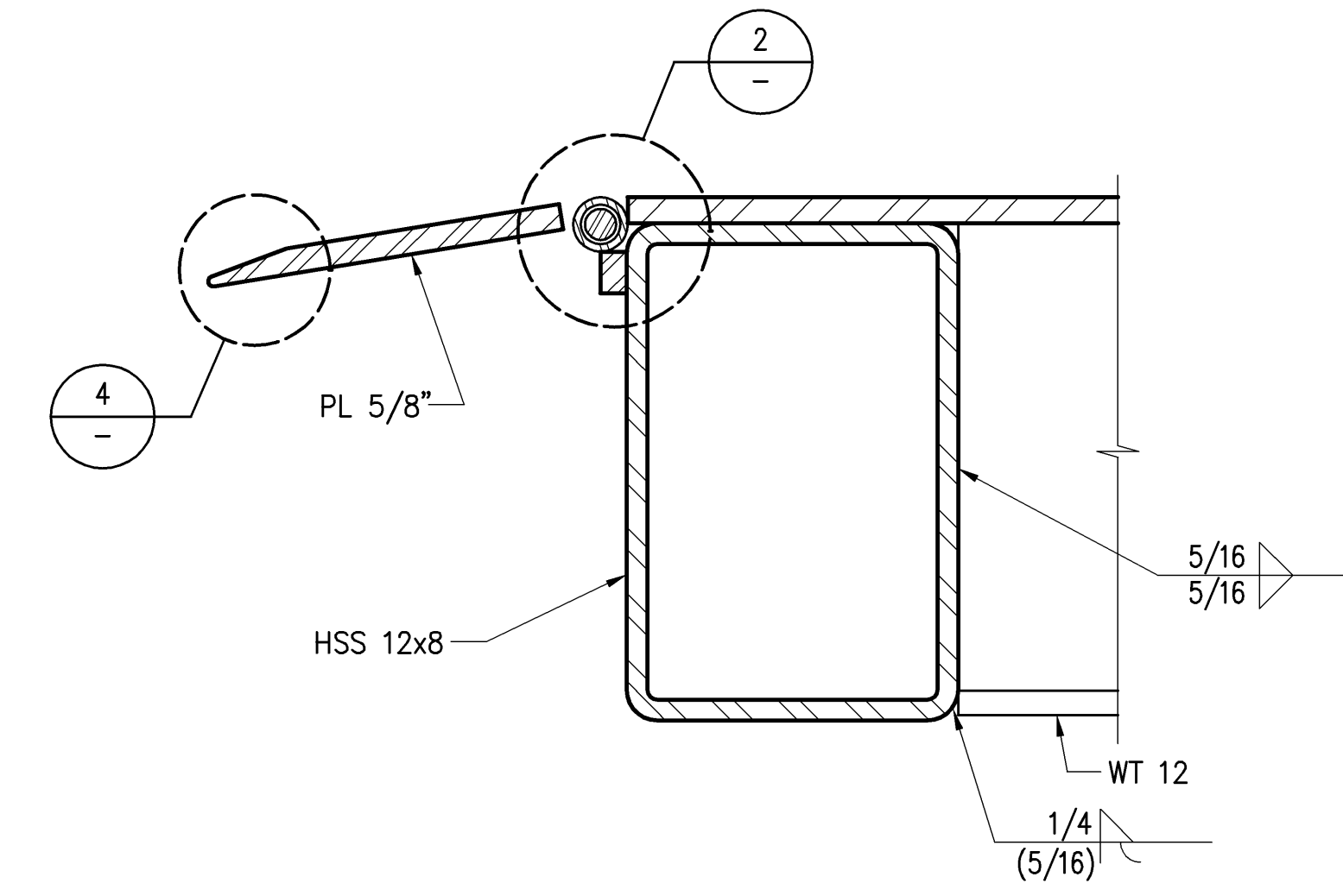
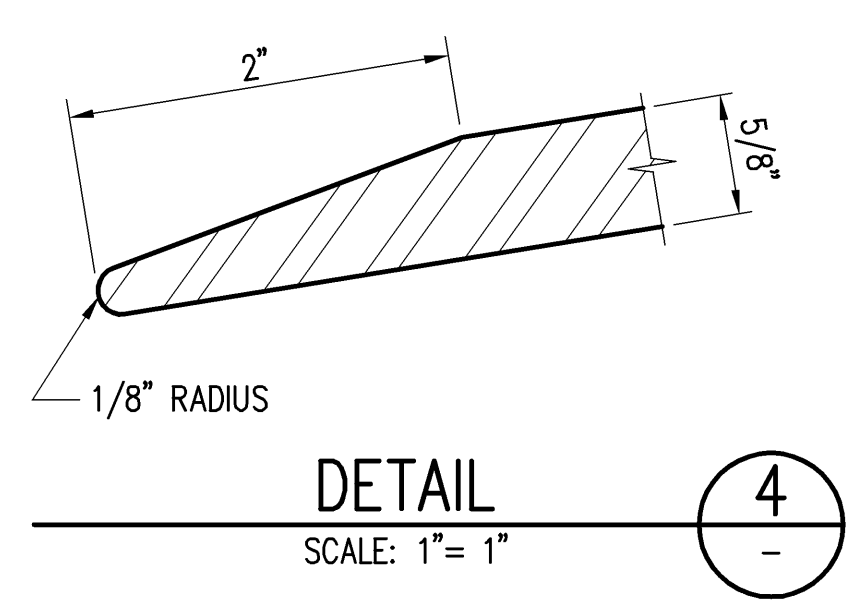


REDUCED SIZE PRINT  
(NOT TO SCALE)

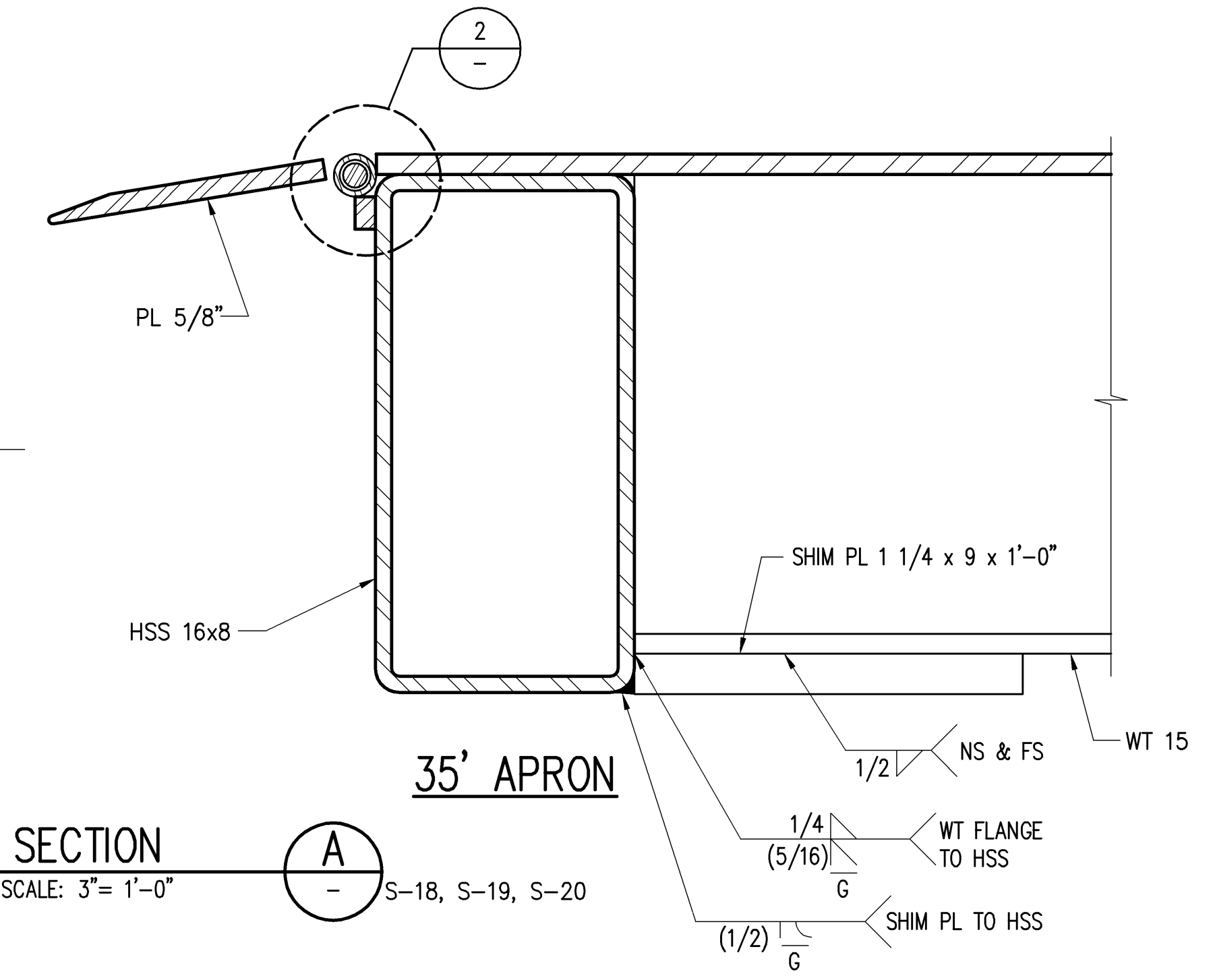
DESIGN RECORD DRAWINGS



**SHORE APRON TRANSITION PLATE AND HINGE DETAIL** (1)  
SCALE: 3" = 1'-0"  
S-18, S-19, S-20

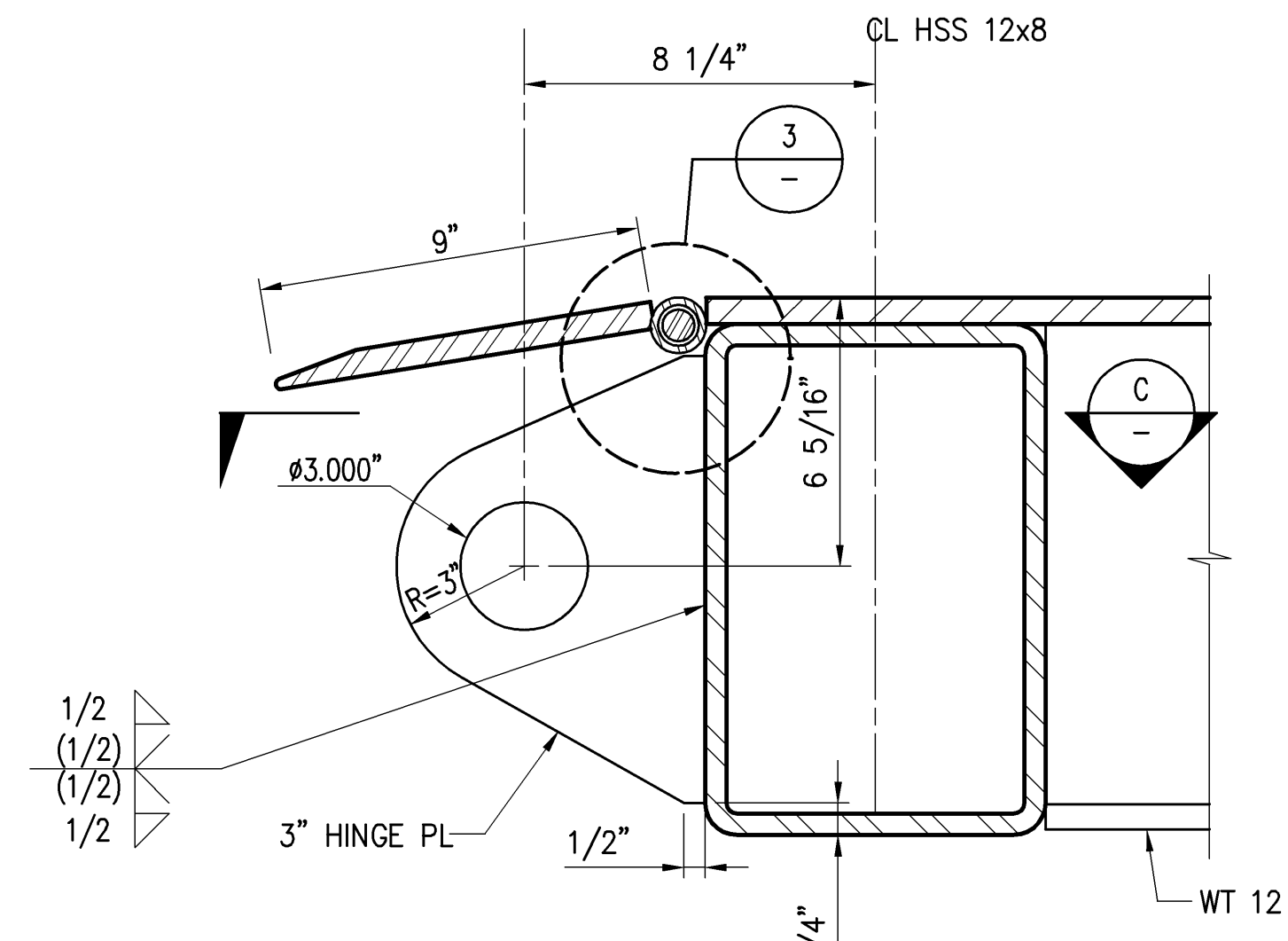


**25' AND 30' APRONS**

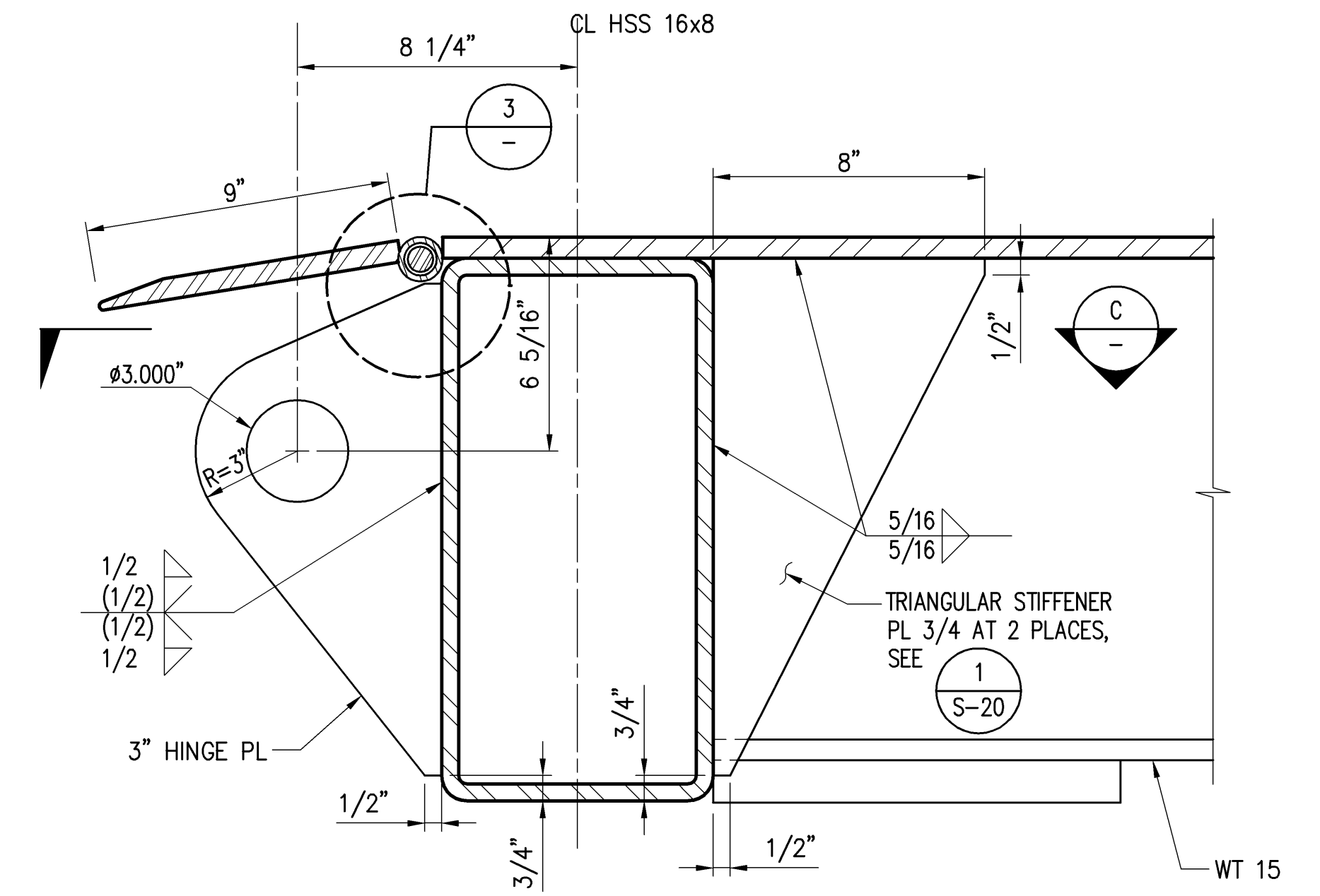


**35' APRON**

**SECTION (A)**  
SCALE: 3" = 1'-0"  
S-18, S-19, S-20

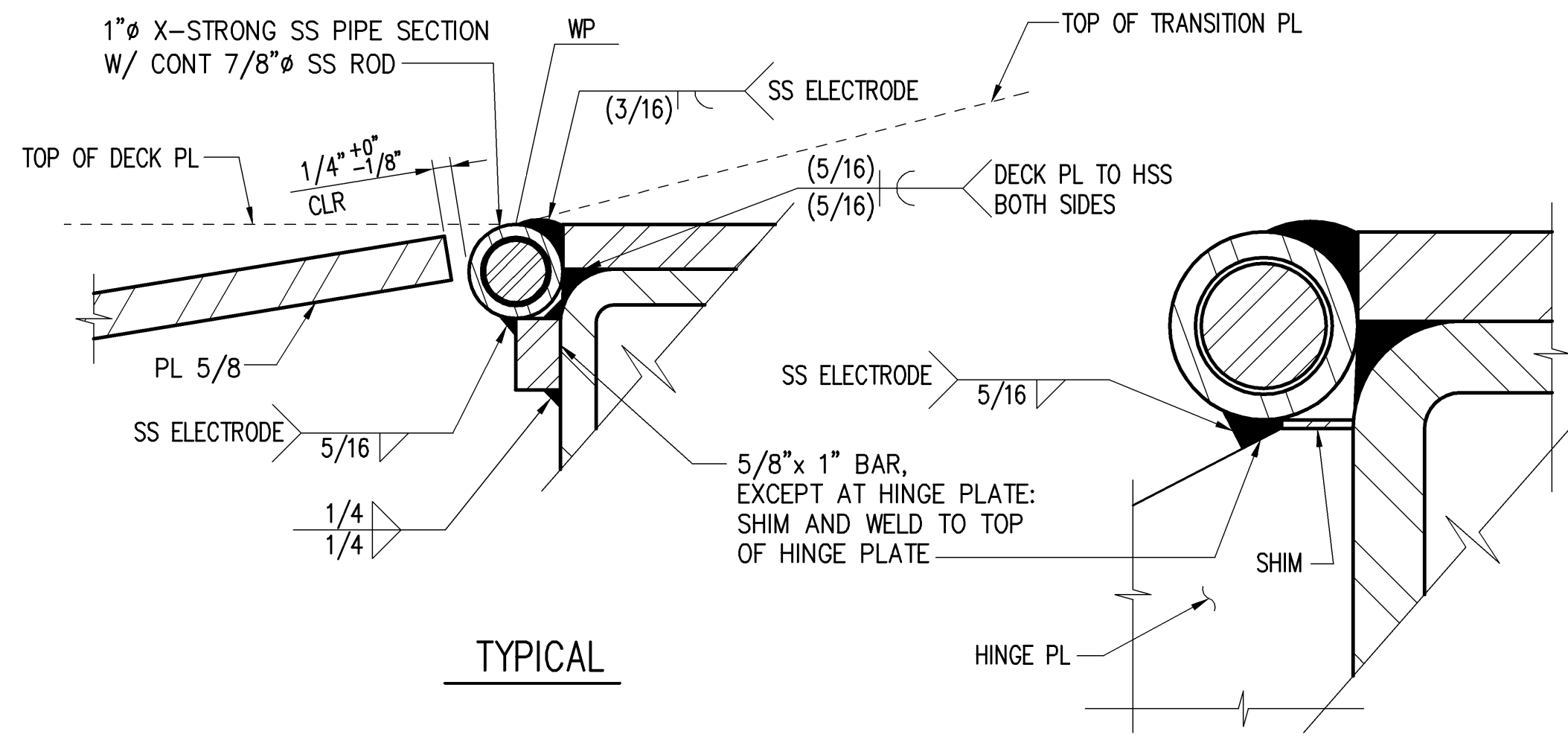


**25' AND 30' APRONS**



**35' APRON**

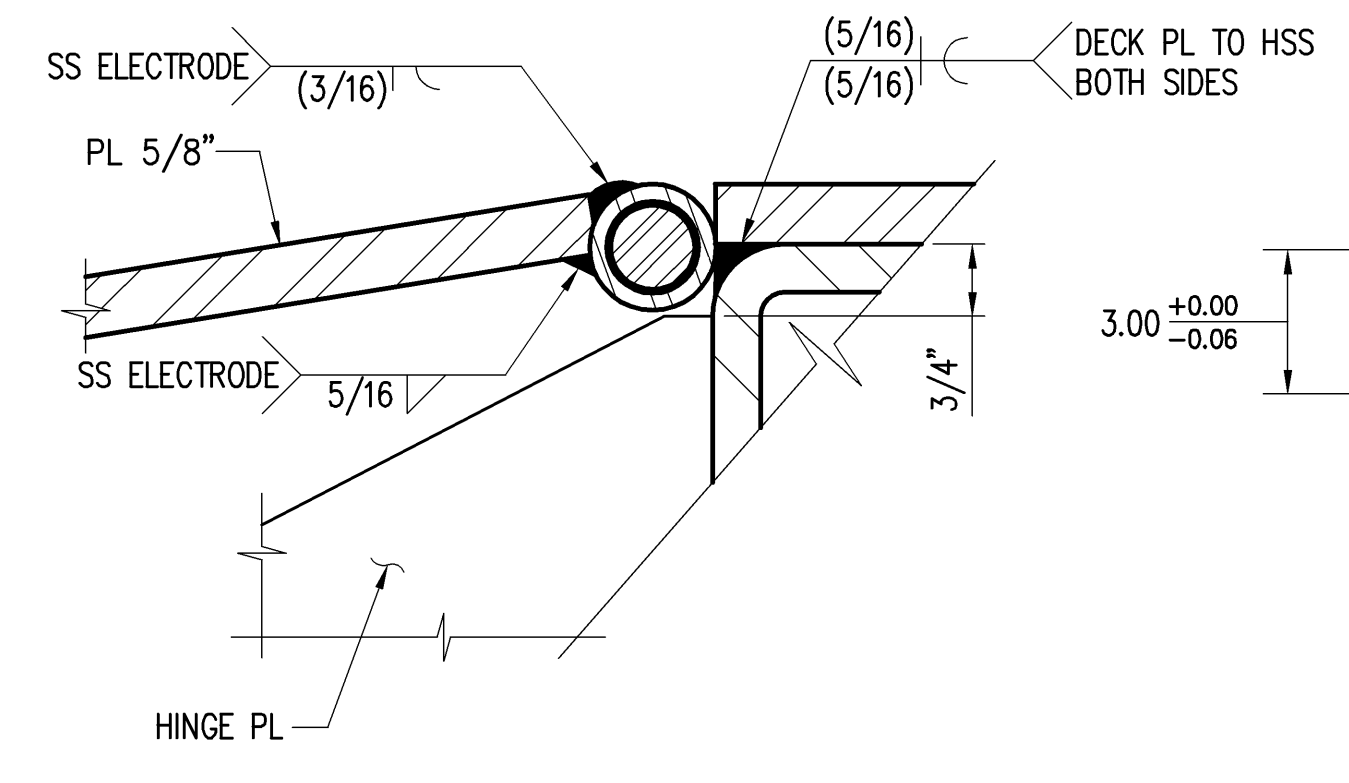
**SECTION (B)**  
SCALE: 3" = 1'-0"  
S-18, S-19, S-20



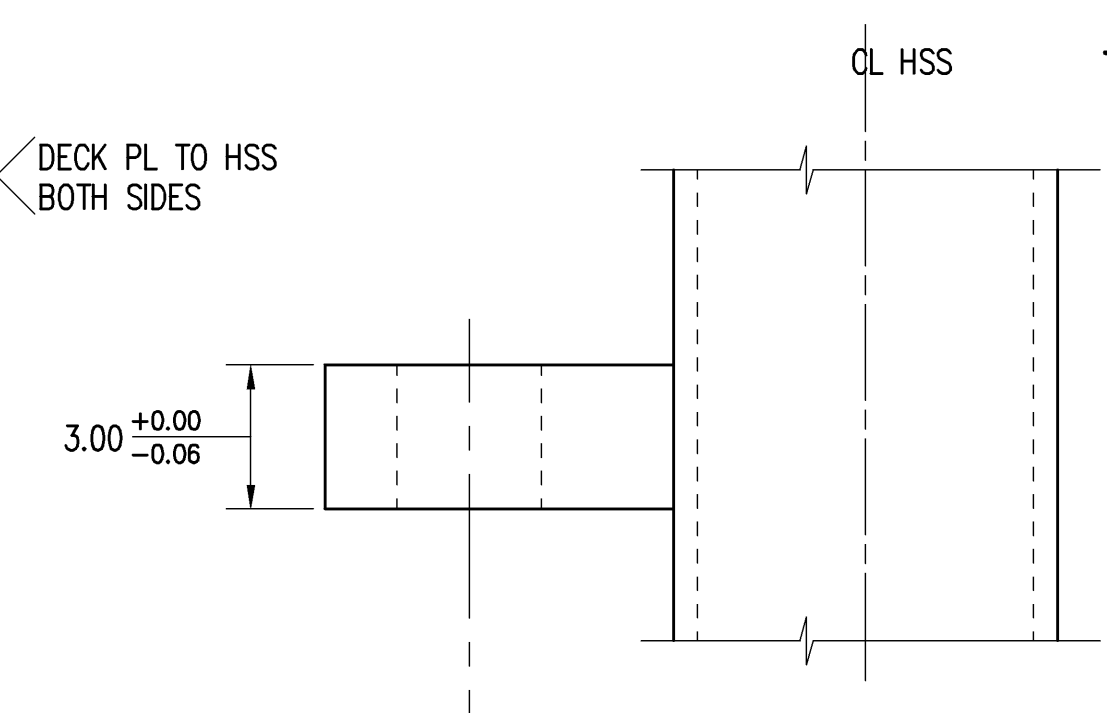
**TYPICAL**

**AT HINGE PLATE**

**DETAIL (2)**  
SCALE: 6" = 1'-0"

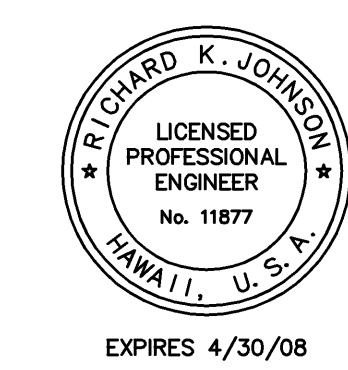


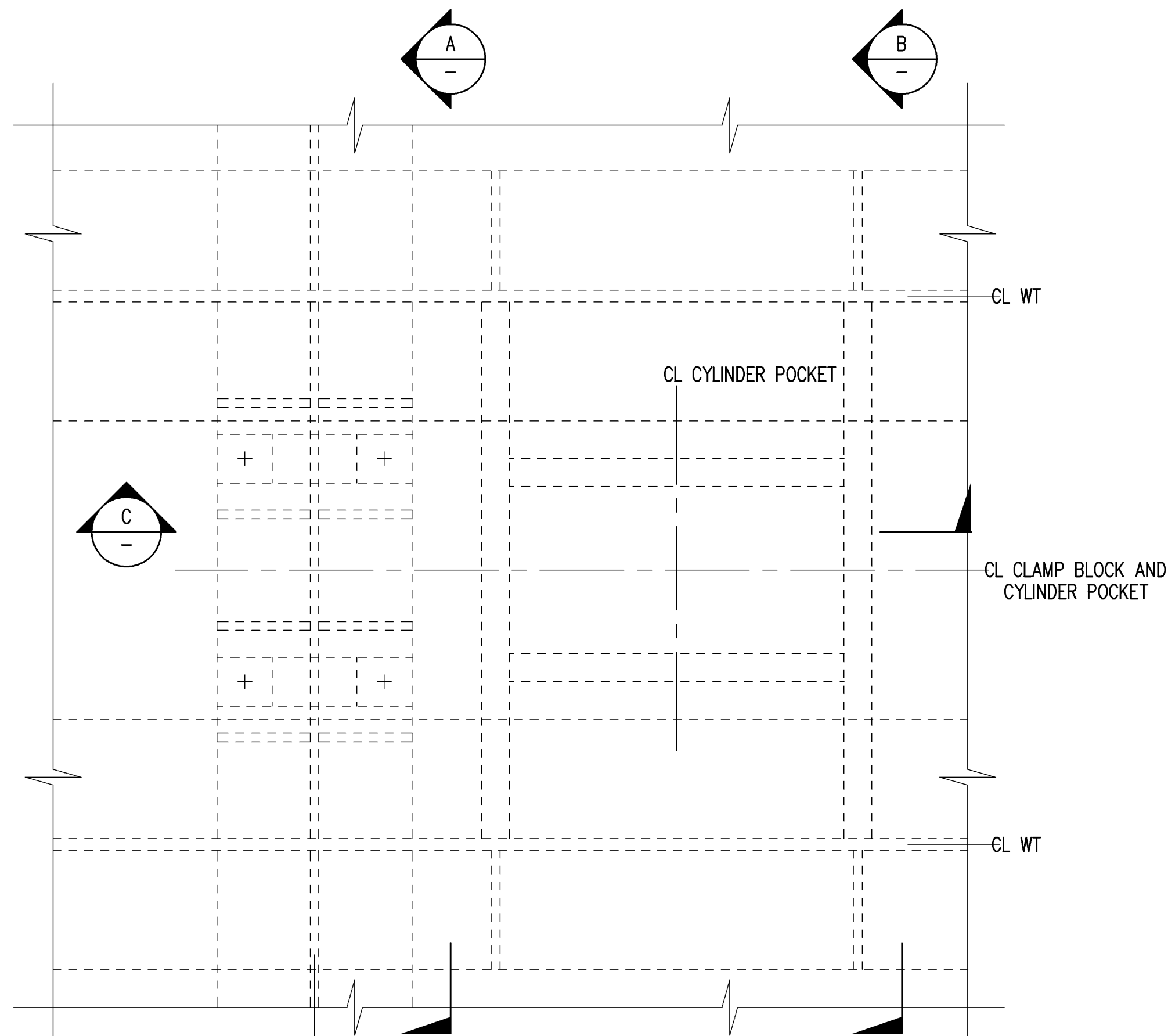
**DETAIL (3)**  
SCALE: 6" = 1'-0"



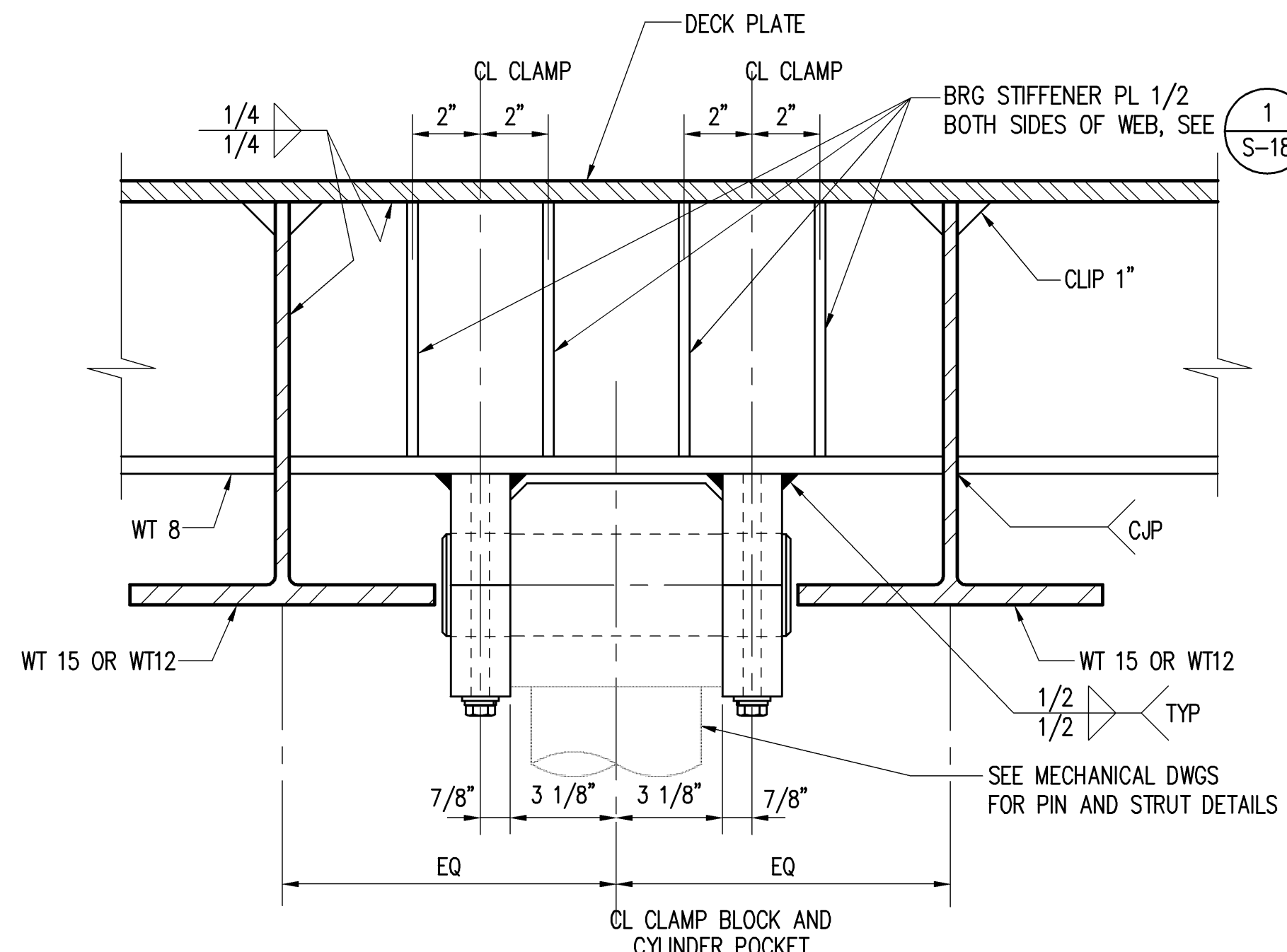
**SECTION (C)**  
SCALE: 3" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE APRON SECTIONS AND DETAILS 2</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
REDUCED SIZE PRINT (NOT TO SCALE)	DRAWING NUMBER <b>S-24.1</b>
	0 OF SHTS

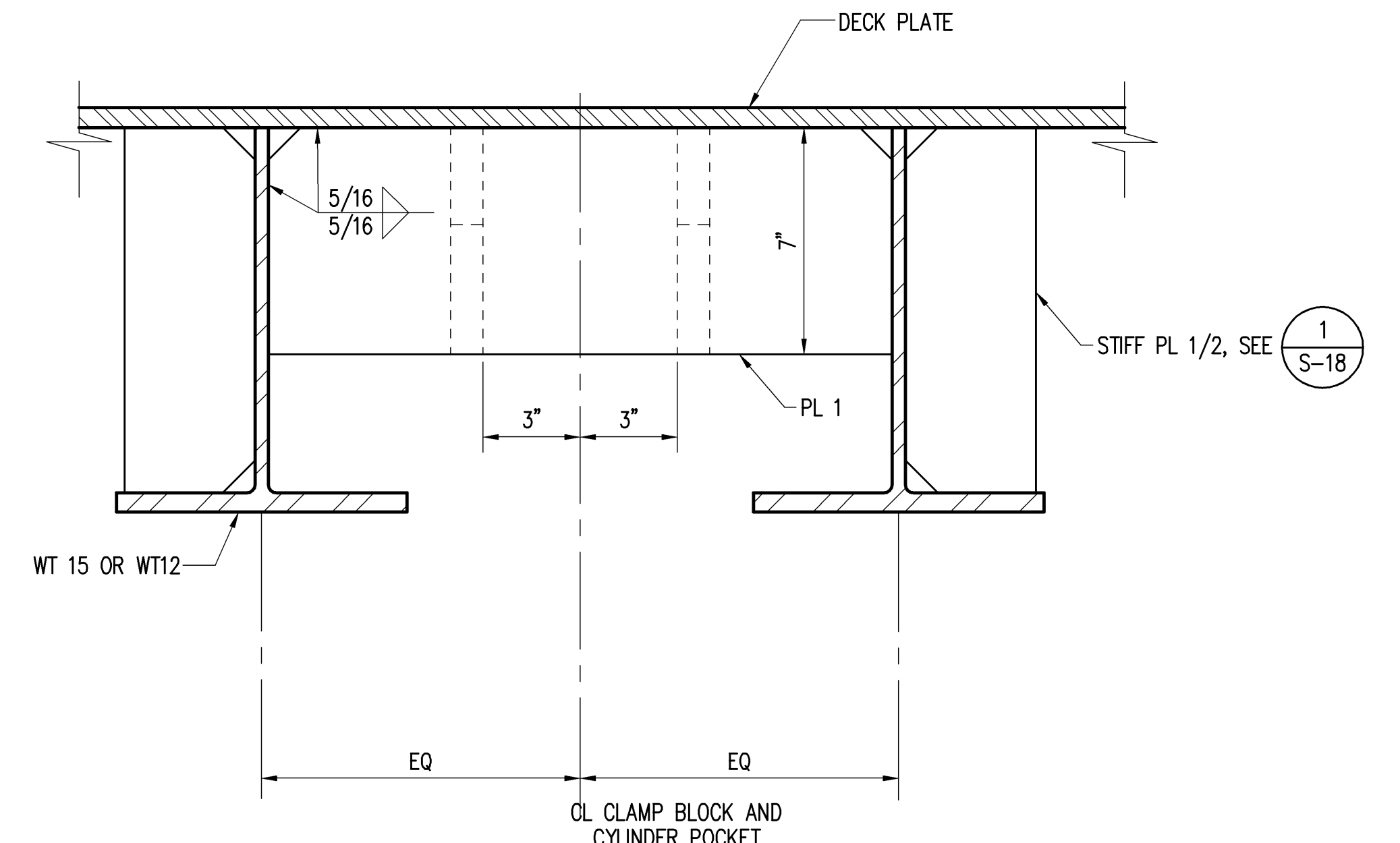




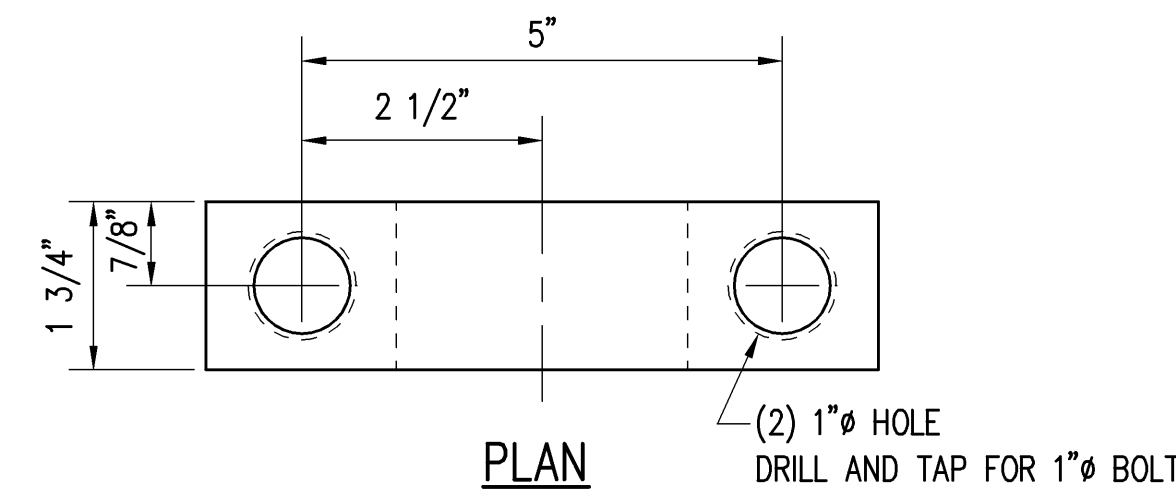
**DETAIL 1**  
SCALE: 3" = 1'-0"



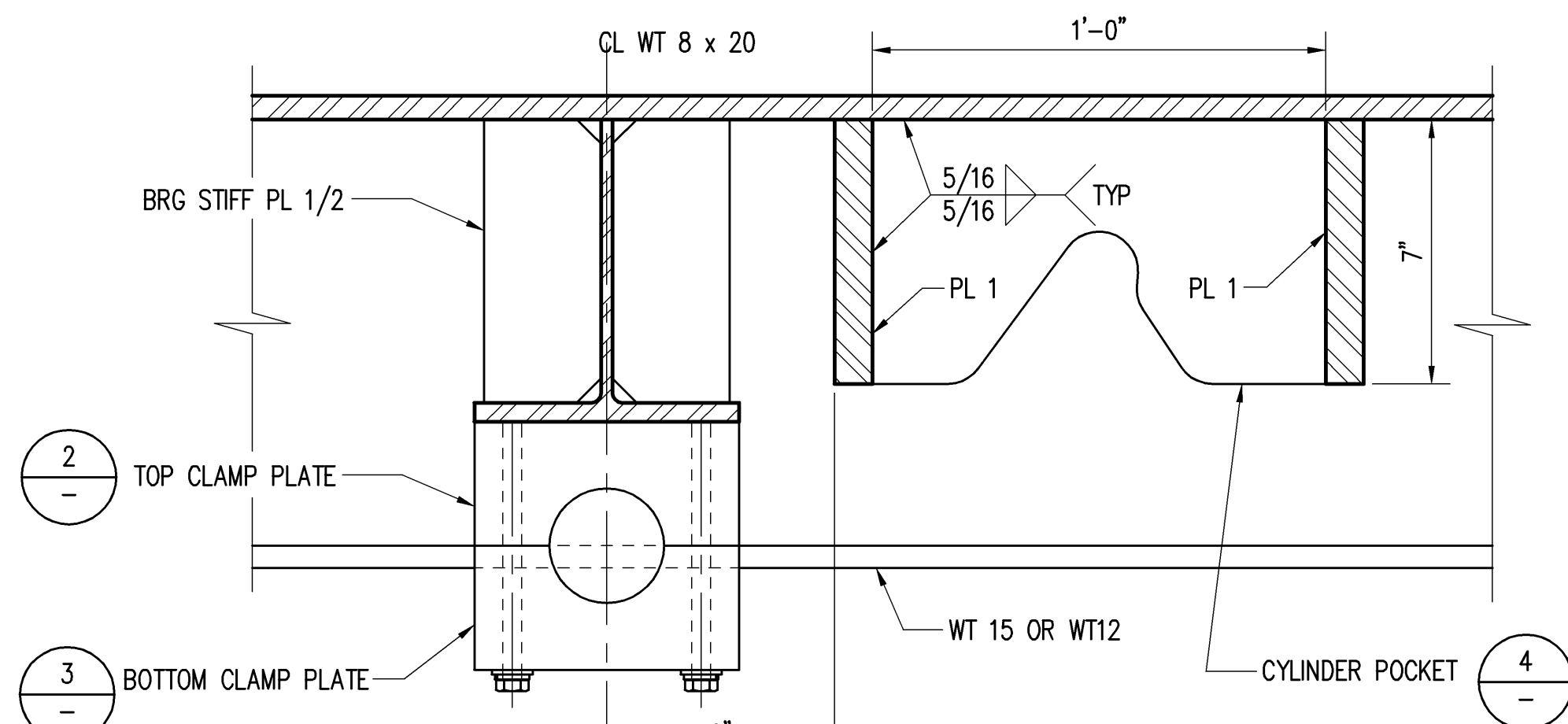
**SECTION A**  
SCALE: 3" = 1'-0"



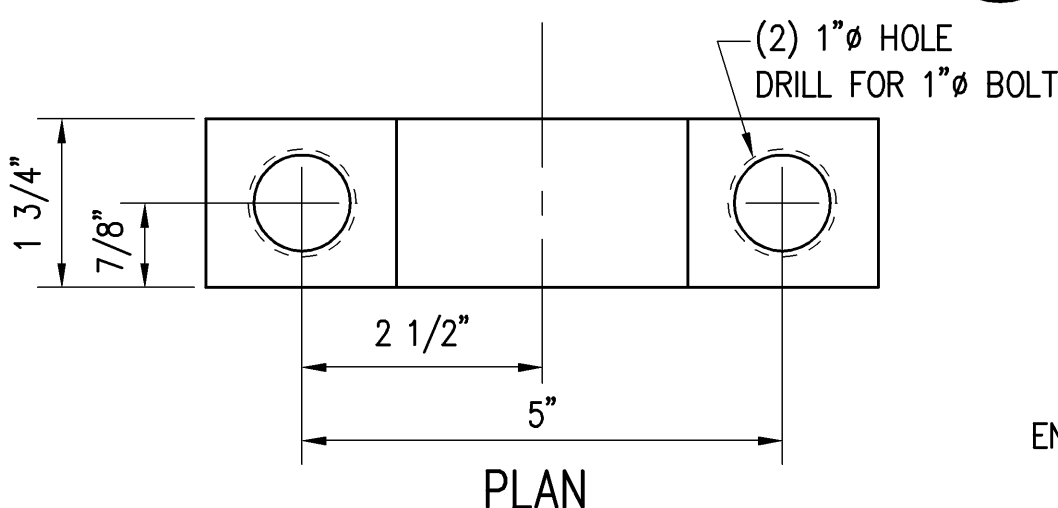
**SECTION B**  
SCALE: 3" = 1'-0"



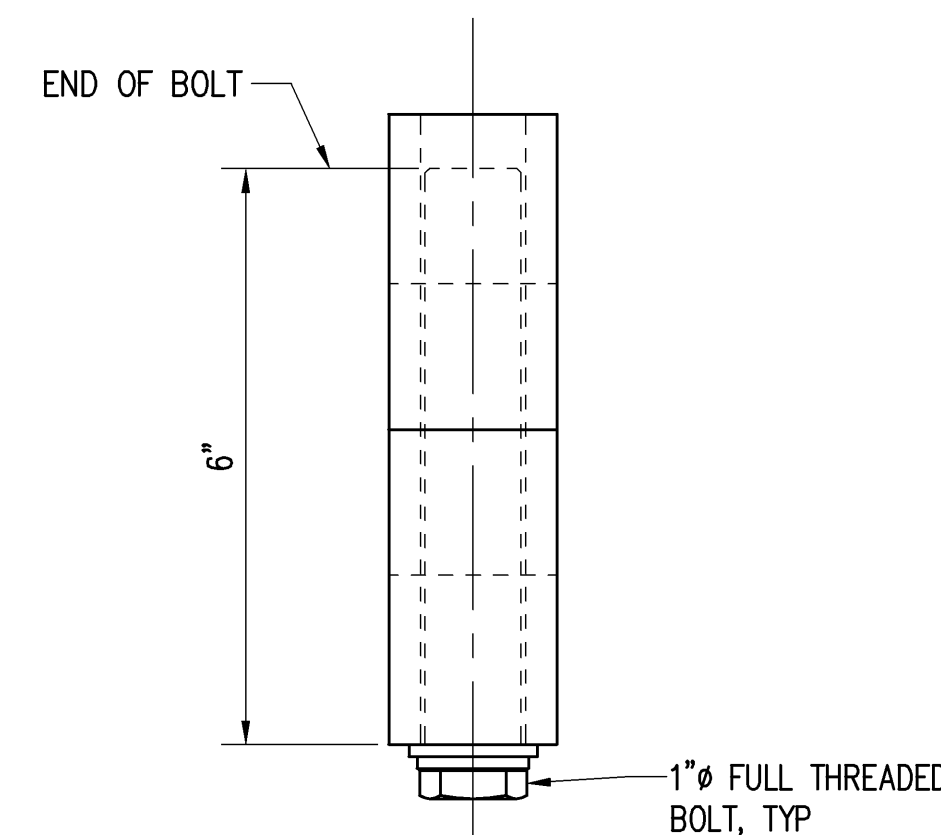
**TOP CLAMP PLATE DETAIL 2**  
SCALE: 6" = 1'-0"



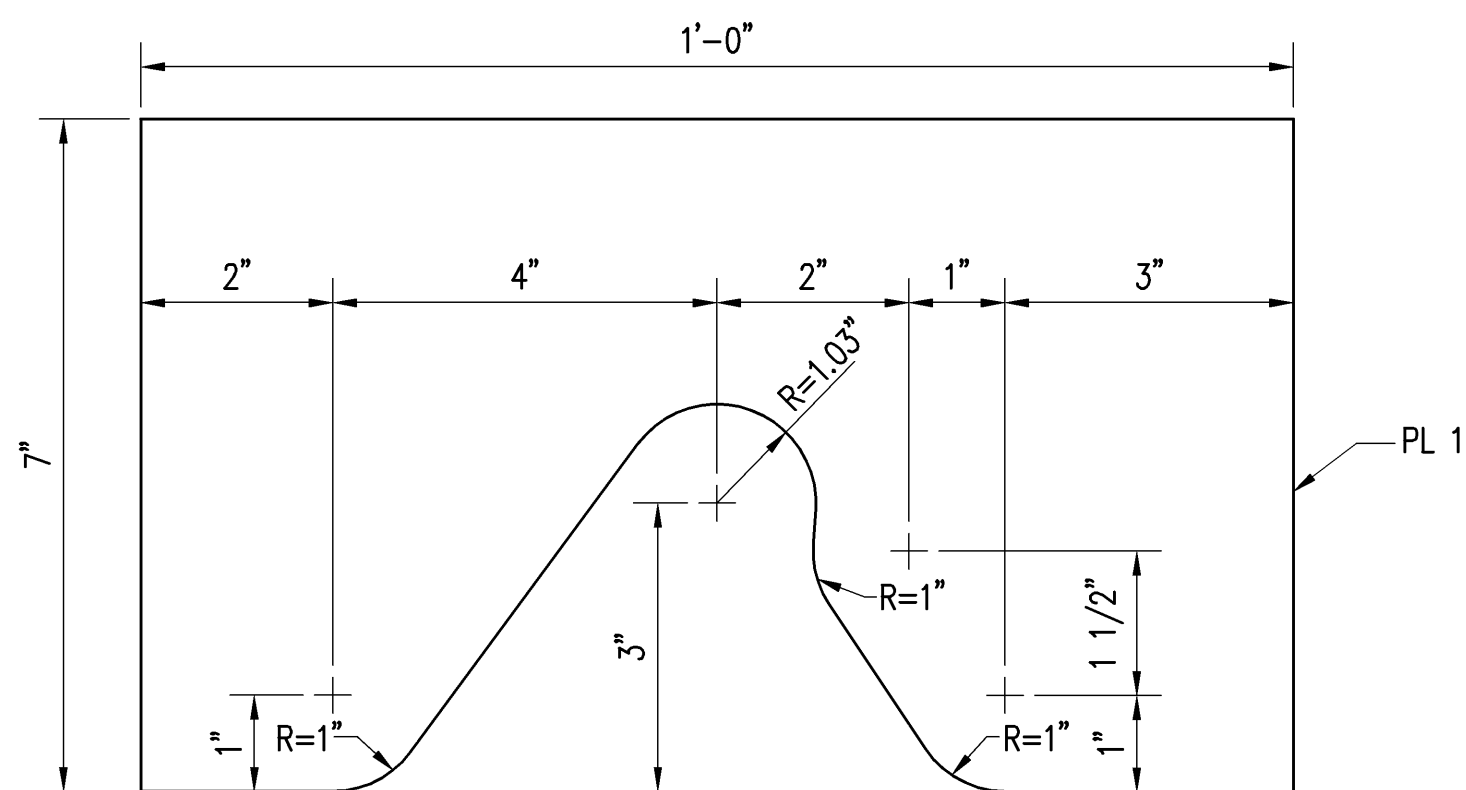
**SECTION C**  
SCALE: 3" = 1'-0"



**BOTTOM CLAMP PLATE DETAIL 3**  
SCALE: 6" = 1'-0"



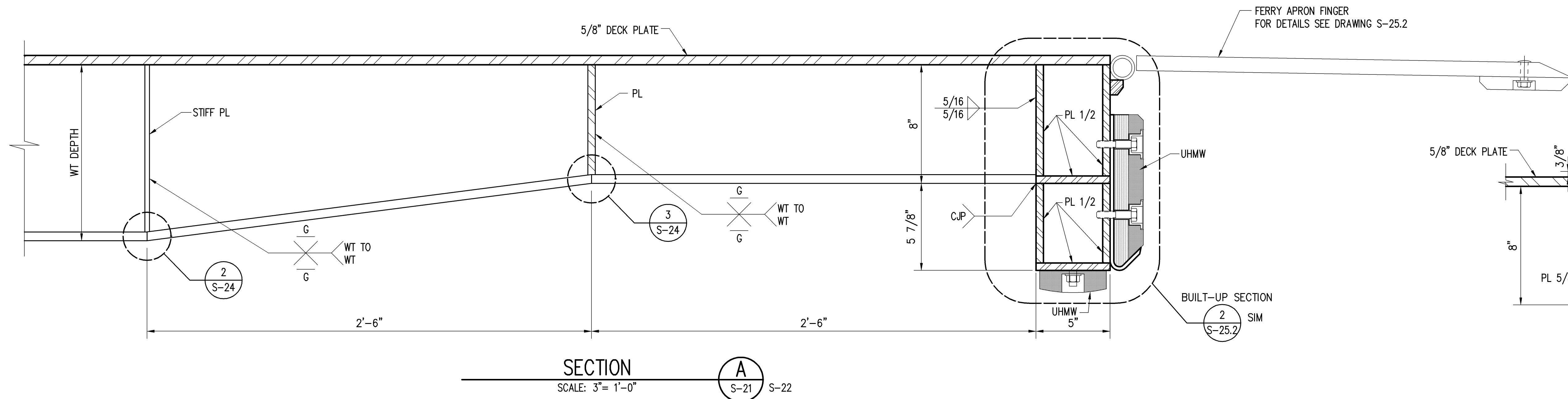
**CLAMP DETAIL 5**  
SCALE: 6" = 1'-0"



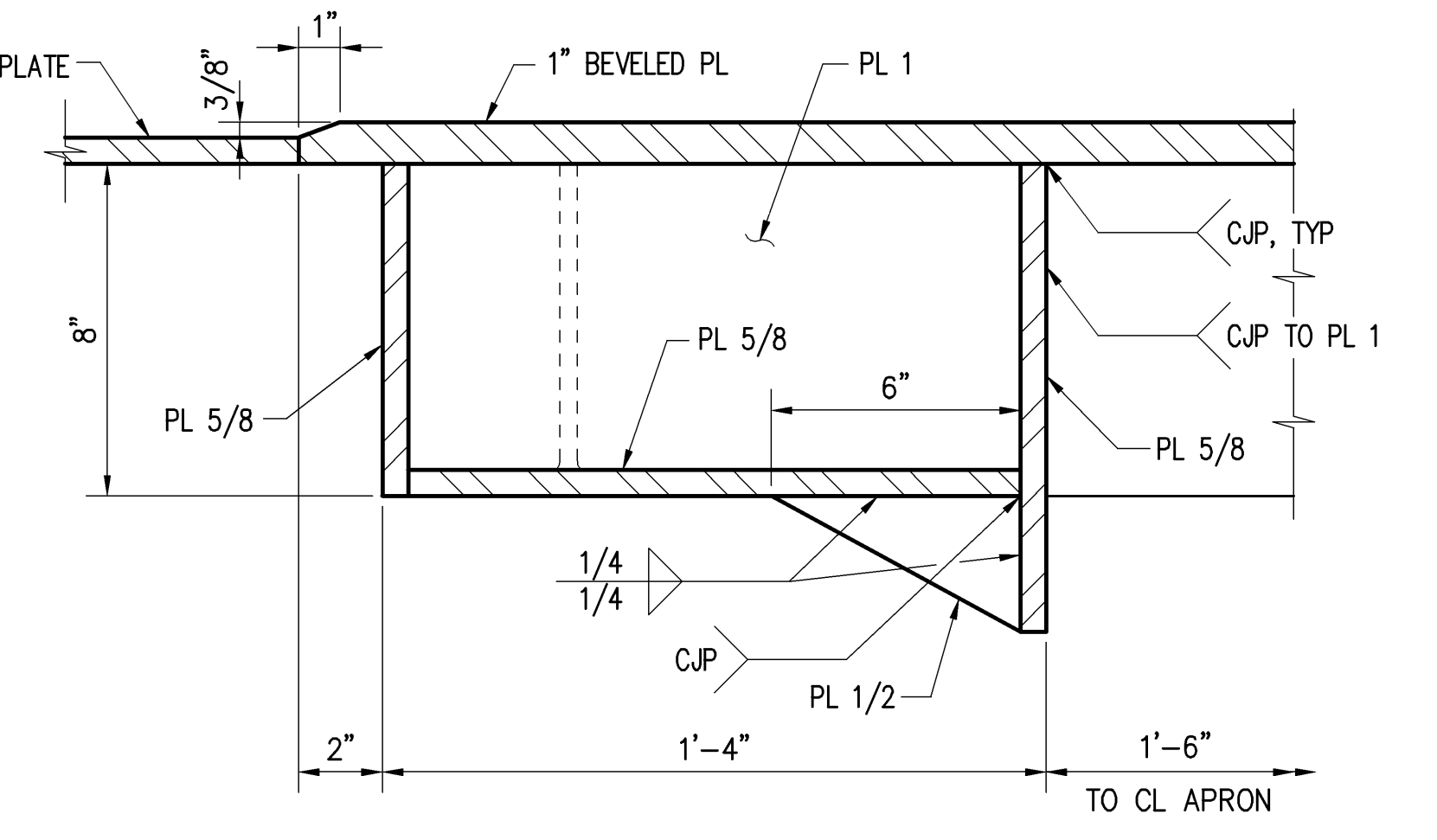
**CYLINDER POCKET DETAIL 4**  
SCALE: 6" = 1'-0"

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<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SHORE APRON SECTIONS AND DETAILS 3</b>			
SUBMITTED BY:		RECOMMENDED BY:	
DESIGNED BY: WGH		APPROVED BY:	
DRAWN BY: RRT		FOR HARBORS ADMINISTRATOR	
CHECKED BY: KN		JOB NUMBER	
DATE: 7/16/07		H.C. 90018	
SCALE: AS SHOWN		DRAWING NUMBER S-24.2	
		REVISION	
		0	

D

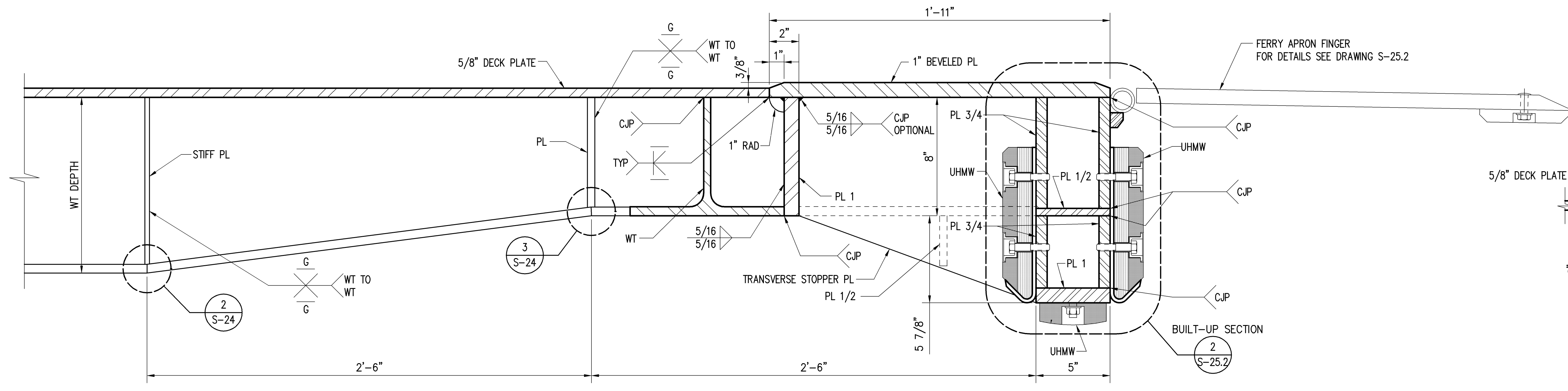


SECTION A  
SCALE: 3" = 1'-0"

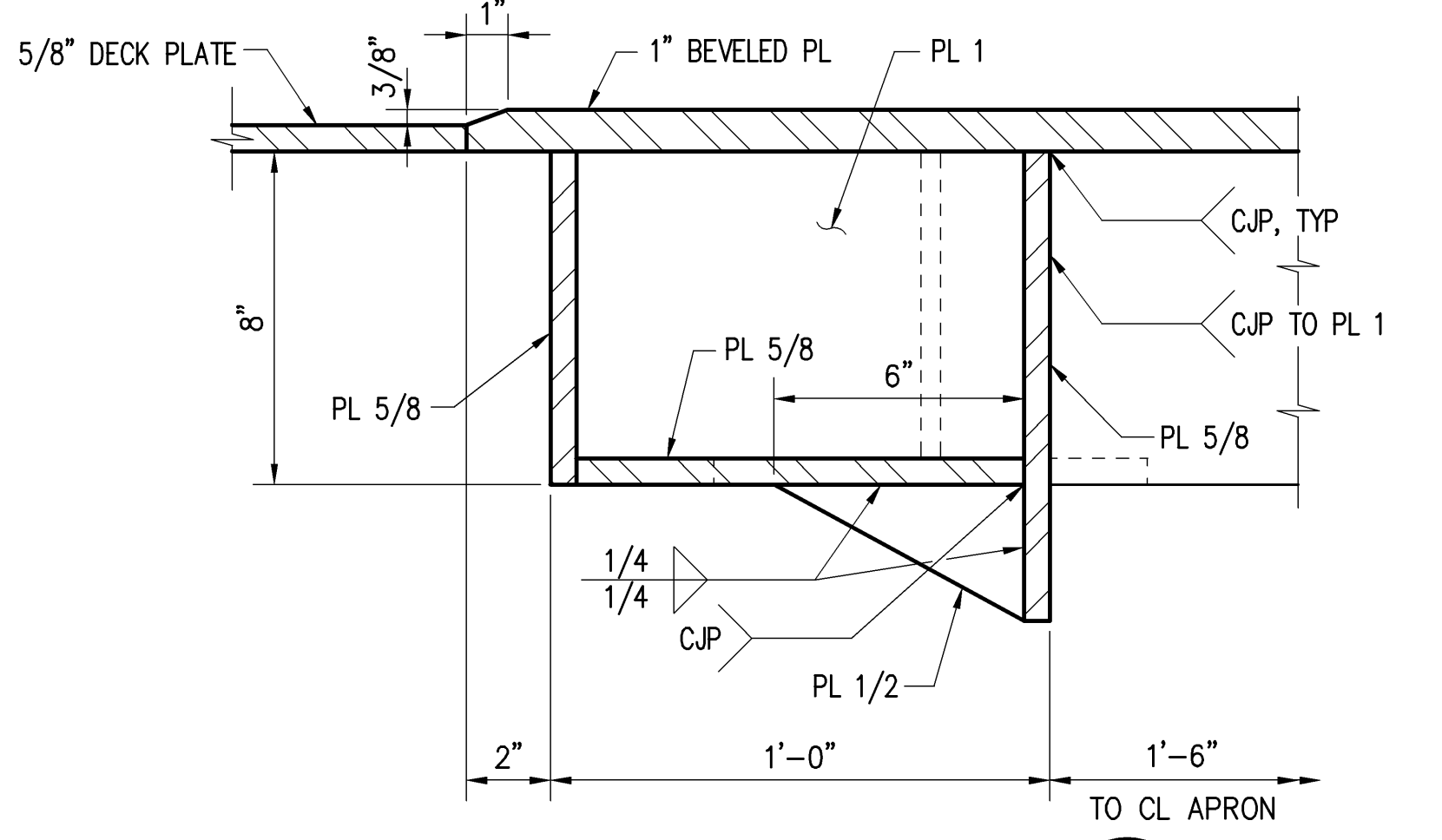


SECTION C  
SCALE: 3" = 1'-0"

C



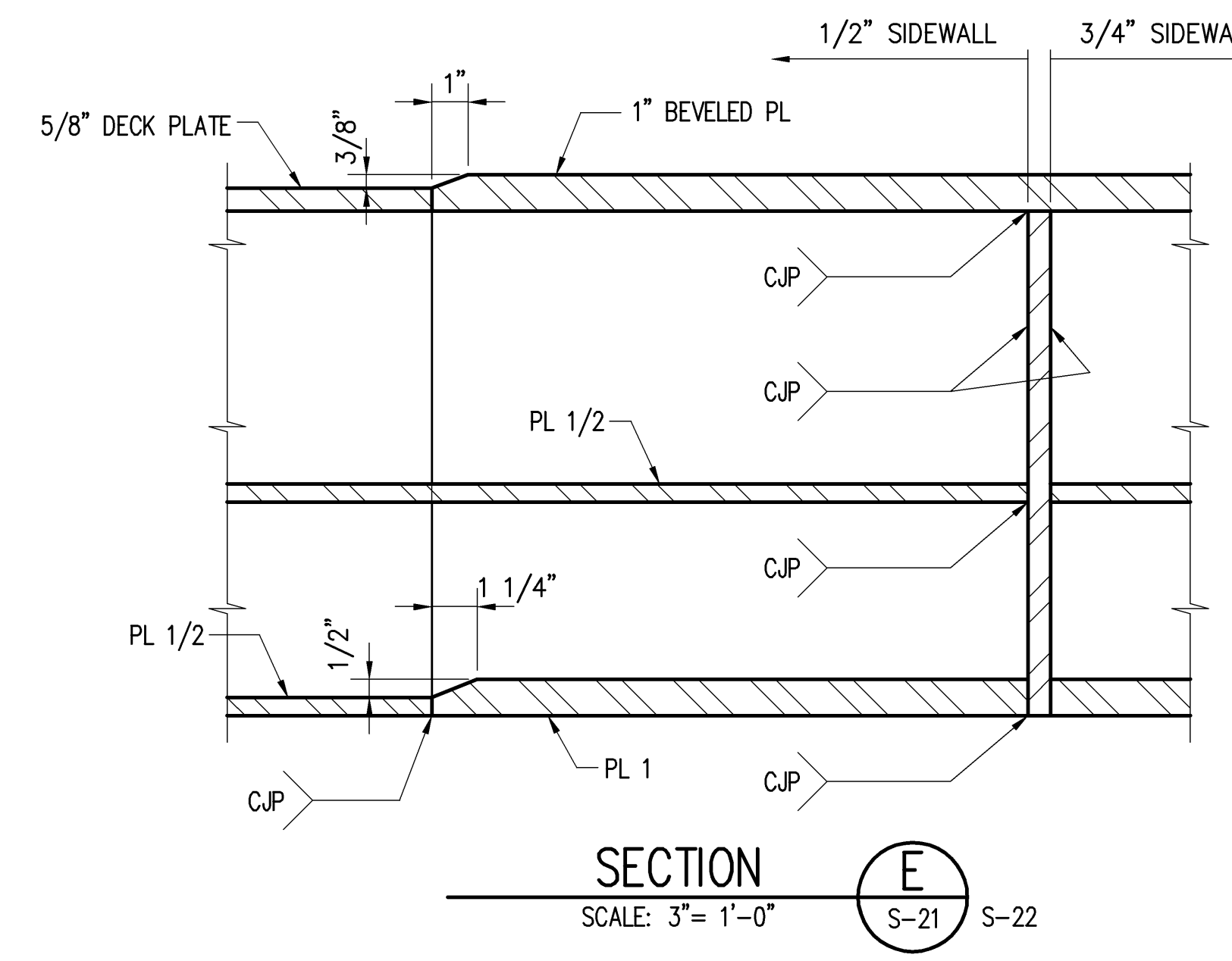
SECTION B  
SCALE: 3" = 1'-0"



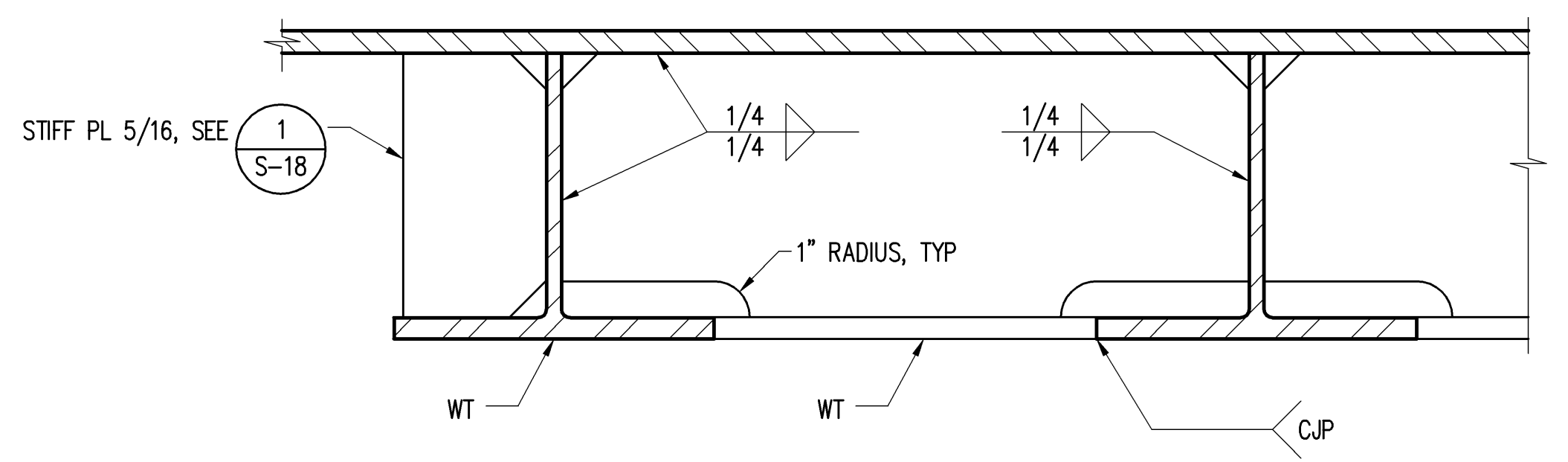
SECTION D  
SCALE: 3" = 1'-0"

B

A

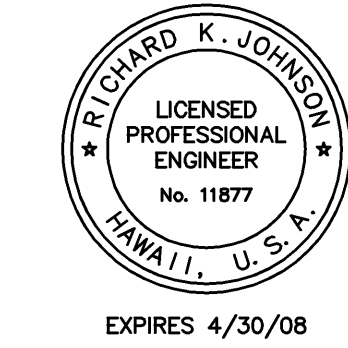


SECTION E  
SCALE: 3" = 1'-0"



SECTION F  
SCALE: 3" = 1'-0"

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SHEET TITLE <b>FERRY APRON SECTIONS AND DETAILS 1</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	REVISION
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(NOT TO SCALE)

D

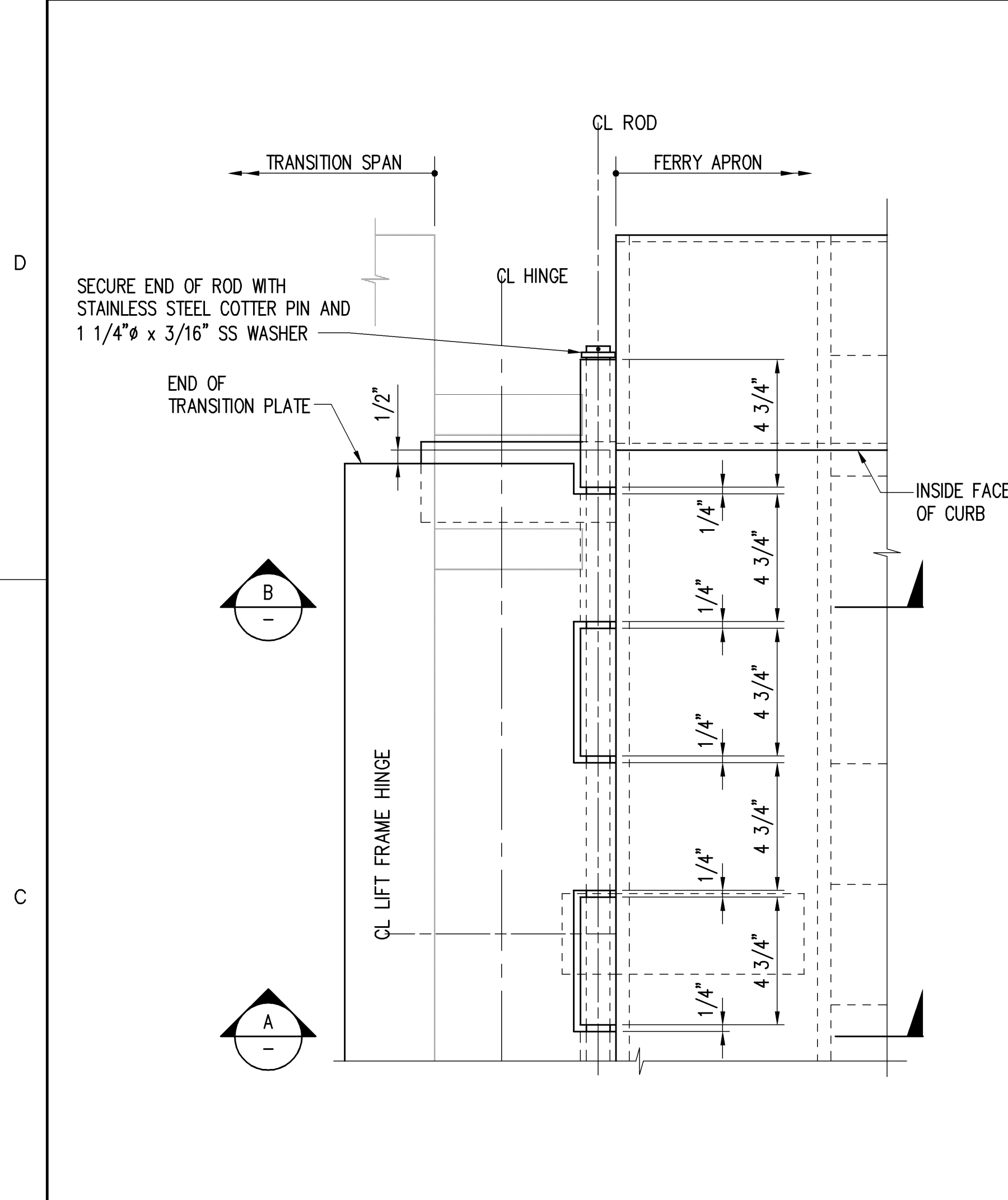
C

B

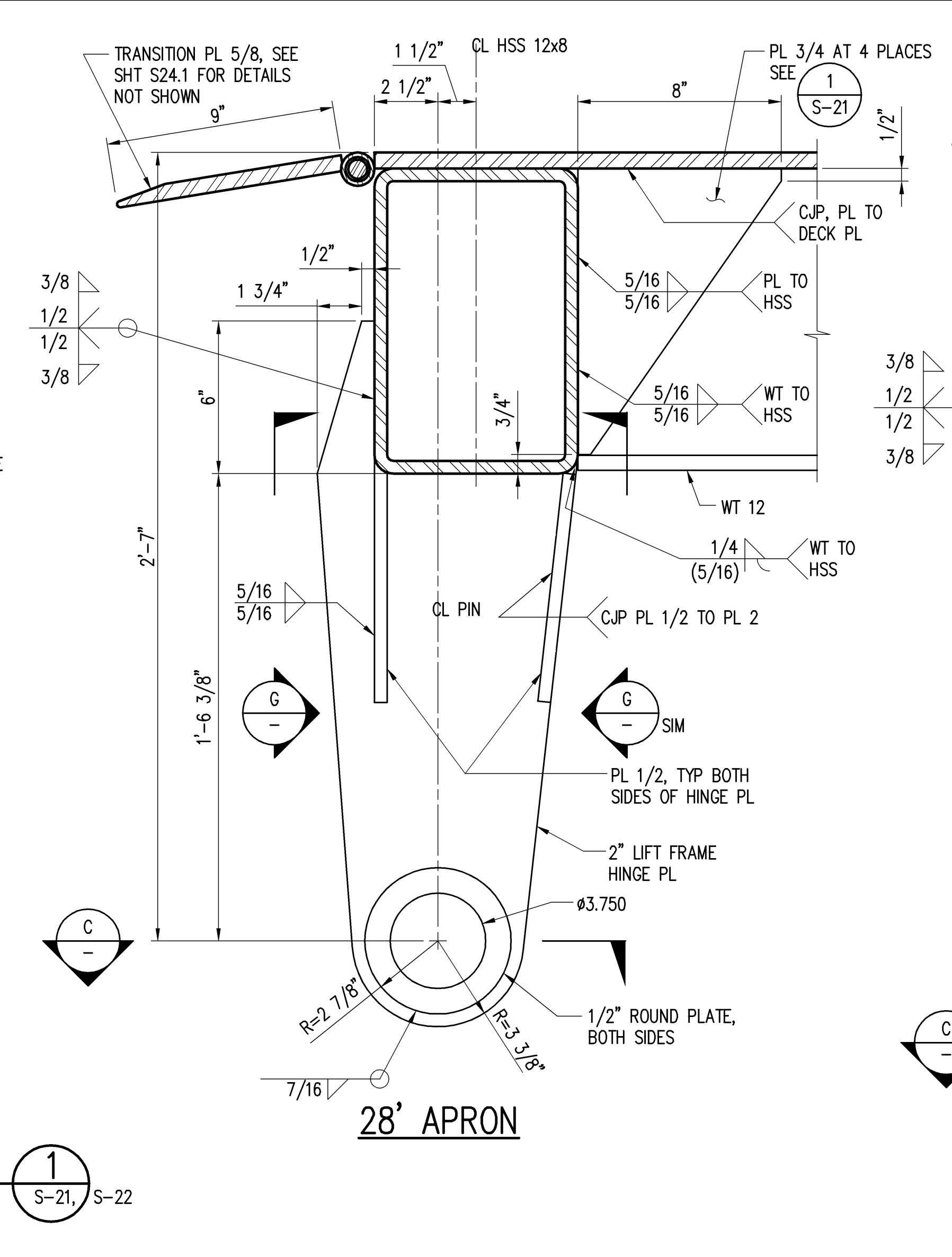
A

DESIGN RECORD DRAWINGS

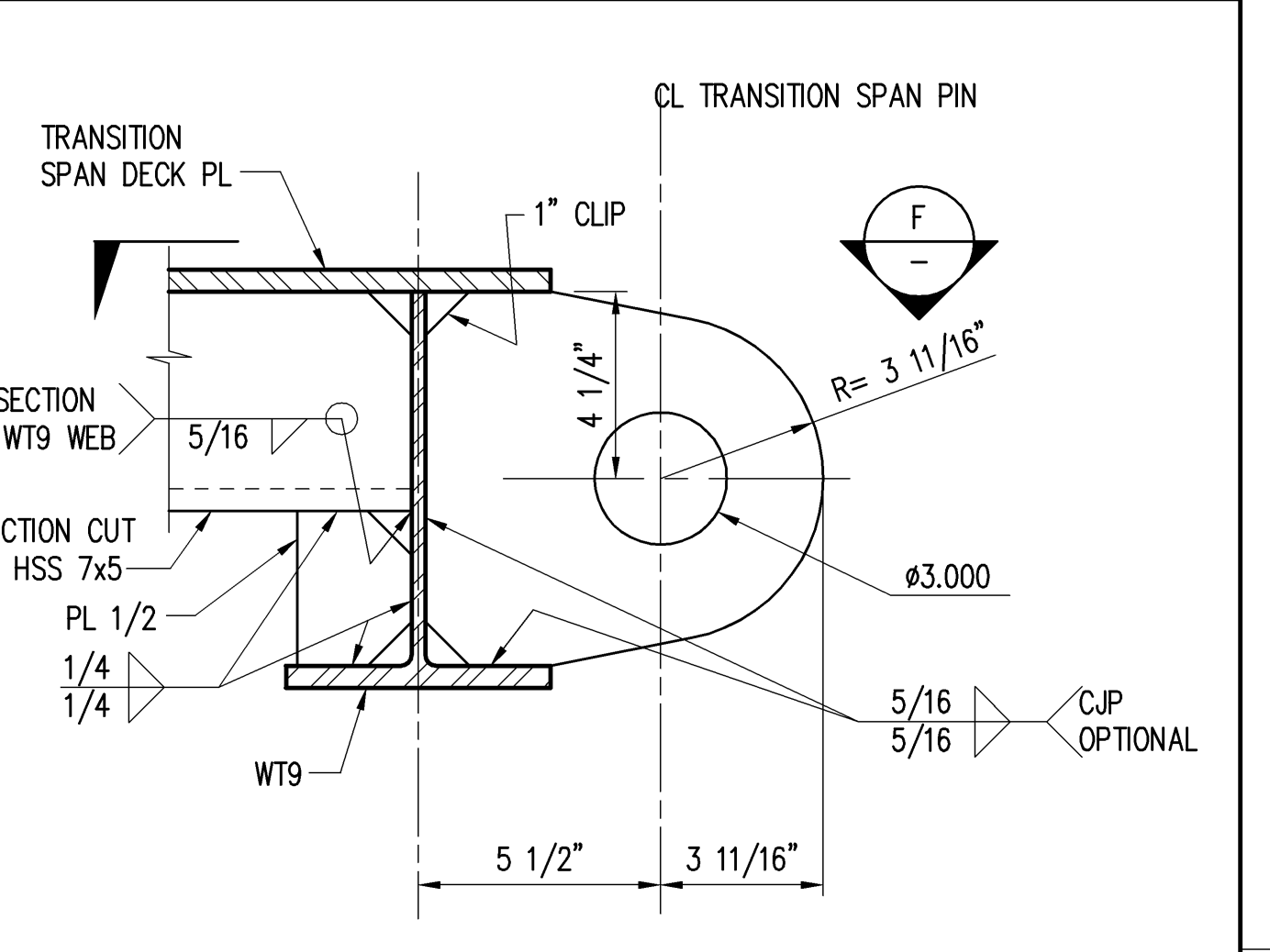
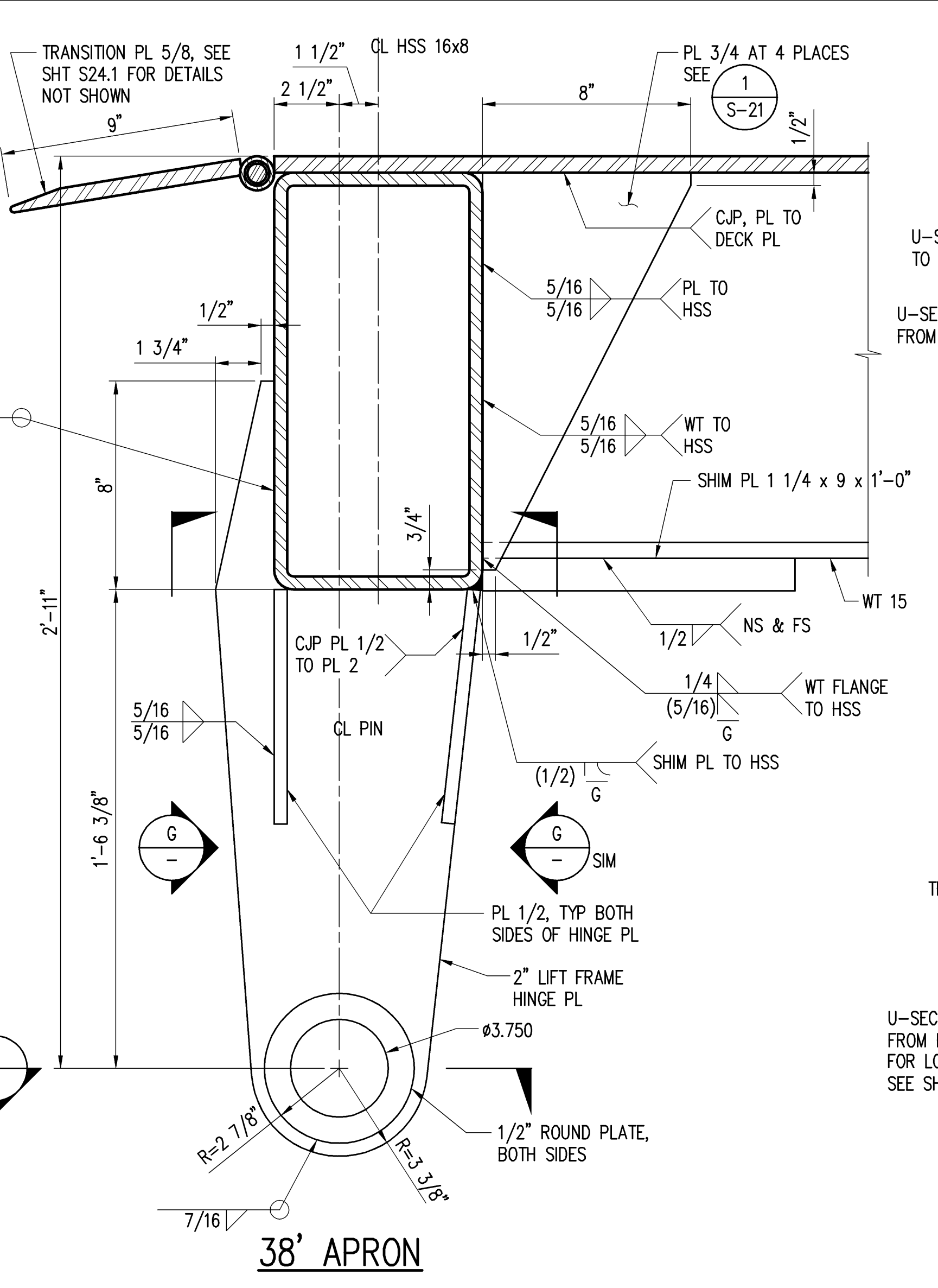




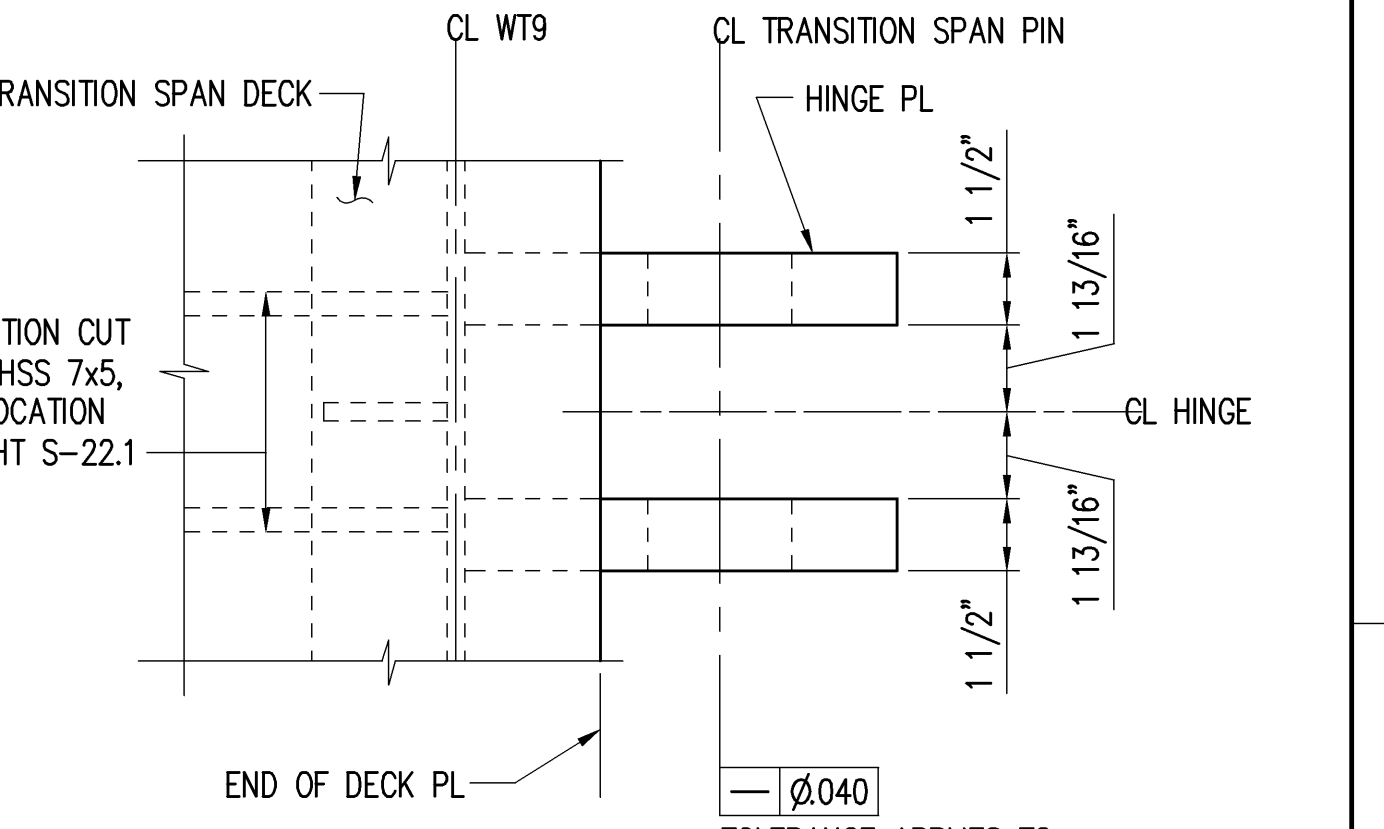
**FERRY APRON TRANSITION PLATE AND HINGE DETAIL**  
SCALE: 3"= 1'-0"  
S-21, S-22



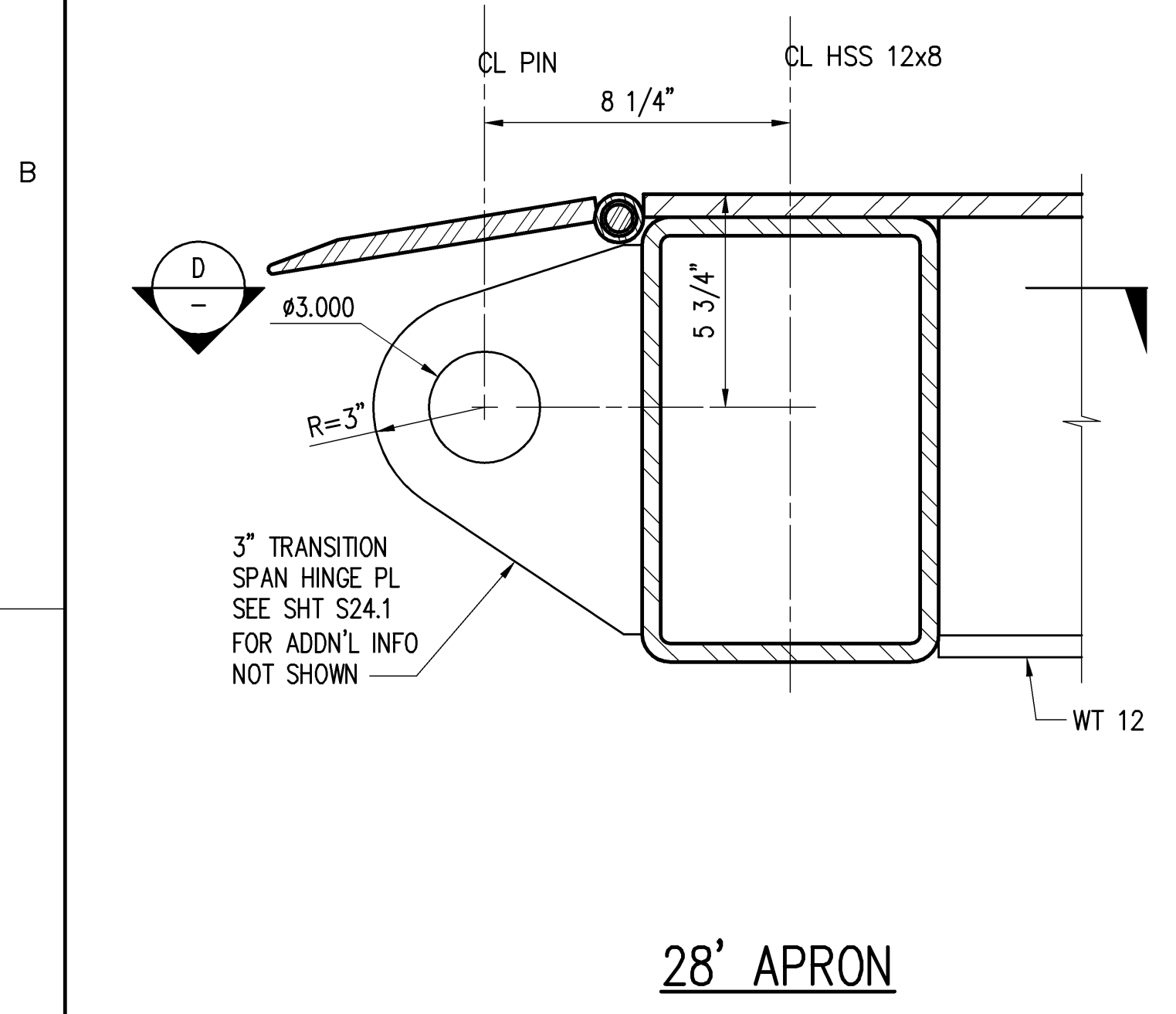
**SECTION AT LIFT FRAME HINGE (A)**  
SCALE: 3"= 1'-0"  
S-21, S-22



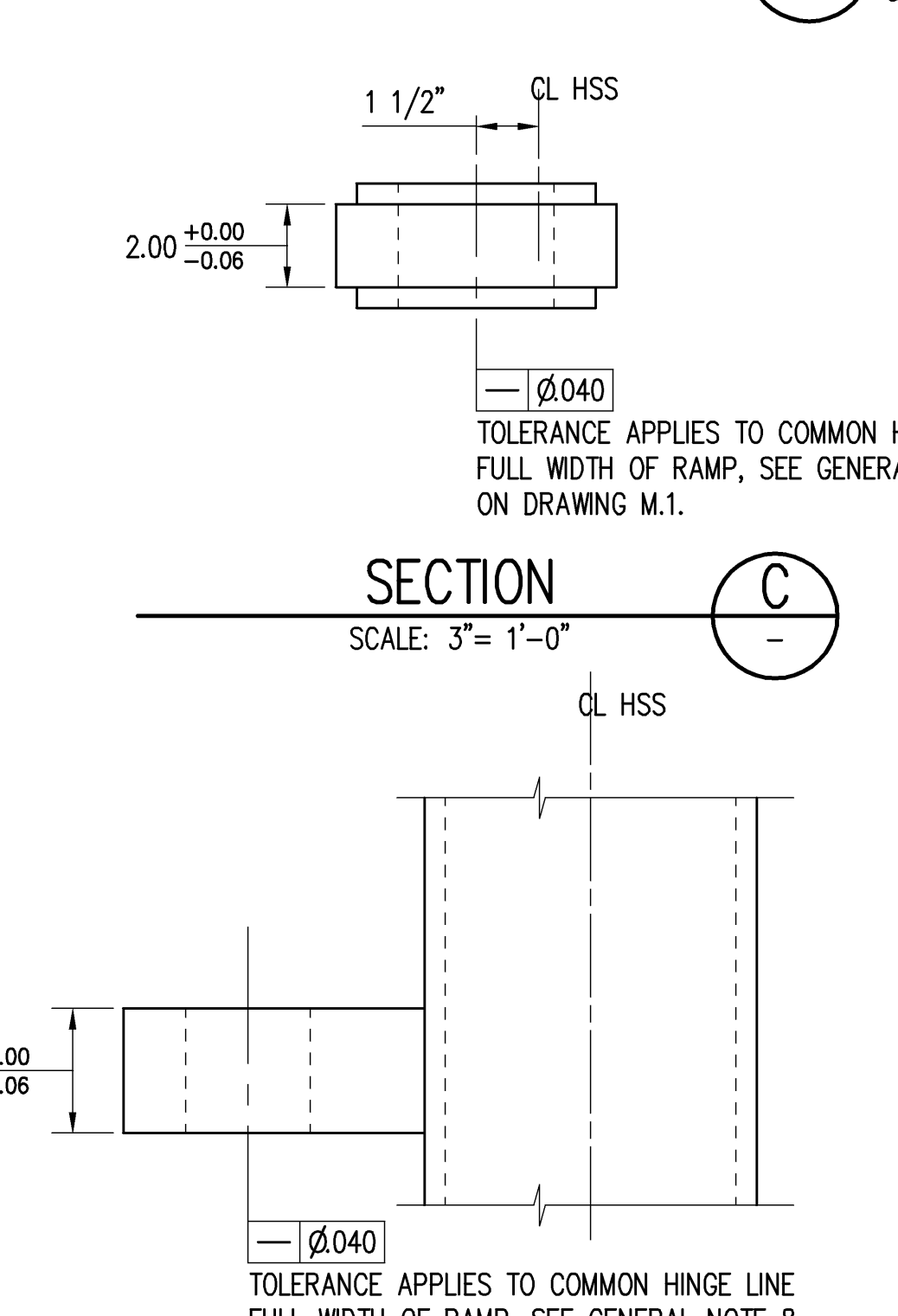
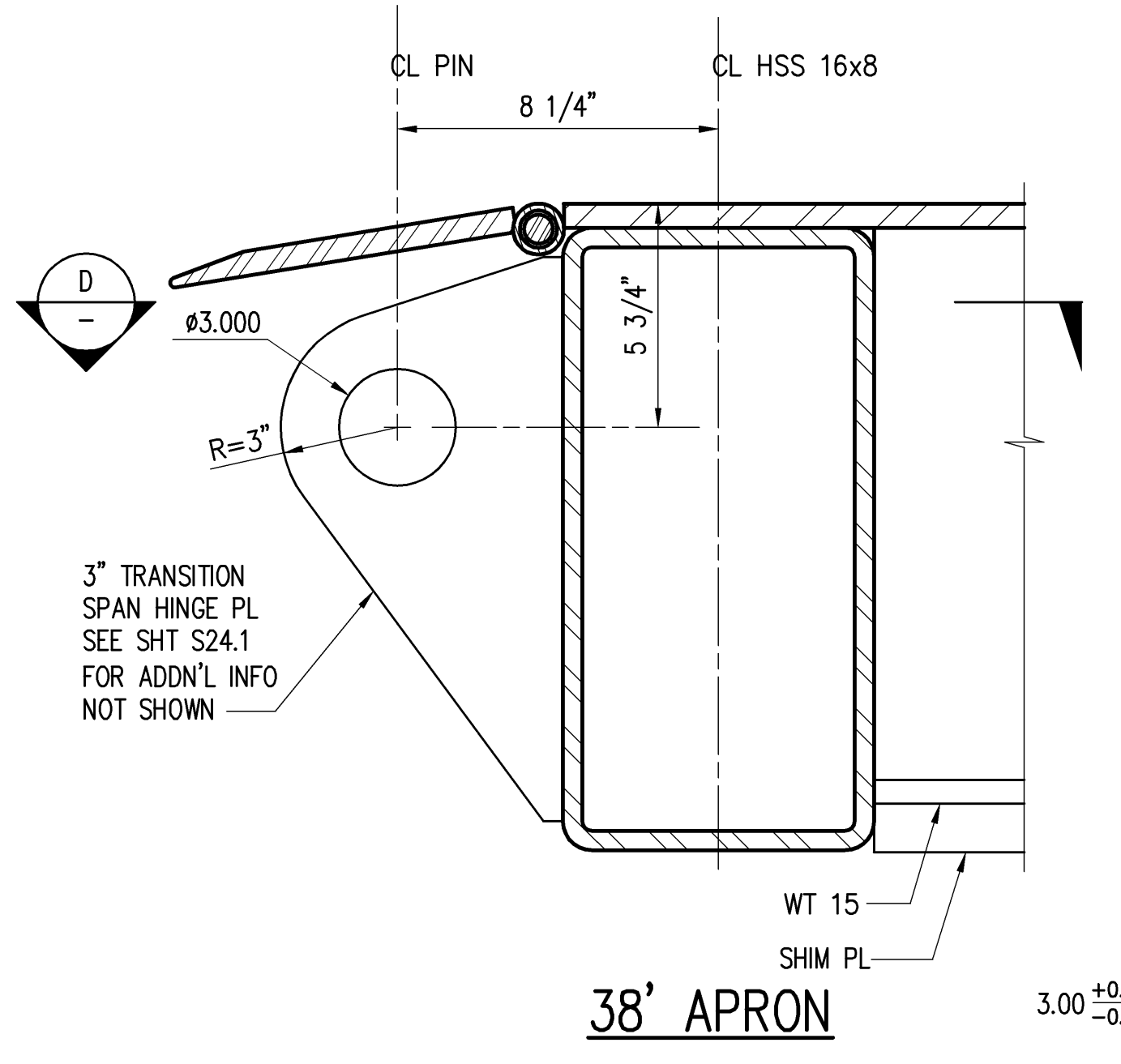
**SECTION AT TRANSITION SPAN HINGE (E)**  
SCALE: 3"= 1'-0"  
S-22.1



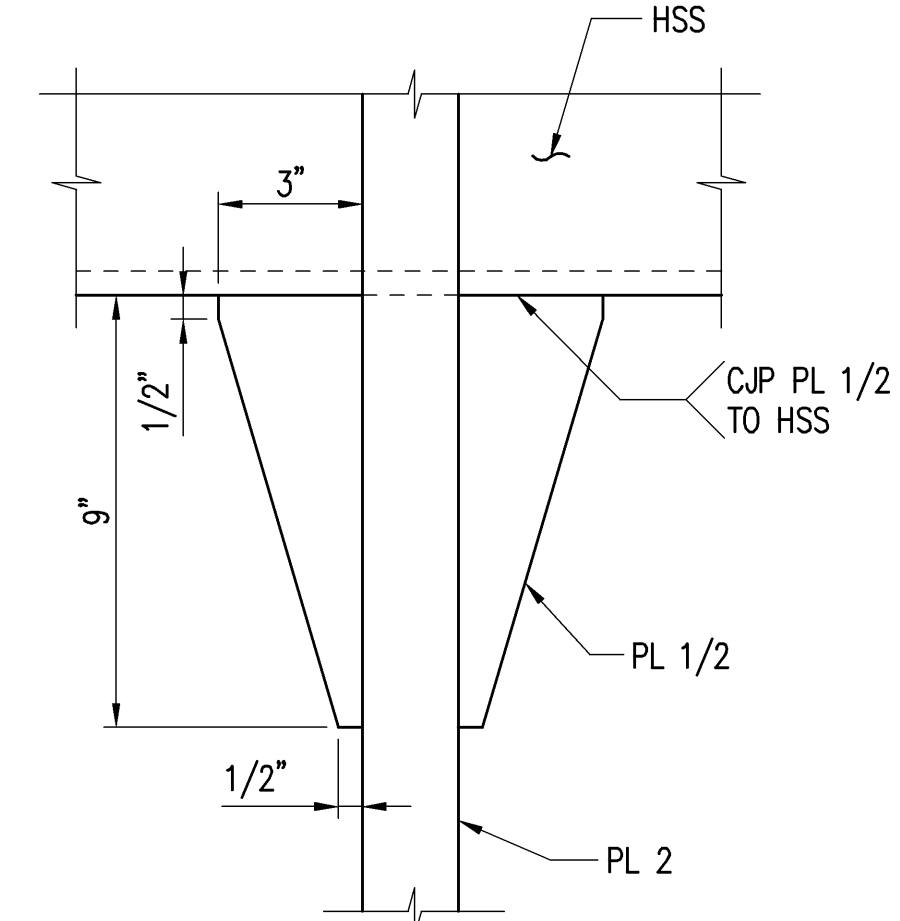
**PLAN AT TRANSITION SPAN HINGE (F)**  
SCALE: 3"= 1'-0"  
S-22.1



**SECTION AT TRANSITION SPAN HINGE (B)**  
SCALE: 3"= 1'-0"  
S-21, S-22



**SECTION (C)**  
SCALE: 3"= 1'-0"  
TOLERANCE APPLIES TO COMMON HINGE LINE FULL WIDTH OF RAMP, SEE GENERAL NOTE 8 ON DRAWING M.1.



**SECTION (G)**  
SCALE: 3"= 1'-0"

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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>FERRY APRON SECTIONS AND DETAILS 2</b>	
SUBMITTED BY:	RECOMMENDED BY:
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
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	REVISION 0

D

C

B

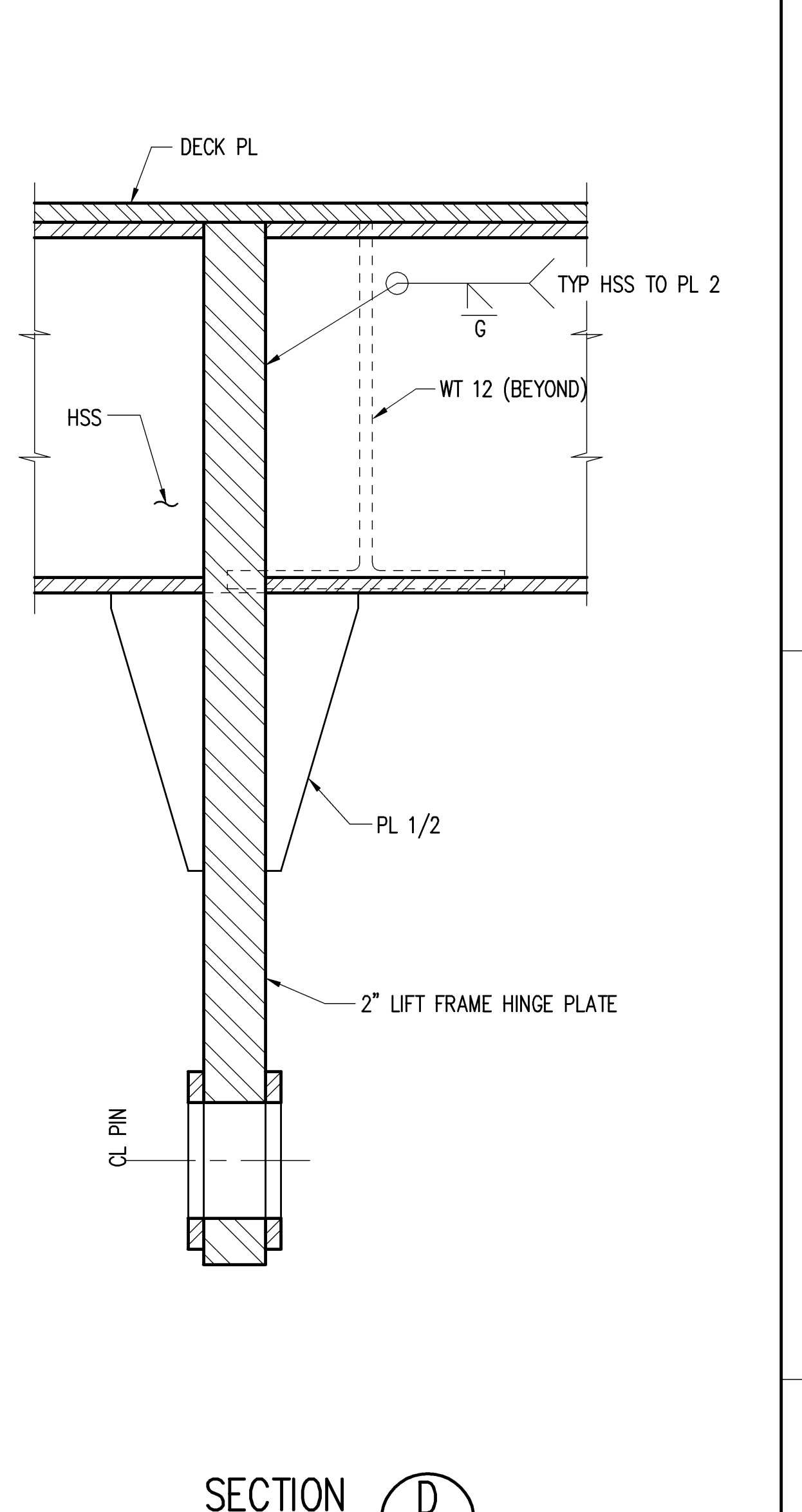
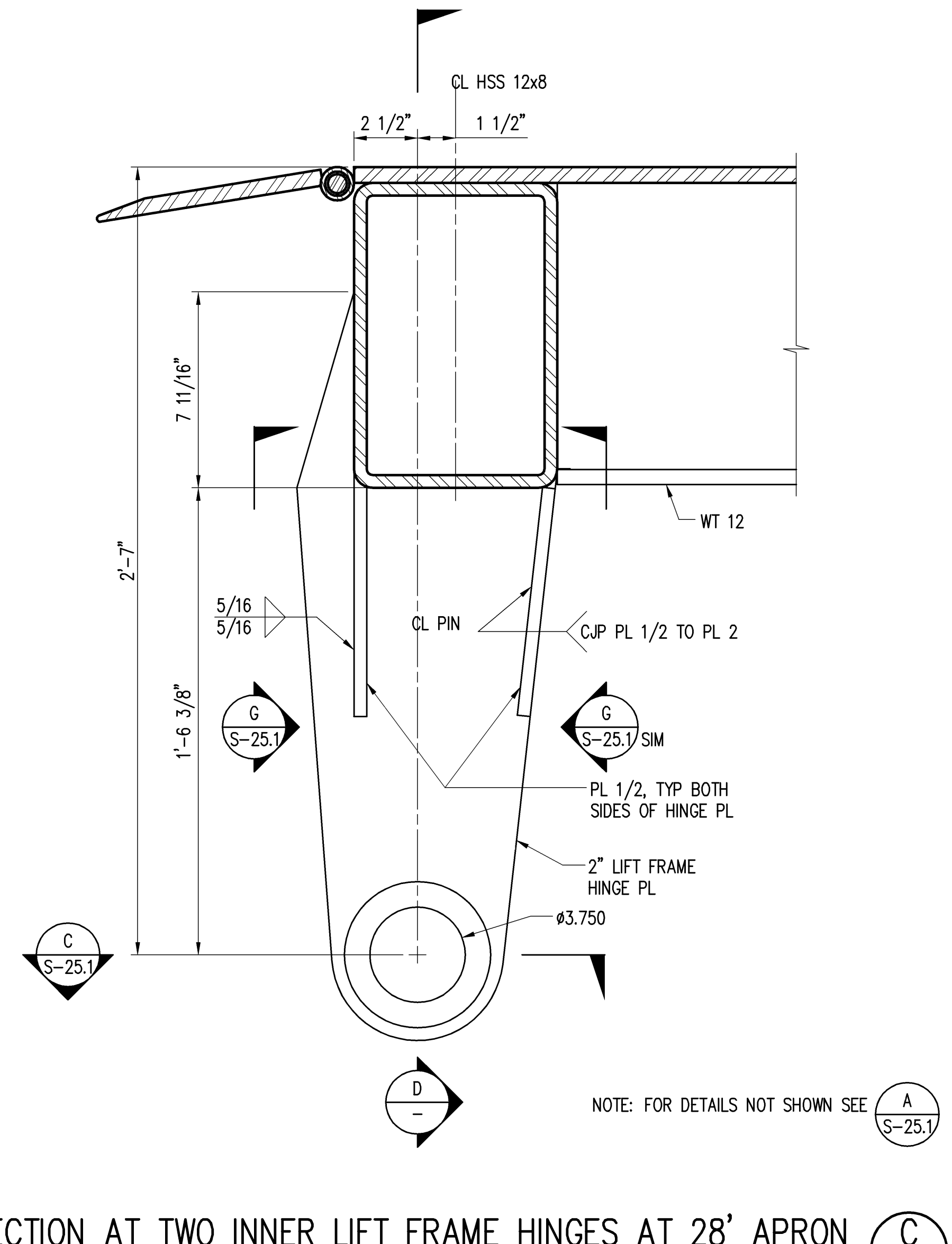
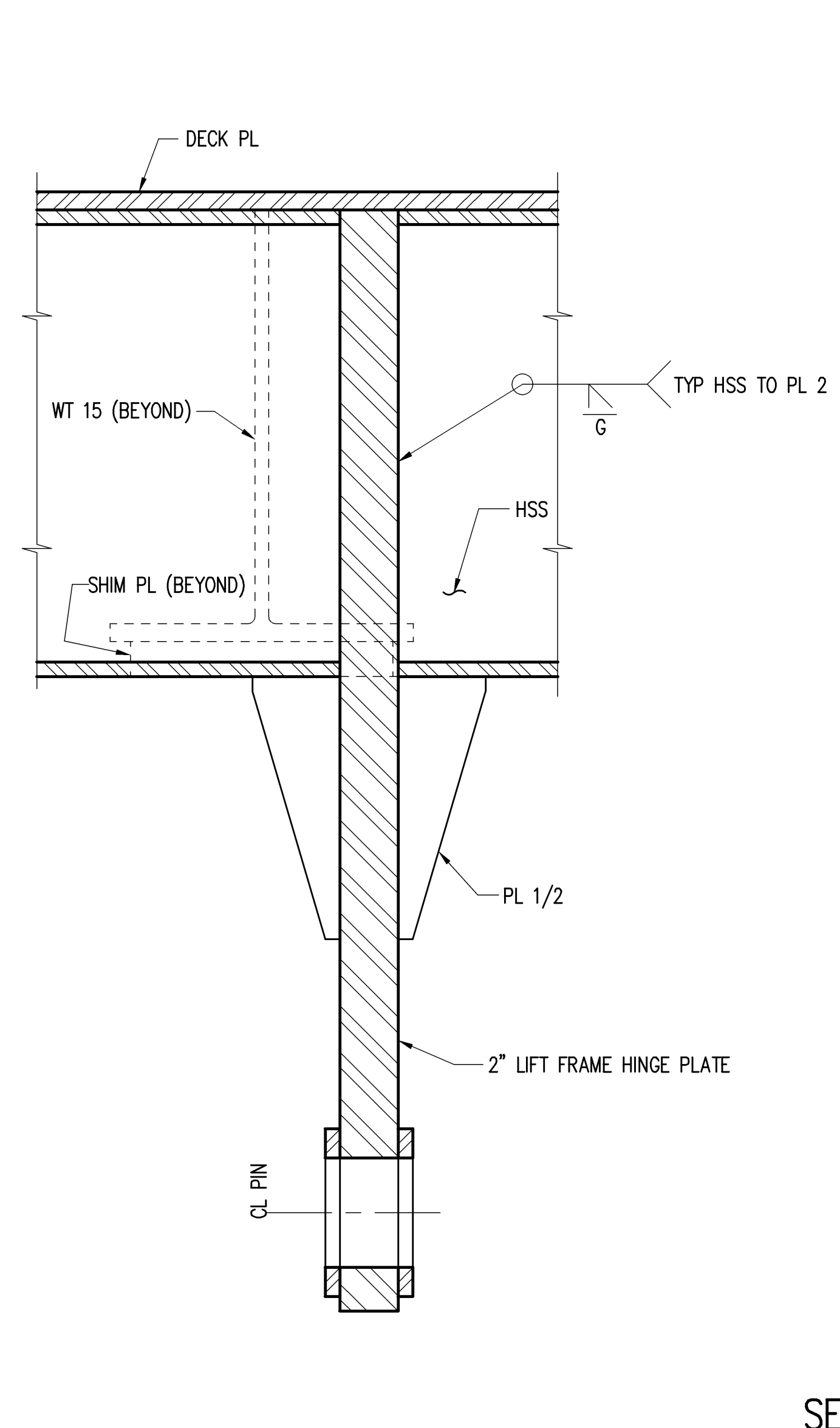
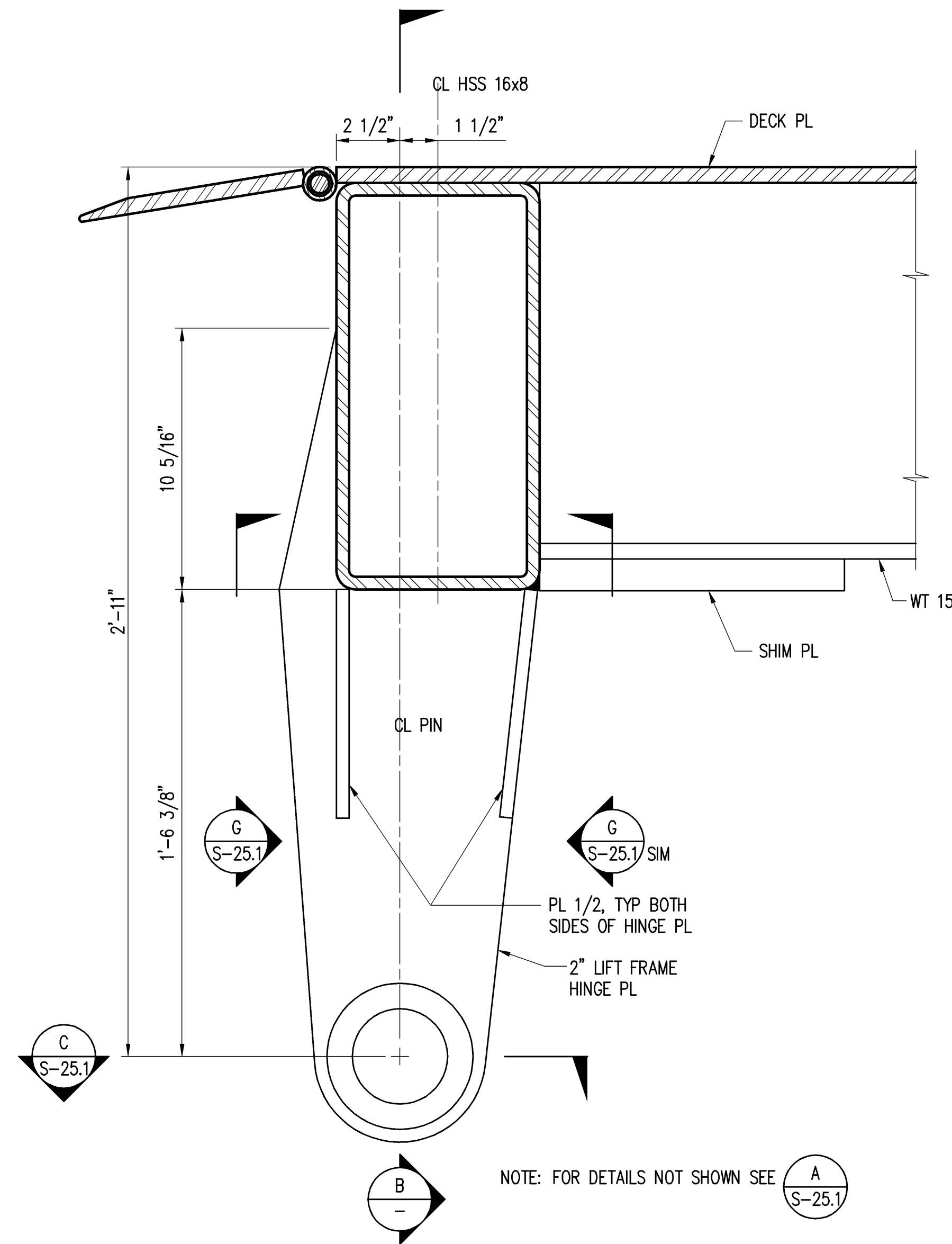
A

D

C

B

A



SECTION AT TWO INNER LIFT FRAME HINGES AT 38' APRON (A) SCALE: 3" = 1'-0"

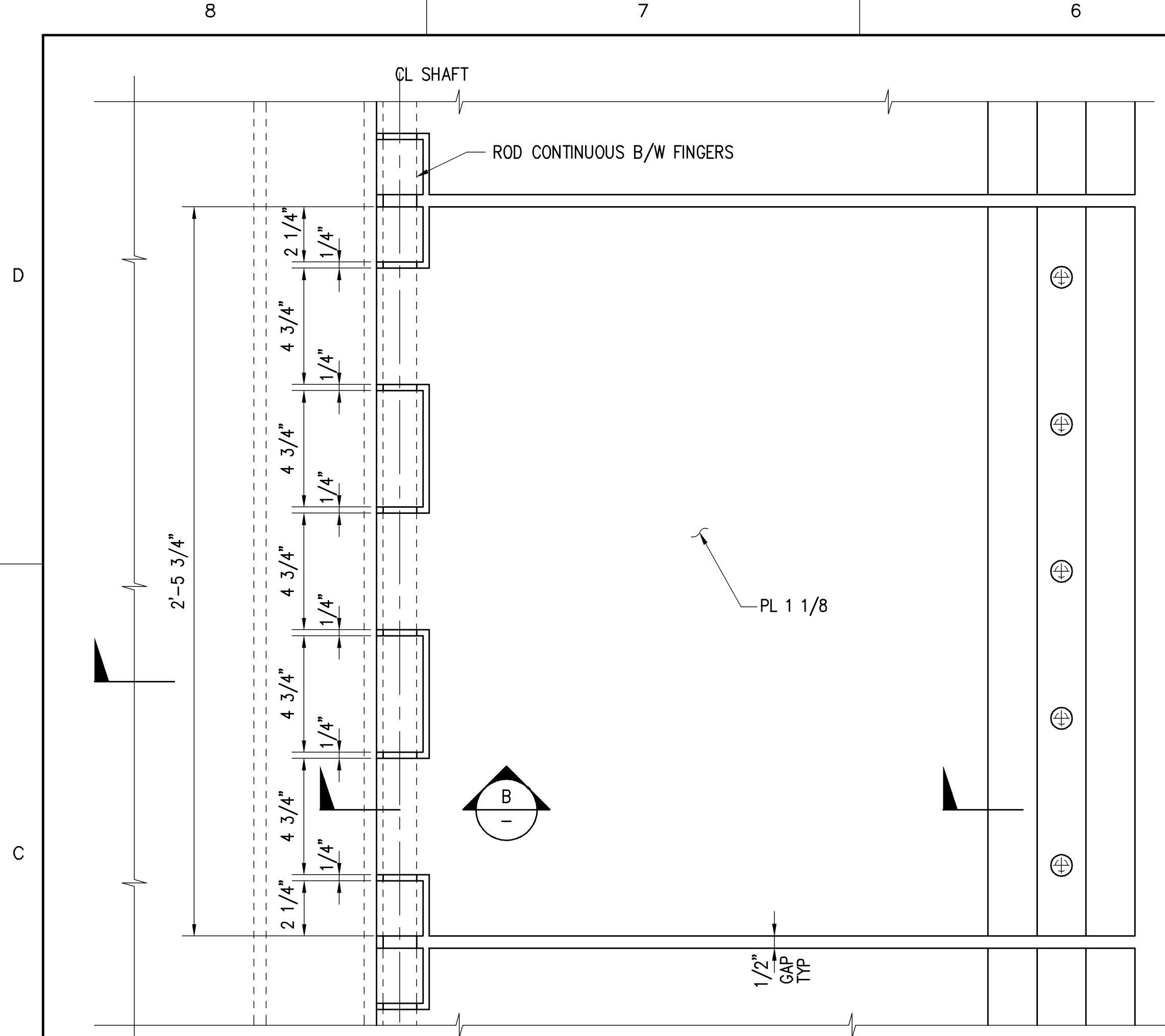
SECTION B SCALE: 3" = 1'-0"

SECTION AT TWO INNER LIFT FRAME HINGES AT 28' APRON (C) SCALE: 3" = 1'-0"

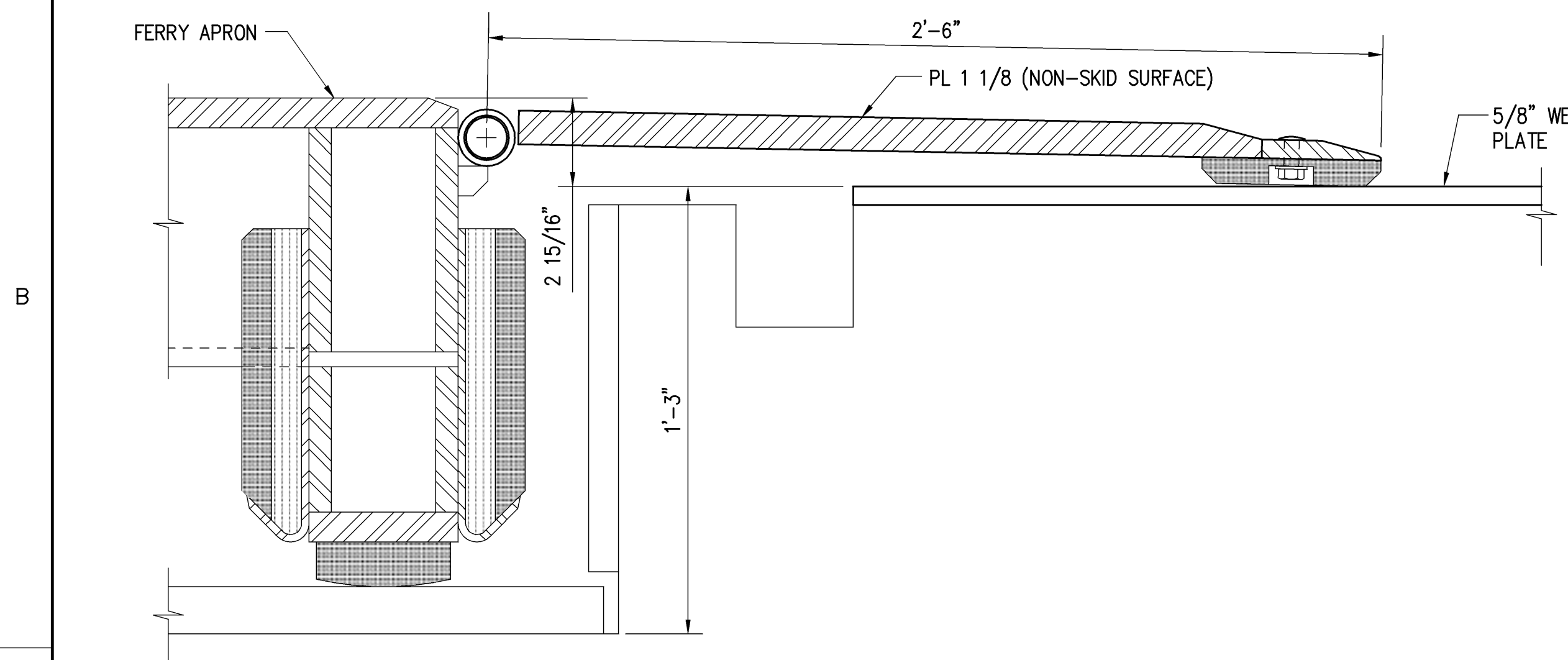
SECTION D SCALE: 3" = 1'-0"

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SHEET TITLE <b>FERRY APRON SECTIONS AND DETAILS 3</b>		
SUBMITTED BY:	SECTION HEAD	RECOMMENDED BY: ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:	DRAWING NUMBER S-25.11
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR	REVISION
CHECKED BY: KN	JOB NUMBER H.C. 90018	0 OF 1 SHTS
DATE: 7/16/07		
SCALE: AS SHOWN		

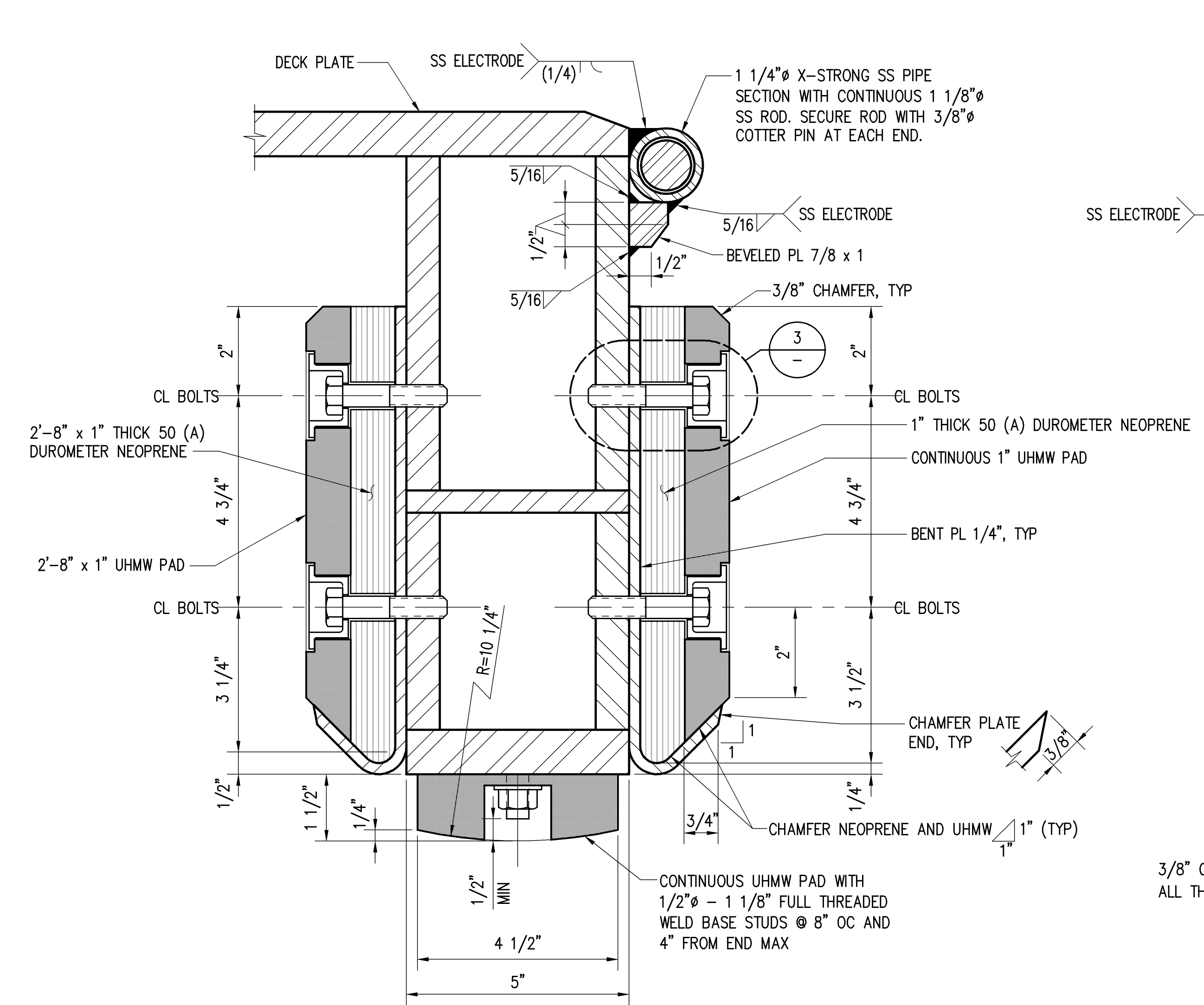
DESIGN RECORD DRAWINGS



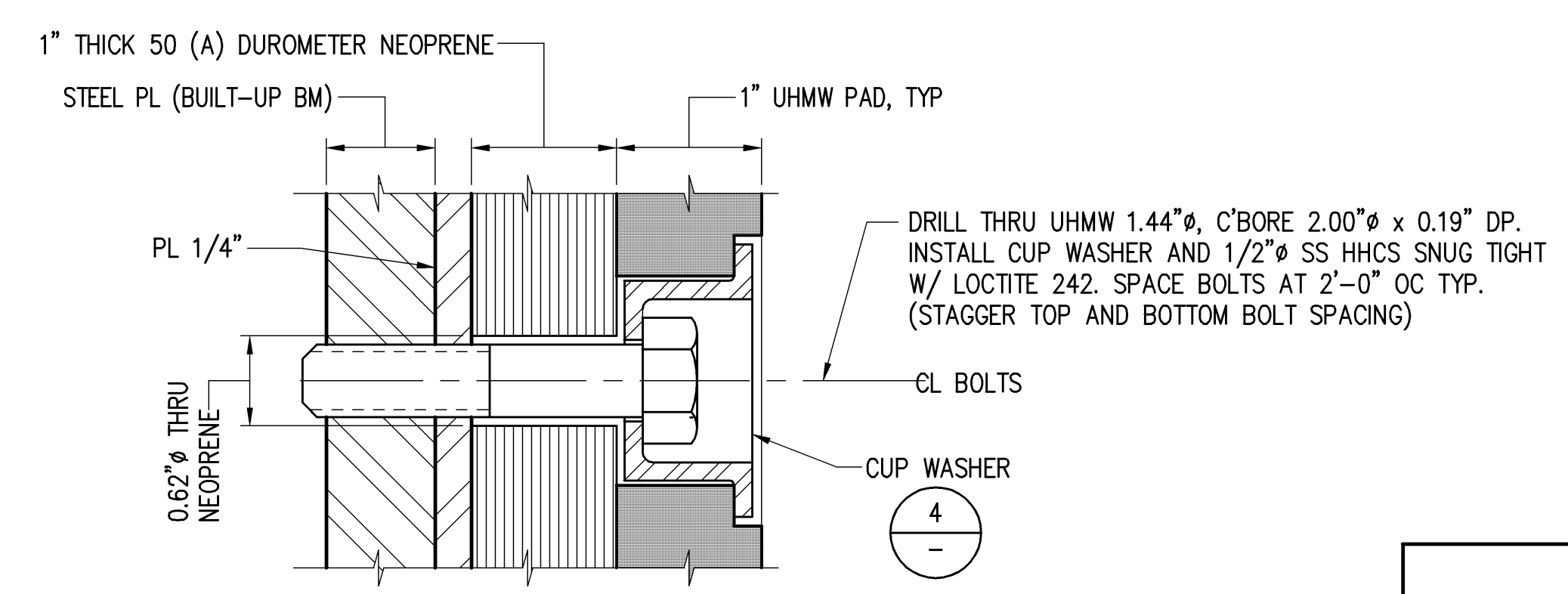
**FERRY APRON FINGER DETAIL 1**  
SCALE: 3" = 1'-0"  
S-21 S-22



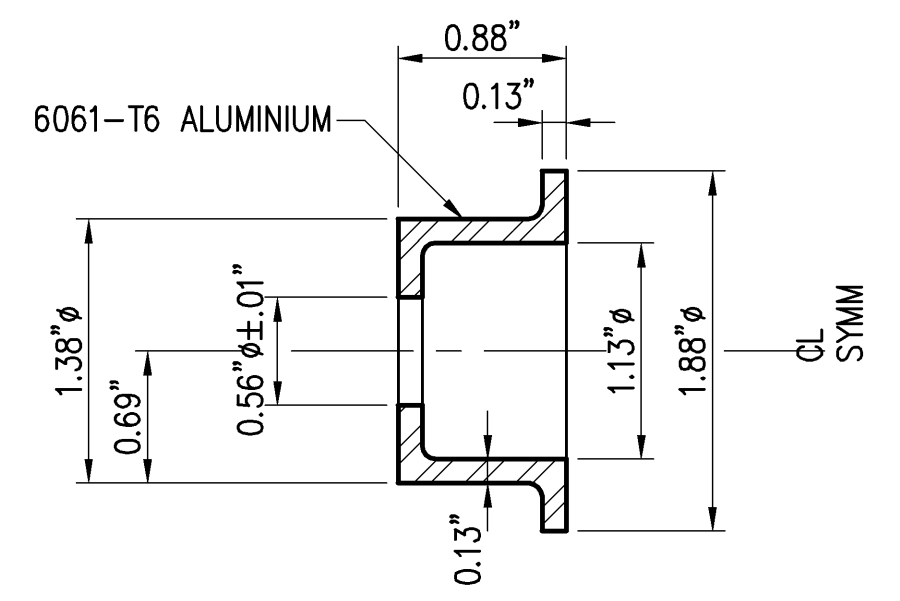
**SECTION A**  
SCALE: 3" = 1'-0"



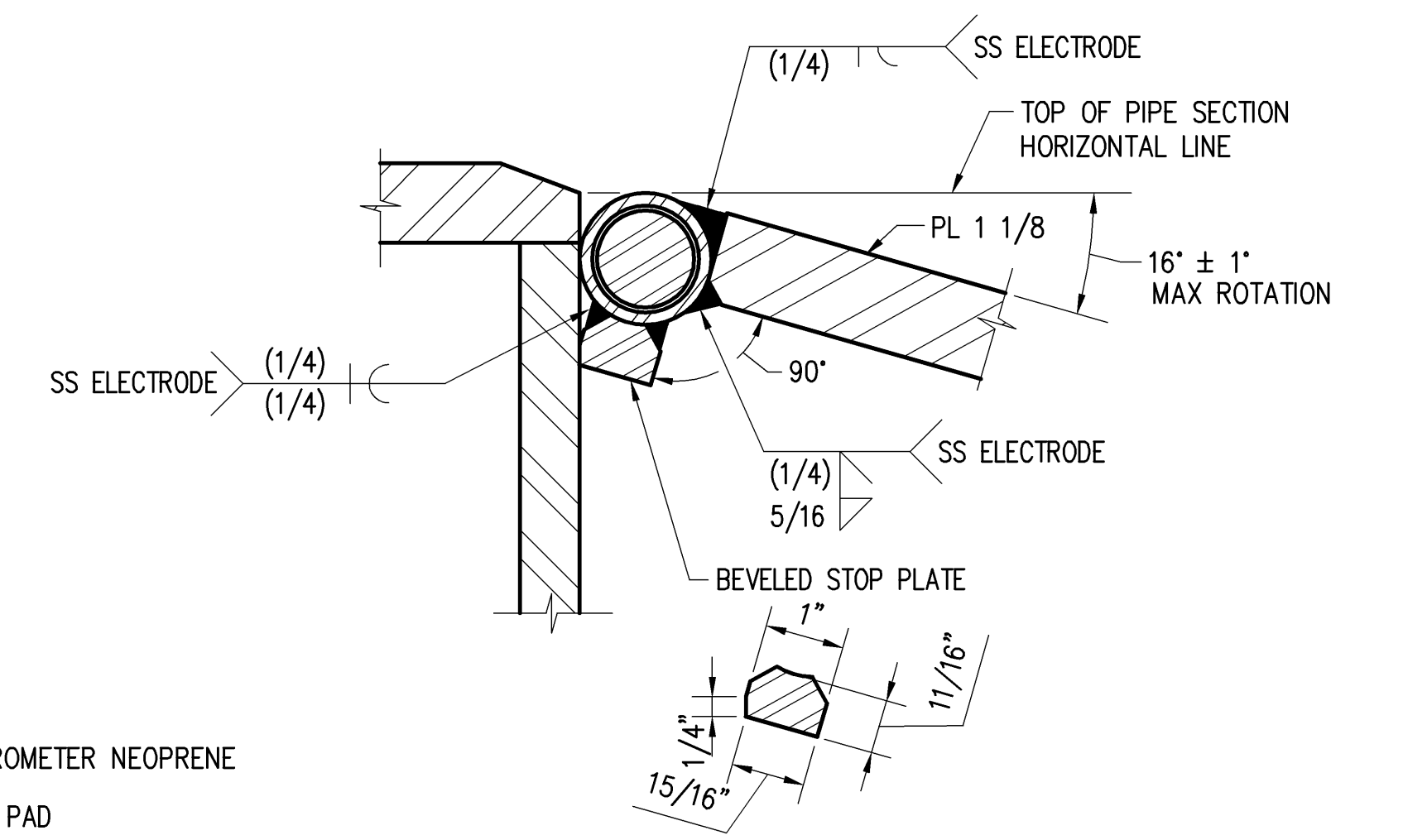
**DETAIL 2**  
SCALE: 6" = 1'-0"  
S-25



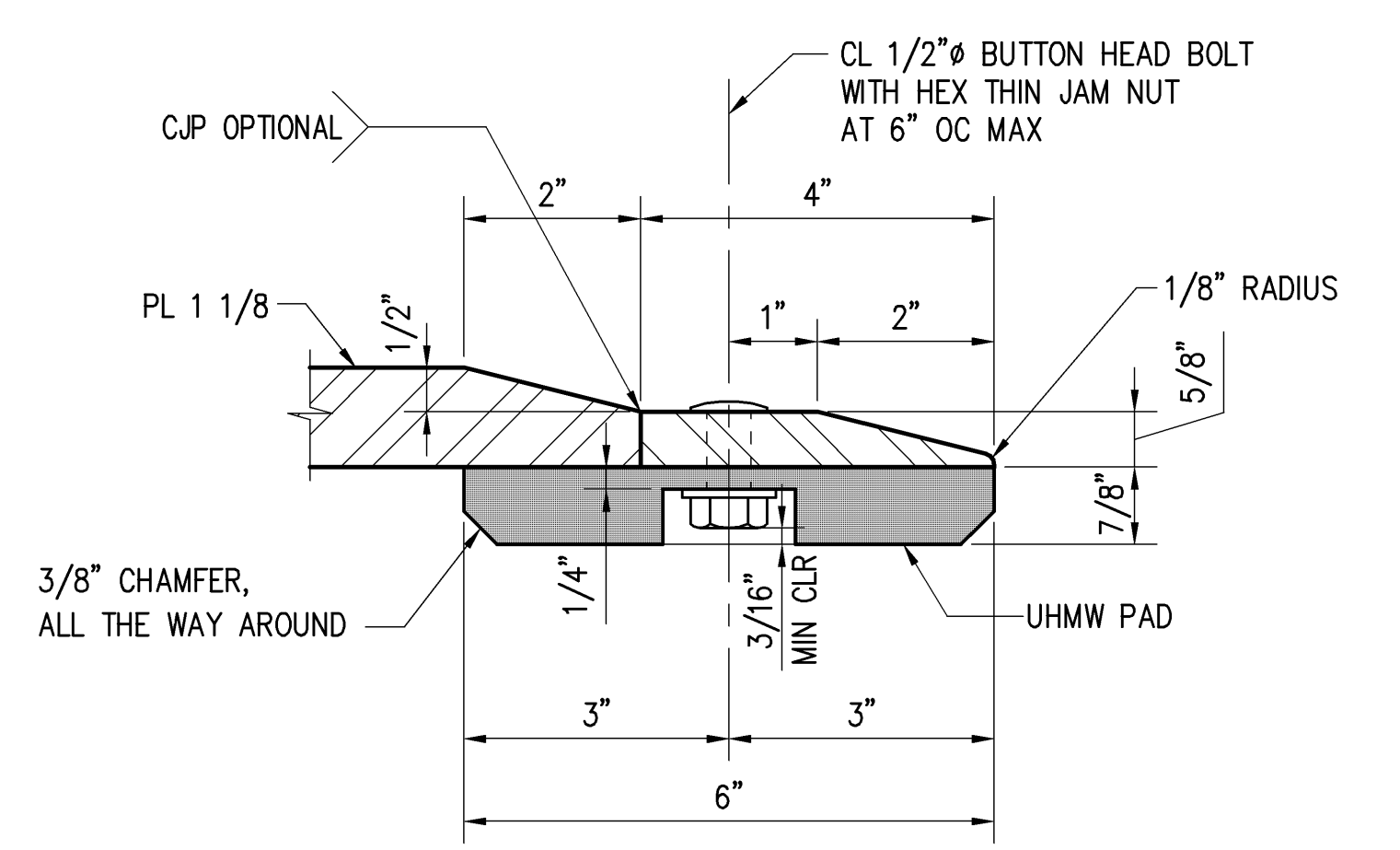
**ATTACHMENT DETAIL 3**  
SCALE: 1" = 1"



**CUP WASHER DETAIL 4**  
SCALE: 1" = 1"

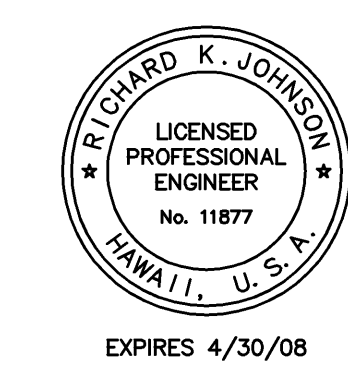


**SECTION B**  
SCALE: 6" = 1'-0"



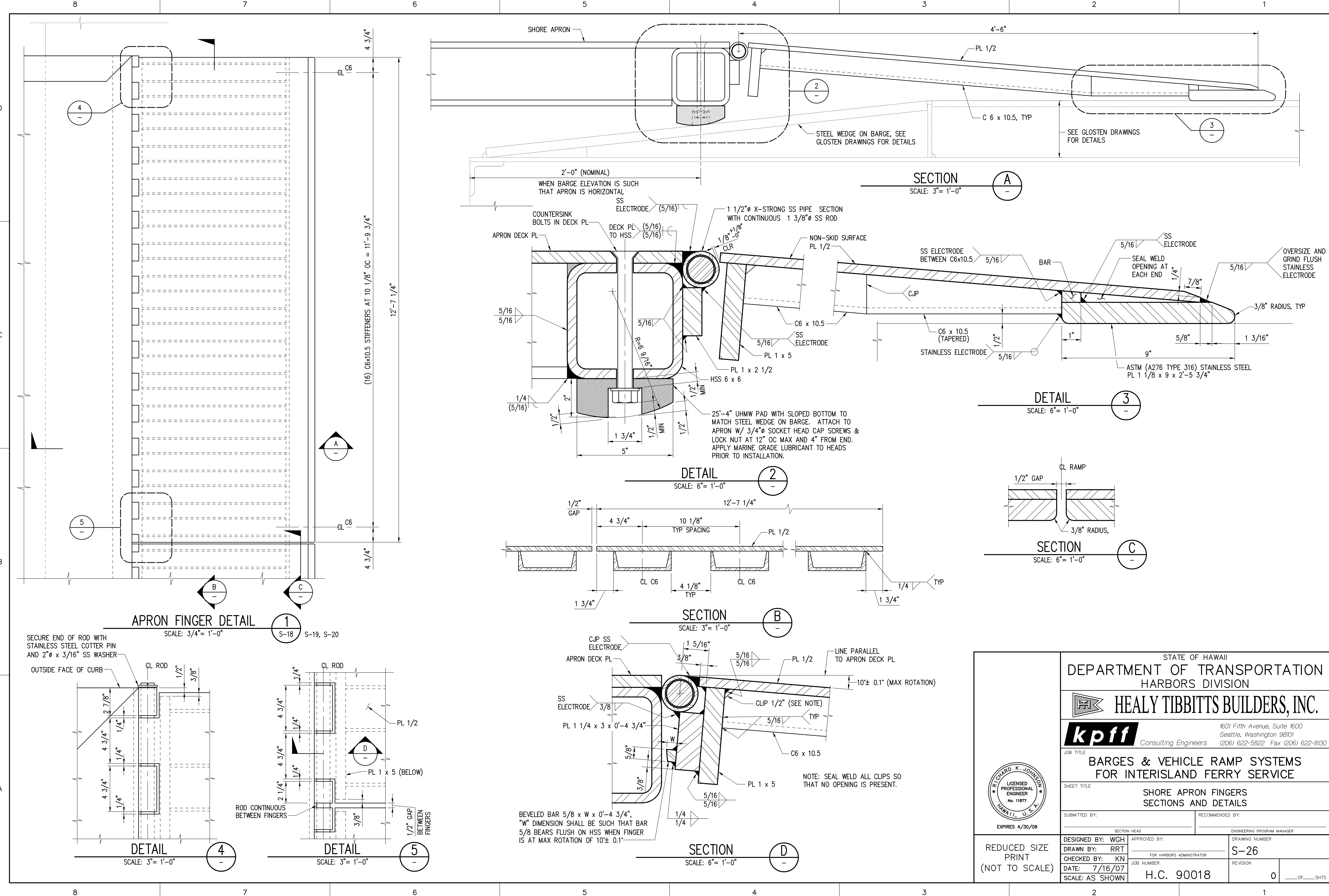
**SECTION C**  
SCALE: 6" = 1'-0"

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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>FERRY APRON FINGERS SECTIONS AND DETAILS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	JOB NUMBER
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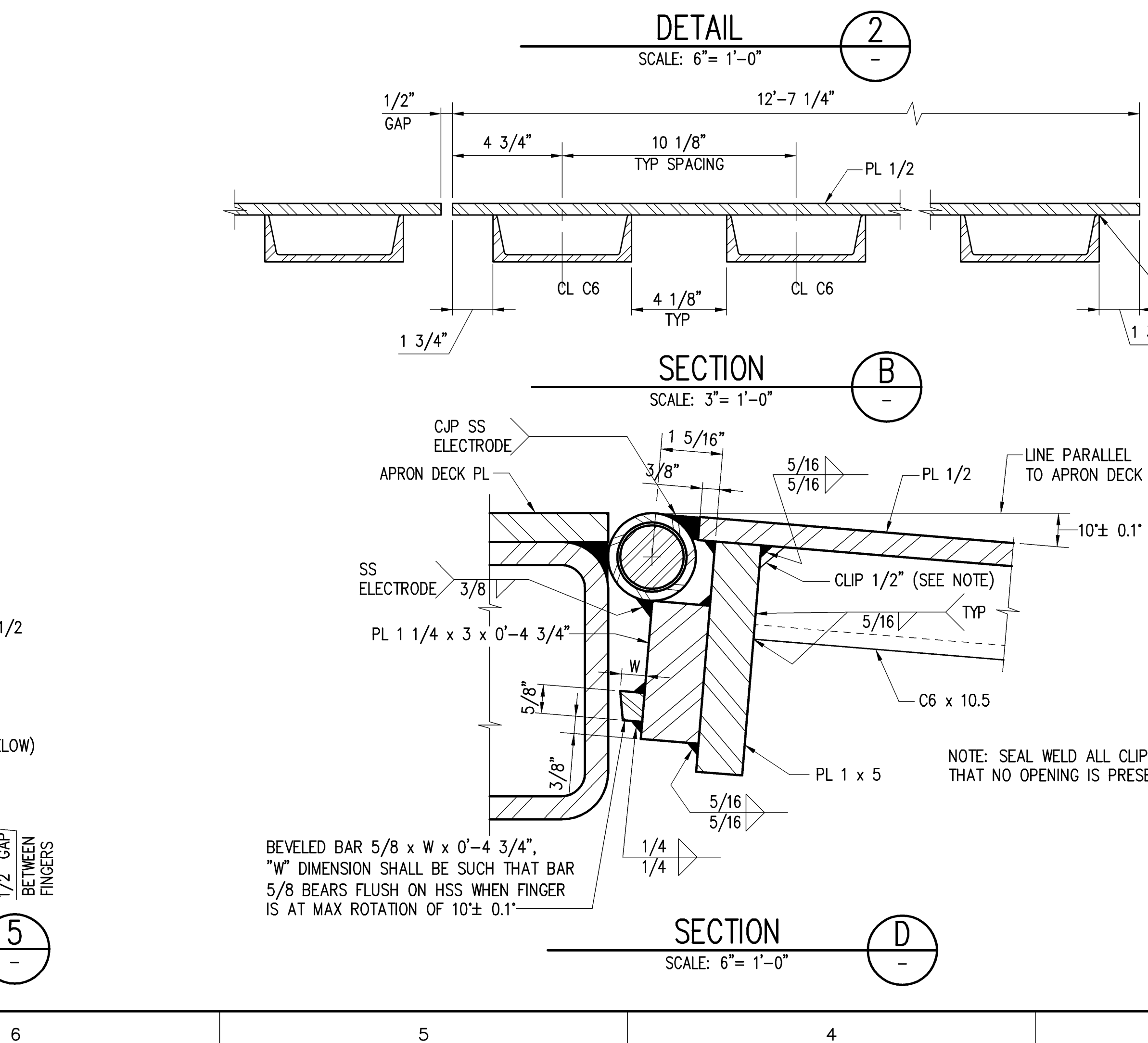
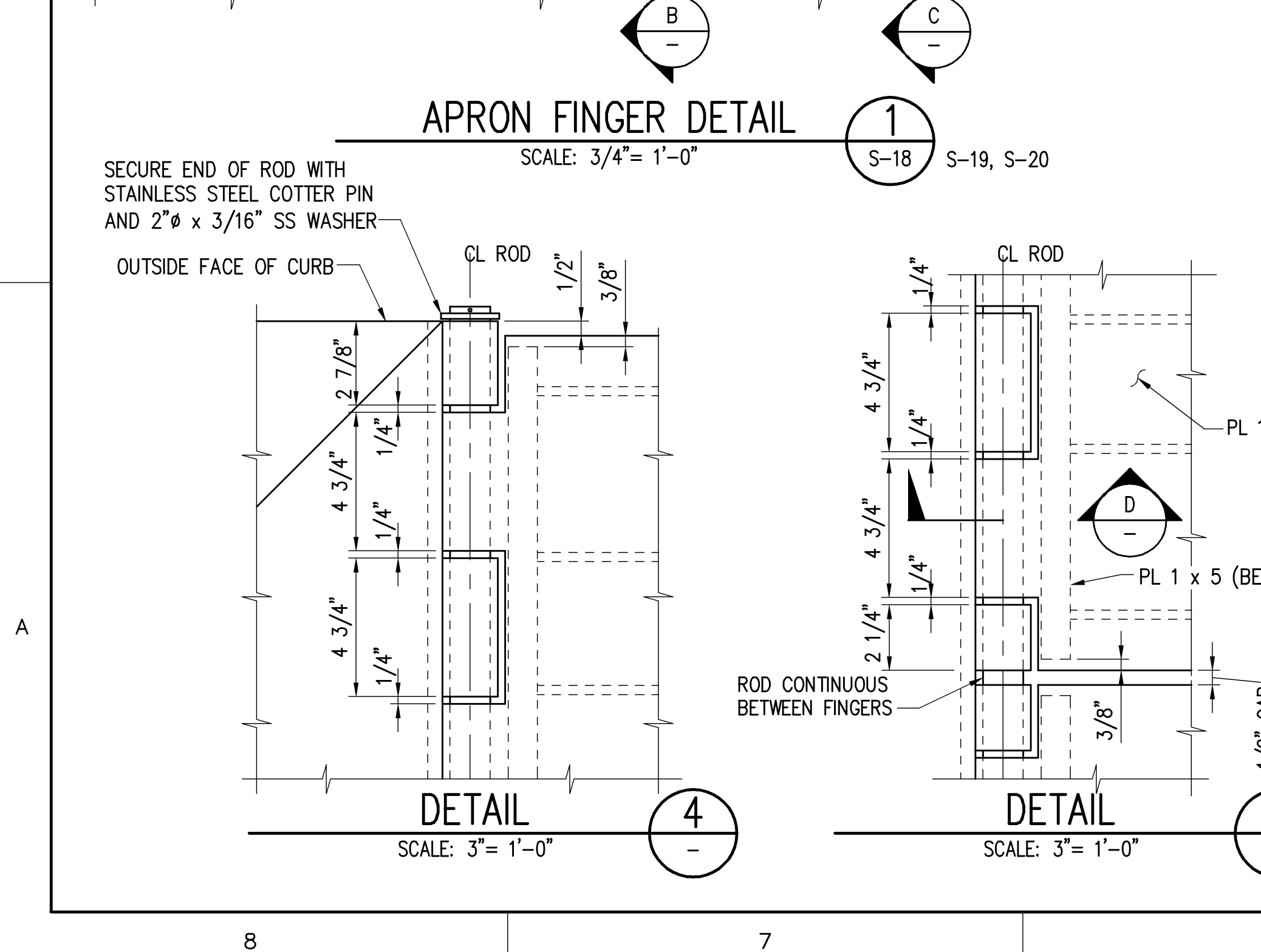
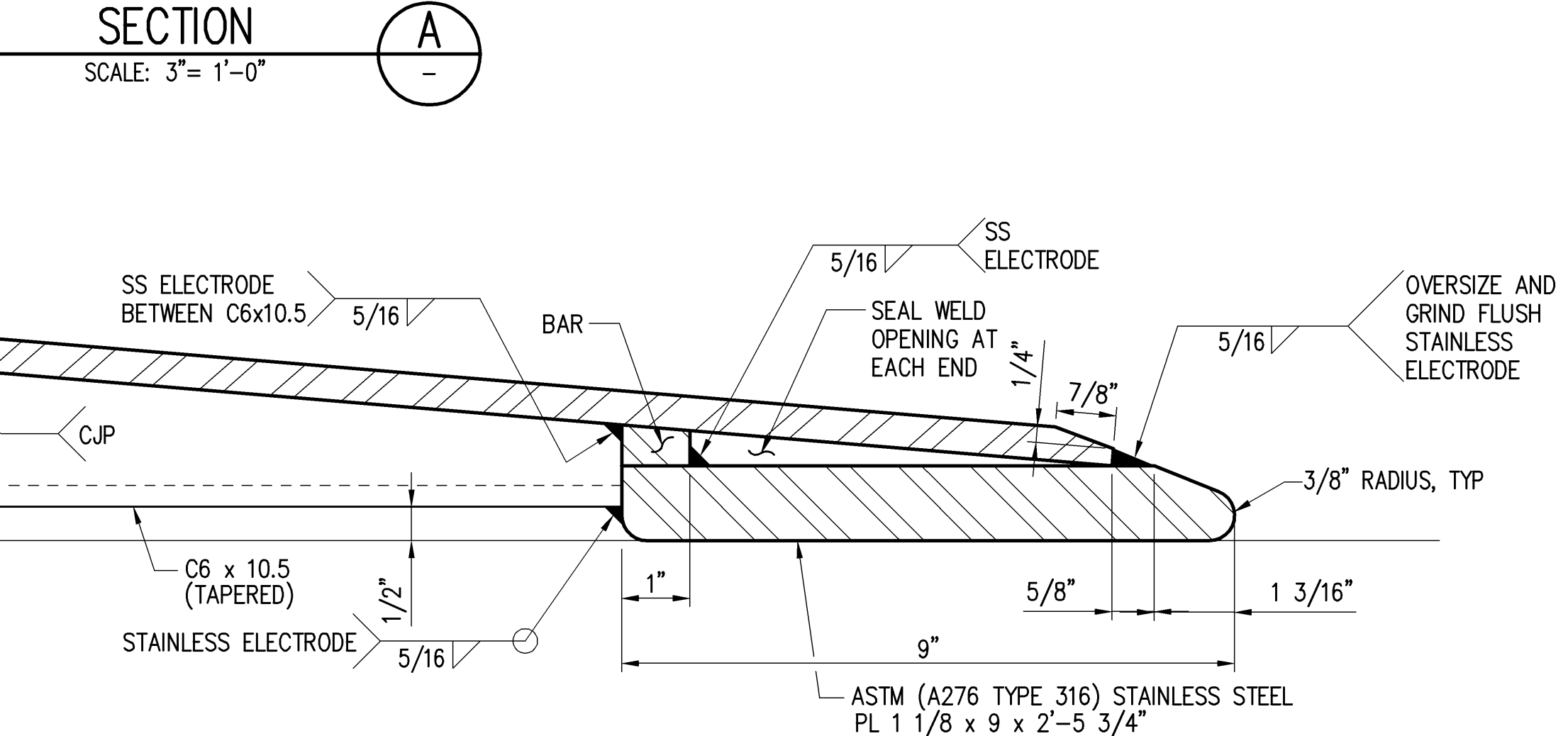
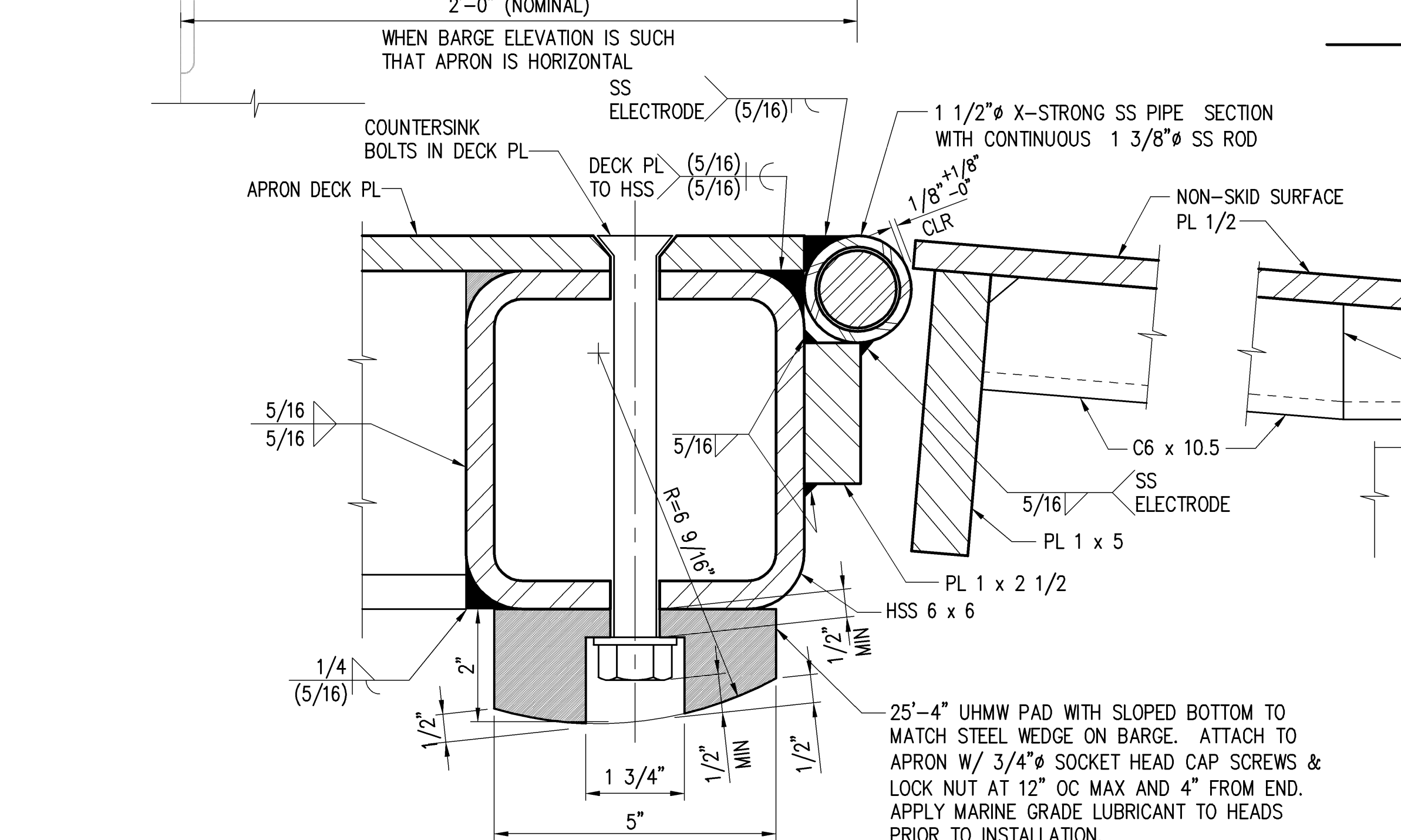
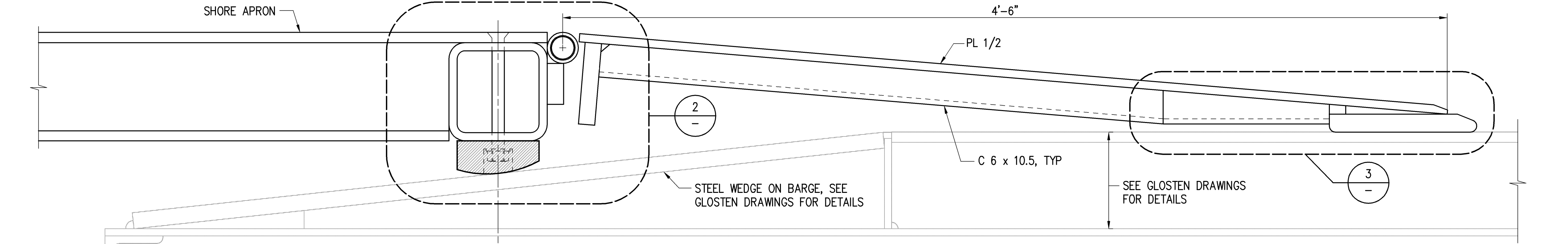
DESIGN RECORD DRAWINGS



(16) C6x10.5 STIFFENERS AT 10 1/8" OC = 11'-9 3/4"

12'-7 1/4"

CL C6



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
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**kpff**

JOB TITLE  
**BARGES & VEHICLE RAMP SYSTEMS  
FOR INTERISLAND FERRY SERVICE**

SHEET TITLE  
**SHORE APRON FINGERS  
SECTIONS AND DETAILS**

SUBMITTED BY: \_\_\_\_\_ RECOMMENDED BY: \_\_\_\_\_

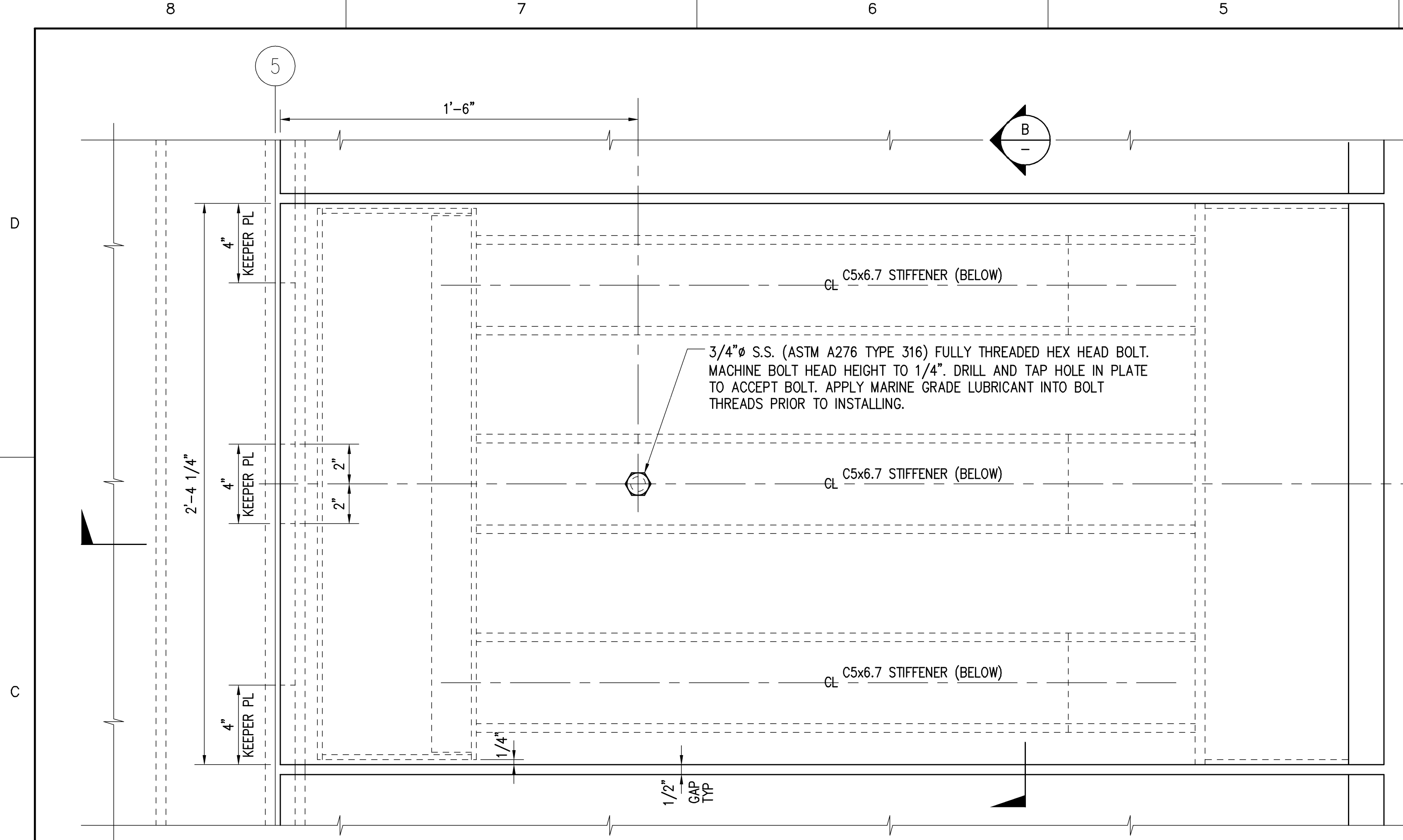
SECTION HEAD: \_\_\_\_\_ ENGINEERING PROGRAM MANAGER: \_\_\_\_\_

DESIGNED BY: WGH APPROVED BY: \_\_\_\_\_  
DRAWN BY: RRT  
CHECKED BY: KN FOR HARBORS ADMINISTRATOR  
DATE: 7/16/07 JOB NUMBER: S-26  
SCALE: AS SHOWN H.C. 90018 REVISION: 0

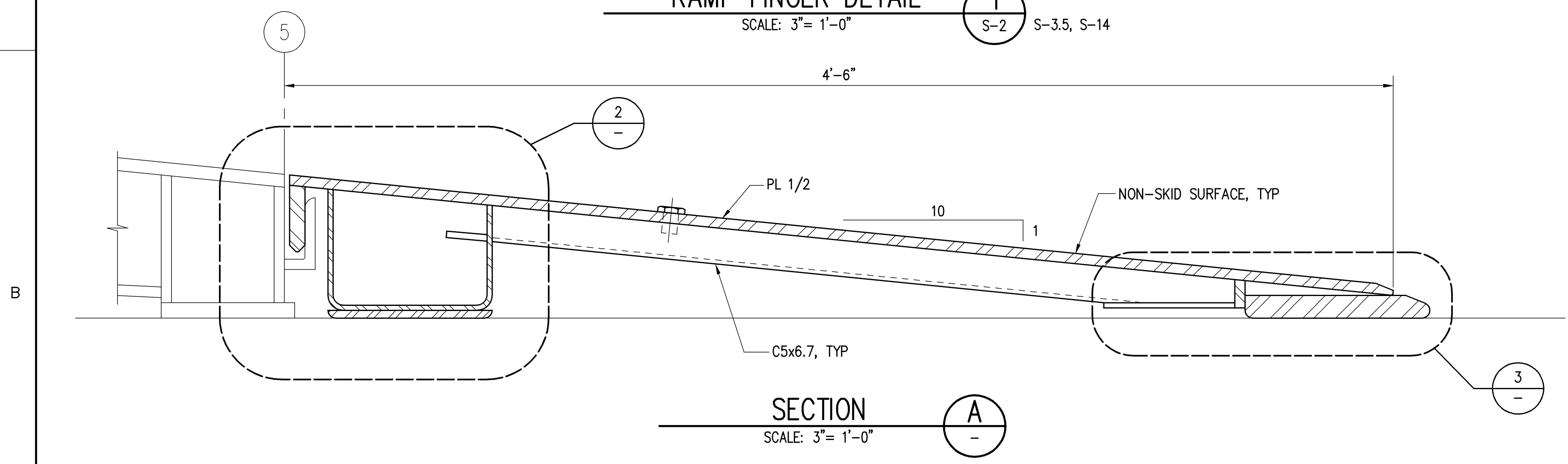
EXPIRES 4/30/08

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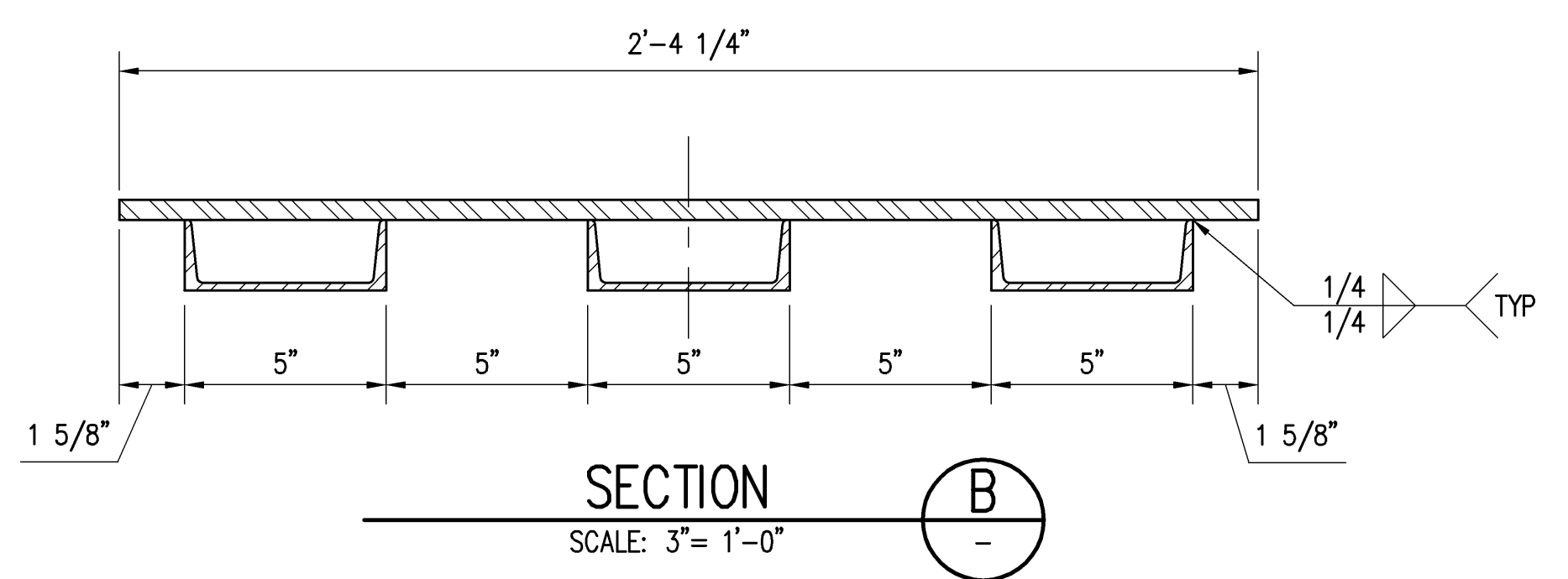
DESIGN RECORD DRAWINGS



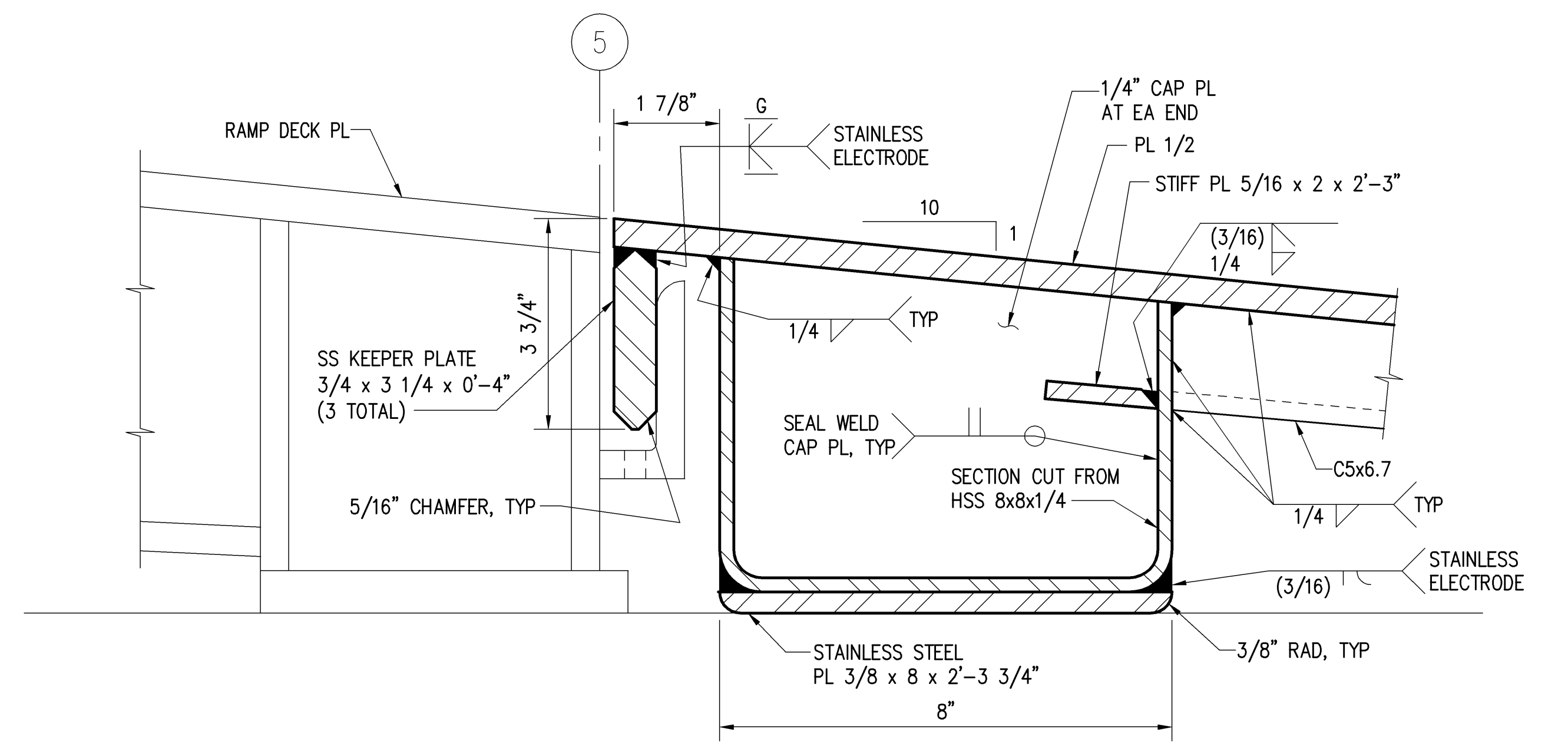
**RAMP FINGER DETAIL 1**  
SCALE: 3" = 1'-0"  
S-2 S-3.5, S-14



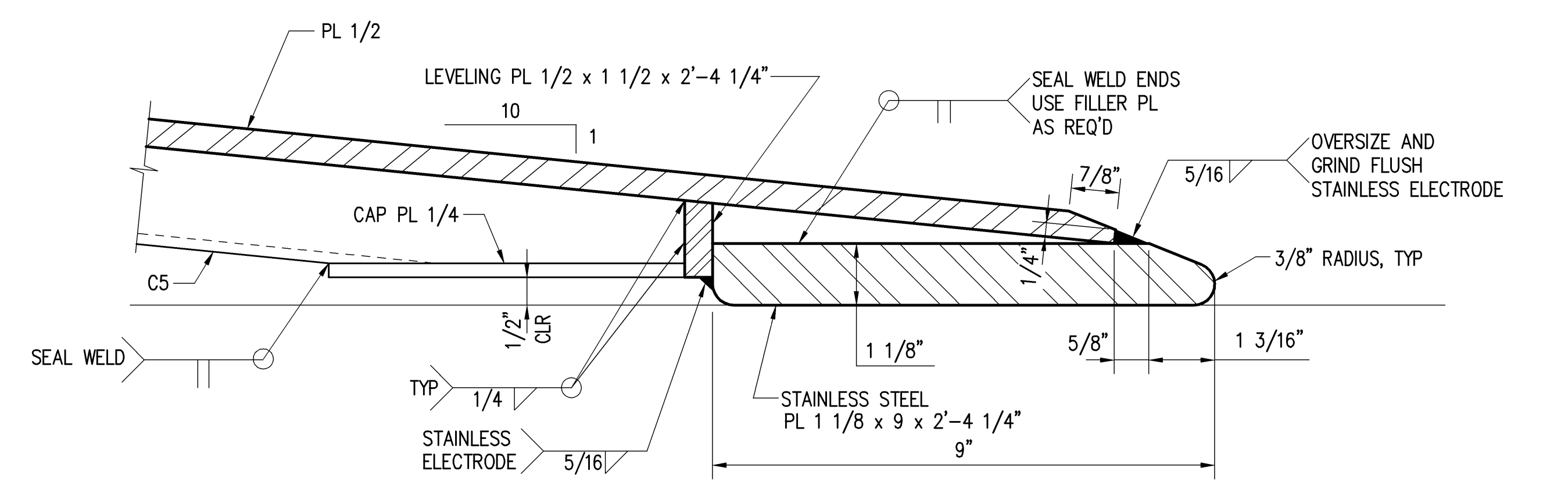
**SECTION A**  
SCALE: 3" = 1'-0"



**SECTION B**  
SCALE: 3" = 1'-0"



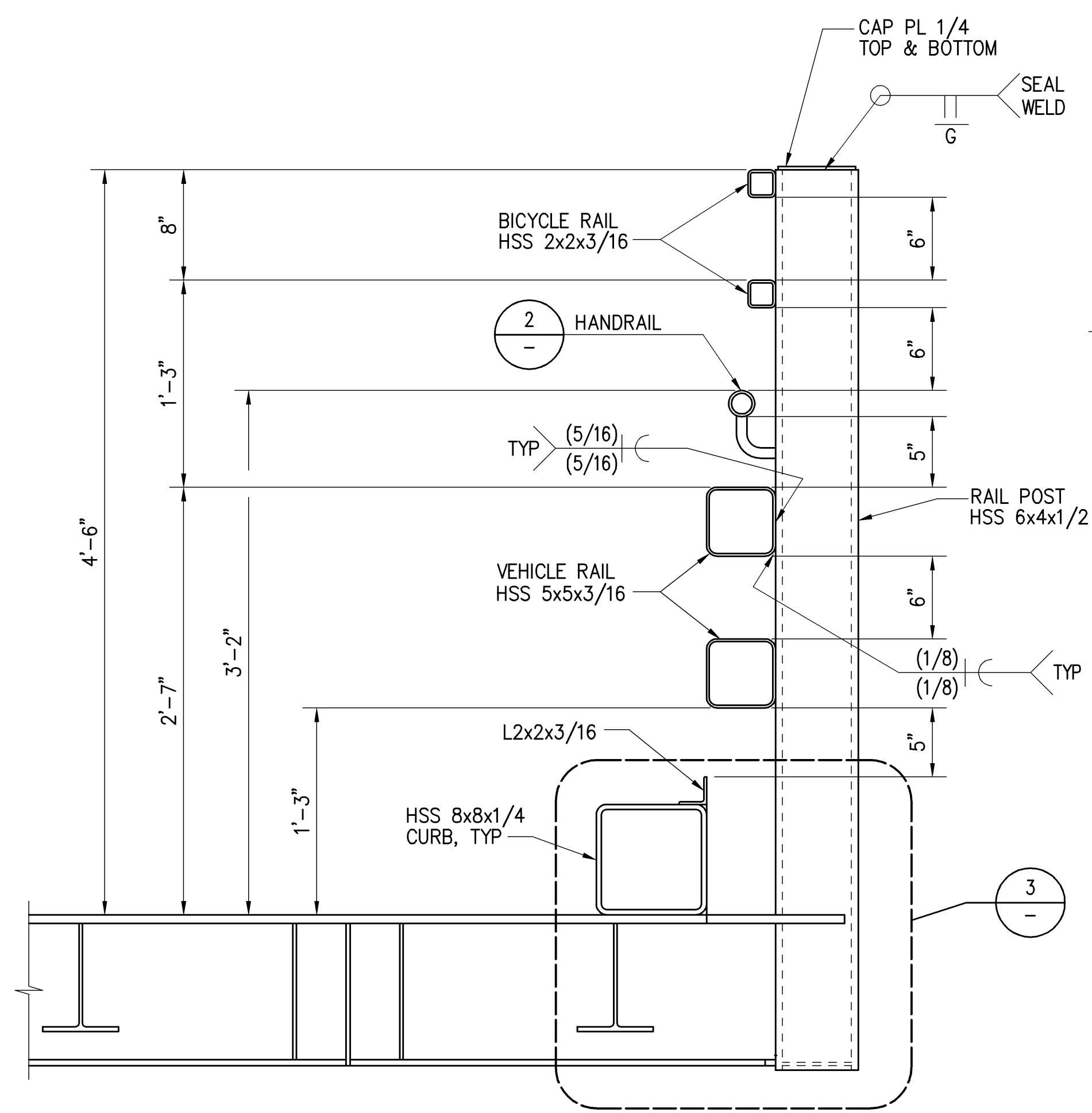
**DETAIL 2**  
SCALE: 6" = 1'-0"



**DETAIL 3**  
SCALE: 6" = 1'-0"

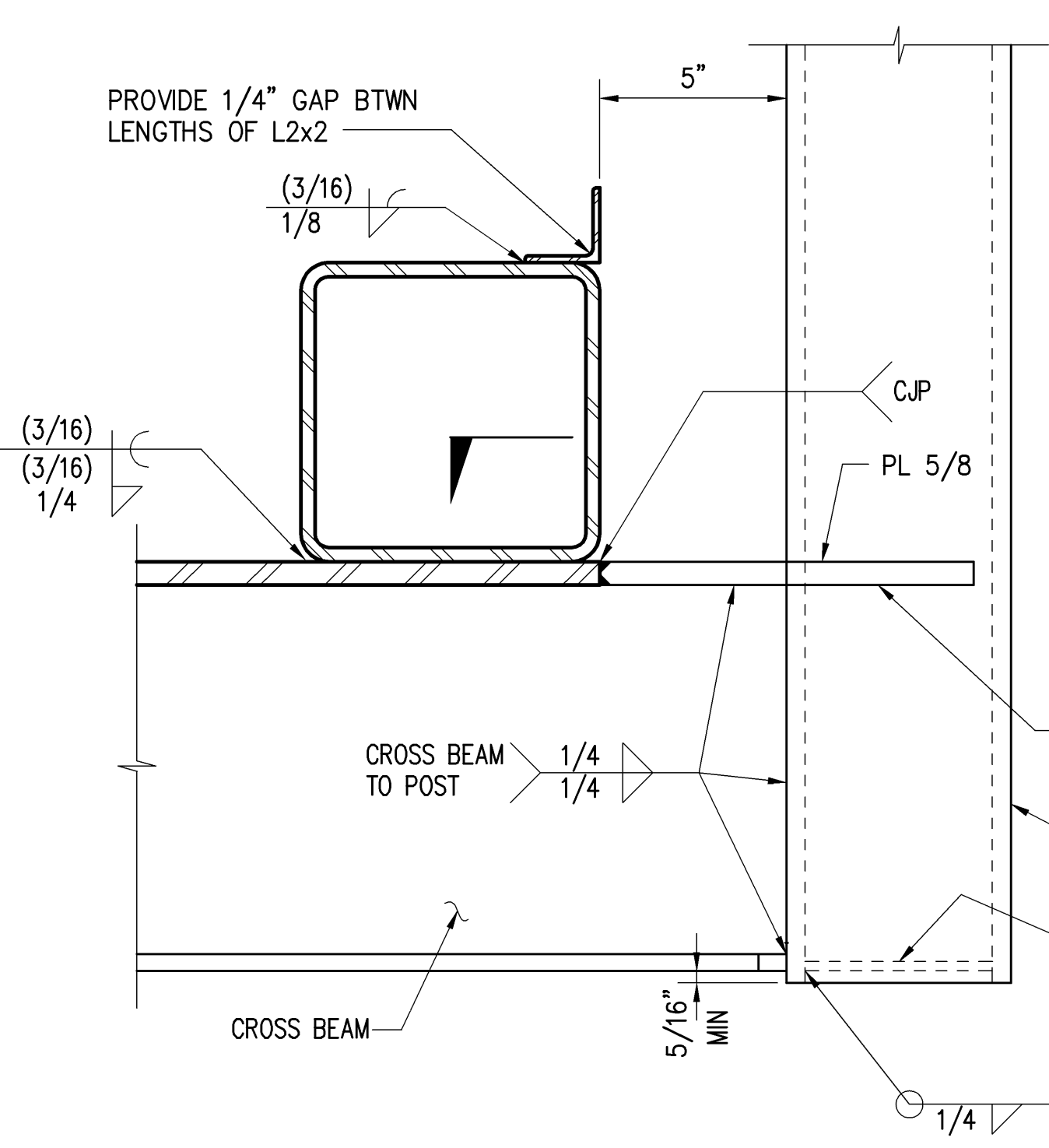
		STATE OF HAWAII	
		DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
		HEALY TIBBITTS BUILDERS, INC.	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		SHEET TITLE <b>SHORE RAMP FINGER SECTIONS AND DETAILS 1</b>	
SUBMITTED BY: _____		RECOMMENDED BY: _____	
SECTION HEAD DESIGNED BY: GGN DRAWN BY: RRT CHECKED BY: KN DATE: 7/16/07 SCALE: AS SHOWN		APPROVED BY: _____ FOR HARBORS ADMINISTRATOR H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>S-27</b> REVISION 0 27 OF ____ SHTS	

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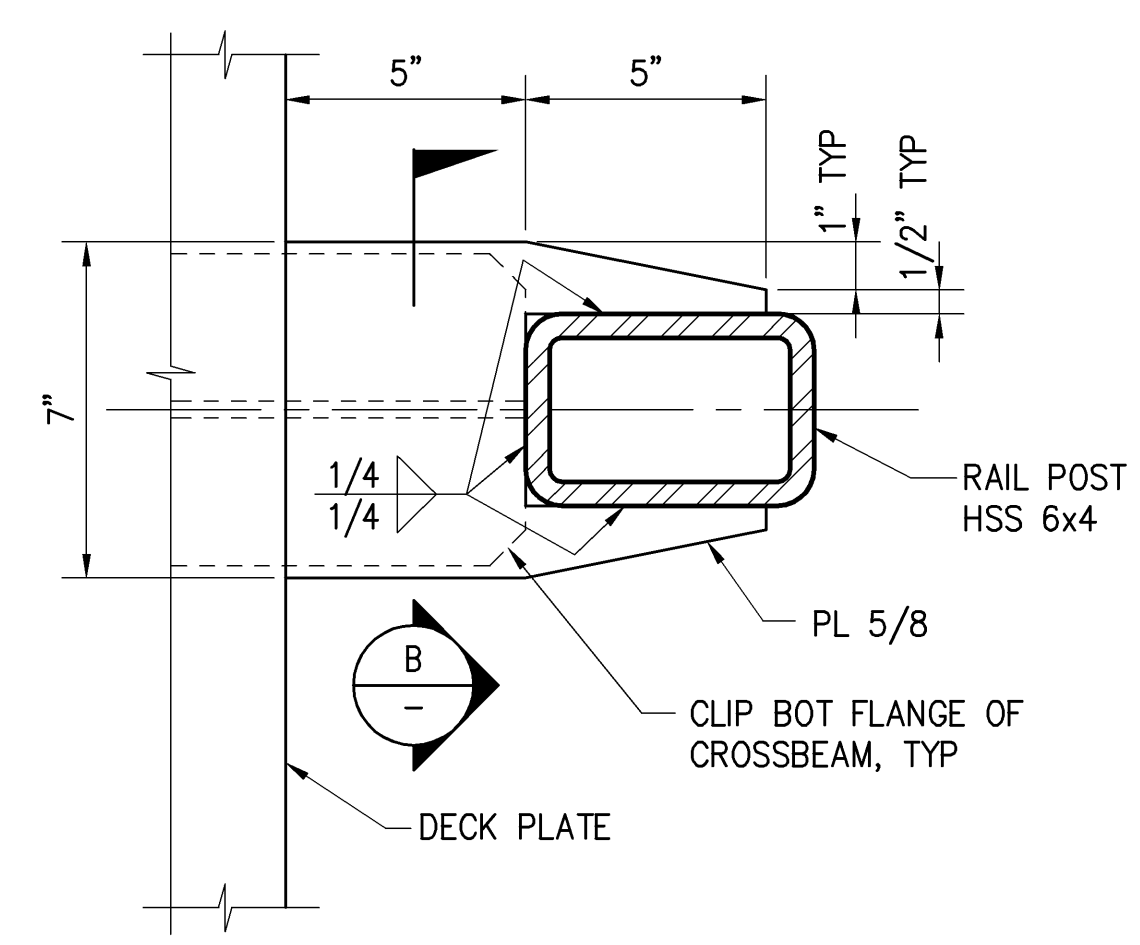


- NOTES:**
1. PROVIDE EXPANSION JOINT IN BICYCLE RAIL AND HANDRAIL AT 24'-0" OC MAX, SEE (2) (4) S-30 S-30
  2. SPLICE VEHICLE RAIL WITH TENSION BUTT SPLICE PER (4) S-12

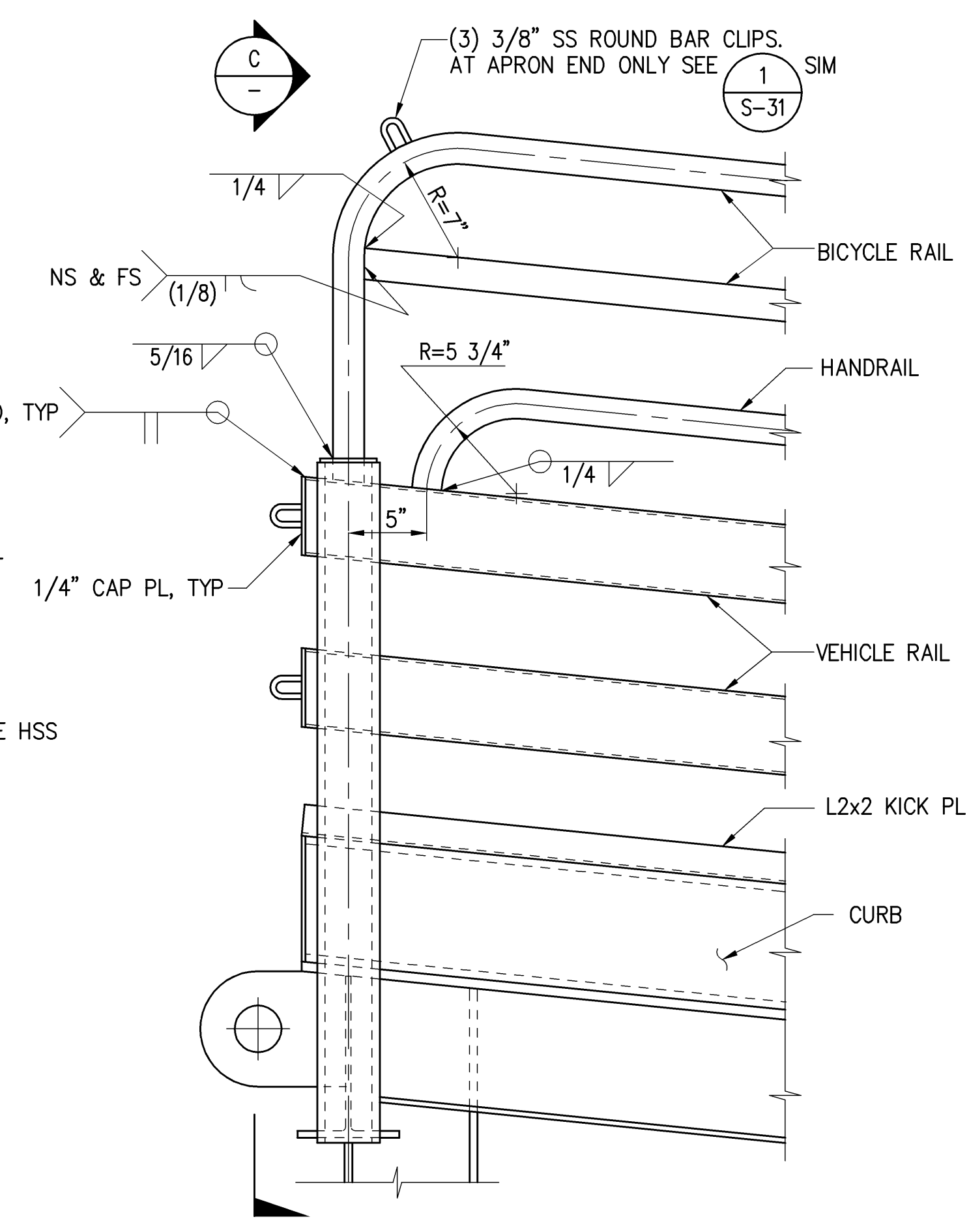
**AASHTO TRAFFIC, PEDESTRIAN AND BICYCLE RAIL DETAIL** (1) S-4 S-15  
SCALE: 1 1/2" = 1'-0"



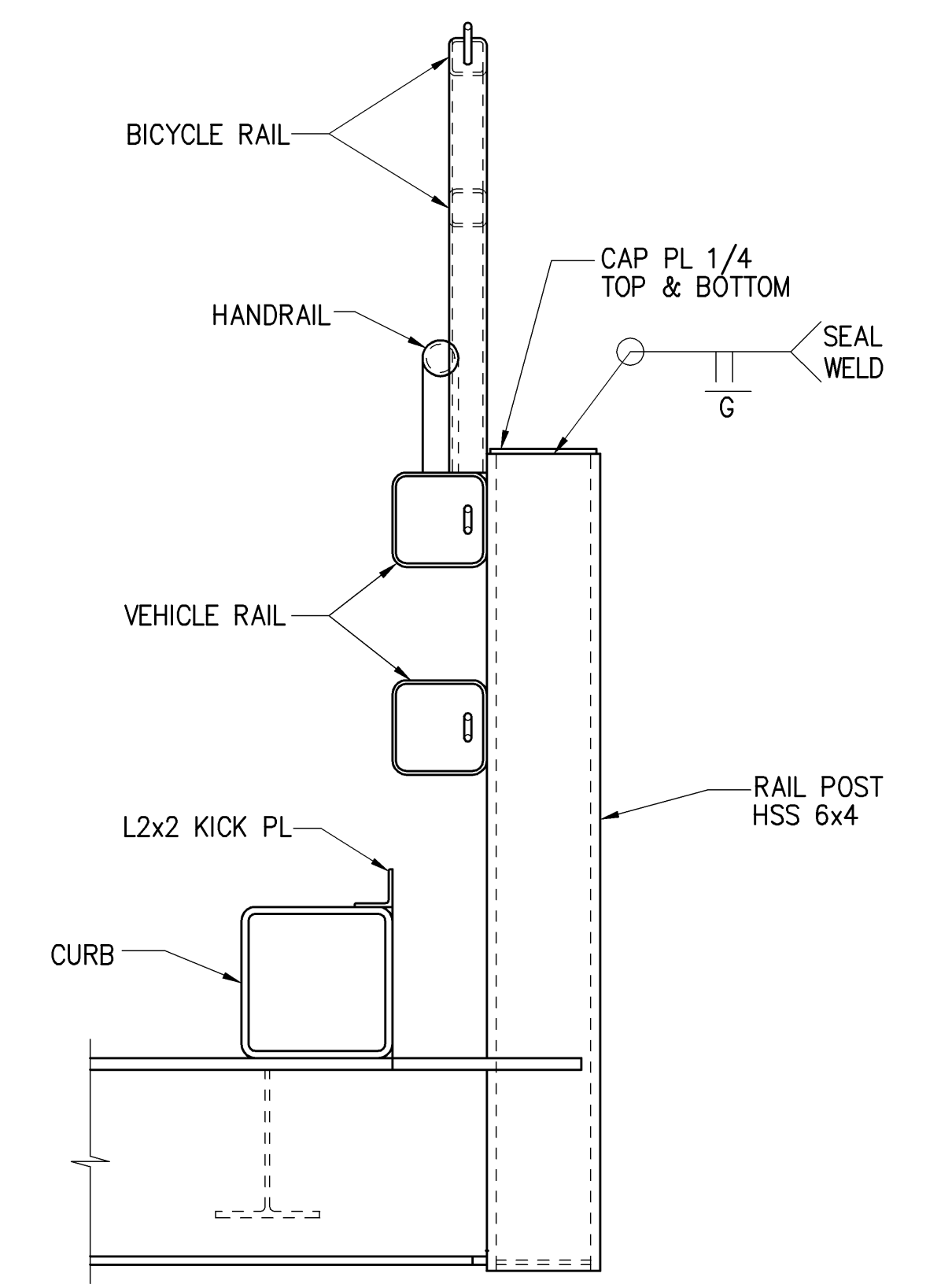
**DETAIL** (3) S-14  
SCALE: 3" = 1'-0"



**SECTION** (A) S-14  
SCALE: 3" = 1'-0"

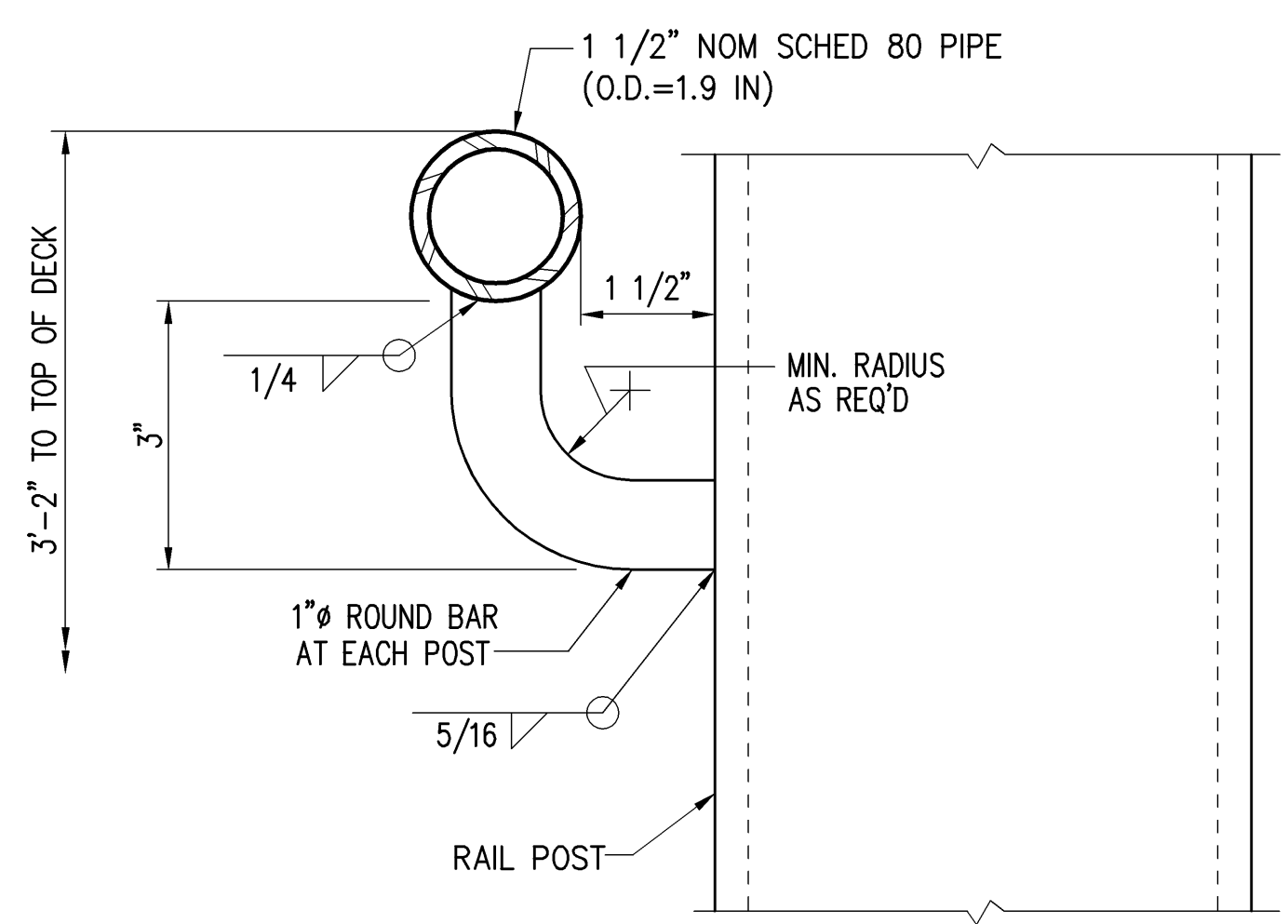


**RAIL TERMINATION DETAIL** (4) S-14  
SCALE: 1 1/2" = 1'-0"

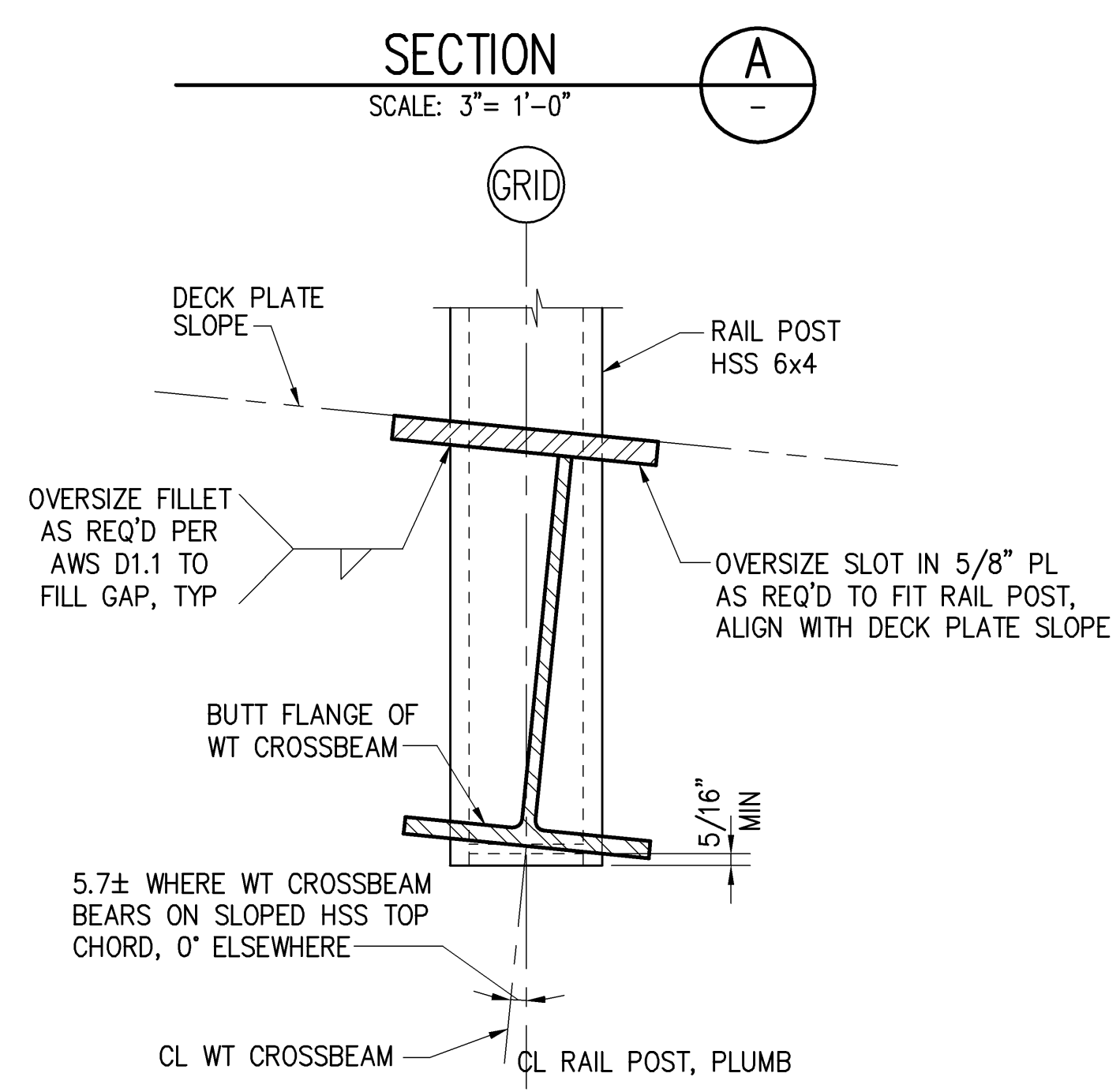


**SECTION** (C) S-14  
SCALE: 1 1/2" = 1'-0"

NOTE: FOR INFO NOT SHOWN SEE DETAIL (1) S-14

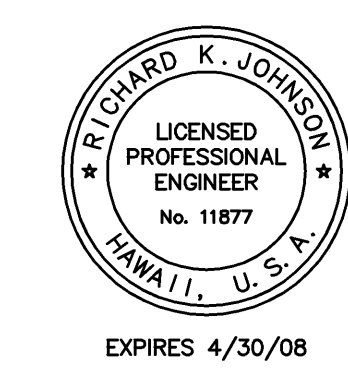


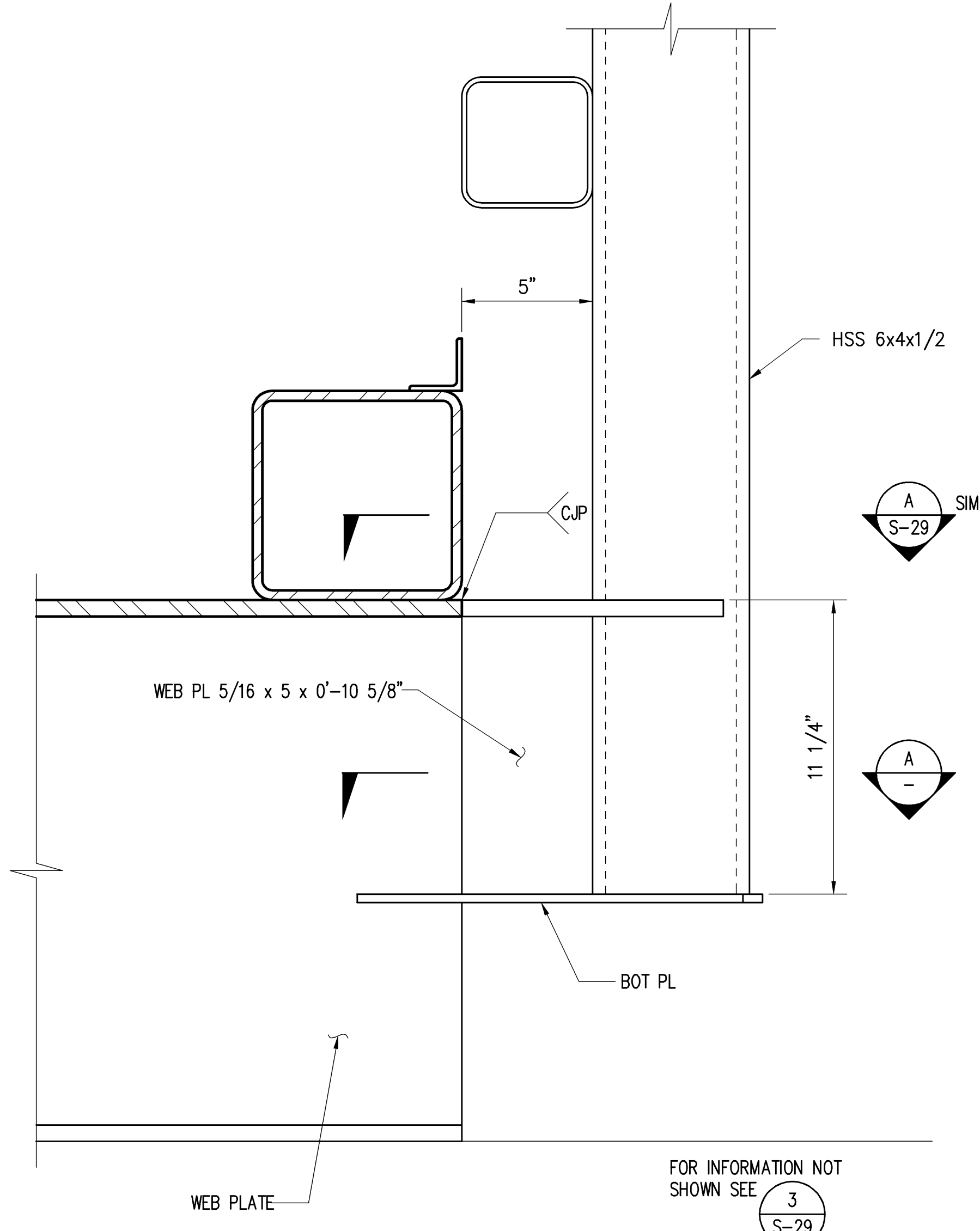
**HANDRAIL DETAIL** (2) S-12  
SCALE: 6" = 1'-0"



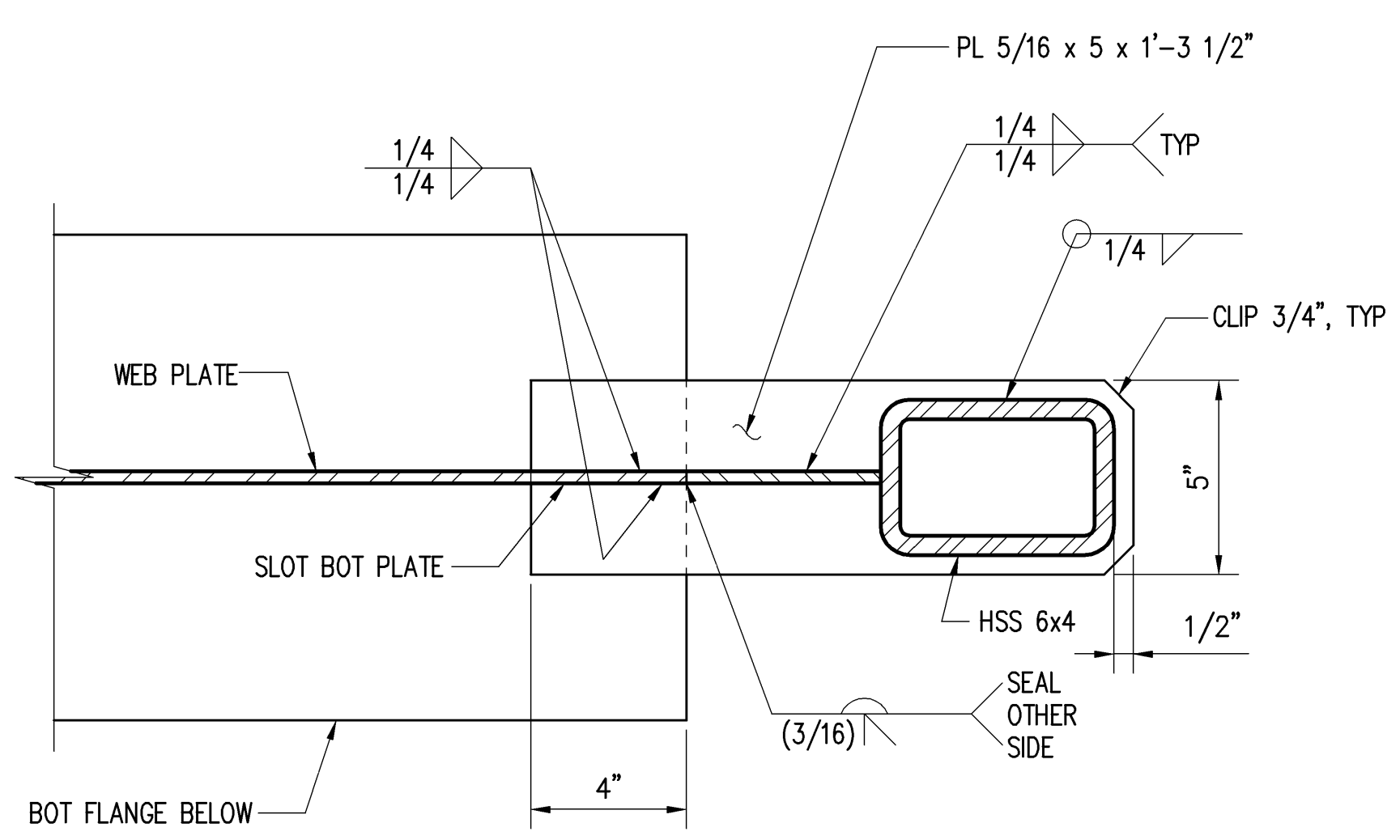
**SECTION** (B) S-14  
SCALE: 3" = 1'-0"

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<b>kpff</b> Consulting Engineers			
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SHEET TITLE <b>RAILING SECTIONS AND DETAILS-1</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: GGN		APPROVED BY:	
DRAWN BY: RRT		DRAWING NUMBER	
CHECKED BY: KN		FOR HARBORS ADMINISTRATOR	
DATE: 7/16/07		REVISION	
SCALE: AS SHOWN		H.C. 90018	
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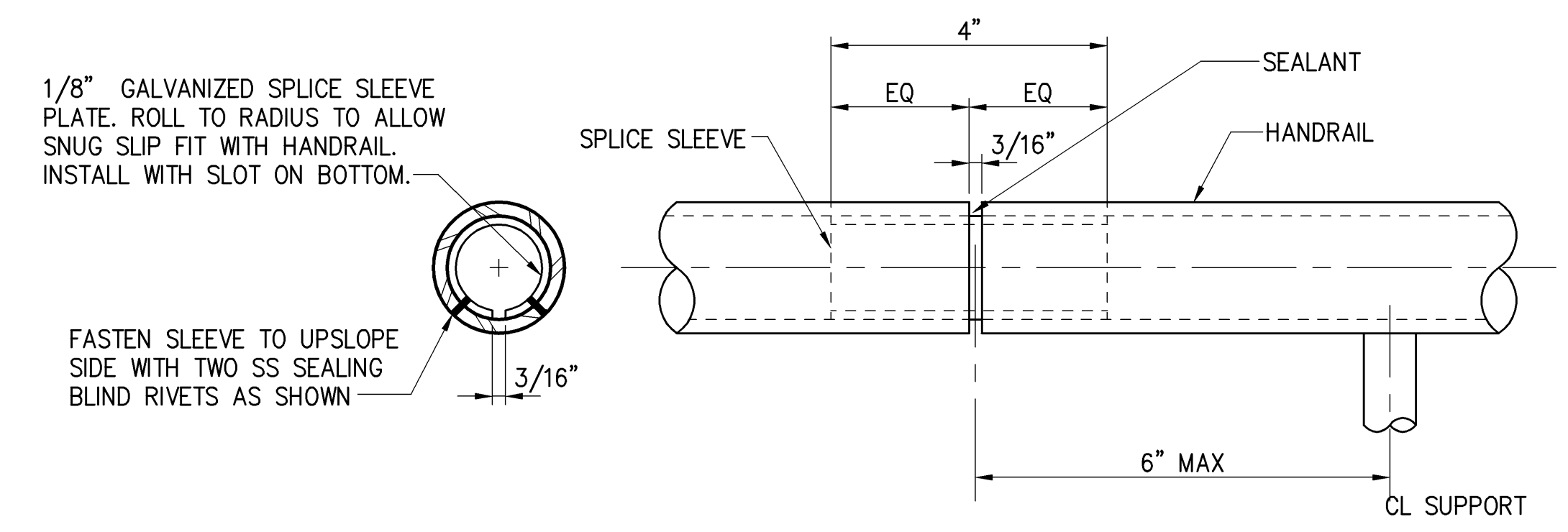




**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-9 S-15.1

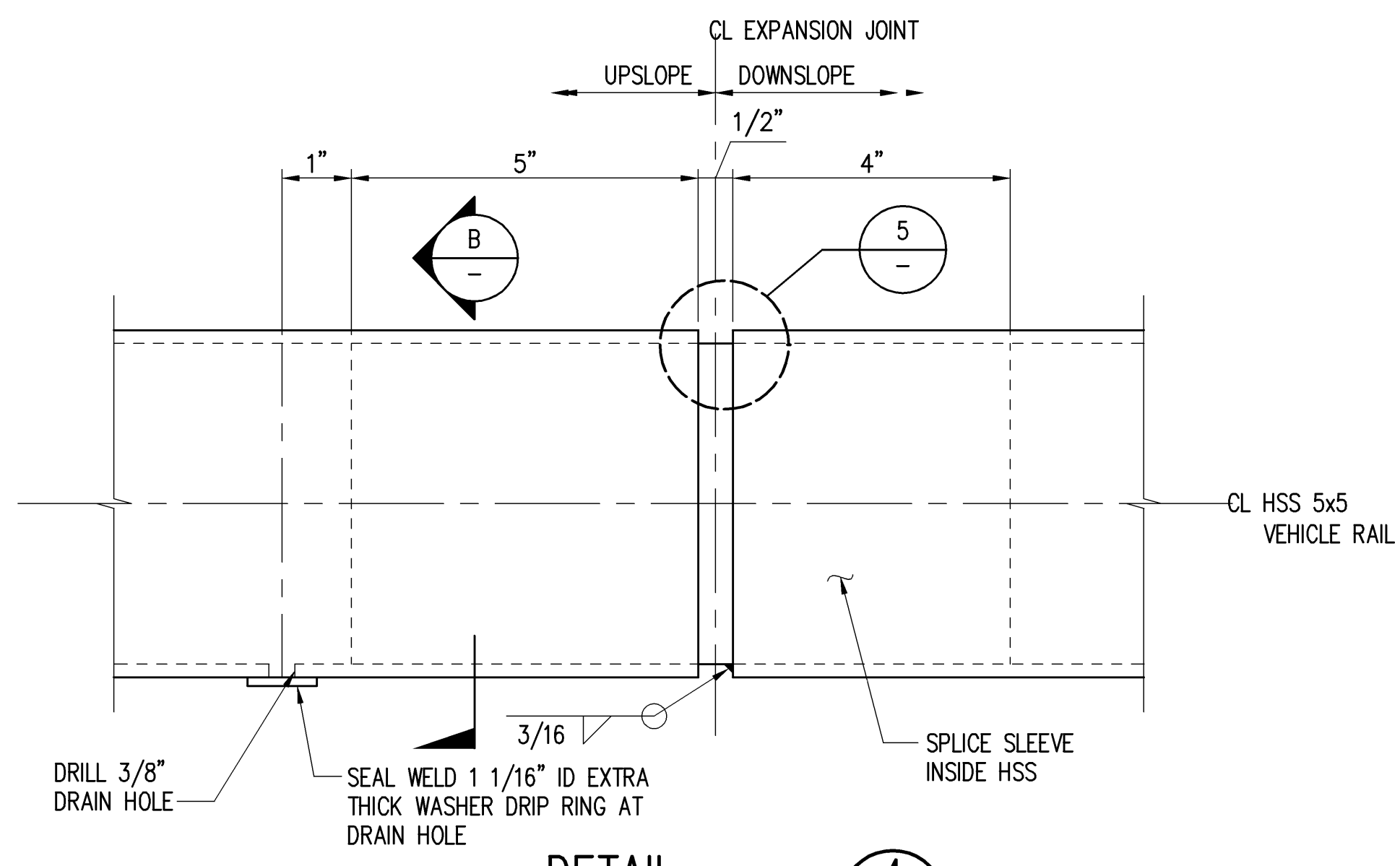


**SECTION A**  
SCALE: 3" = 1'-0"

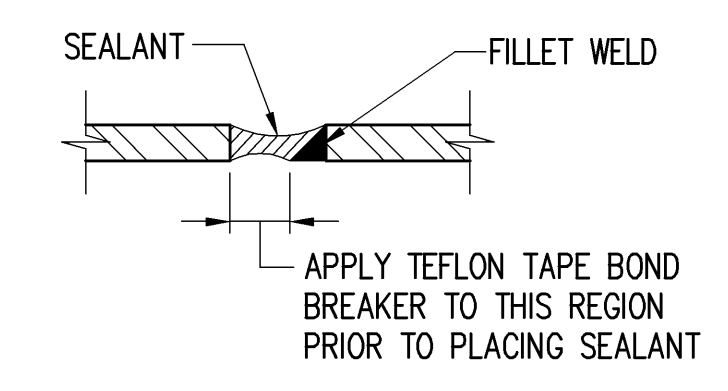


NOTE: BICYCLE RAIL SIMILAR

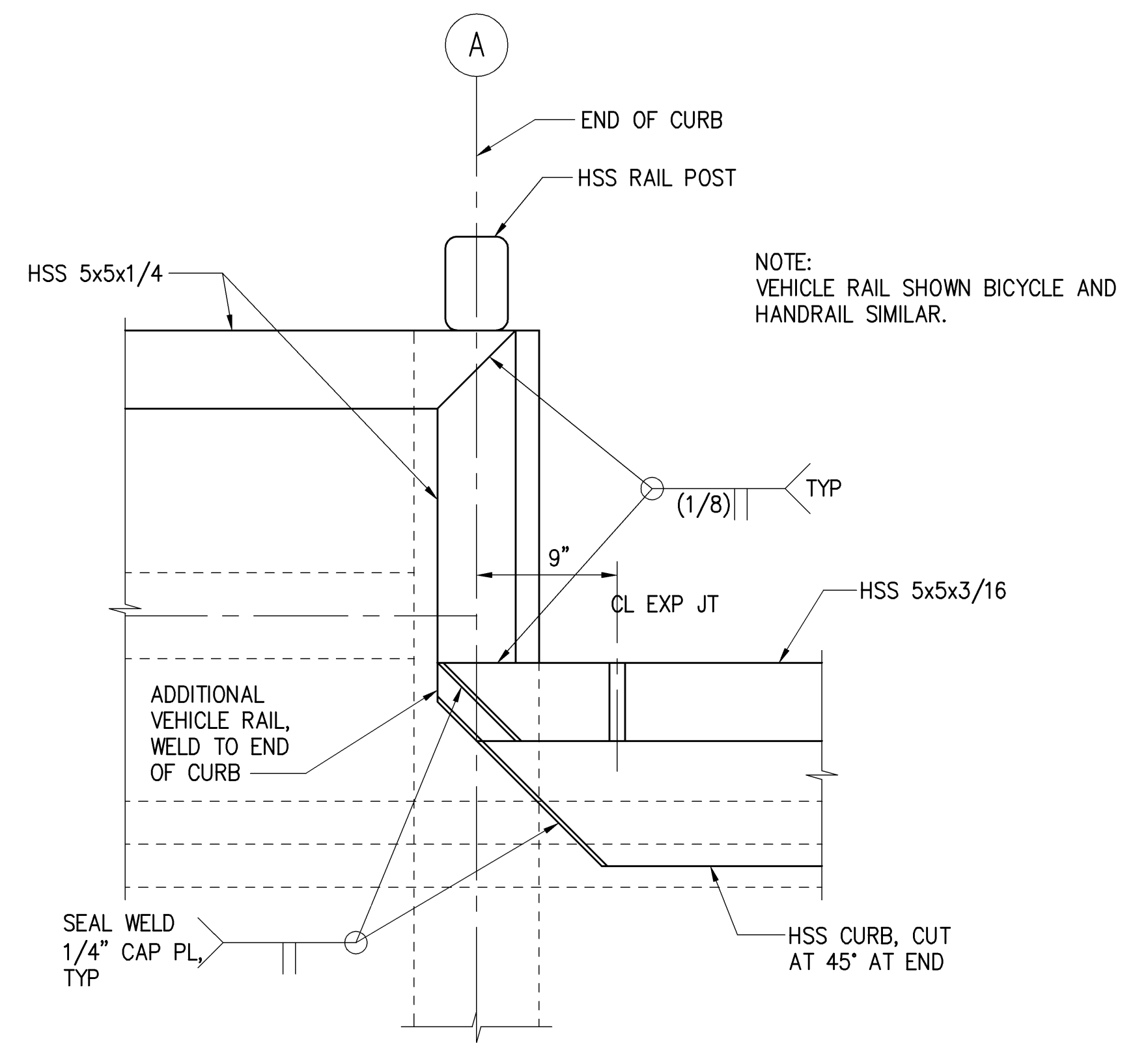
**HANDRAIL EXPANSION JOINT DETAIL 2**  
SCALE: 3" = 1'-0"  
S-2 S-14, S-18, S-19, S-20, S-21, S-22, S-29



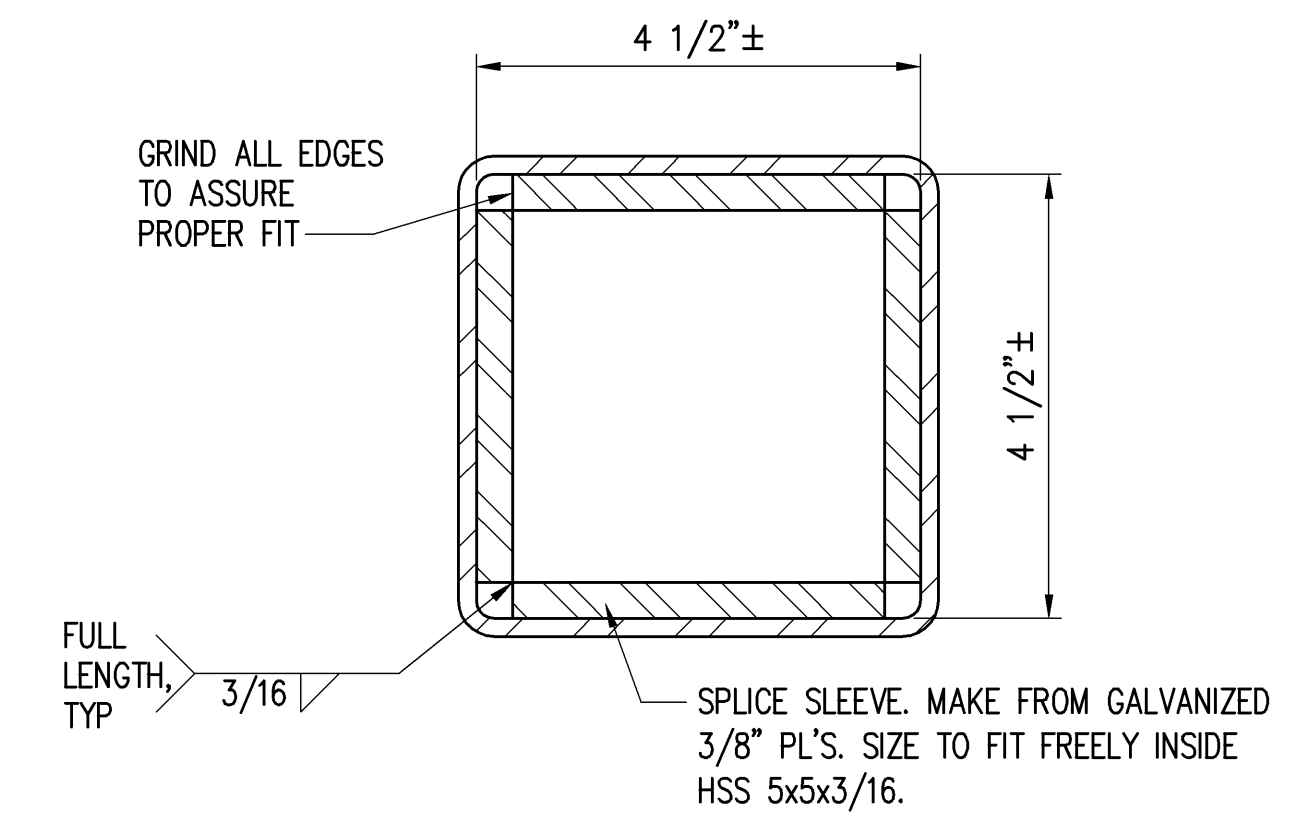
**DETAIL 4**  
SCALE: 6" = 1'-0"  
S-2 S-14, S-29



**DETAIL 5**  
SCALE: 1'-0" = 1'-0"

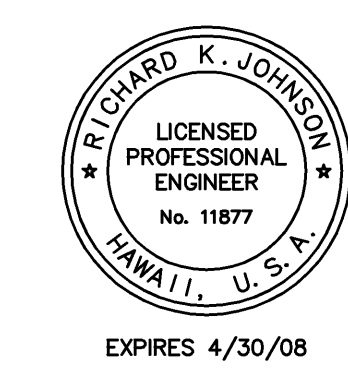


**DETAIL 3**  
SCALE: 1 1/2" = 1'-0"  
S-2

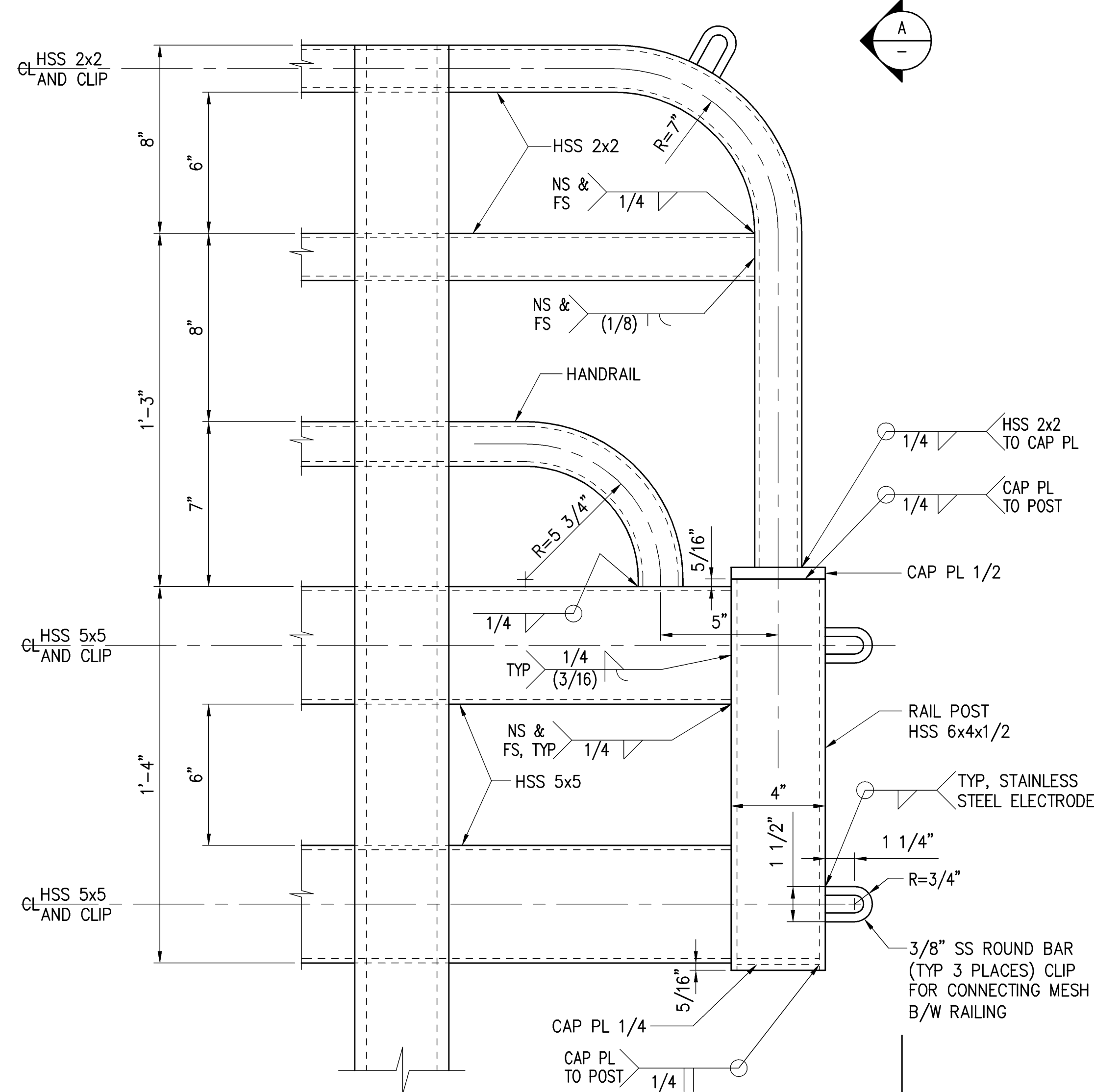


**SECTION B**  
SCALE: 6" = 1'-0"

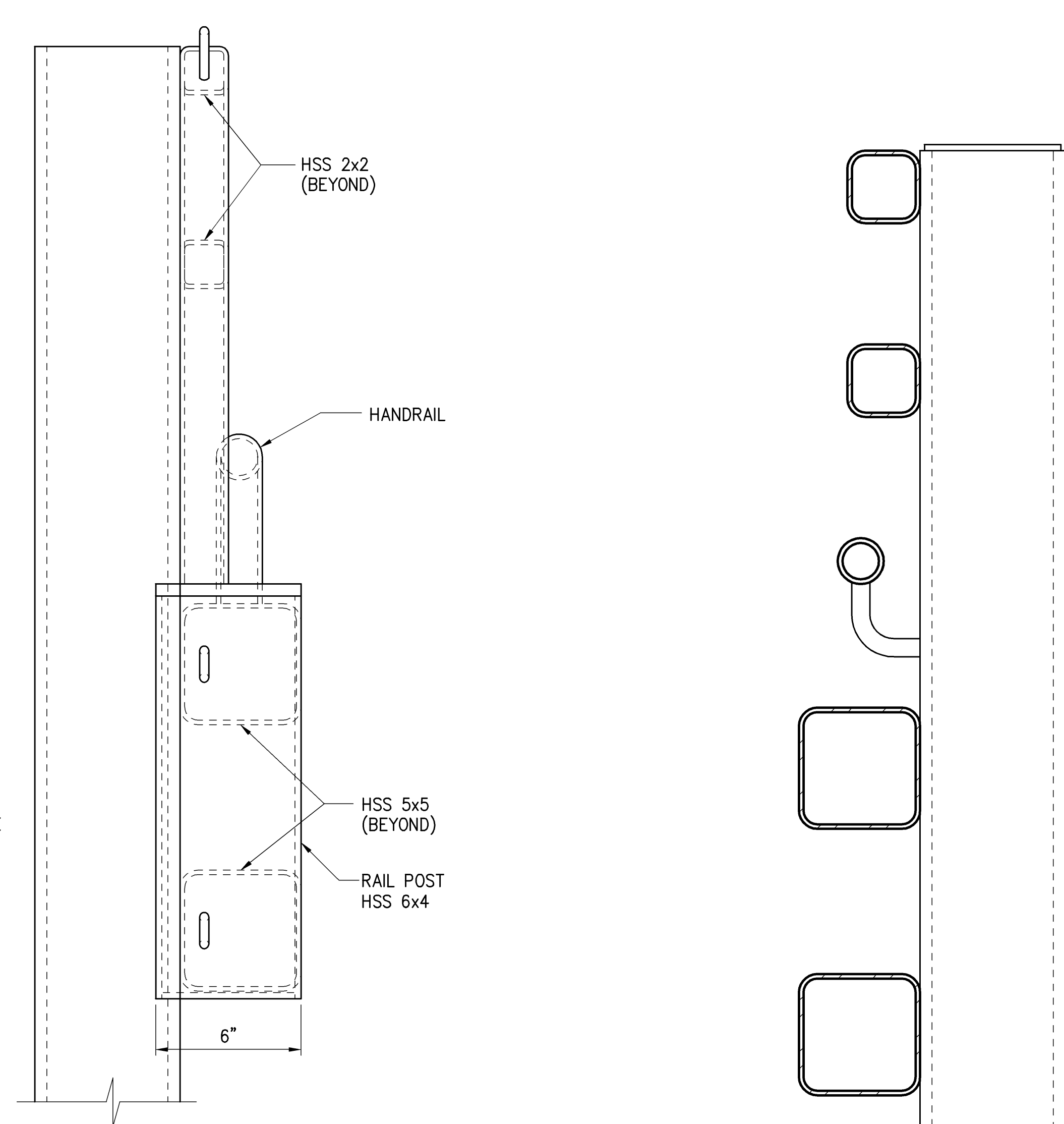
STATE OF HAWAII	
DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>RAILING SECTIONS AND DETAILS-2</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	DRAWING NUMBER <b>S-30</b>
DATE: 7/16/07	REVISION
SCALE: AS SHOWN	<b>H.C. 90018</b>
	0 OF 1 SHTS



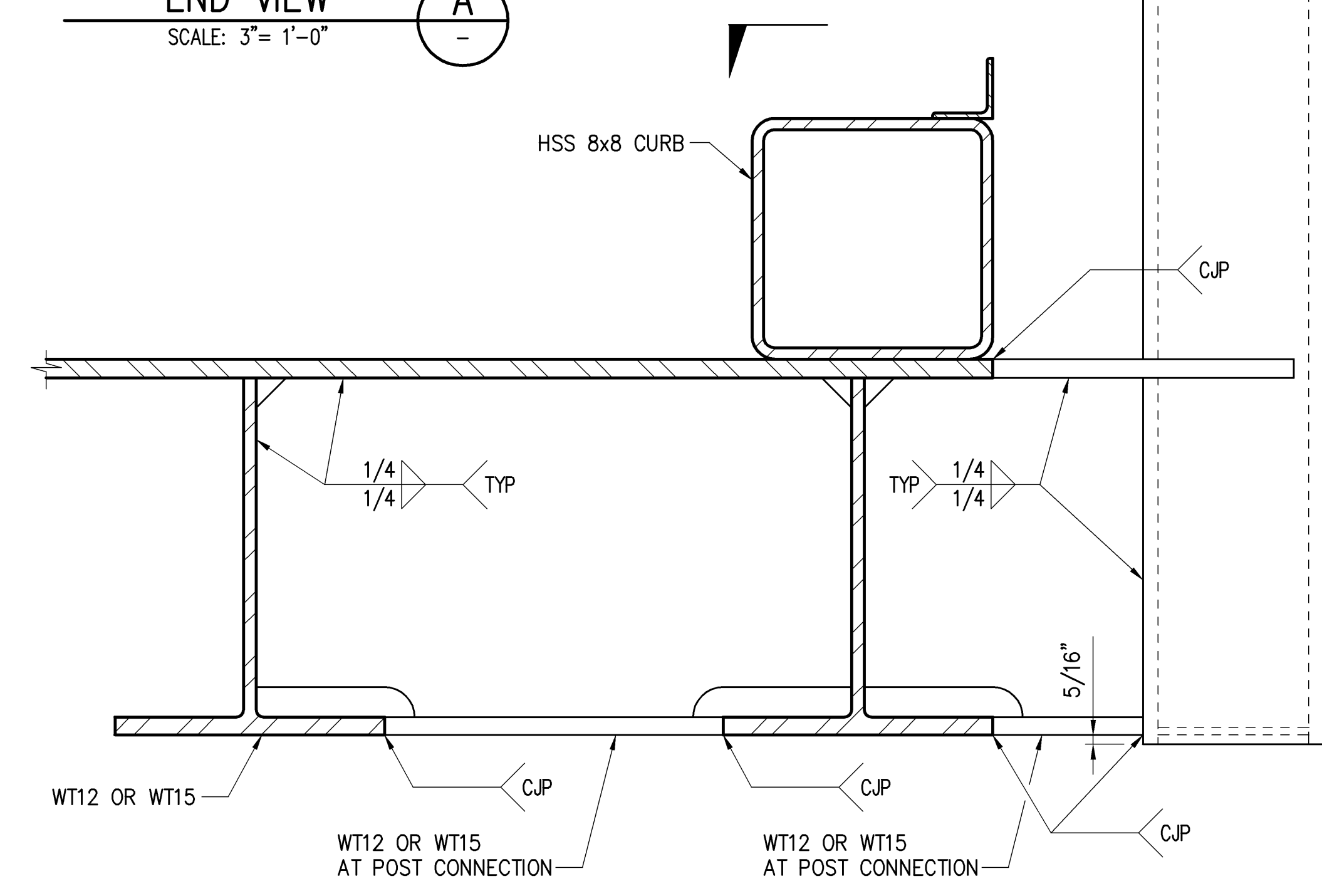
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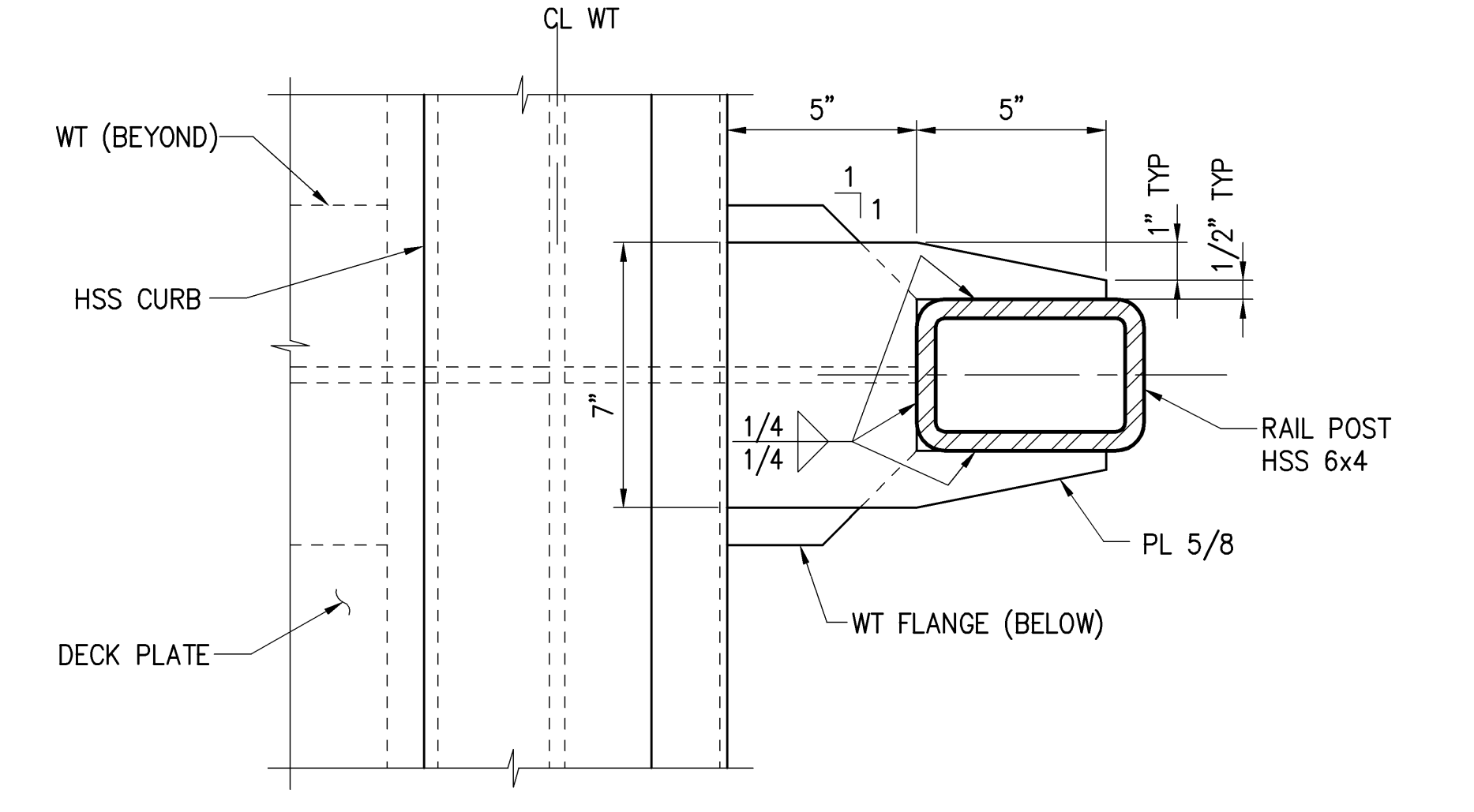
**DETAIL 1**  
SCALE: 3" = 1'-0"  
S-18 S-19, S-20, S-21 S-22, S-22.1



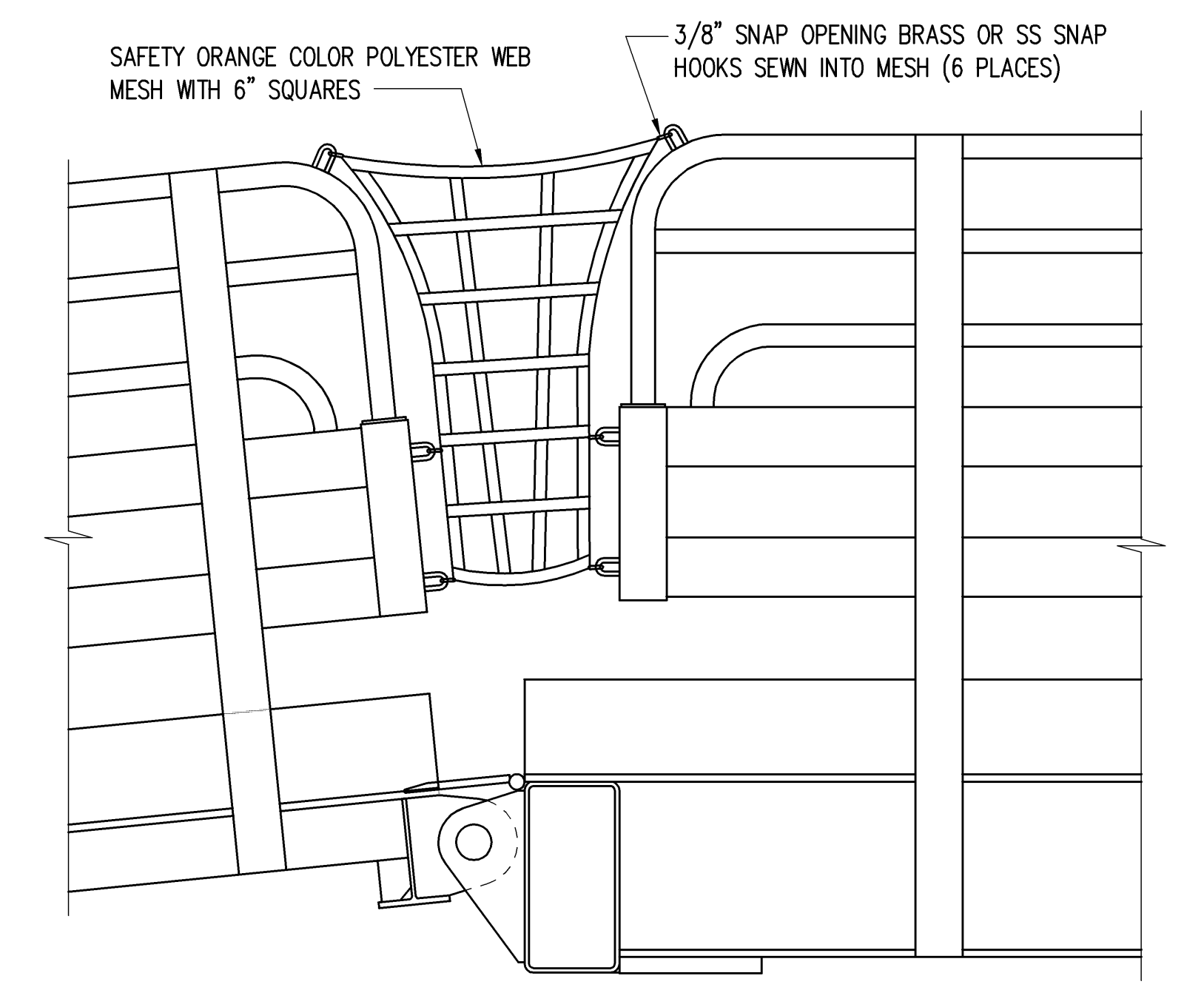
**END VIEW A**  
SCALE: 3" = 1'-0"



NOTE: FOR INFO NOT SHOWN SEE **1** S-29  
**DETAIL 3**  
SCALE: 3" = 1'-0" S-23 S-22.1

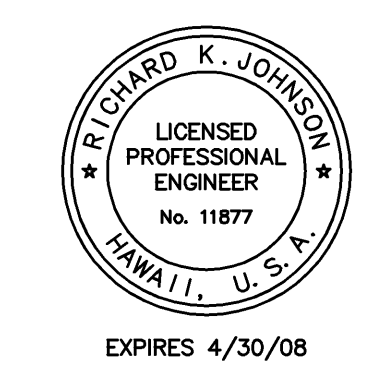


**SECTION B**  
SCALE: 3" = 1'-0"



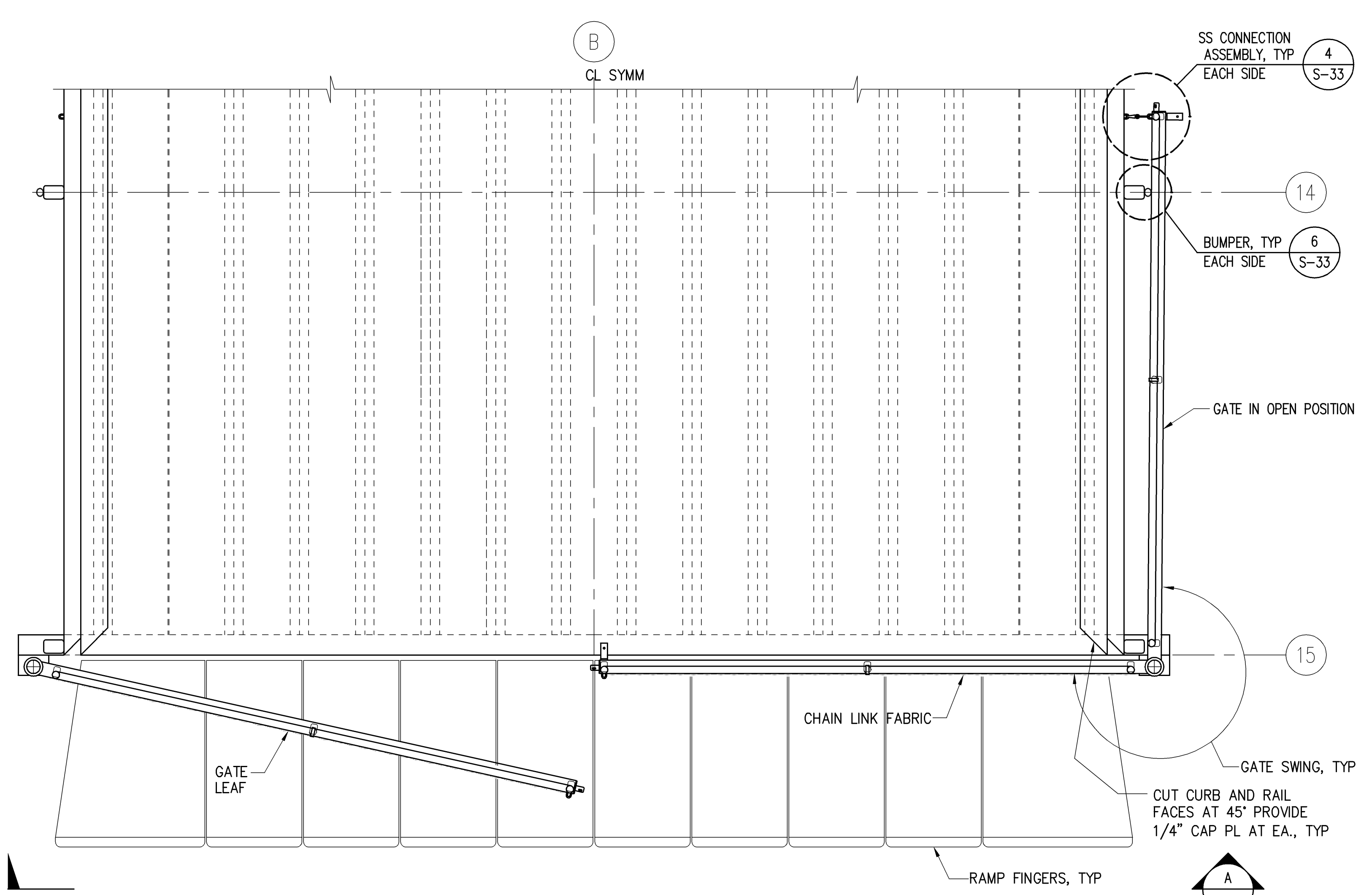
**DETAIL 4**  
SCALE: 1" = 1'-0" S-14 S-18, S-19, S-20, S-21 & S-22

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>RAILING SECTIONS AND DETAILS-3</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: WGH	APPROVED BY:
DRAWN BY: RRT	DRAWING NUMBER
CHECKED BY: KN	FOR HARBORS ADMINISTRATOR
DATE: 7/16/07	REVISION
SCALE: AS SHOWN	H.C. 90018
REDUCED SIZE PRINT (NOT TO SCALE)	0 OF SHTS

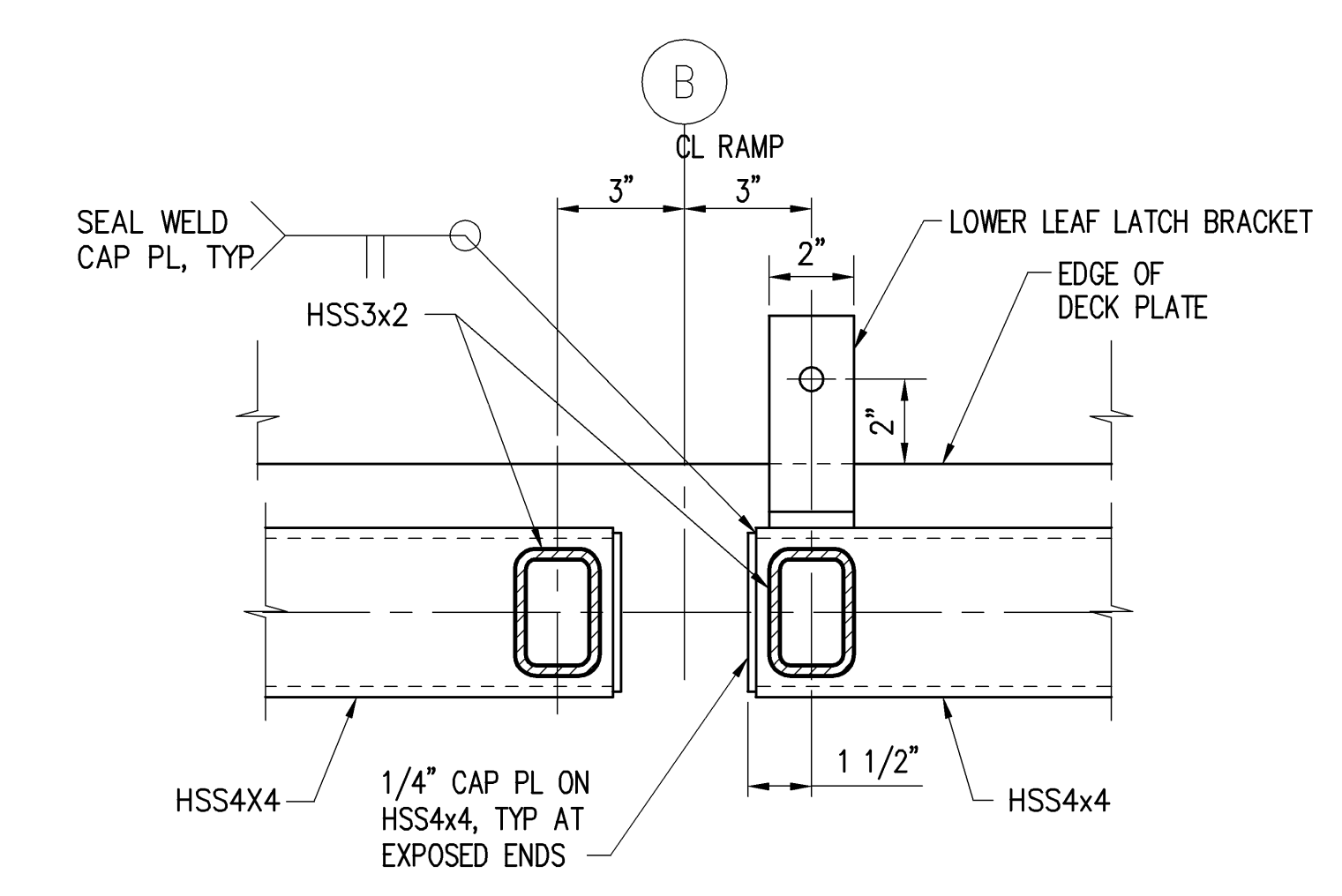


DESIGN RECORD DRAWINGS

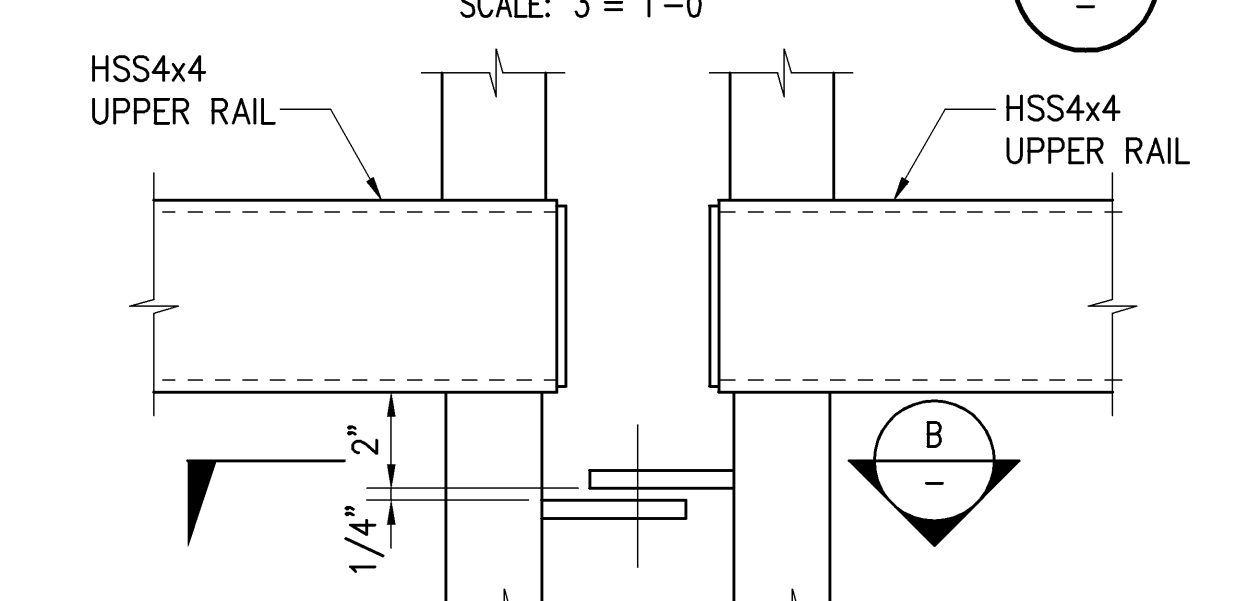




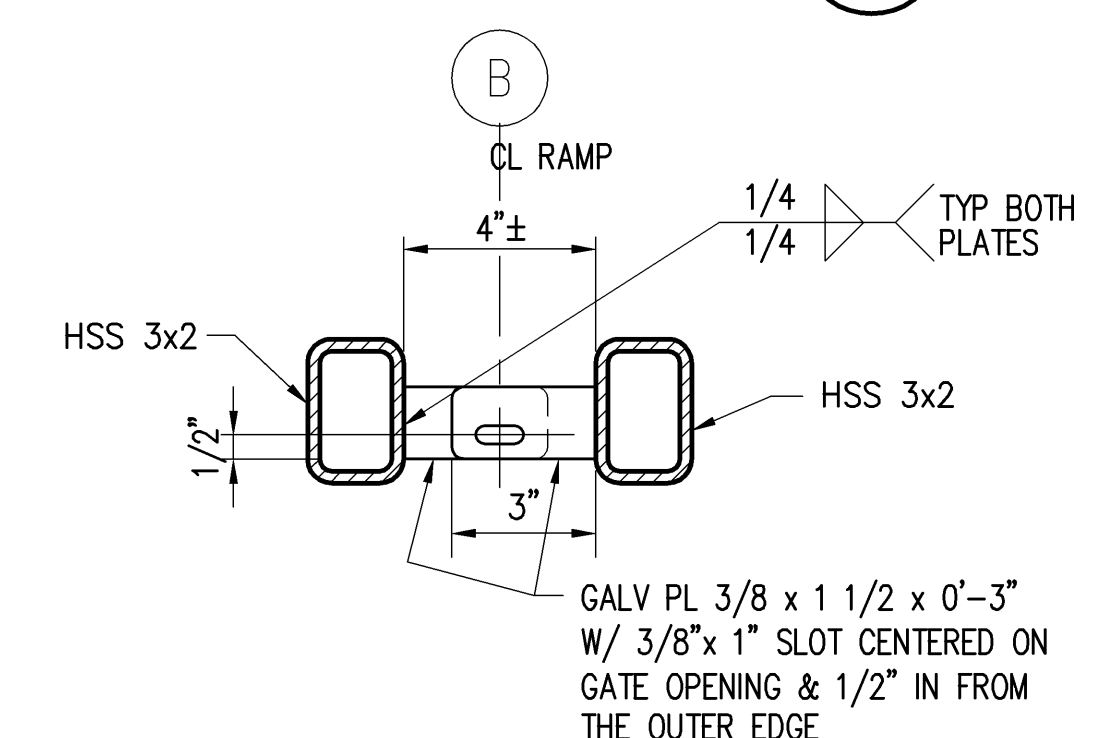
**RAMP GATE PLAN**  
SCALE: 1/2" = 1'-0"  
S-2 S-14



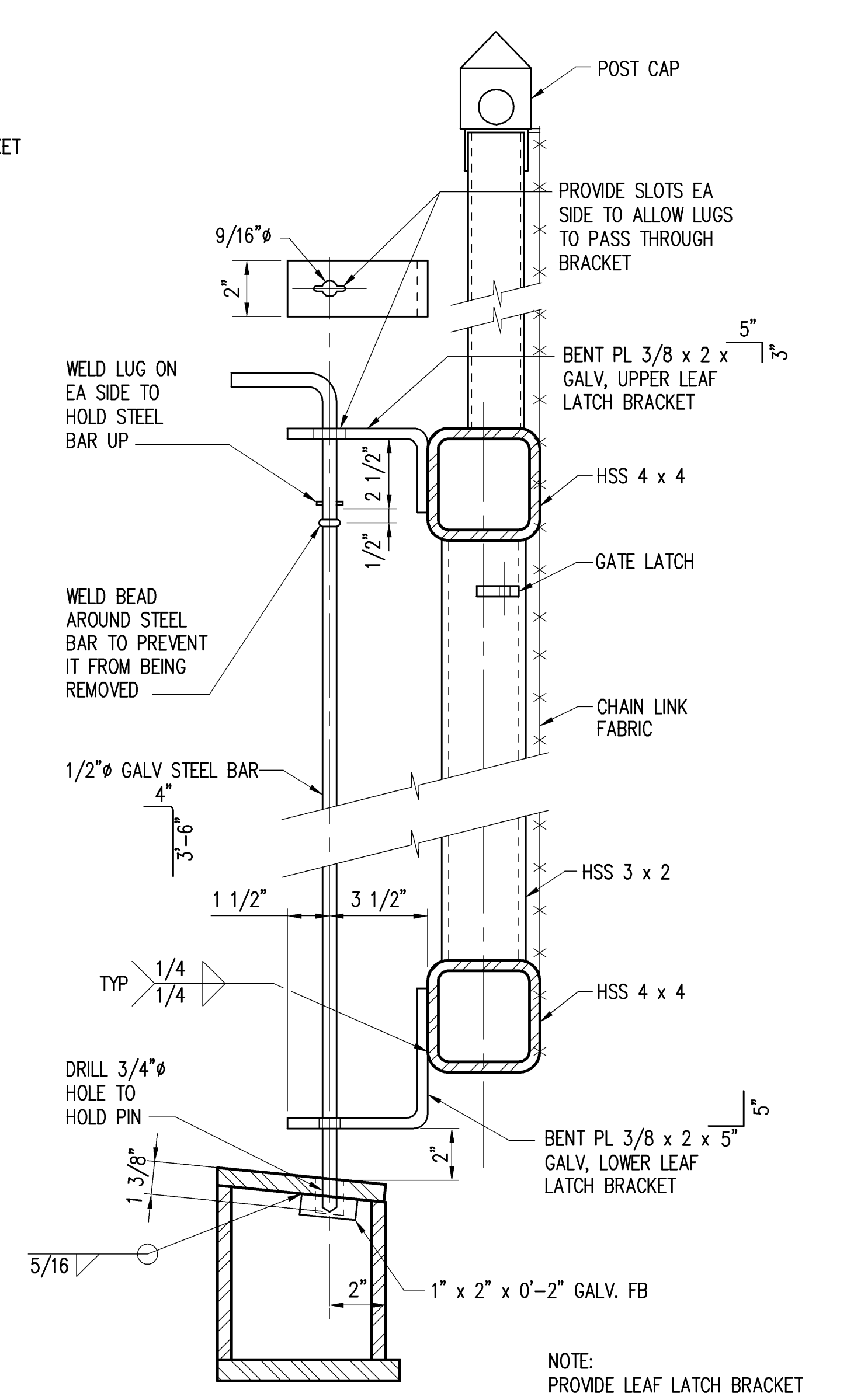
**GATE CENTER PLAN**  
SCALE: 3" = 1'-0"



**GATE LATCH**  
SCALE: 3" = 1'-0"

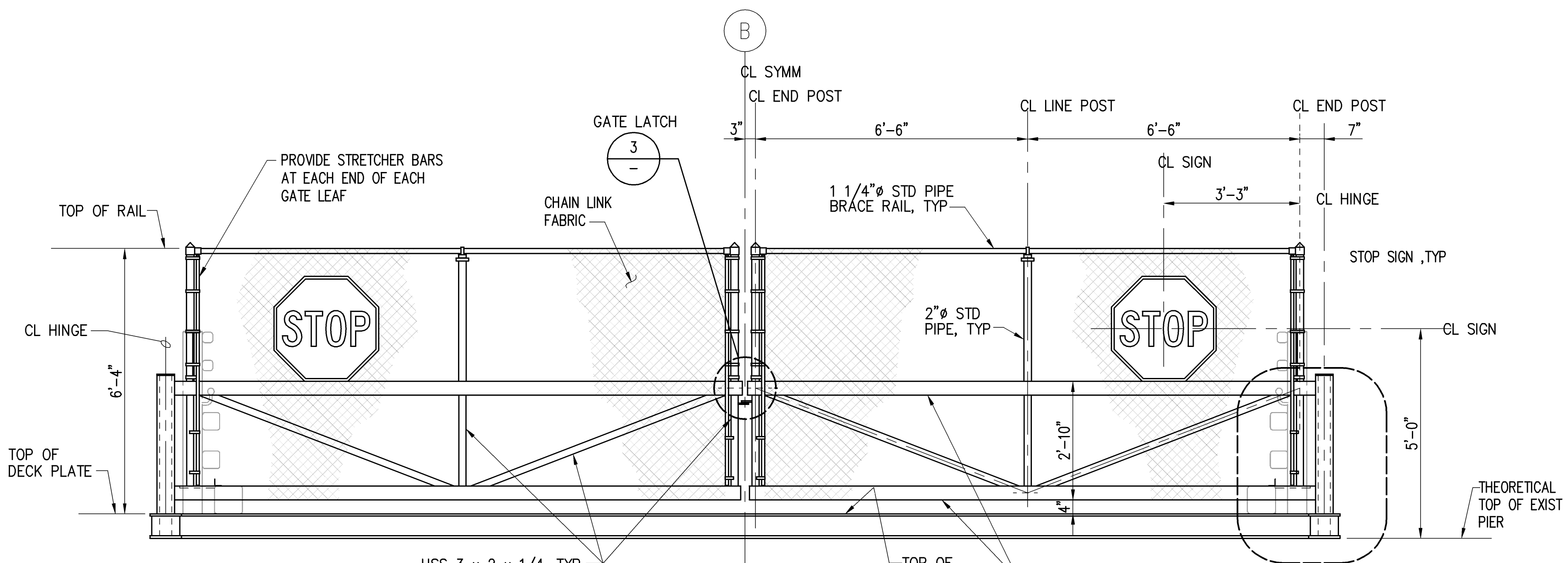


**GATE LATCH SECTION (B)**  
SCALE: 3" = 1'-0"



**LEAF LATCH**  
SCALE: 3" = 1'-0"

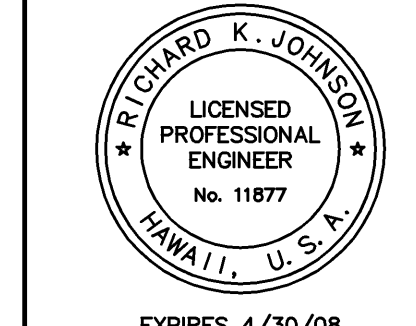
NOTE: PROVIDE LEAF LATCH BRACKET ON ONLY ONE GATE LEAF



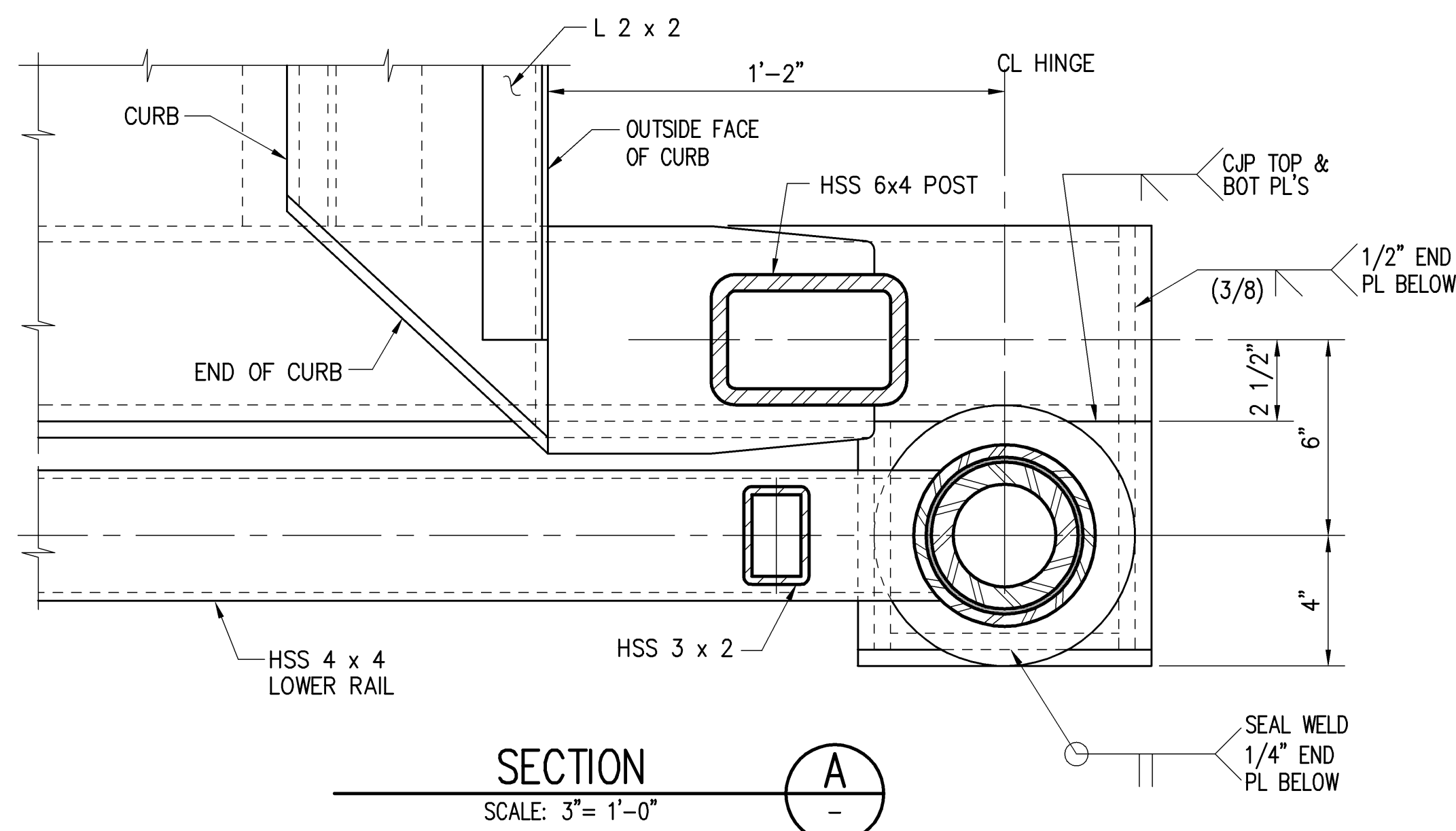
**RAMP GATE ELEVATION**  
SCALE: 1/2" = 1'-0"

- NOTES:
- CHAIN LINK FABRIC SHALL BE GALVANIZED 2" MESH X 9 GAGE X 72" HIGH.
  - HARDWARE SHALL BE GALVANIZED PER ASTM A153.
  - SEAL ALL OPENINGS AFTER GALVANIZING.

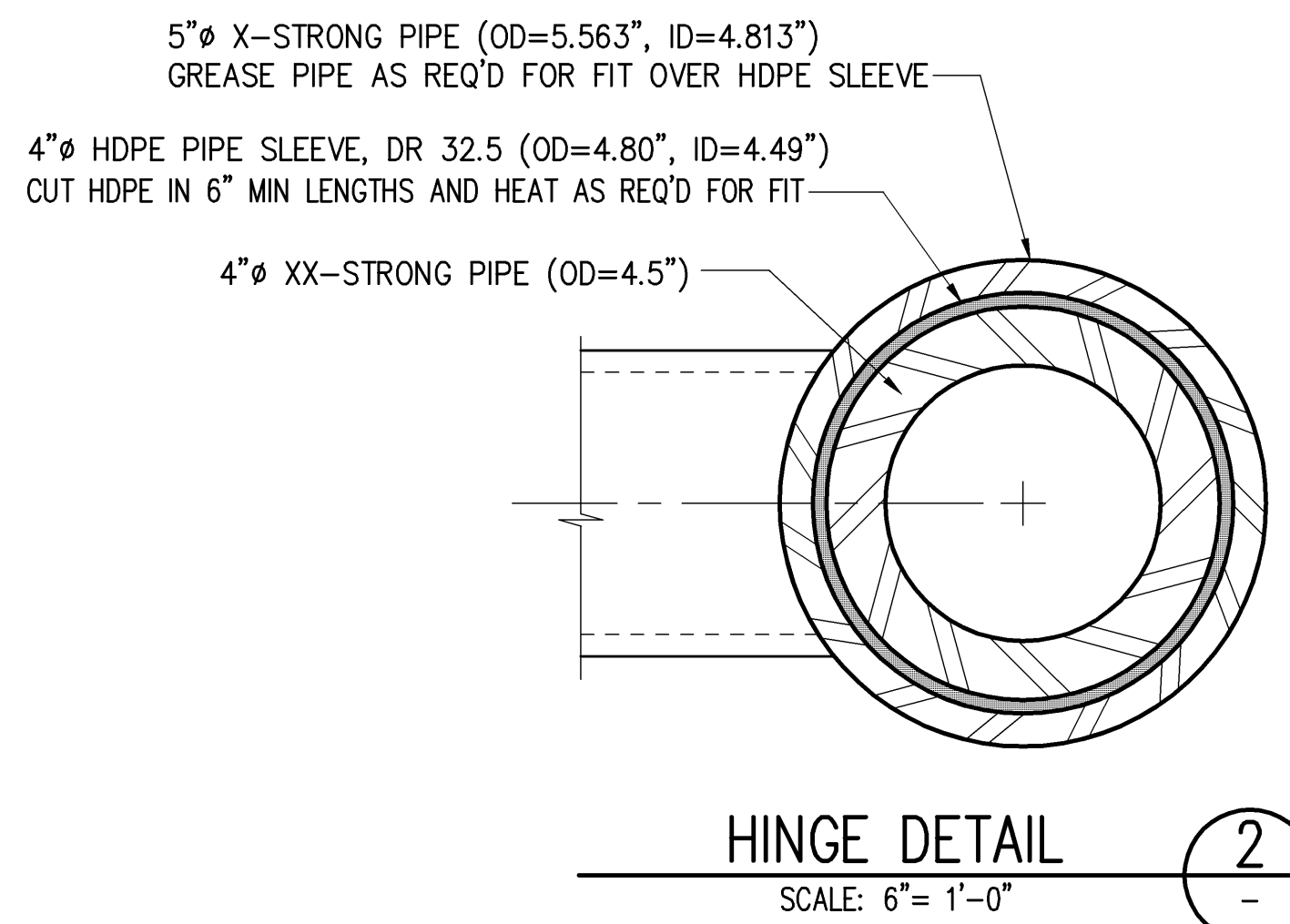
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
HEALY TIBBITTS BUILDERS, INC.			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>RAMP GATE SECTIONS AND DETAILS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: GGN	APPROVED BY:	DRAWING NUMBER <b>S-32</b>	
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR		
CHECKED BY: KN	JOB NUMBER		
DATE: 7/16/07	H.C. 90018		
SCALE: AS SHOWN	REVISION 0		



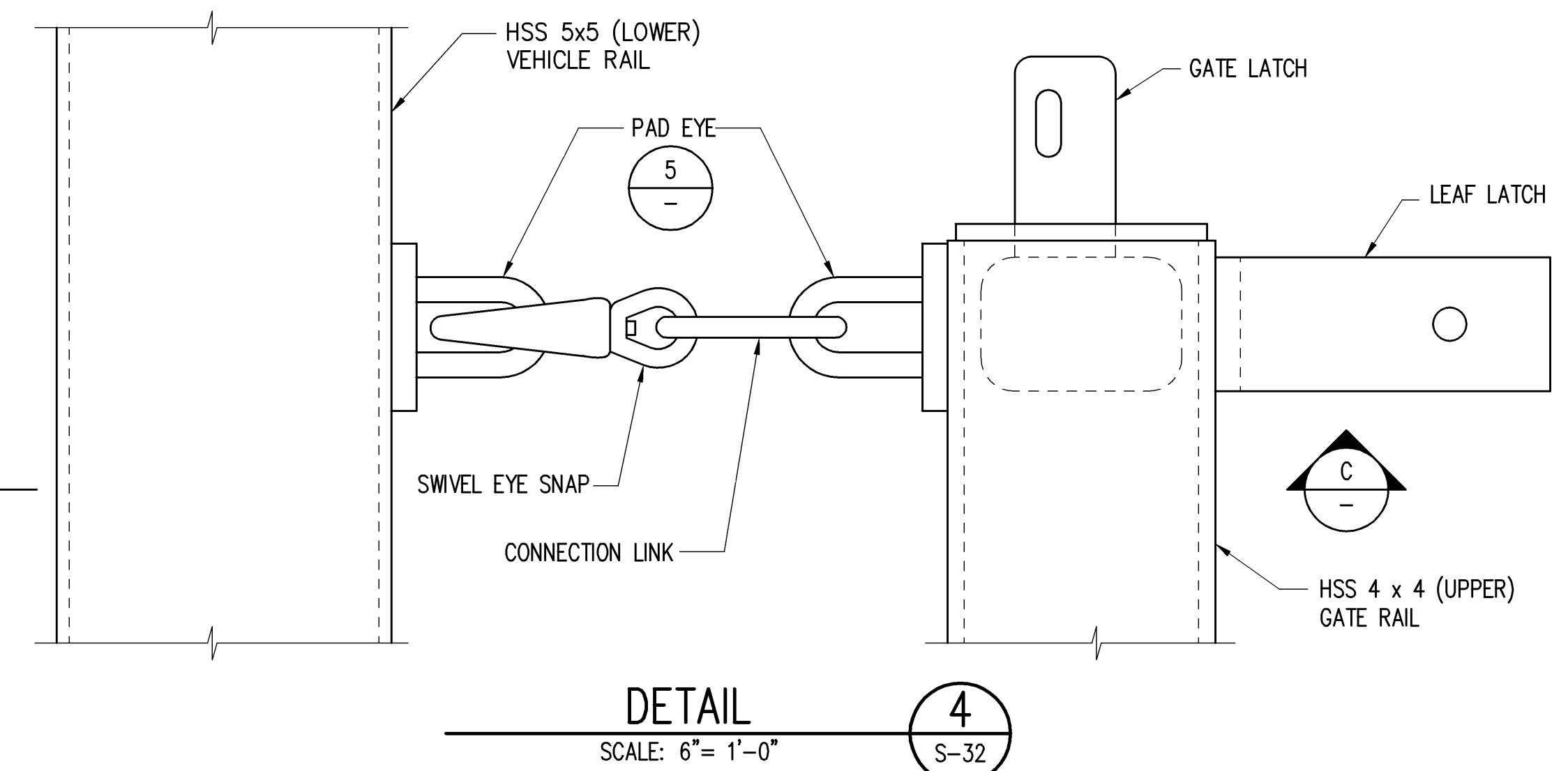
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(NOT TO SCALE)



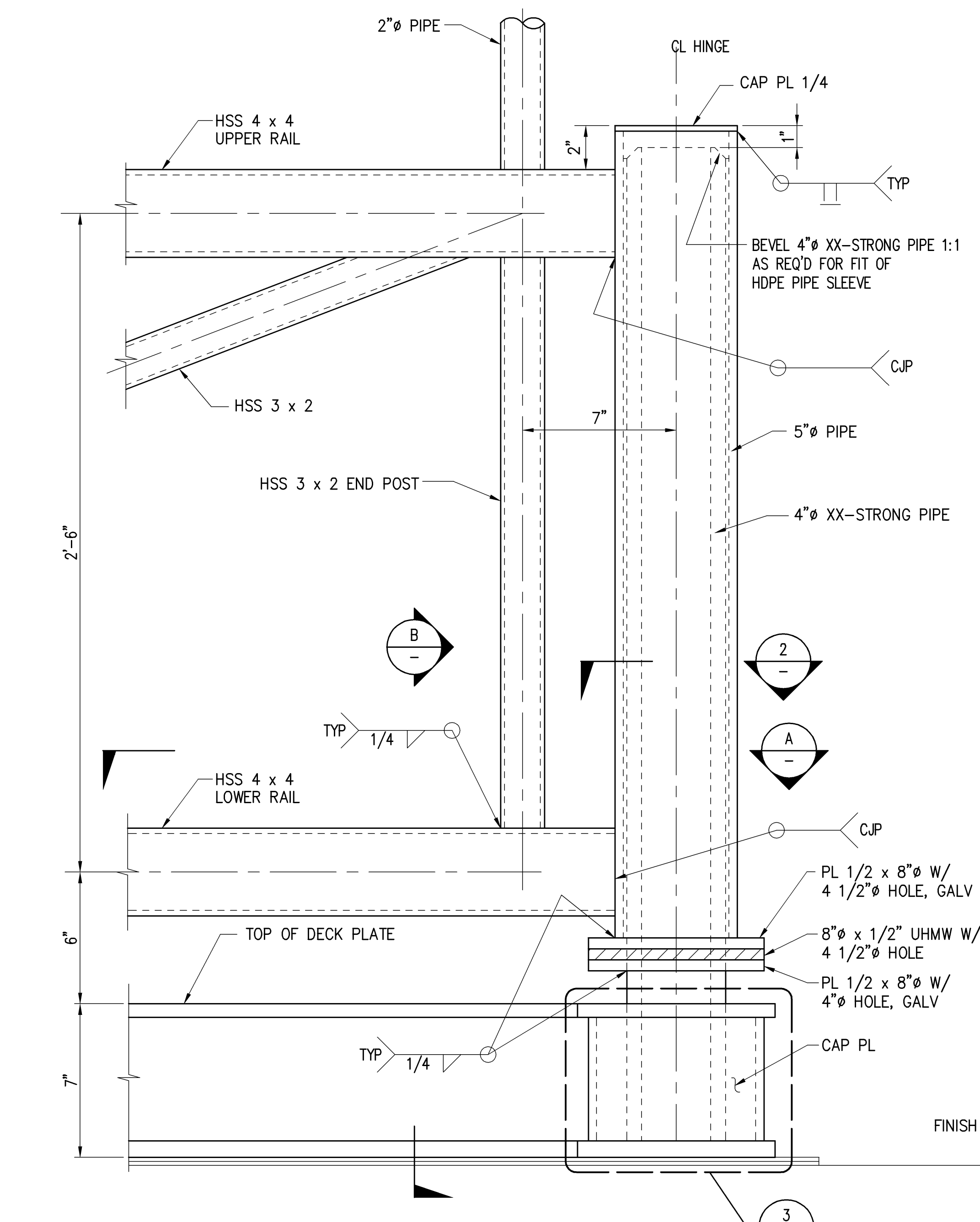
**SECTION A**  
SCALE: 3" = 1'-0"



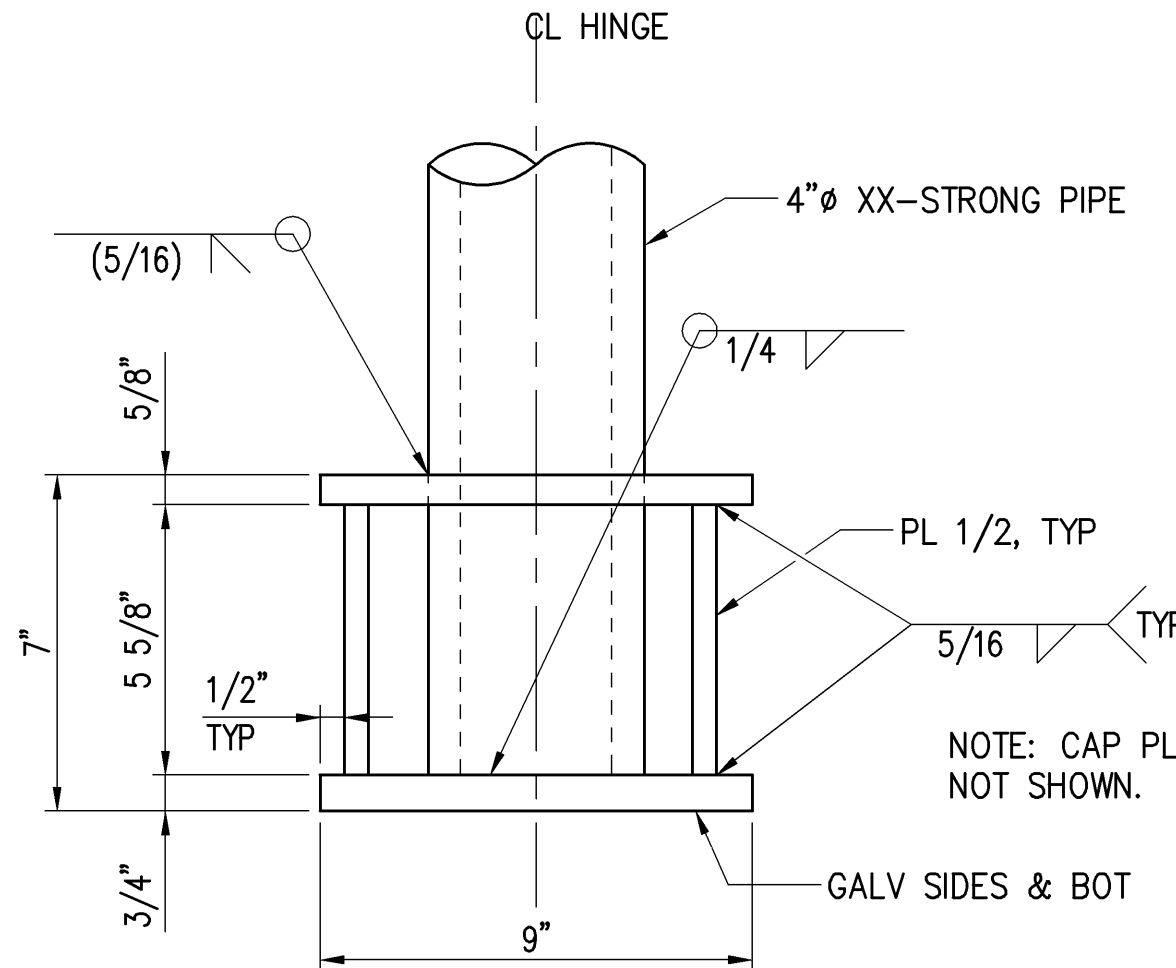
**HINGE DETAIL 2**  
SCALE: 6" = 1'-0"



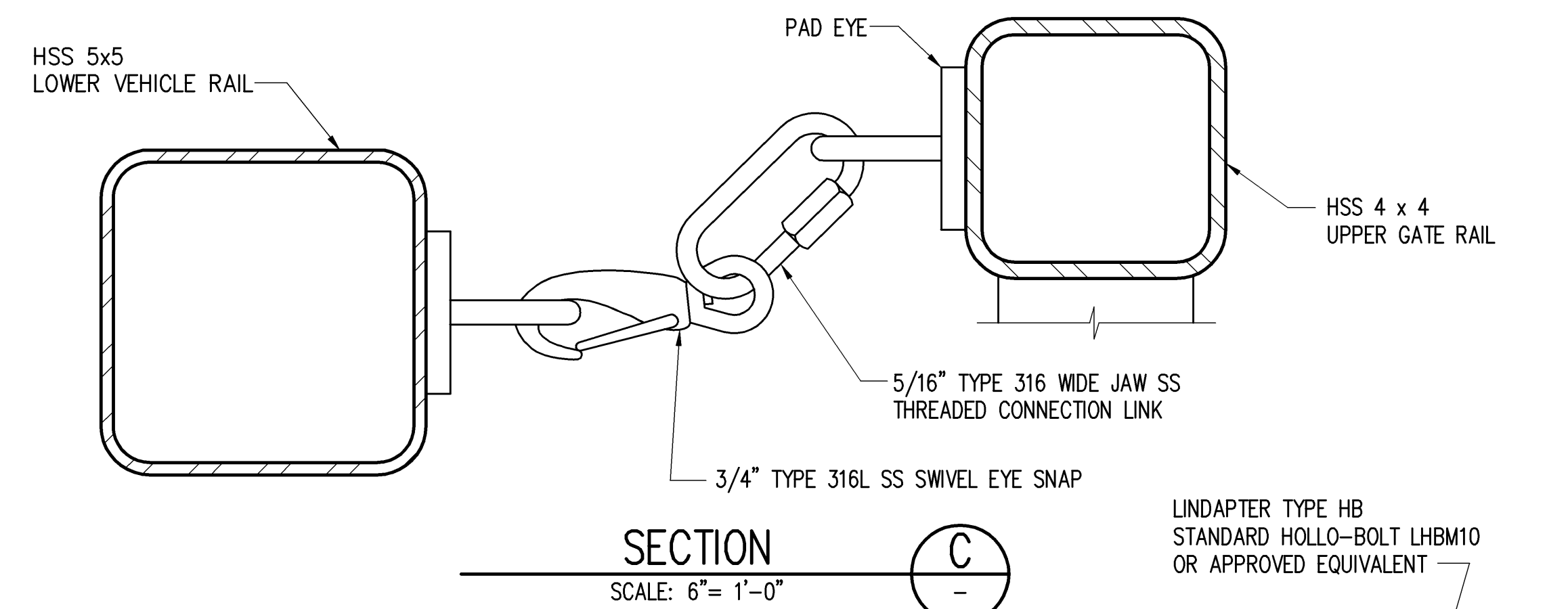
**DETAIL 4**  
SCALE: 6" = 1'-0"



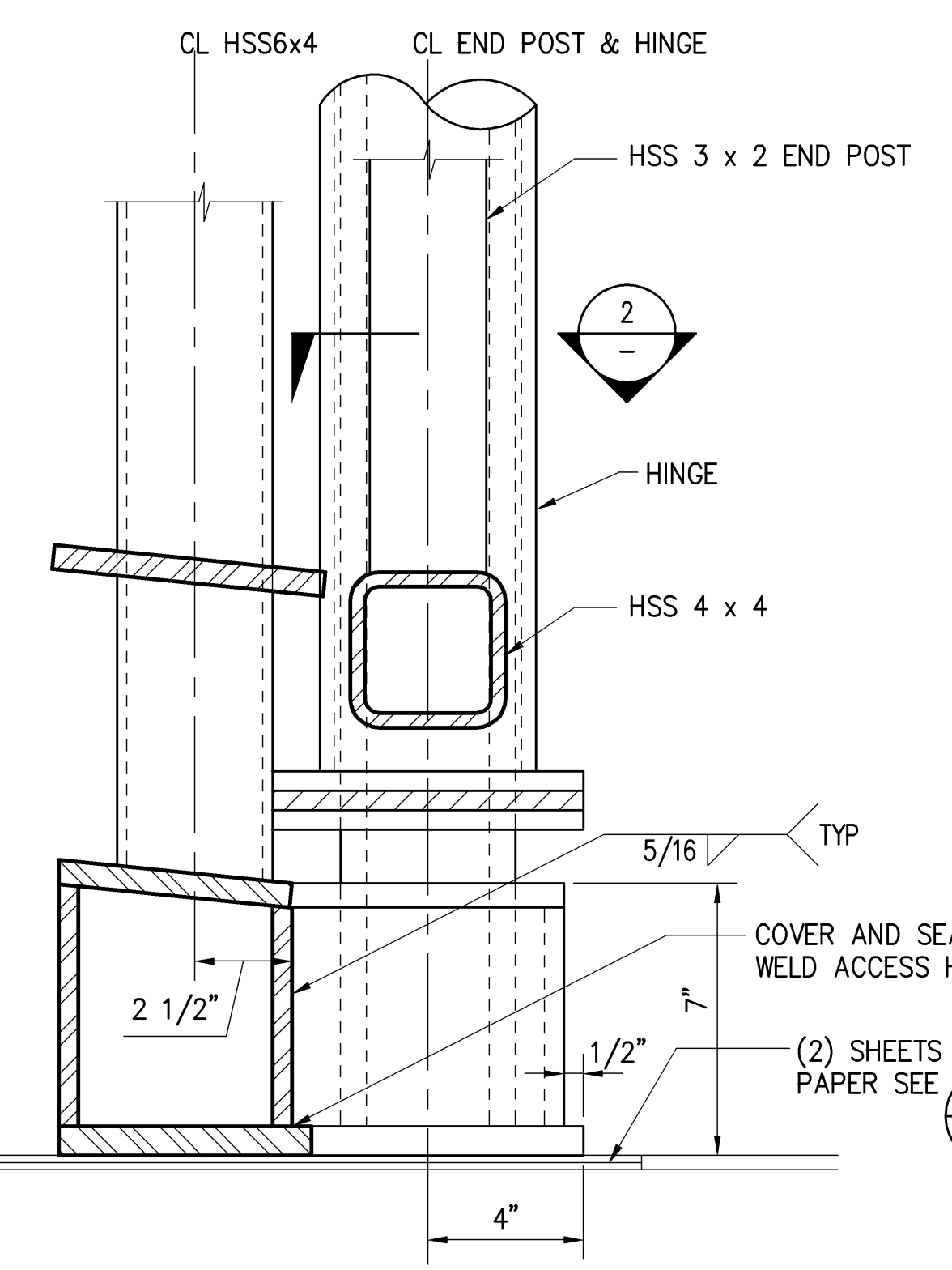
**GATE HINGE AND SUPPORT BASE 1**  
SCALE: 3" = 1'-0"



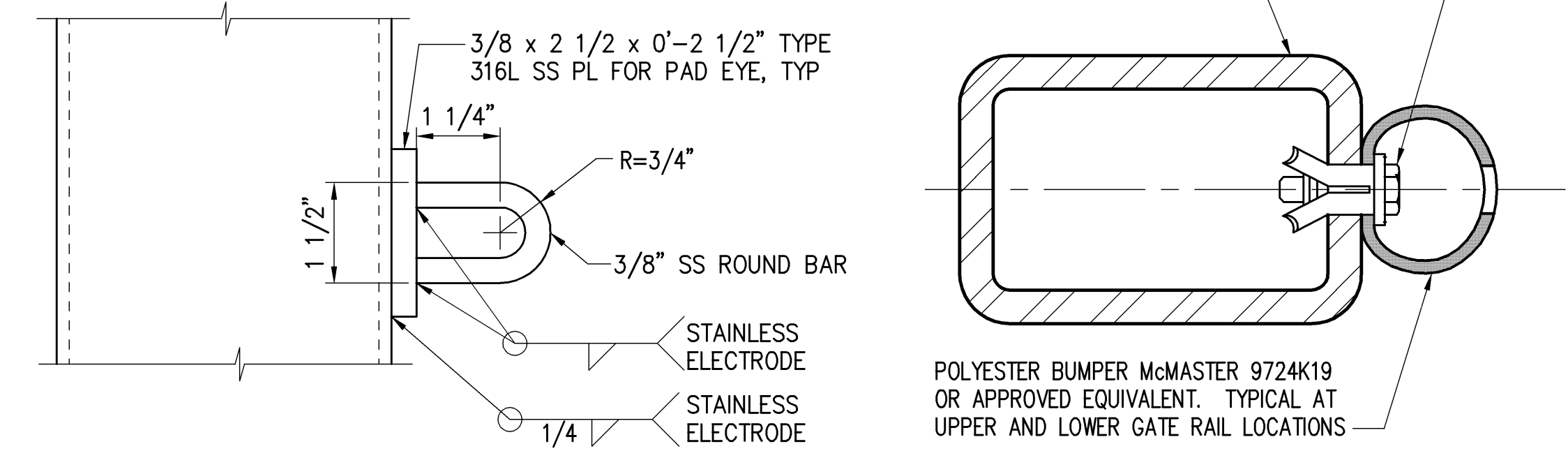
**SUPPORT BASE DETAIL 3**  
SCALE: 3" = 1'-0"



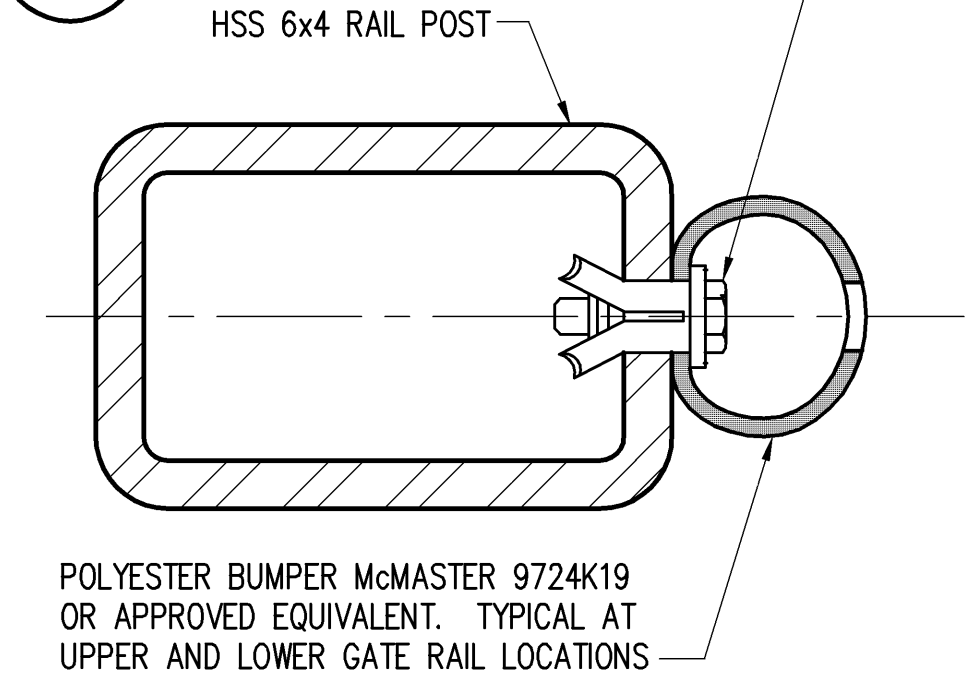
**SECTION C**  
SCALE: 6" = 1'-0"



**SECTION B**  
SCALE: 3" = 1'-0"

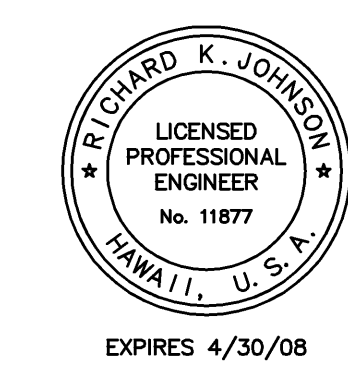


**PAD EYE DETAIL 5**  
SCALE: 6" = 1'-0"



**BUMPER DETAIL 6**  
SCALE: 6" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
<b>RAMP GATE SECTIONS AND DETAILS</b>	
DESIGNED BY: GGN	APPROVED BY:
DRAWN BY: RRT	FOR HARBORS ADMINISTRATOR
CHECKED BY: KN	REVISION
DATE: 7/16/07	H.C. 90018
SCALE: AS SHOWN	0



DESIGN RECORD DRAWINGS

**GENERAL**

1. FOLLOWING ARE PRIMARY POINTS OF CONTACT FOR CONSTRUCTION OF THIS WORK:
  - A. PRIME CONTRACTOR: HEALY TIBBITTS BUILDERS, INC.(HTBI), 808-487-3664  
CLAY HUTCHINSON, PROJECT MANAGER  
STEVE FORD, CONSTRUCTION MANAGER  
RICK HELTZEL, PRESIDENT
  - B. FABRICATOR: THOMPSON METAL FAB (TMF), VANCOUVER, WA, 360-696-0811  
DAVE GARDNER, PROJECT MANAGER
  - C. HYDRAULICS CONTROLS: SAWYER SYSTEMS (SSE), VANCOUVER, WA  
CHARLIE SAWYER, PRESIDENT 360-574-7809  
JAMES CAMPPELL PROJECT MANAGER 360-574-7809
  - D. DESIGNERS OF RECORD: KPFF CONSULTING ENGINEERS (KPFF), SEATTLE, WA  
CHRIS JOHNSON, PROJECT MANAGER, MECHANICAL DOR, 206-382-0600  
RICK JOHNSON, STRUCTURAL DOR, 206-622-5822  
KAMYAR NIKZAD, LEAD STRUCTURAL DESIGNER, 206-622-5822  
SHANNON SCOTT, LEAD MECHANICAL DESIGNER, 206-382-0600
2. SUBMIT SHOP DRAWINGS TO KPFF FOR REVIEW PRIOR TO BEGINNING ANY CONSTRUCTION. INCLUDE MANUFACTURERS' DRAWINGS AND/OR CATALOG CUTS, MARKED "CERTIFIED FOR CONSTRUCTION", AND DO NOT PURCHASE MANUFACTURED ITEMS WITHOUT TO APPROVAL.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE APPROVED PROJECT QUALITY CONTROL PLAN.
4. HIGH STRENGTH FASTENERS SHALL BE INSTALLED WITH PRELOAD EQUAL TO 75% OF PROOF STRENGTH +10%/-0%. PRELOAD MAY BE APPLIED BY DIRECT HYDRAULIC TENSIONING OR TORQUE. SUBMIT TORQUE CALCULATIONS FOR SPECIFIC COMBINATIONS OF BOLT SIZE, MATERIAL AND LUBRICATION. LOAD INDICATING WASHERS ARE NOT ALLOWED IN MECHANICAL SYSTEMS.
5. COAT ALL THREADED SURFACES WITH MARINE GRADE ANTI-SEIZE COMPOUND - BOSTIK, JET LUBE OR LOCTITE. NOTE THAT THESE LUBRICANTS HAVE LOW COEFFICIENTS OF FRICTION; USE CAUTION TO AVOID OVERSTRESSING BOLTS.
6. COAT FINISH-MACHINED RUNNING SURFACES WITH RUST INHIBITING GREASE AS SOON AS PRACTICAL AFTER MACHINING.
7. PAINT MECHANICAL WORK AS DESCRIBED ON DRAWING S-1, BUT DO NOT PAINT FAYING MACHINED SURFACES, ELASTOMERIC OR ANTIFRICTION BEARINGS, OR STAINLESS STEEL.
8. DRILLED AND MACHINED HOLES FORMING A HINGE LINE MUST BE PARALLEL AND HAVE A STRAIGHT LINE OF CENTERS AS SHOWN IN THE DRAWINGS. ACHIEVING THE REQUIRED TOLERANCES BY METHODS OTHER THAN LINE BORING MAY BE ACCEPTABLE, SUBJECT TO REVIEW BY KPFF.
9. IT IS INTENDED TO SHIP THE SUBFRAME, LIFT FRAME AND HYDRAULICS FULLY COMMISSIONED AND READY FOR INSTALLATION. DO NOT OPEN HYDRAULIC SYSTEM AFTER ACCEPTANCE TESTING AT TMF. SHRINK WRAP OR OTHERWISE SEAL HPU ENCLOSURE FOR SHIPMENT.

**REFERENCE STANDARDS AGENCIES**

THE WORK OF THIS PROJECT INCORPORATES STANDARDS OF THE FOLLOWING AGENCIES:

- AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO)
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- AMERICAN WELDING SOCIETY (AWS)
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - ELECTRICAL
- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
- SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)
- STEEL STRUCTURES PAINTING COUNCIL (SSPC)
- NATIONAL FLUID POWER ASSOCIATION (NFPA) - HYDRAULICS
- UNDERWRITERS LABORATORIES

**ASSEMBLY AND PASSIVE TEST OF APRON SYSTEM.**

1. PROVIDE AN ASSEMBLY SEQUENCE AND TEST PLAN FOR WORK DESCRIBED HEREIN. SUBMIT FOR KPFF REVIEW NOT LESS THAT 2 WEEKS PRIOR TO ASSEMBLY OF THE FIRST SYSTEM, AND INCLUDE A PROJECTED SCHEDULE FOR ASSEMBLY AND TEST OF ALL SYSTEMS. KPFF WILL WITNESS THE FIRST ASSEMBLY AND ALL TESTS.
2. INSTALL THE SUBFRAME ON A SHOP MOUNT FIXTURE SUITABLE FOR ASSEMBLY AND TEST OF THE ENTIRE APRON / LIFT FRAME / HYDRAULIC SYSTEM. TOP OF SHOP MOUNT FIXTURE MUST BE FLAT WITHIN +/-0.03" OVER THE ENTIRE PLANE OF SUBFRAME COLUMN PLATES.
3. THE SHOP MOUNT MUST BE ANCHORED SUITABLY TO REACT ALL APPLIED LOADS AND MOMENTS OF THE COMPLETED SYSTEM(S) DURING PASSIVE TESTING AND OPERATIONAL HYDRAULIC TESTS. LOADS ARE DEFINED ON DRAWING M-6.3. PROVIDE PLANS OF THE SHOP TEST MOUNT FOR REVIEW.
4. THOROUGHLY LUBRICATE ORKOT SLIDE AND JOURNAL BEARINGS, AND ANTIFRICTION BEARINGS, AT ASSEMBLY WITH "AQUALUBE" OR OTHER WATERPROOF GREASE .
5. WHEN ASSEMBLY IS COMPLETE, CAREFULLY MOVE ALL SYSTEM COMPONENTS THROUGH THEIR DESIGN RANGE OF MOTION. NOTE ANY RESTRICTIONS, BINDING, OR ROUGHNESS AND COORDINATE RESOLUTION WITH KPFF.

**NOTES TO MECHANICAL DETAILERS**

1. MATERIALS ARE STEELS AS FOLLOWS UNLESS NOTED OTHERWISE:
  - A. STEEL W SHAPES: ASTM A992 GR50
  - B. OTHER ROLLED STEEL SHAPES AND PLATE: ASTM A572 GR50
  - C. STEEL PIPE AS STRUCTURE: ASTM A53 GRB
  - D. HOLLOW STRUCTURAL SHAPES: ASTM A500 GRB
  - E. STRUCTURAL STEEL BOLTS: ASTM A325
  - F. STAINLESS STEEL PLATE AND BAR: ASTM A240 / 316L
  - G. STAINLESS STEEL BOLTS: ASTM F593 / 316
  - H. STAINLESS STEEL NUTS: ASTM F594 / 316
  - I. CLEVIS PINS AND HINGE PINS: ASTM A564 / 630  
HEAT TREAT CONDITION H1100, MINIMUM SU = 140KSI

CARBON AND ALLOY STEEL PLATES SHAPES AND BARS SHALL CONFORM TO ASTM A106.

2. BEARINGS AND BEARING MATERIALS
  - A. UHMW POLYETHYLENE SHAPES: ASTM D6712
  - B. LIFT FRAME SLIDING BEARINGS AND ALL HINGE BEARINGS: ORKOT TYPE TL AS MANUFACTURED BY ORKOT, INC., EUGENE OREGON. CONTACT: MIKE SCOTT 541-688-5529
3. TOLERANCES
  - A. ADJUST SHOP DIMENSIONING AND TOLERANCES TO ACHIEVE LAYOUT DIMENSIONS INDICATED AND AVOID UNWORKABLE TOLERANCE STACKUPS.
  - B. UNLESS NOTED OTHERWISE, LAYOUT DIMENSIONAL TOLERANCES ARE AS FOLLOWS:
 

FRACTIONAL OR FT.- IN. MORE THAN 60":	+/- 1/8"
FRACTIONAL OR FT.- IN. LESS THAN 60":	+/- 1/16"
DECIMAL INCHES	.X 0.06"
	.XX 0.03"
	.XXX 0.010"
  - C. UNLESS NOTED OTHERWISE, DIMENSIONS BETWEEN HOLES AND MACHINED SURFACE IN A SINGLE PART HAVE A TOLERANCE OF +/- 0.010", FLATNESS OF MACHINED SURFACES IS +/- .020" AND CLEARANCE HOLES FOR BOLTS ARE 1/16" LARGER IN DIAMETER THAN THE BOLT.
  - D. UNLESS NOTED OTHERWISE, TOLERANCE ON ANGULAR DIMENSIONS IS +/- 0.5 DEGREES. FEATURES OF PARTS AND ASSEMBLIES THAT ARE IMPLIED AS PARALLEL OR PERPENDICULAR MUST BE PARALLEL OR PERPENDICULAR WITHIN THIS TOLERANCE.
4. WELDING
  - A. WELDING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH AWS D1.5, EXCEPT FOR WELDING HSS SECTIONS WHICH SHALL BE ACCOMPLISHED IN CONFORMANCE WITH AWS D1.1. USE ONLY WELDERS CURRENTLY CERTIFIED FOR THE WELDS AND POSITIONS USED.
  - B. STEEL ELECTRODES SHALL BE 70 KSI, LOW HYDROGEN TYPE.
  - C. WELD STAINLESS TO STAINLESS, OR STAINLESS TO CARBON OR ALLOY STEELS, WITH TYPE 316L LOW HYDROGEN ELECTRODES.
  - D. ALL WELDS SHALL BE 100% VISUALLY INSPECTED. AT LEAST 30% OF FILET WELDS AND PJP GROOVE WELDS SHALL BE TESTED BY MT.
  - E. ALL CJP WELDS SHALL BE 100% UT. ALL CJP BUTT TENSION WELDS SHALL BE 100% UT AND 100%MT TESTED.
  - F. TESTING SHALL BE ACCOMPLISHED USING ONLY PERSONNEL CURRENTLY CERTIFIED BY AWS FOR THE TESTING SPECIFIED.
  - G. RANDOM RE-INSPECTION OF WELDS INSPECTED BY TMF PERSONNEL WILL BE ACCOMPLISHED BY AN INDEPENDENT TESTING AGENCY HIRED BY HTBI

**HYDRAULIC SYSTEM NOTES**

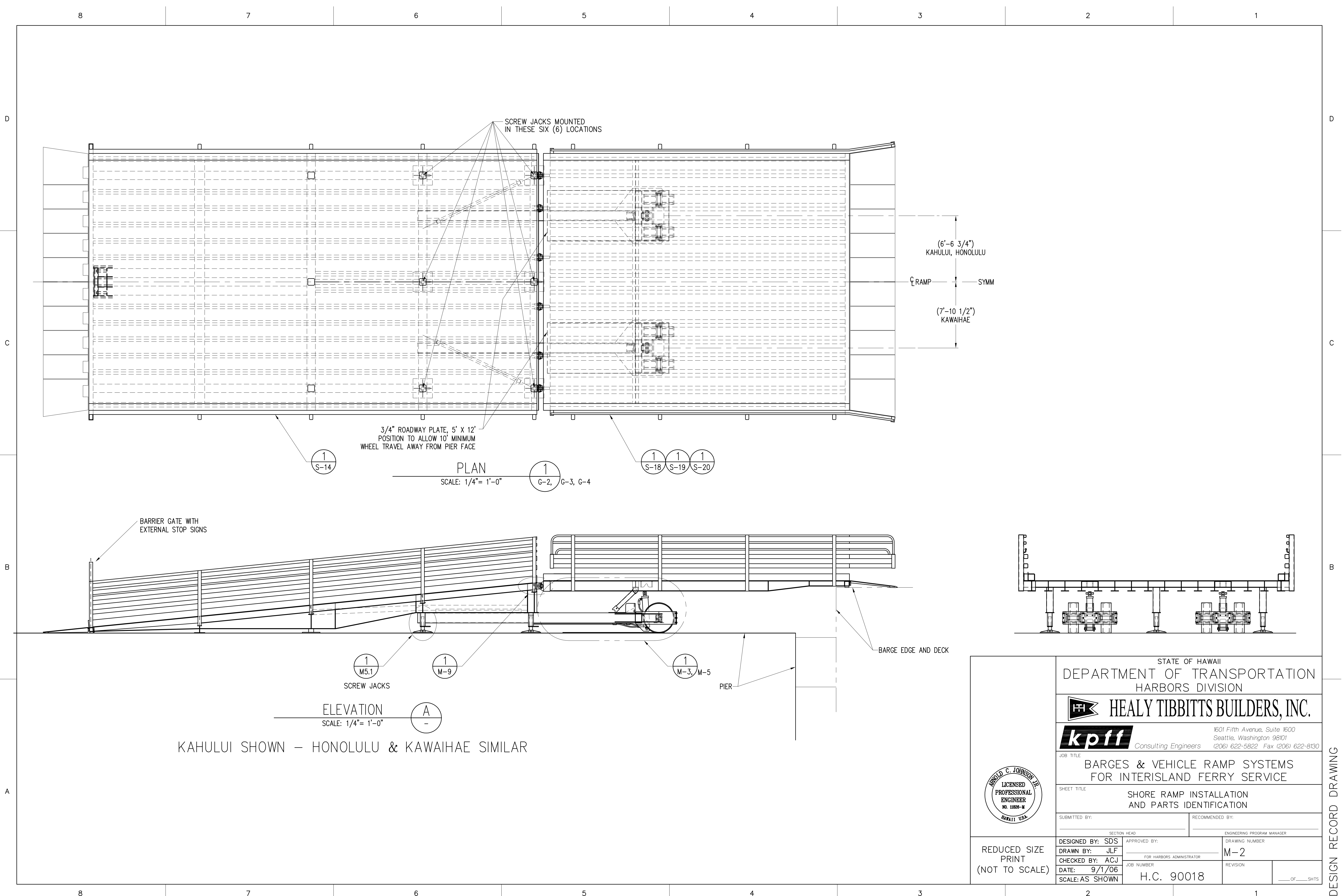
1. DETAIL DESIGN AND CONSTRUCTION OF HYDRAULIC SYSTEMS SHALL CONFORM TO NFPA/JIC T2.24.1-1990.
2. MANUFACTURED COMPONENTS OTHER THAN CYLINDERS SHALL BE AS SHOWN ON M-13.2. SUBSTITUTIONS FOR PARTS DEFINED BY MANUFACTURERS' MAKE AND MODEL MAY BE ACCEPTABLE, SUBJECT TO KPFF APPROVAL.
4. CYLINDERS SHALL BE AS SHOWN ON DRAWINGS M-10.0 - M-10.2 INCLUSIVE. LIFT CYLINDERS FOR NAWLIWLI WHEEL DOLLIES SHALL BE AS SUPPLIED BY HOLLAND, INC., THE WHEEL DOLLY MANUFACTURER.
5. UNLESS NOTED OTHERWISE, TUBING, PIPE HOSES AND FITTINGS SHALL BE AS FOLLOWS:
  - A. TUBING: STAINLESS STEEL PER ASTM A269/316L
  - B. PIPE: STAINLESS STEEL PER ASTM A312/316L
  - C. HOSE: NO-SKIVE SAE TYPE 100R2 UP TO 3/4"  
NO-SKIVE SAE TYPR 100R13 OVER 3/4"
  - D. ALL HOSES SHALL BE RATED FOR THE DESIGN HYDRAULIC PRESSURE
  - E. TUBE FITTINGS UP TO 3/4": THREE PIECE BITE TYPE FLARELESS PER SAE J514, ALL STAINLESS.
  - F. TUBE FITTINGS OVER 3/4", AND ALL PIPE FITTINGS: SHALL BE SAE CODE 61 FOUR BOLT FLANGE TYPE, WELDED DIRECTLY TO TUBE ENDS, ALL STAINLESS WITH STAINLESS BOLTS.
  - G. PASSIVATE TUBING, PIPE AND WELDED PIPE ASSEMBLIES PER ALASKA COPPER AND BRASS PROCEDURE FOR PASSIVATION NO. N706 OR EQUAL PRIOR TO INSTALLATION.
  - H. TO THE GREATEST EXTENT POSSIBLE USE HARD TUBING AND PIPE - MINIMIZE LENGTH OF HOSES.
  - I. TUBING AND PIPE MOUNTS SHALL HAVE ELASTOMERIC INSERTS TO MINIMIZE VIBRATION AND ACCOMMODATE MINOR RELATIVE MOTION BETWEEN THE PIPE AND ITS MOUNTING SURFACE..
6. PRE-INSTALLATION HYDRAULIC TESTING
  - A. DO NOT ALLOW HYDRAULIC OIL TO ENTER THE SYSTEM WITHOUT FILTRATION AT LEAST EQUAL TO THE SYSTEM RETURN FILTER.
  - B. HYDRAULIC COMPONENTS AND ASSEMBLIES SHALL BE TESTED PRIOR TO SYSTEM ASSEMBLY AND INSTALLATION AT TMF. SIMULATE IN-SERVICE LOADS AND FLOWS USING RELIEF VALVES OR OTHER SUITABLE MEANS. TESTS SHALL BE DESIGNED TO DEMONSTRATE PROPER PERFORMANCE OF COMPONENTS AT THE LOWEST PRACTICAL LEVEL AND VERIFY THAT PRESSURES AND FLOW OF ALL COMPONENTS ARE PROPERLY ADJUSTED.
  - C. CYLINDERS SHALL BE SHOP TESTED AS SHOWN ON THE CYLINDER DRAWINGS.
7. OPERATIONAL TESTING OF HYDRAULIC SYSTEM
  - A. OPERATIONAL TESTS SHALL BE PERFORMED AFTER PASSIVE MOTION TESTS OF ASSEMBLED SUBFRAME, LIFT FRAME AND APRON.
  - B. AFTER INSTALLATION ON THE APRON/LIFT FRAME ASSEMBLY, FLUSH THE FULLY ASSEMBLED HYDRAULIC SYSTEM PER ASTM D4174 AND TEST. MINIMUM ACCEPTANCE CRITERION IS PUMP MANUFACTURER'S CLEANLINESS REQUIREMENT.
  - C. BEGINNING SLOWLY, USE THE OPERATOR PANEL TO OPERATE COMPLETED SYSTEM THROUGH THE ENTIRE RANGE OF MOTION OF ALL FUNCTIONS. VERIFY PROPER FUNCTIONALITY AND SMOOTHNESS OF OPERATION.
  - D. USING THE OPERATOR PANEL, OPERATE THE COMPLETED SYSTEM THROUGH ACTIONS DESCRIBED ON DRAWING 13.2. VERIFY OPERATING LOGIC AND PROPER ADJUSTMENT OF TRAVEL LIMITS AND SPEEDS.

**ELECTRICAL NOTES**

1. SAWYER SYSTEMS WILL PROVIDE ALL ELECTRICAL DESIGN AND CONSTRUCTION RELATED TO HYDRAULIC SYSTEMS SHOWN HEREIN.
2. ELECTRICAL DESIGN AND CONSTRUCTION MUST CONFORM TO REQUIREMENTS OF NFPA 70 (NEC), NFPA 79 AND UL508A, AS WELL AS REQUIREMENTS OF STATE AND LOCAL AGENCIES HAVING JURISDICTION IN HAWAII.
3. ALL ELECTRICAL SYSTEMS WILL BE OPERATED AND TESTED AT THOMPSON METAL FAB PRIOR TO SHIPMENT. THEY WILL THEN BE DISCONNECTED FOR SHIPMENT TO HONOLULU, WHERE QUALIFIED AND LICENCED ELECTRICIANS WILL CONNECT POWER AND CONTROL STATIONS PER WIRING DIAGRAMS PROVIDED BY SAWYER.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION				
<b>HEALY TIBBITTS BUILDERS, INC.</b>				
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 <b>kpff</b> Consulting Engineers (206) 622-5822 Fax (206) 622-8130				
JOB TITLE		<b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE				
<b>MECHANICAL NOTES</b>				
SUBMITTED BY:		RECOMMENDED BY:		
SECTION HEAD		ENGINEERING PROGRAM MANAGER		
	DESIGNED BY: SDS		APPROVED BY:	
	DRAWN BY: JLF		DRAWING NUMBER	
	CHECKED BY: ACJ		FOR HARBORS ADMINISTRATOR	<b>M-1</b>
	DATE: 9/1/06	JOB NUMBER	REVISION	___ OF ___ SHTS
SCALE: NONE		H.C. 90018		

DESIGN RECORD DRAWING



3/4" ROADWAY PLATE, 5' X 12'  
 POSITION TO ALLOW 10" MINIMUM  
 WHEEL TRAVEL AWAY FROM PIER FACE

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

BARRIER GATE WITH  
 EXTERNAL STOP SIGNS

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

KAHULUI SHOWN - HONOLULU & KAWAIHAE SIMILAR

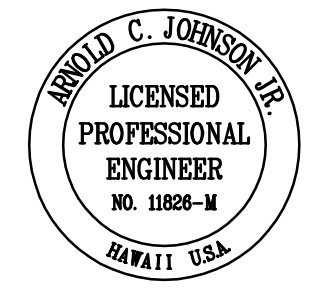
(6'-6 3/4")  
 KAHULUI, HONOLULU

RAMP SYMM

(7'-10 1/2")  
 KAWAIHAE

BARGE EDGE AND DECK

PIER



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**

**kpff** Consulting Engineers  
 1601 Fifth Avenue, Suite 1600  
 Seattle, Washington 98101  
 (206) 622-5822 Fax (206) 622-8130

JOB TITLE  
**BARGES & VEHICLE RAMP SYSTEMS  
 FOR INTERISLAND FERRY SERVICE**

SHEET TITLE  
**SHORE RAMP INSTALLATION  
 AND PARTS IDENTIFICATION**

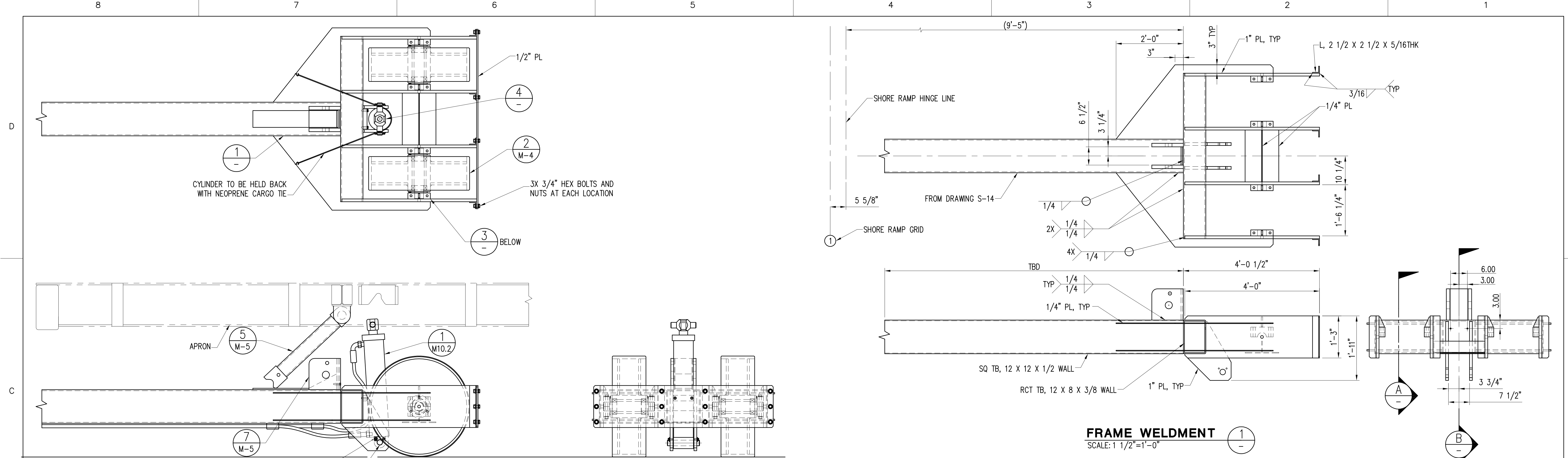
SUBMITTED BY: \_\_\_\_\_ RECOMMENDED BY: \_\_\_\_\_  
 SECTION HEAD: \_\_\_\_\_ ENGINEERING PROGRAM MANAGER: \_\_\_\_\_

REDUCED SIZE  
 PRINT  
 (NOT TO SCALE)

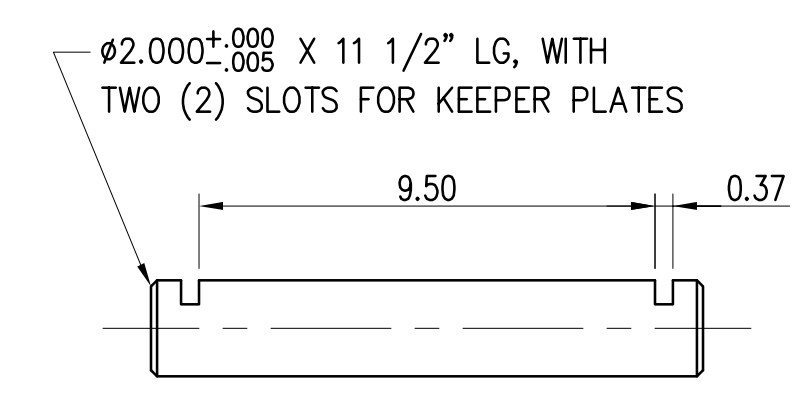
DESIGNED BY: SDS  
 DRAWN BY: JLF  
 CHECKED BY: ACJ  
 DATE: 9/1/06  
 SCALE: AS SHOWN

APPROVED BY: \_\_\_\_\_  
 FOR HARBORS ADMINISTRATOR  
 JOB NUMBER: H.C. 90018  
 DRAWING NUMBER: M-2  
 REVISION: \_\_\_\_\_  
 OF \_\_\_\_\_ SHTS

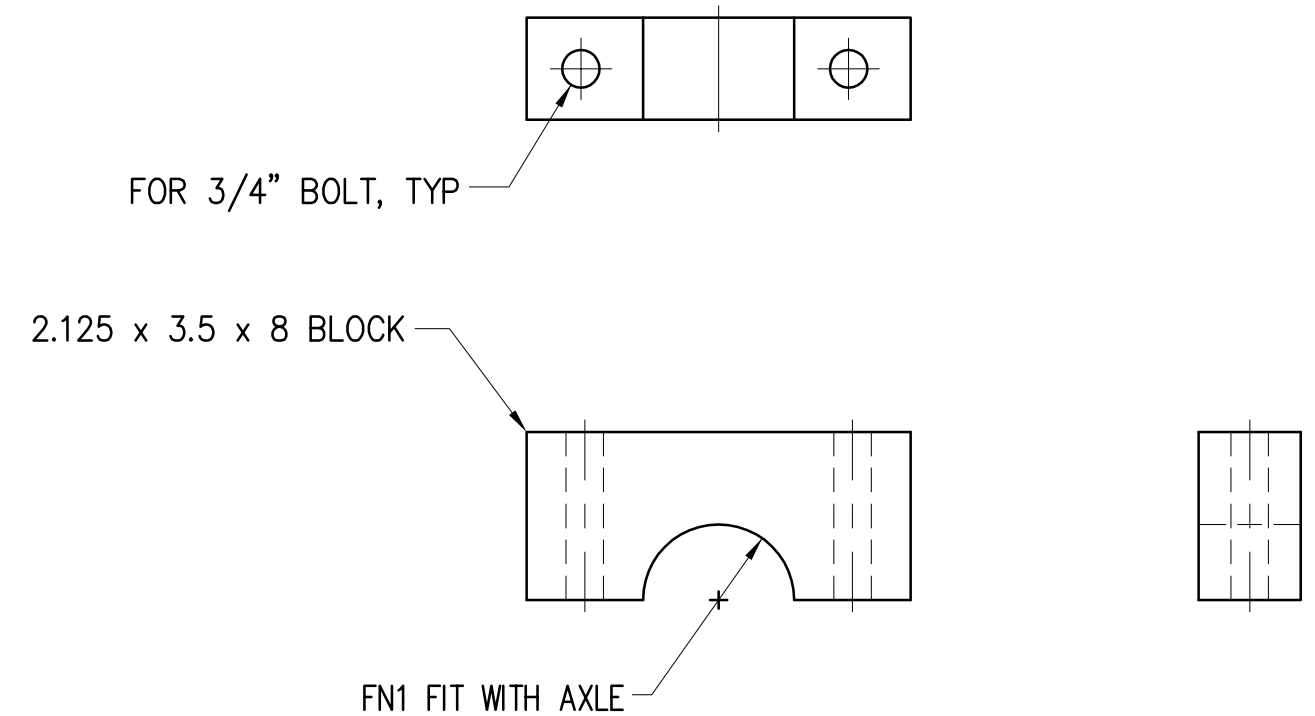
DESIGN RECORD DRAWING



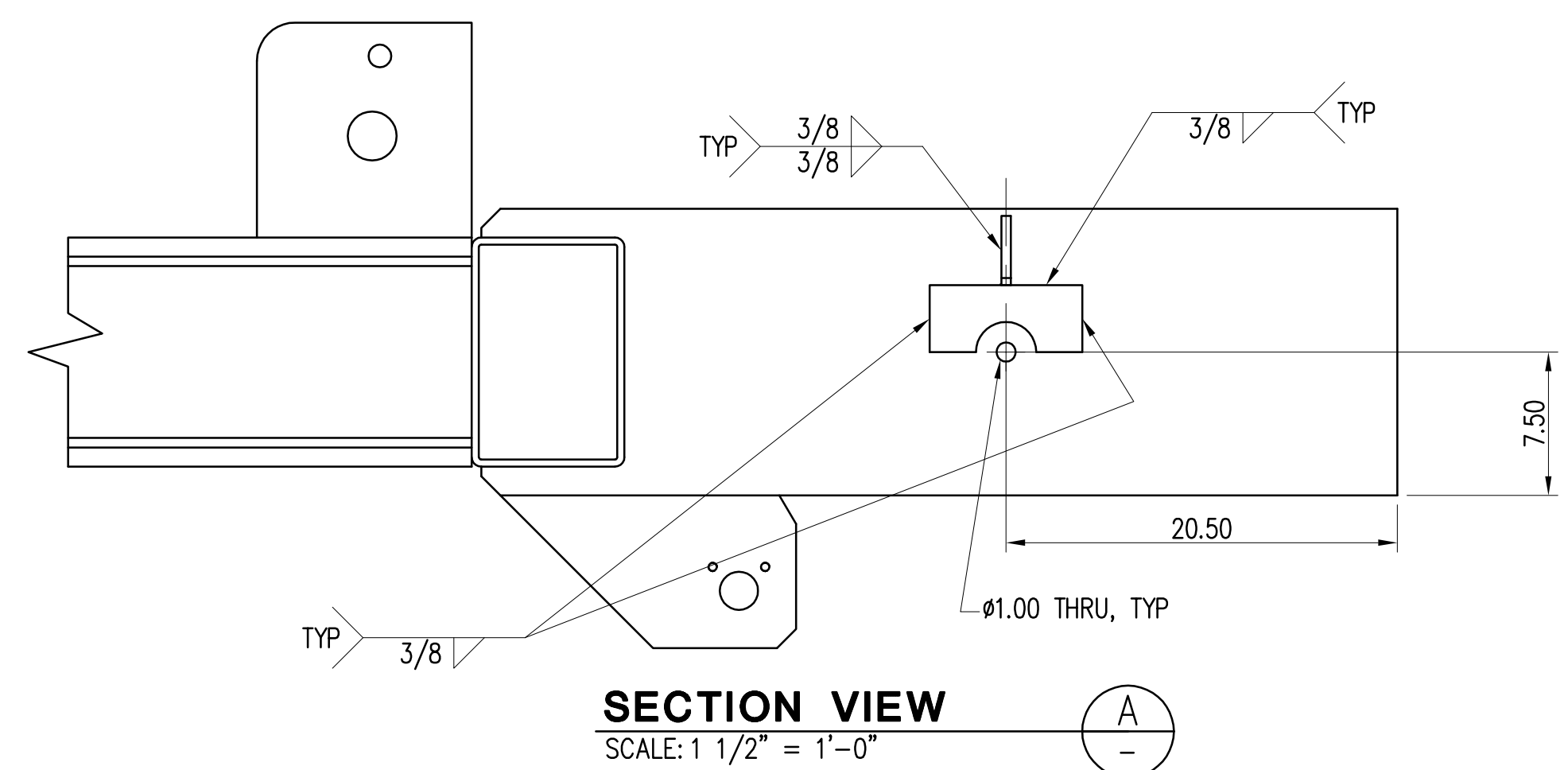
**WHEELSET ASSEMBLY**  
SCALE: 3/4" = 1'-0"



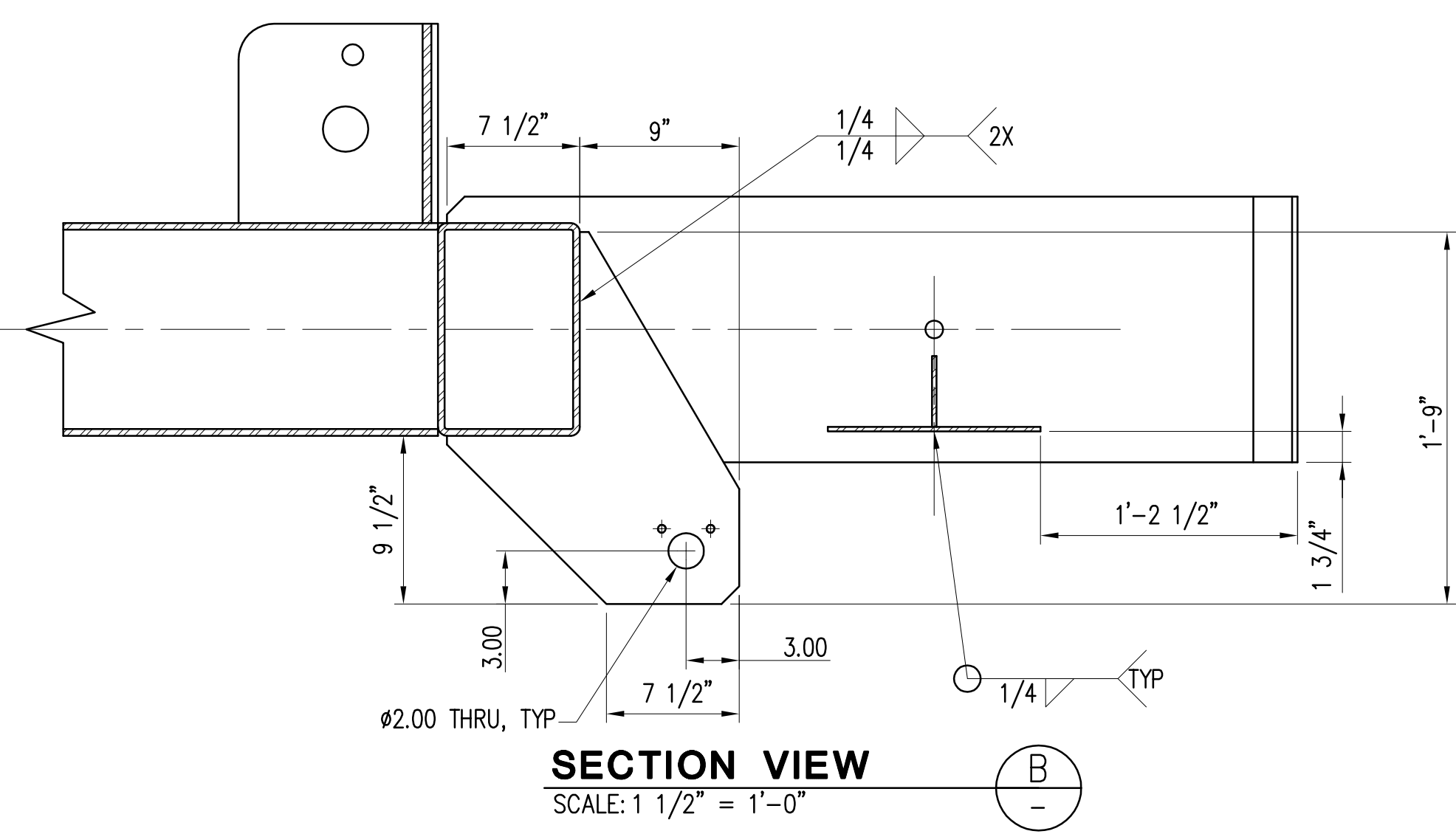
**CYLINDER PIN**  
SCALE: 1/4" = 1"  
MAT'L: ASTM A564 TP630, COND. H1100



**DETAIL**  
SCALE: 1/4" = 1"

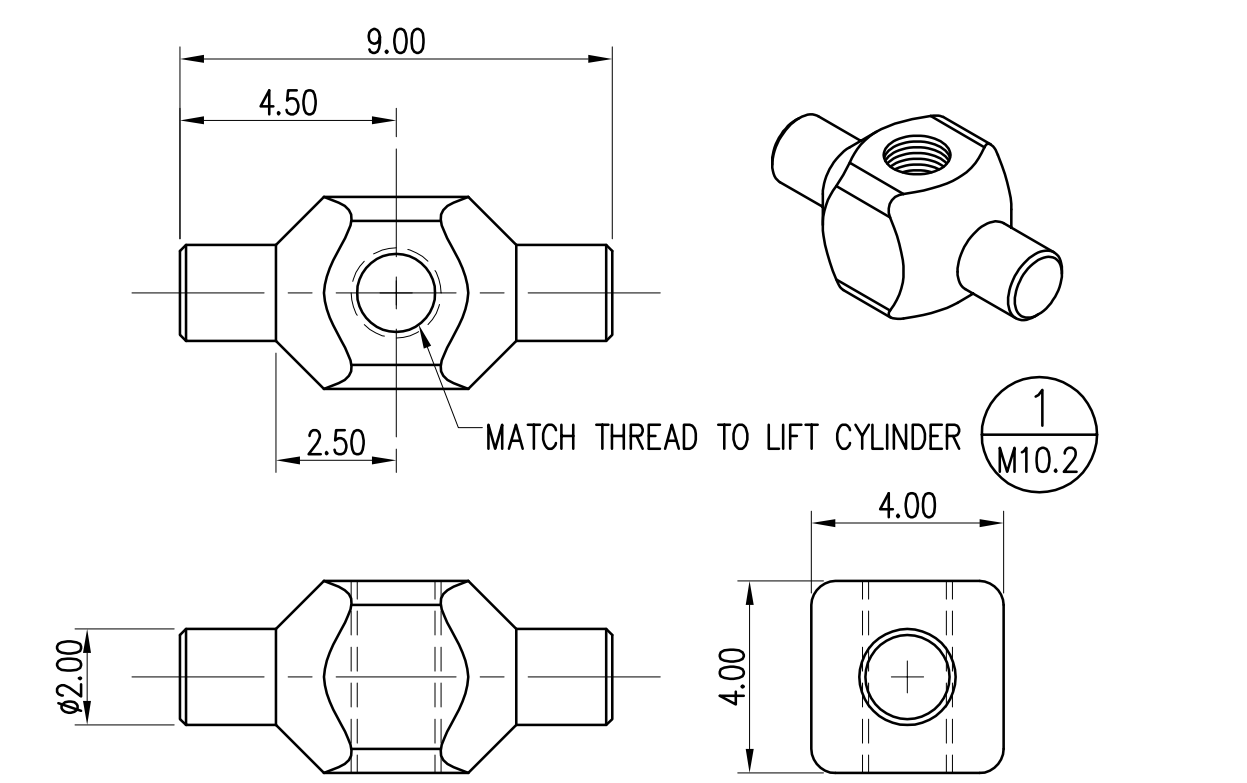


**SECTION VIEW A**  
SCALE: 1 1/2" = 1'-0"



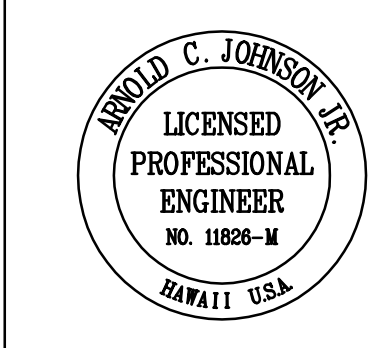
**SECTION VIEW B**  
SCALE: 1 1/2" = 1'-0"

**FRAME WELDMENT**  
SCALE: 1 1/2" = 1'-0"



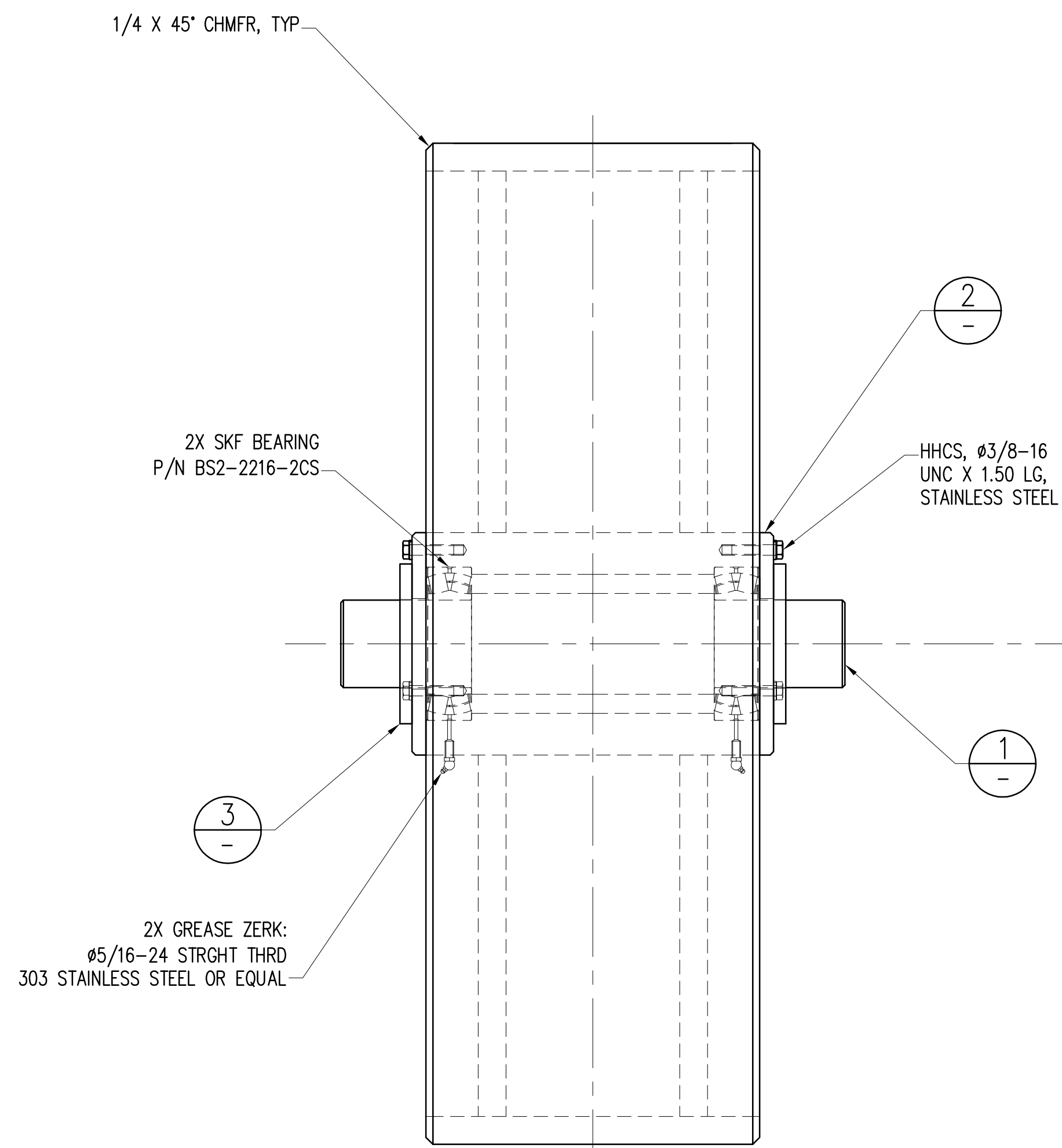
**CYLINDER INTERFACE BLOCK**  
SCALE: 3" = 1'-0"  
MATERIAL: STAINLESS STEEL A564 TYPE  
630 CONDITION H1100

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION		
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<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SHORE RAMP MAIN WHEELSET AND APRON CYLINDER INSTALLATION</b>		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: MJE	APPROVED BY:	DRAWING NUMBER
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	<b>M-3</b>
CHECKED BY: ACJ	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	____ OF ____ SHTS
SCALE: AS SHOWN		

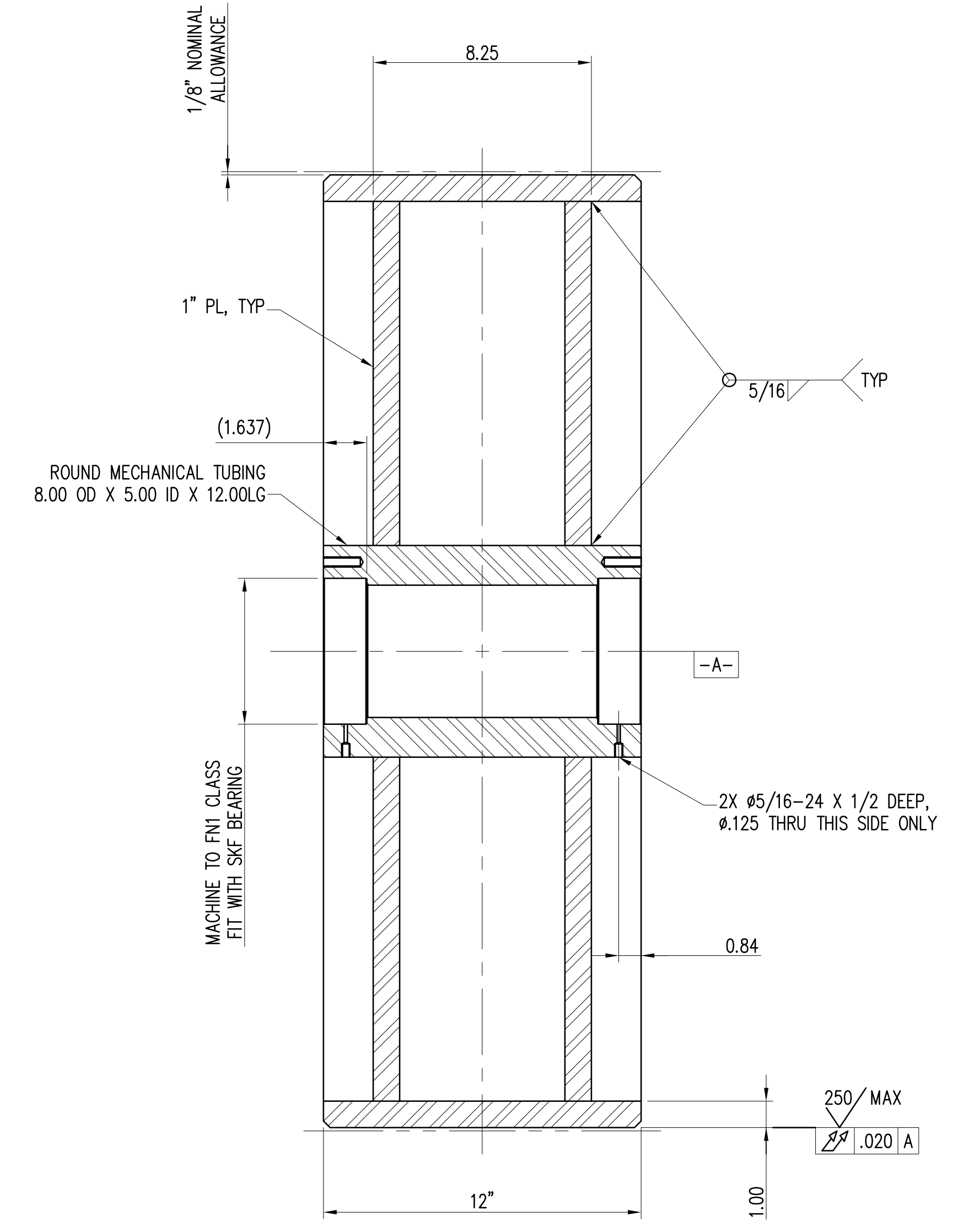
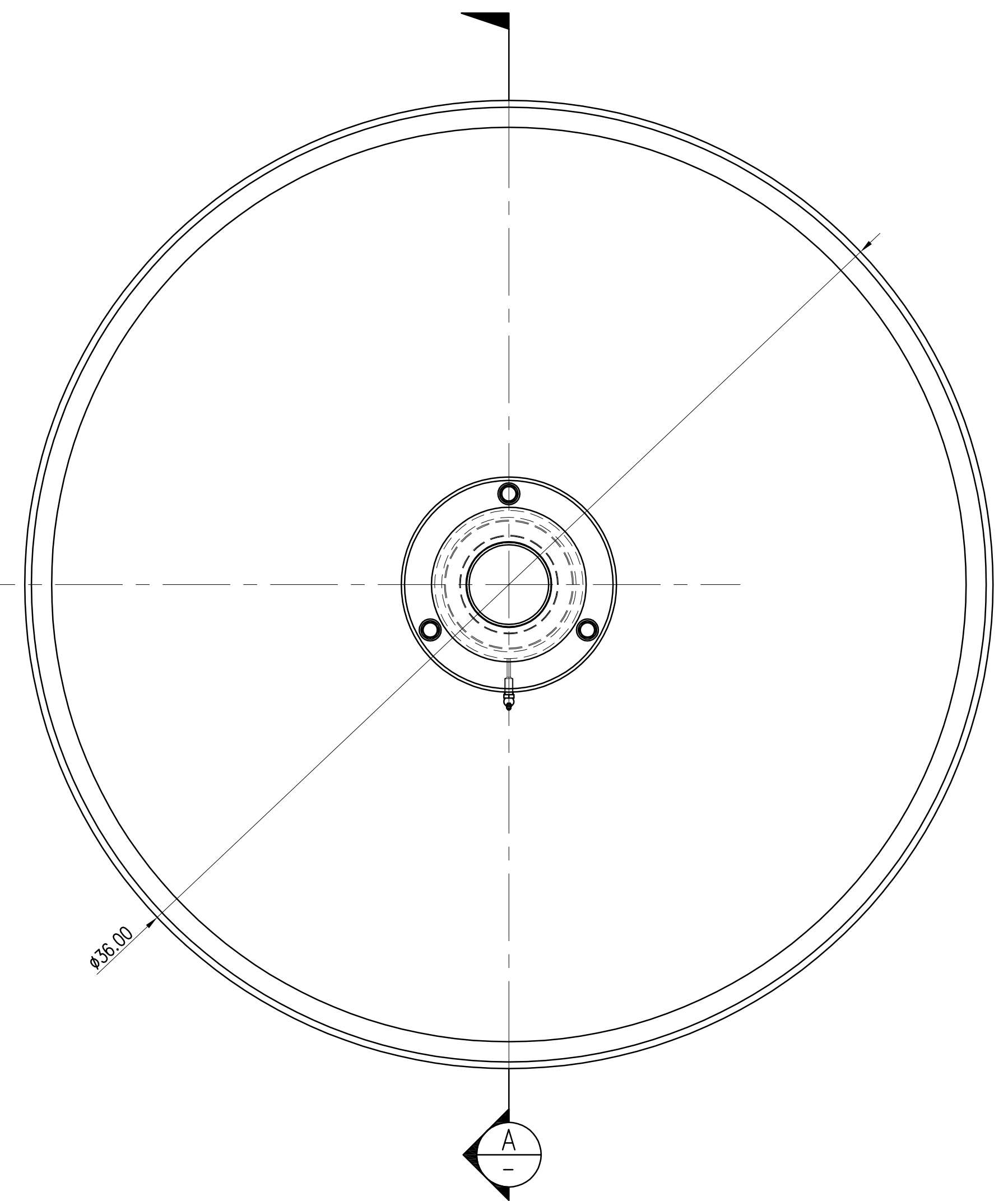


REDUCED SIZE  
PRINT  
(NOT TO SCALE)

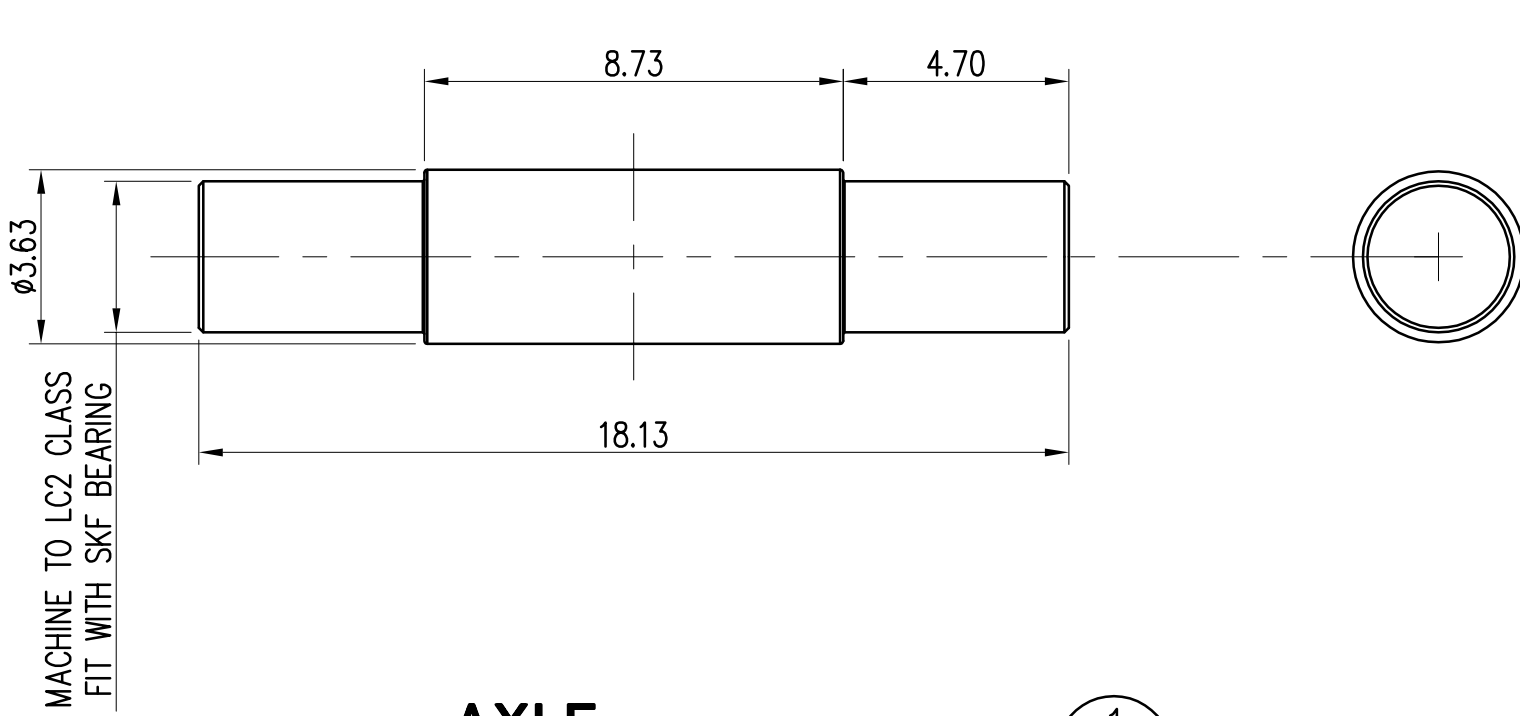
DESIGN RECORD DRAWING



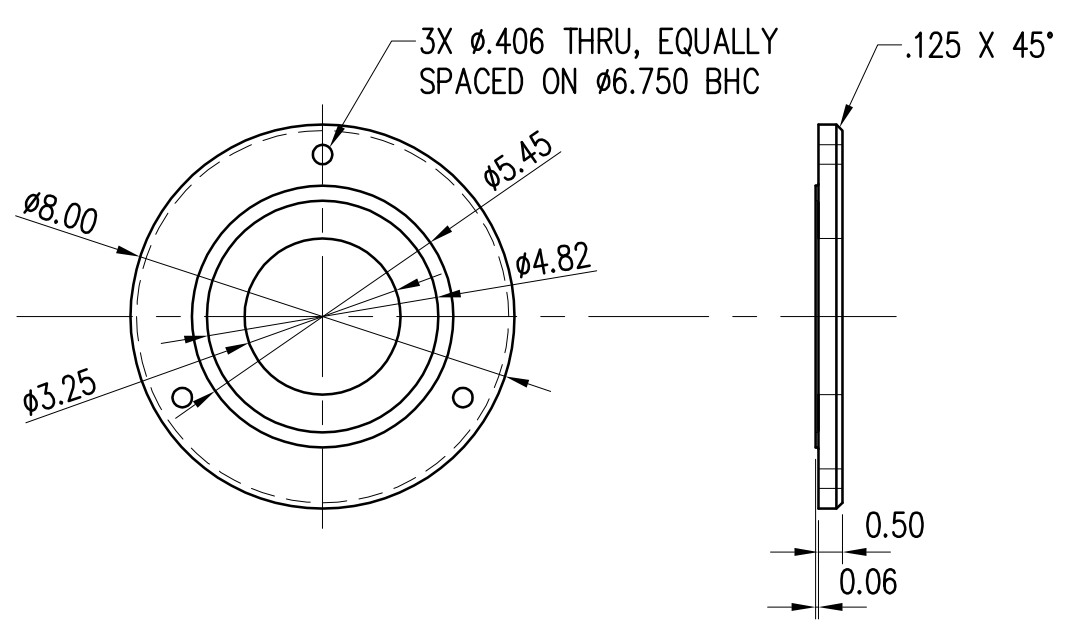
**WHEEL ASSEMBLY**  
SCALE: 3"=1'-0"  
②  
M-3.0



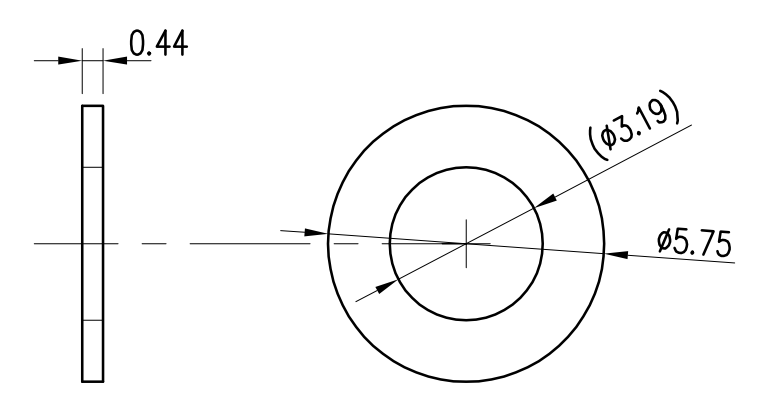
**WHEEL HUB**  
SCALE: 3"=1'-0"  
MATERIAL: ASTM A572 STEEL  
①  
A



**AXLE**  
SCALE: 3"=1'-0"  
MATERIAL: ASTM A564/630-H1100  
①



**BEARING RETAINER**  
SCALE: 3"=1'-0"  
MATERIAL: STAINLESS STEEL  
②

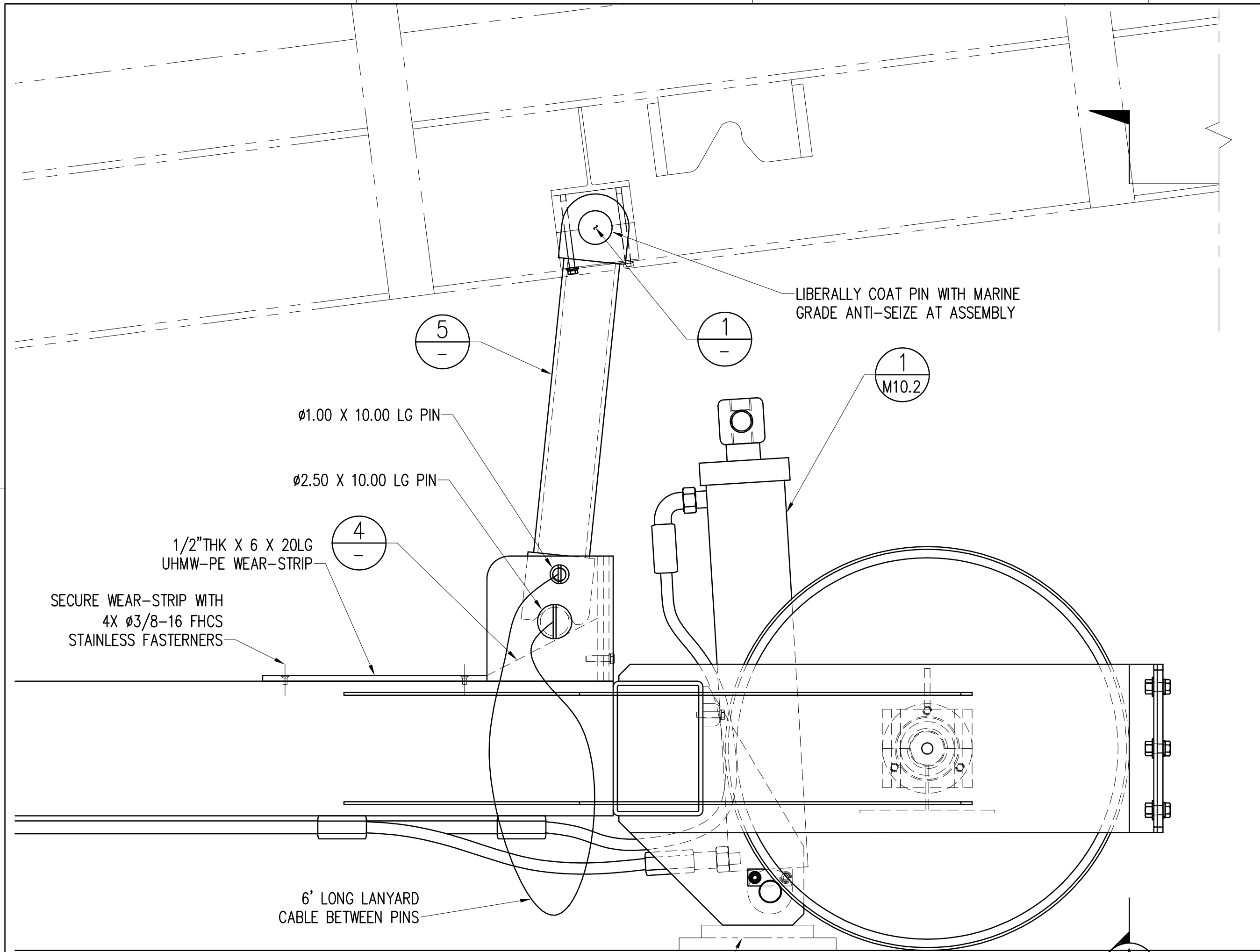


**THRUST WASHER**  
SCALE: 3"=1'-0"  
MATERIAL: UNS C46400 BRASS OR EQUAL  
③

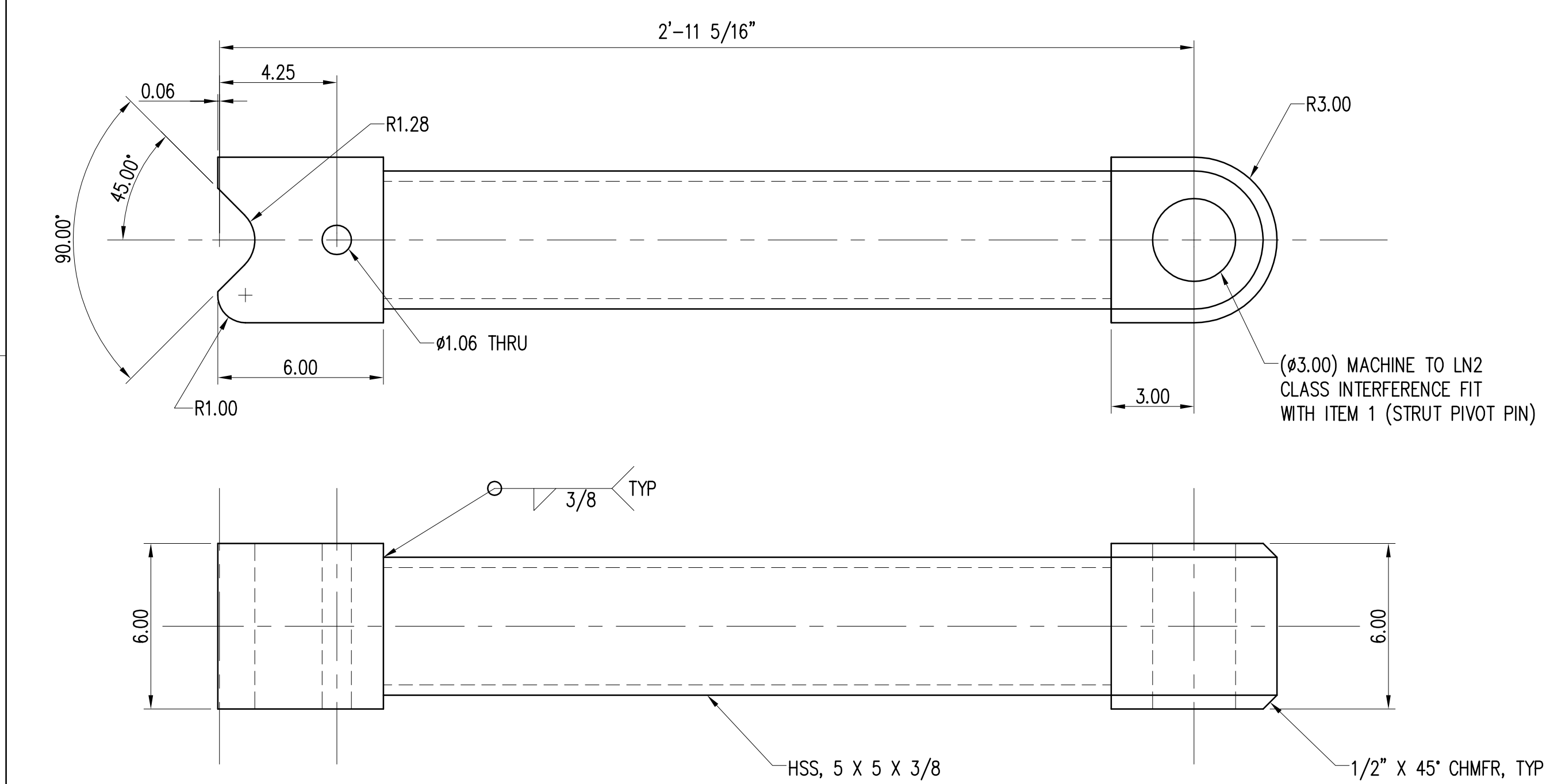
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
	<b>kpff</b> Consulting Engineers	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SHORE RAMP WHEEL ASSEMBLY</b>		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: MJE	APPROVED BY:	DRAWING NUMBER
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-4
CHECKED BY: SDS	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	OF SHTS
SCALE: AS SHOWN		

REDUCED SIZE  
PRINT  
(NOT TO SCALE)

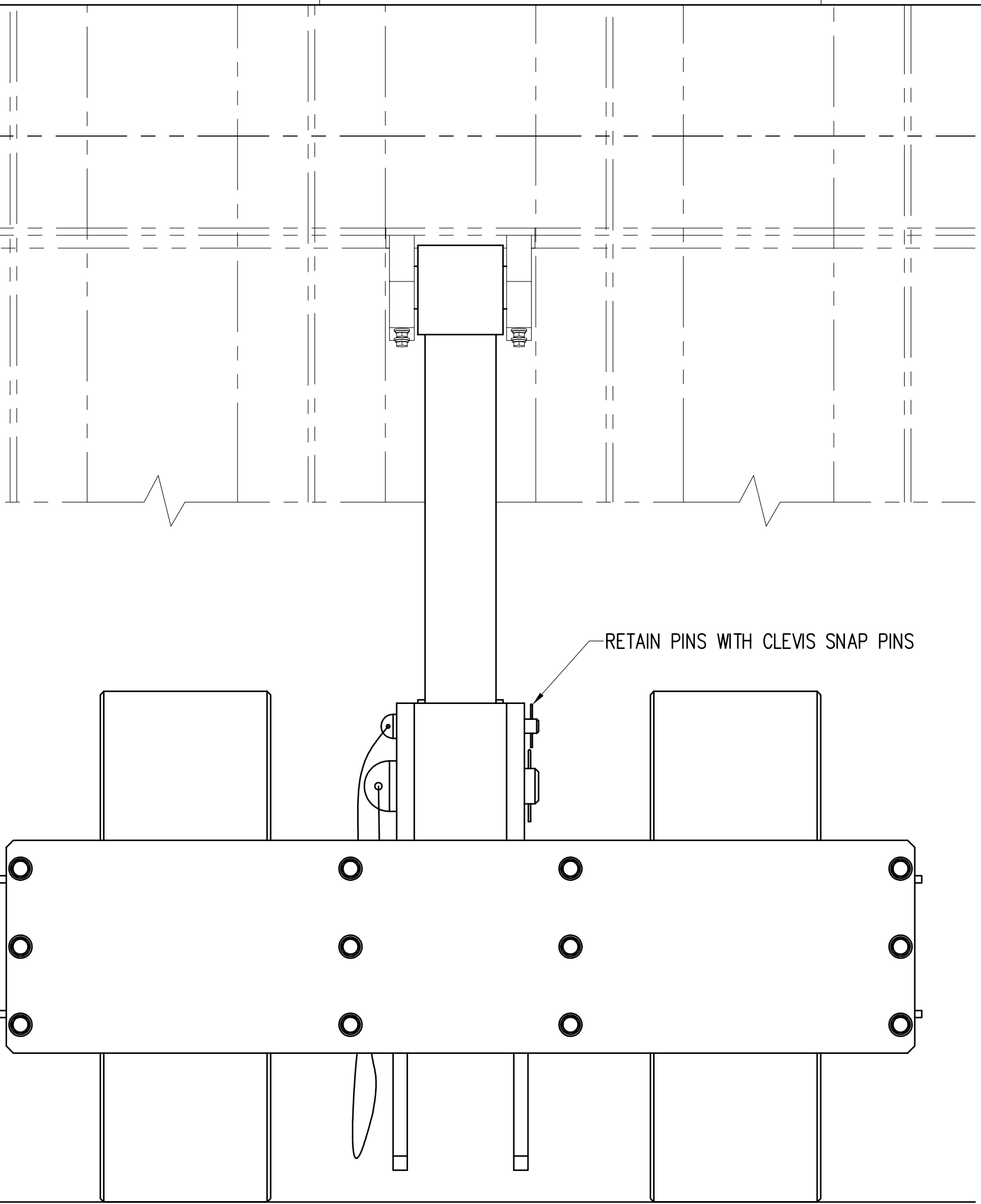
DESIGN RECORD DRAWING



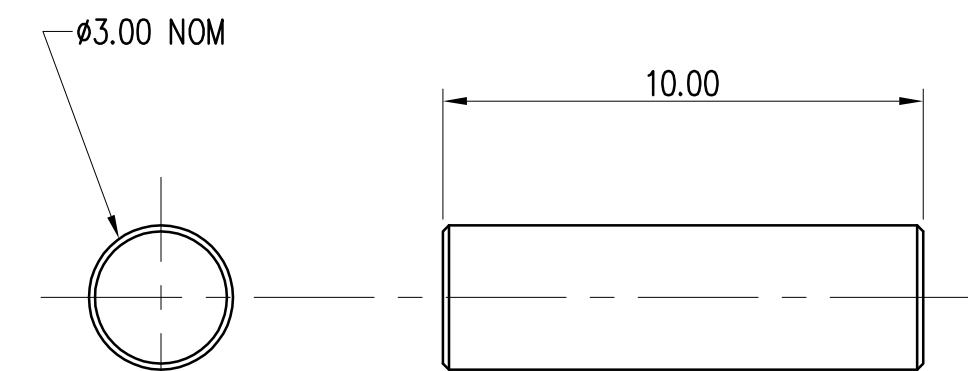
**APRON LOCKING STRUT**  
 SCALE: 1 1/2"=1'-0"  
 STRUT SYSTEM SHOWN IN LOCKED POSITION



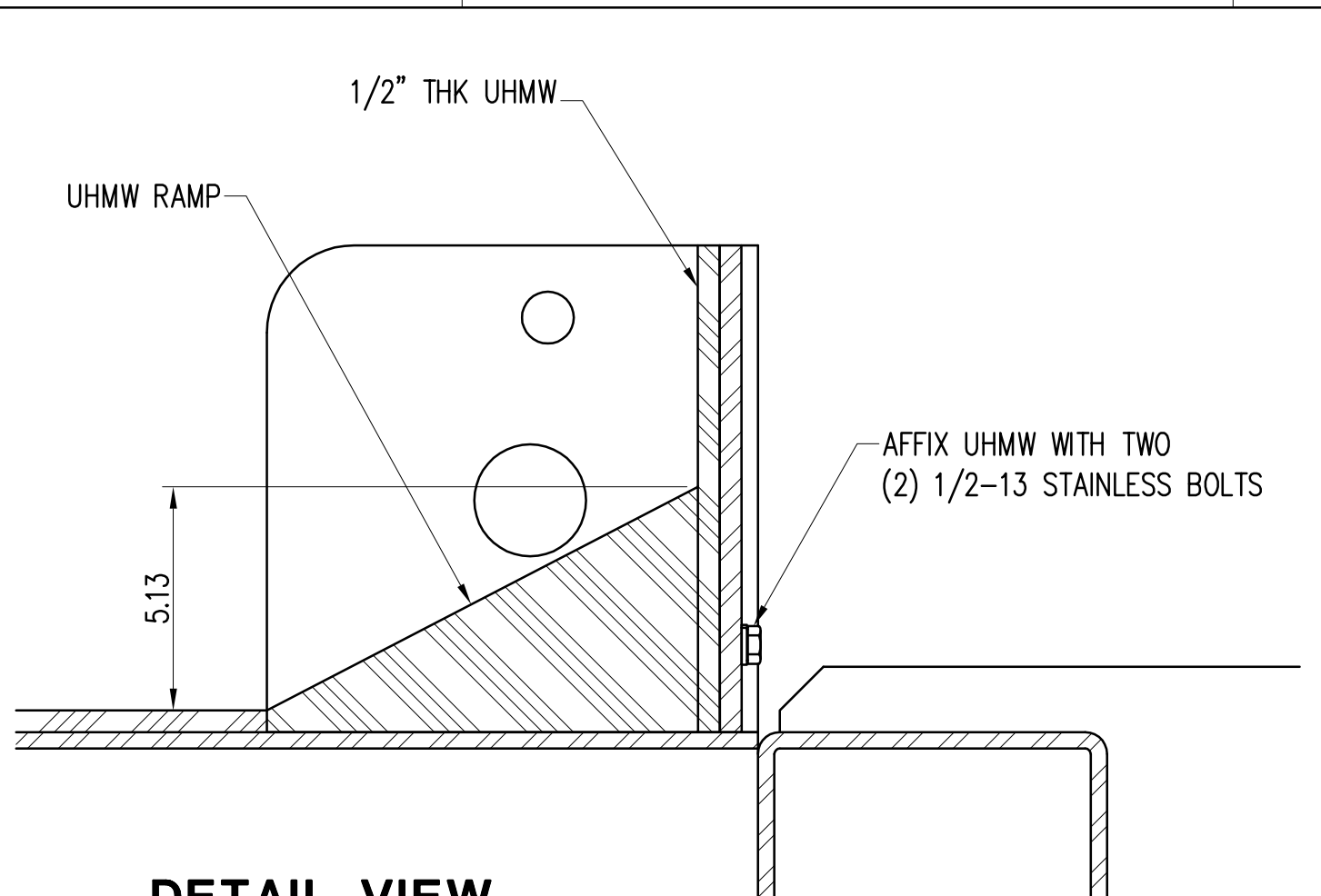
**STRUT WELDMENT**  
 SCALE: 3"=1'-0"



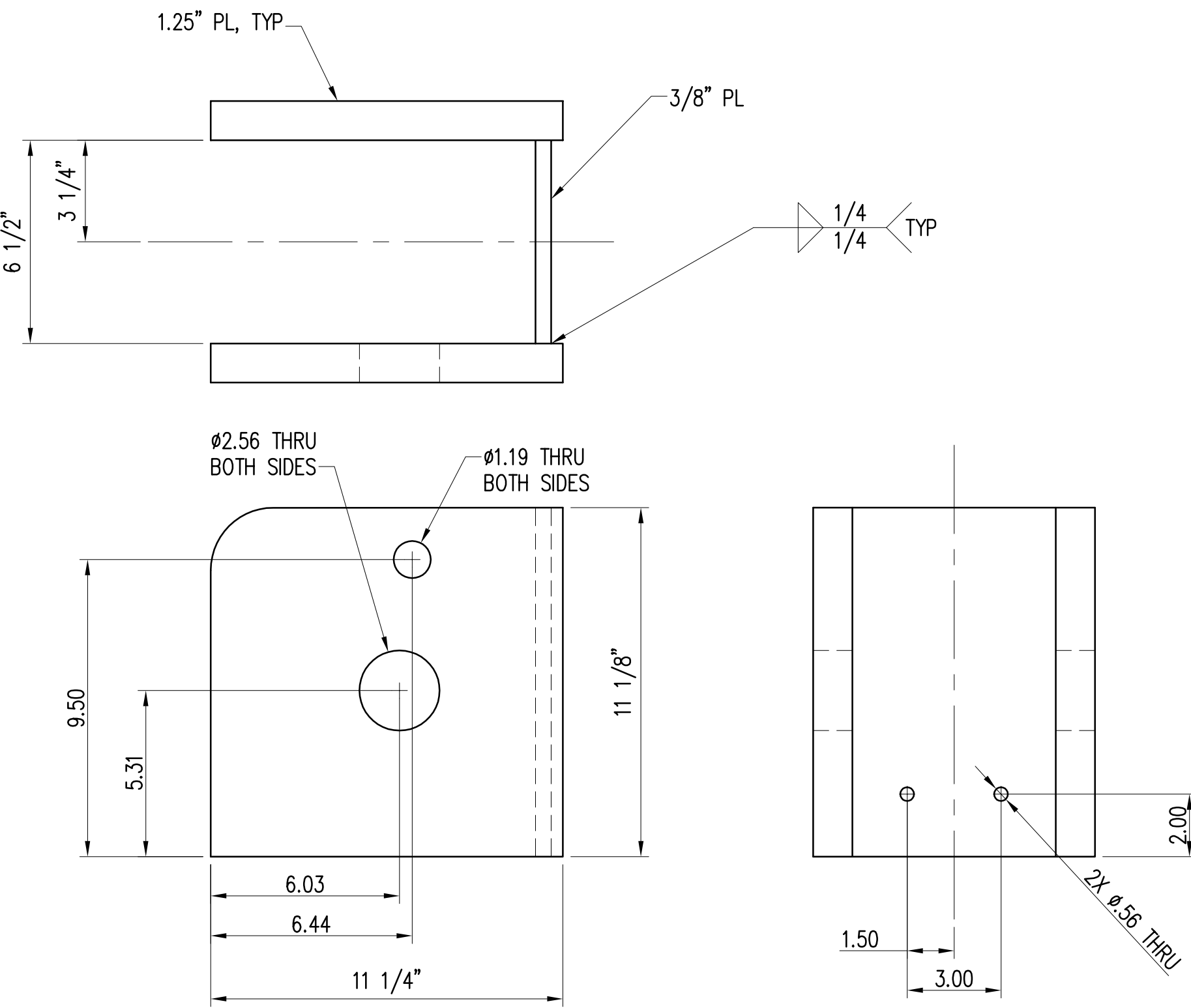
**DETAIL VIEW**  
 SCALE: 3"=1'-0"  
 CYLINDER REMOVED FOR CLARITY



**STRUT PIVOT PIN**  
 SCALE: 3"=1'-0"  
 MAT'L: ASTM A569 TPB630, COND. H1100



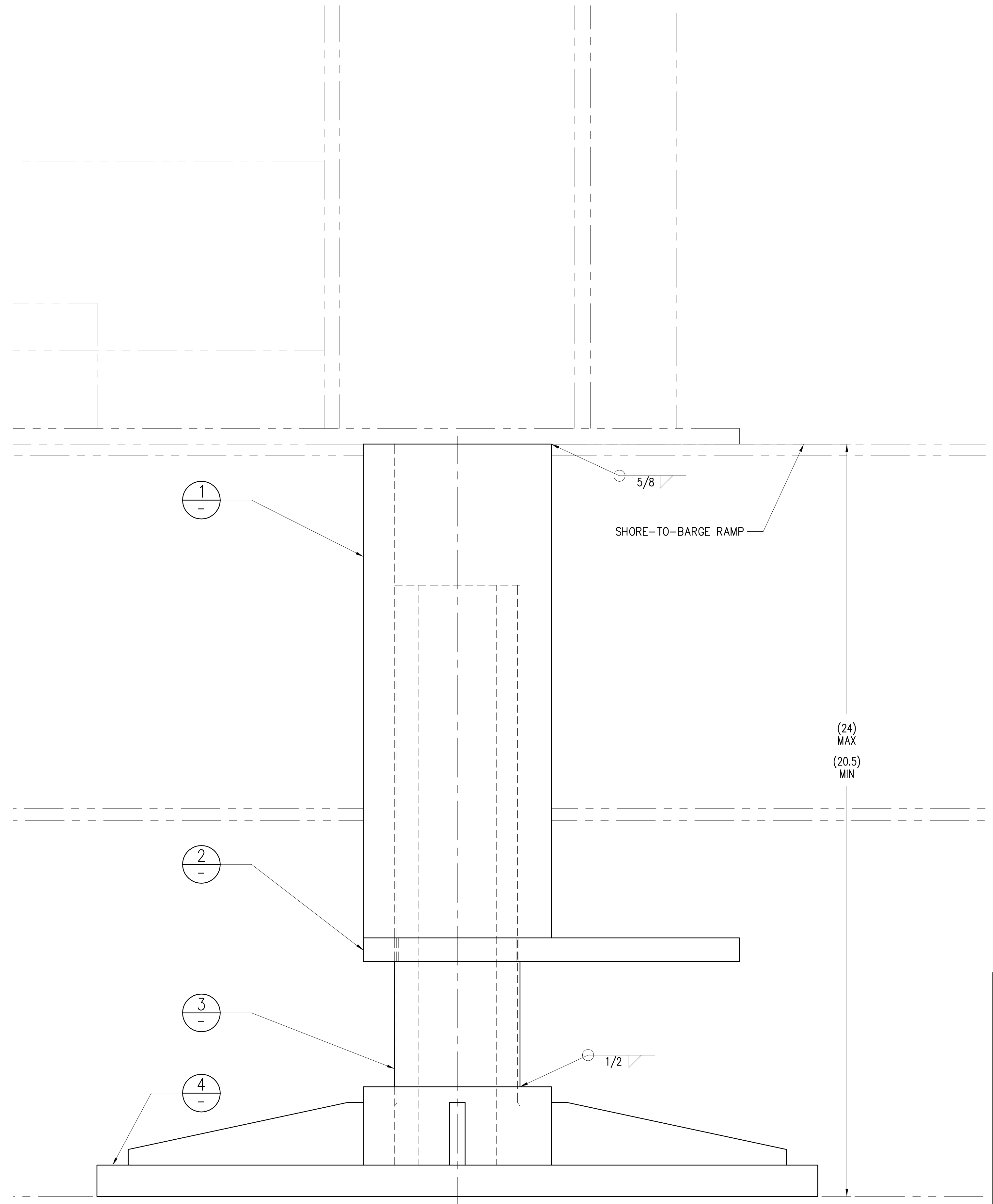
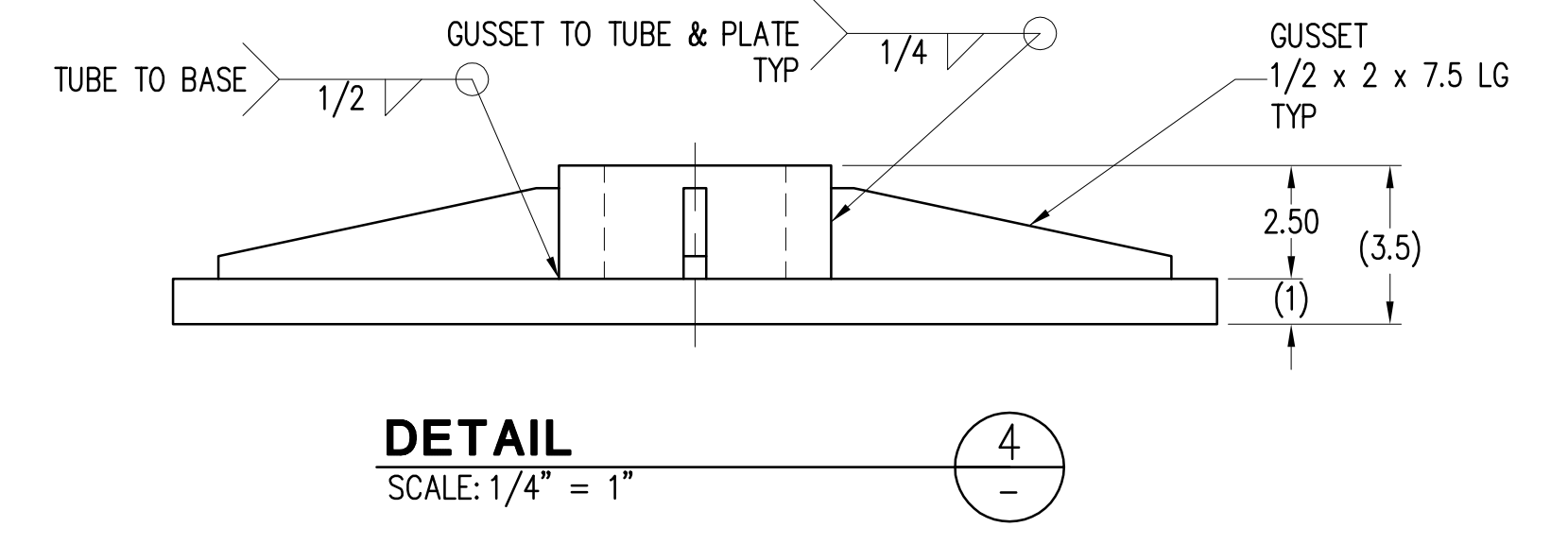
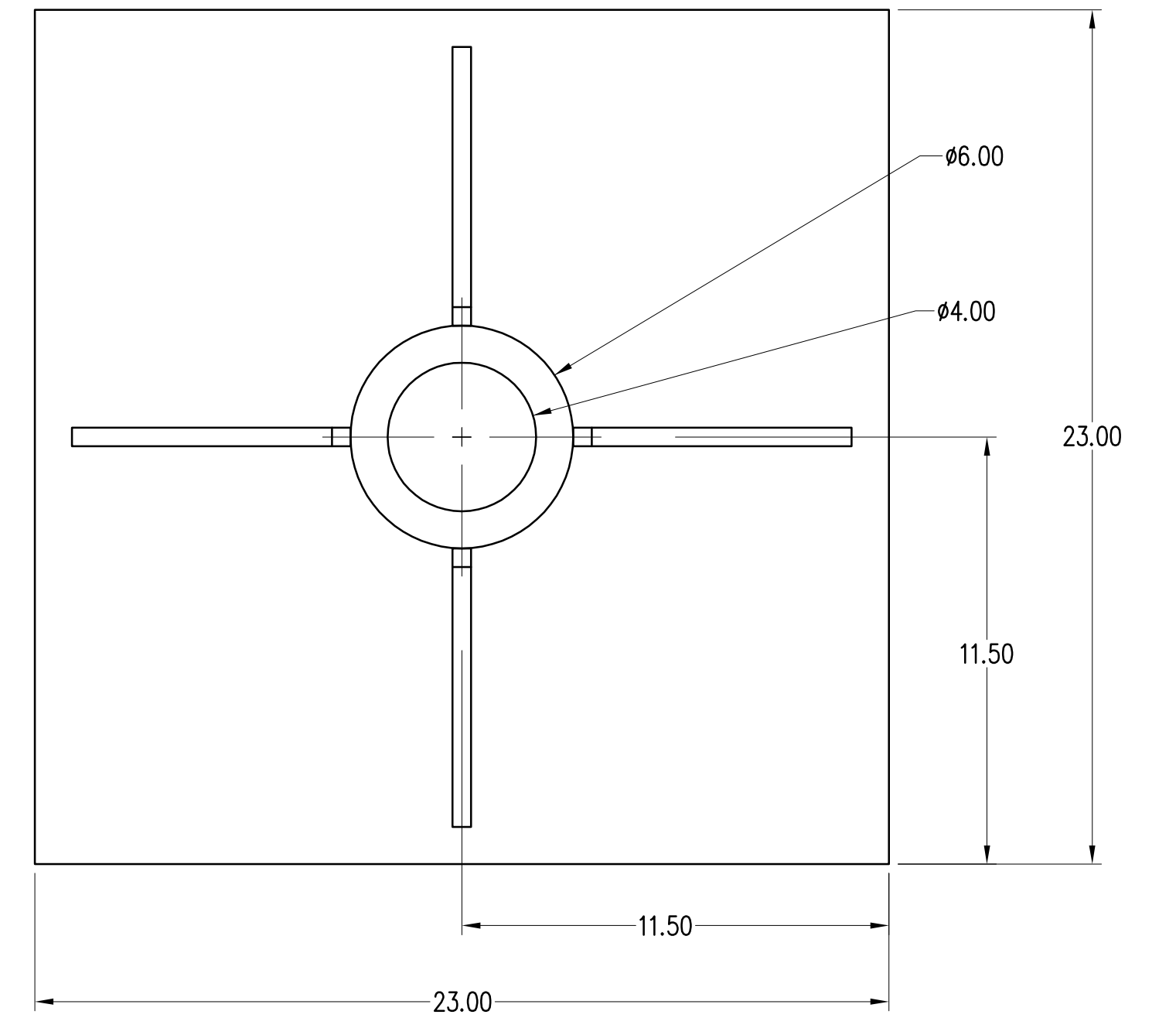
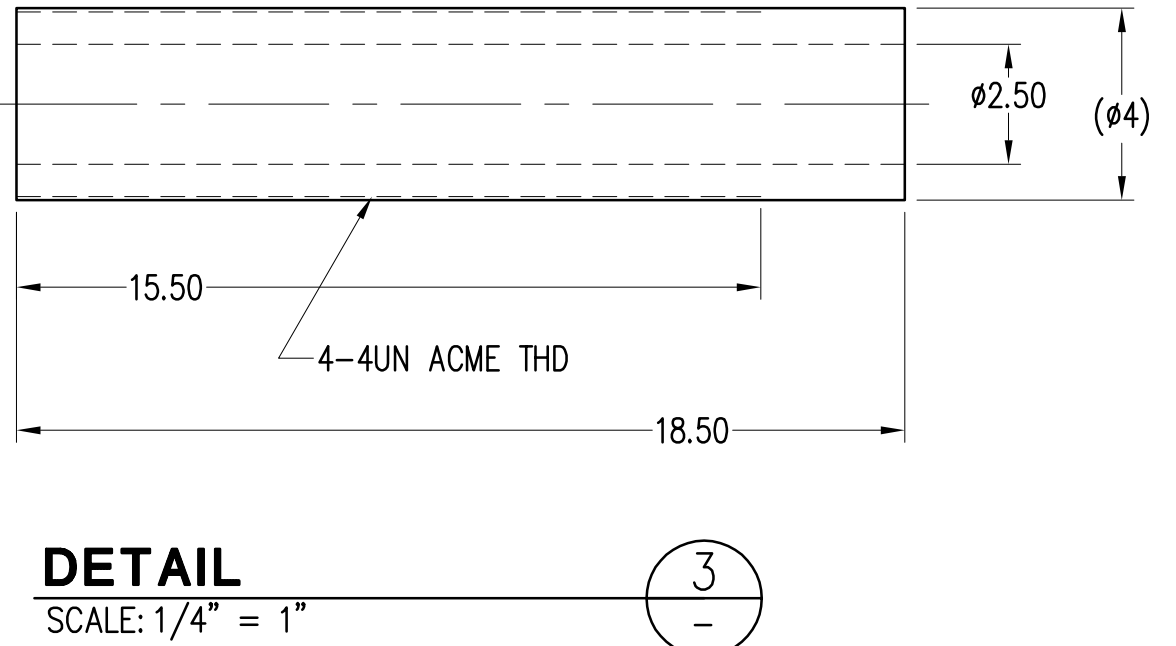
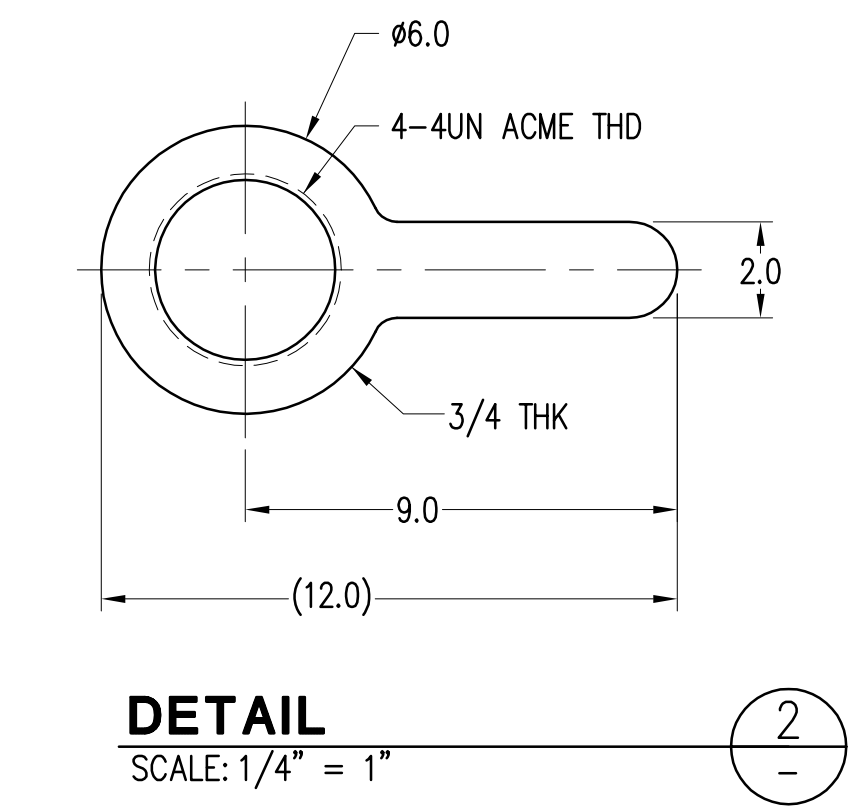
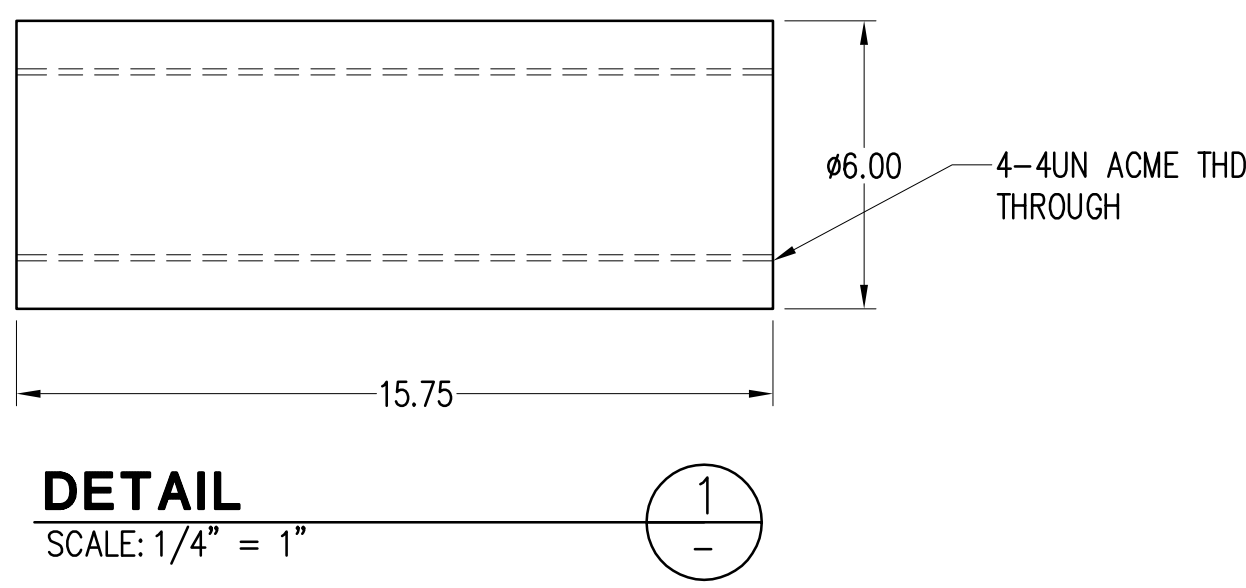
**DETAIL VIEW STRUT BRACE UHMW ASSEMBLY**  
 SCALE: 3"=1'-0"



**STRUT BRACE**  
 SCALE: 3"=1'-0"

	STATE OF HAWAII	
	DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
JOB TITLE: BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
SHEET TITLE: SHORE APRON LOCKING STRUT		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: MJE DRAWN BY: SS CHECKED BY: ACJ DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER: M-5.0 REVISION: _____ OF _____ SHEETS
REDUCED SIZE PRINT (NOT TO SCALE)		

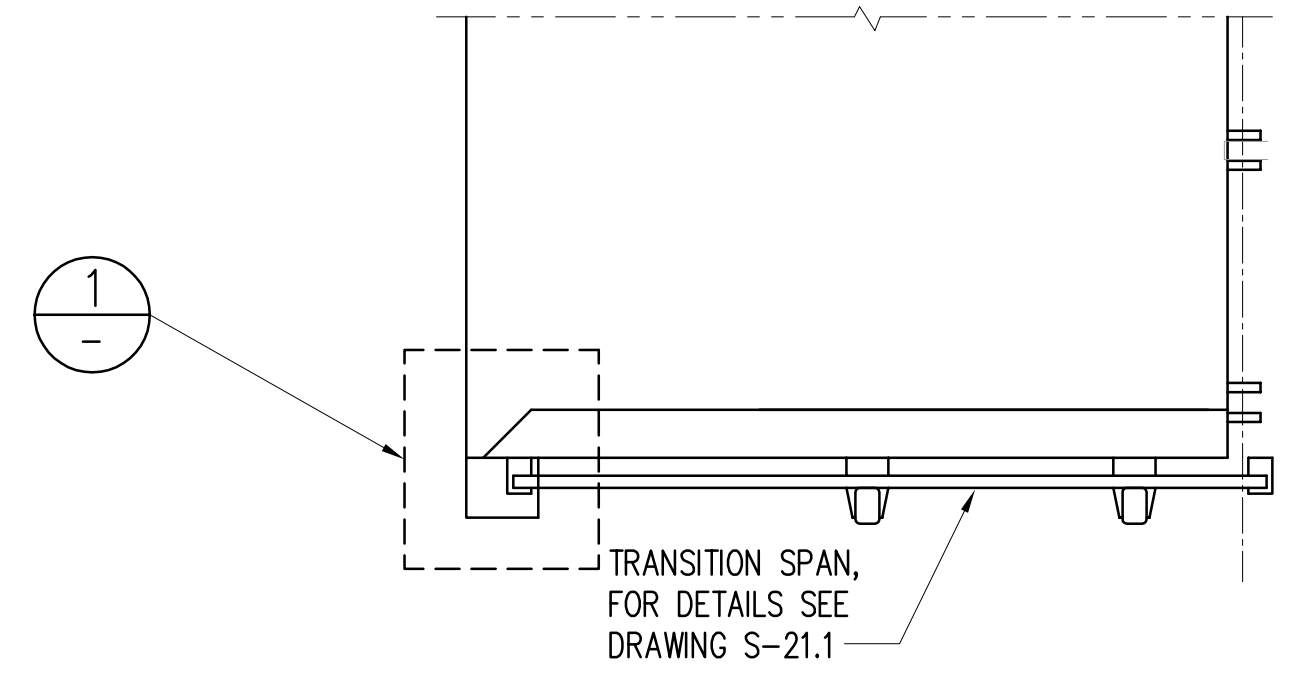
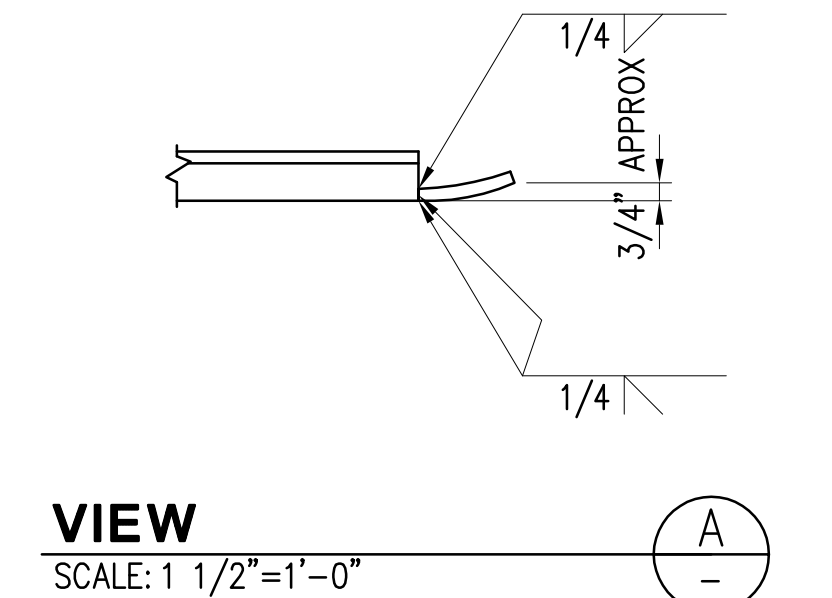
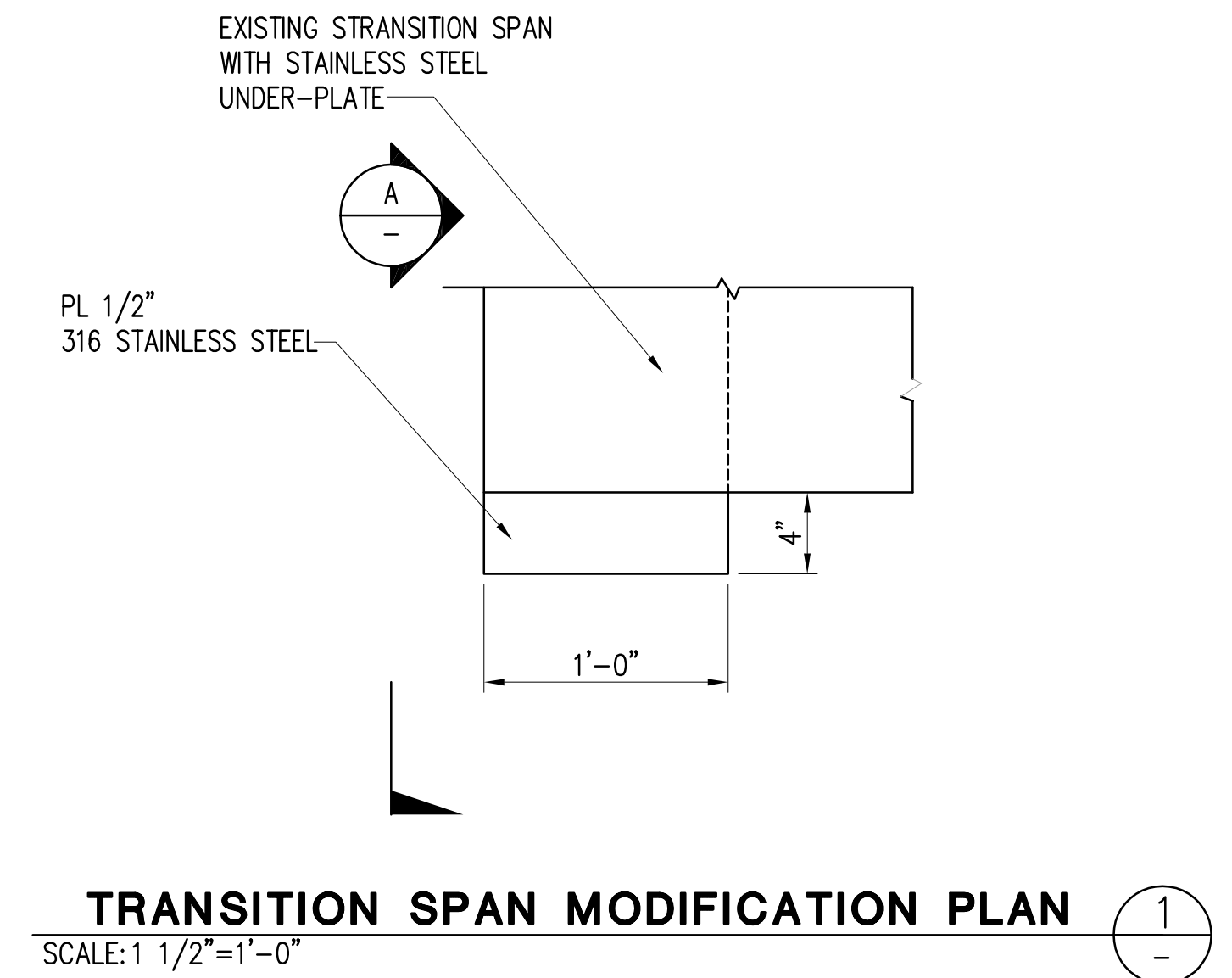
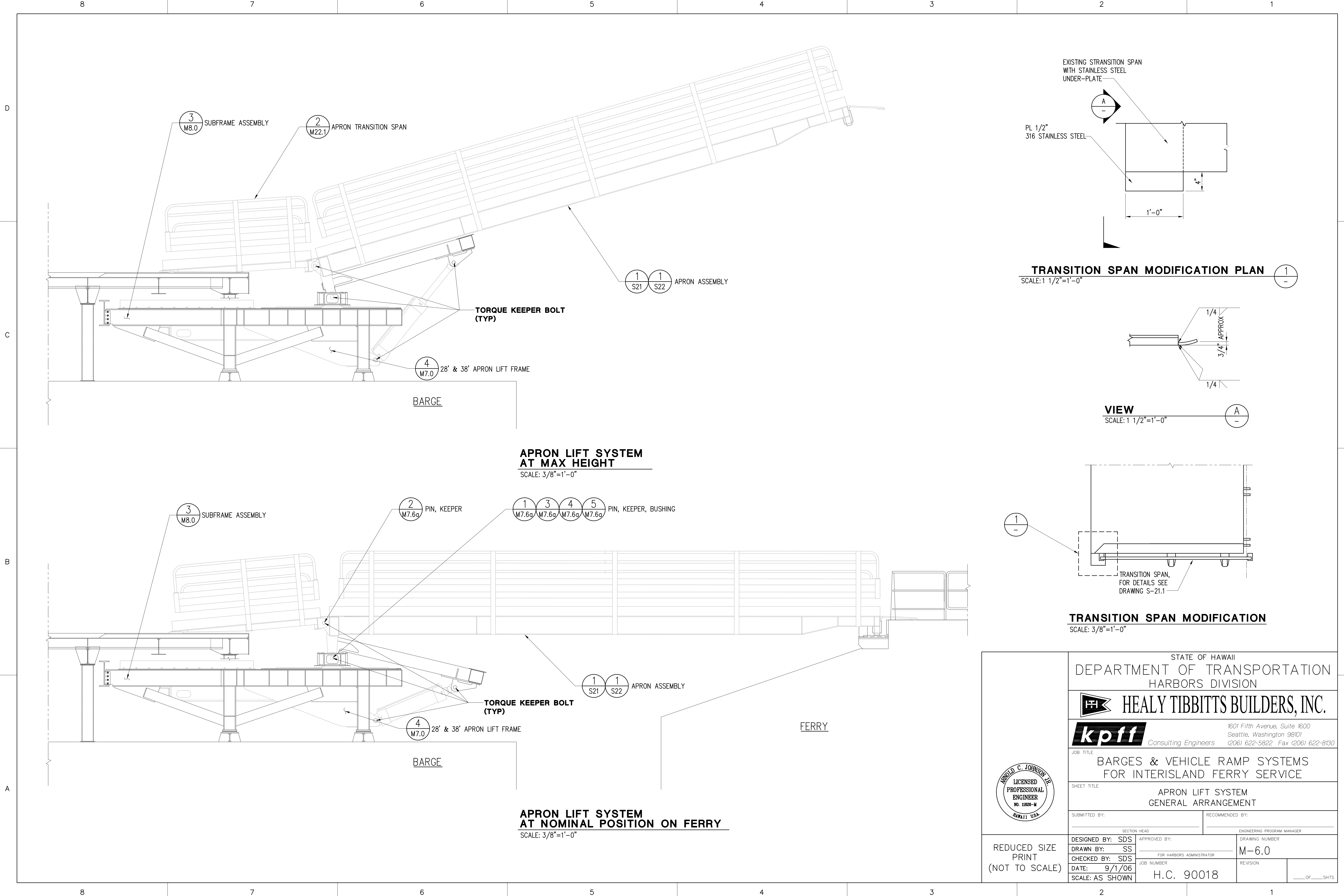
DESIGN RECORD DRAWING



**DETAIL**  
SCALE: 1/2" = 1"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	HEALY TIBBITTS BUILDERS, INC. 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SHORE RAMP SUPPORT JACK</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD _____		ENGINEERING PROGRAM MANAGER _____
DESIGNED BY: ACJ DRAWN BY: MJE CHECKED BY: SDS DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-5.1</b> REVISION _____ _____ OF _____ SHTS
REDUCED SIZE PRINT (NOT TO SCALE)		H.C. 90018



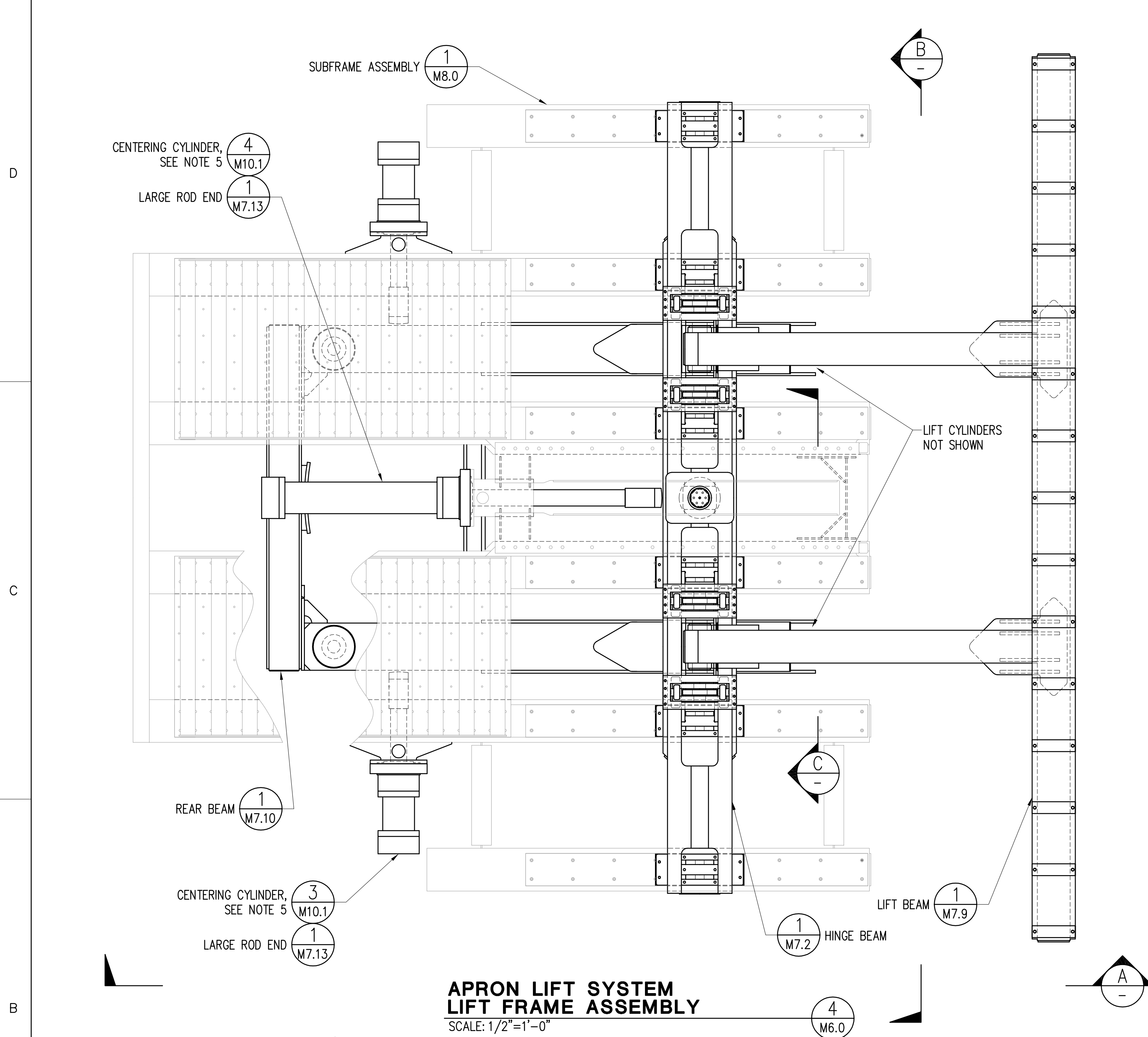


**APRON LIFT SYSTEM AT MAX HEIGHT**  
SCALE: 3/8"=1'-0"

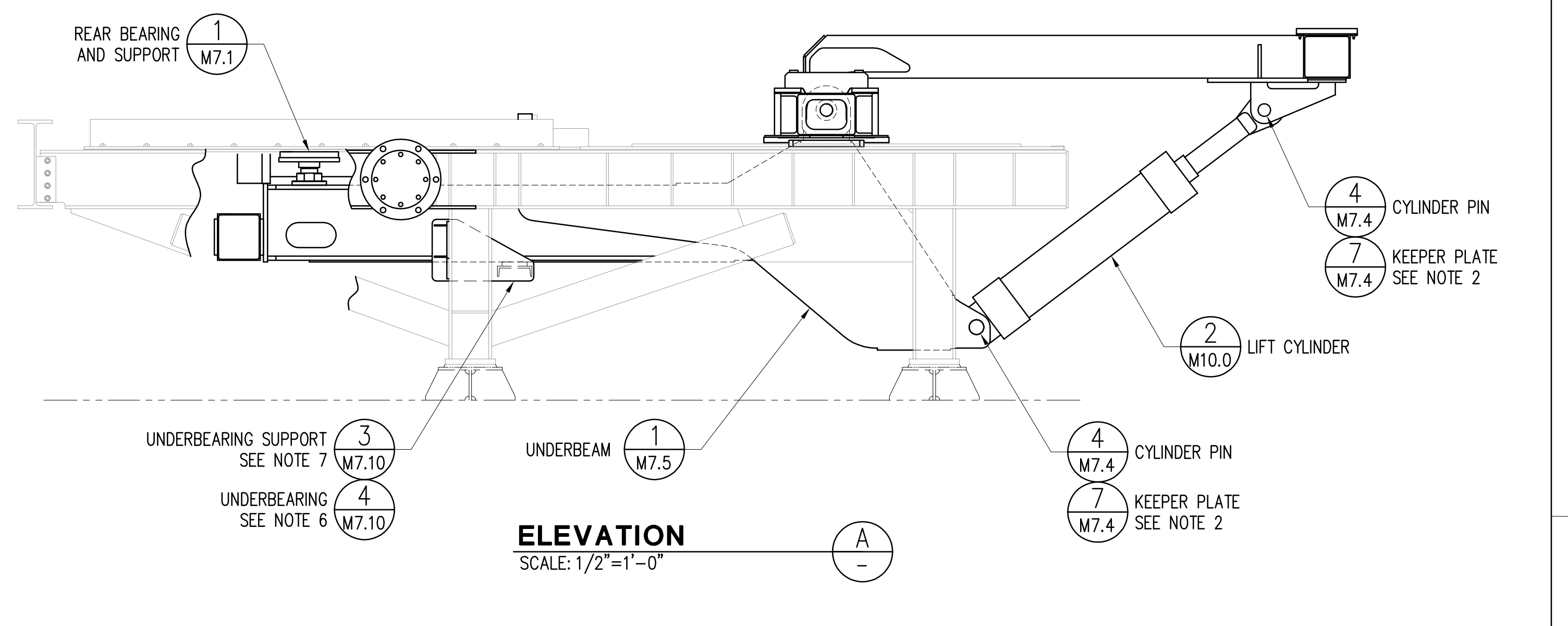
**APRON LIFT SYSTEM AT NOMINAL POSITION ON FERRY**  
SCALE: 3/8"=1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		
<b>kpff</b> Consulting Engineers		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>APRON LIFT SYSTEM GENERAL ARRANGEMENT</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: SDS DRAWN BY: SS CHECKED BY: SDS DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-6.0</b> REVISION _____ OF _____ SHEETS
REDUCED SIZE PRINT (NOT TO SCALE)		JOB NUMBER <b>H.C. 90018</b>

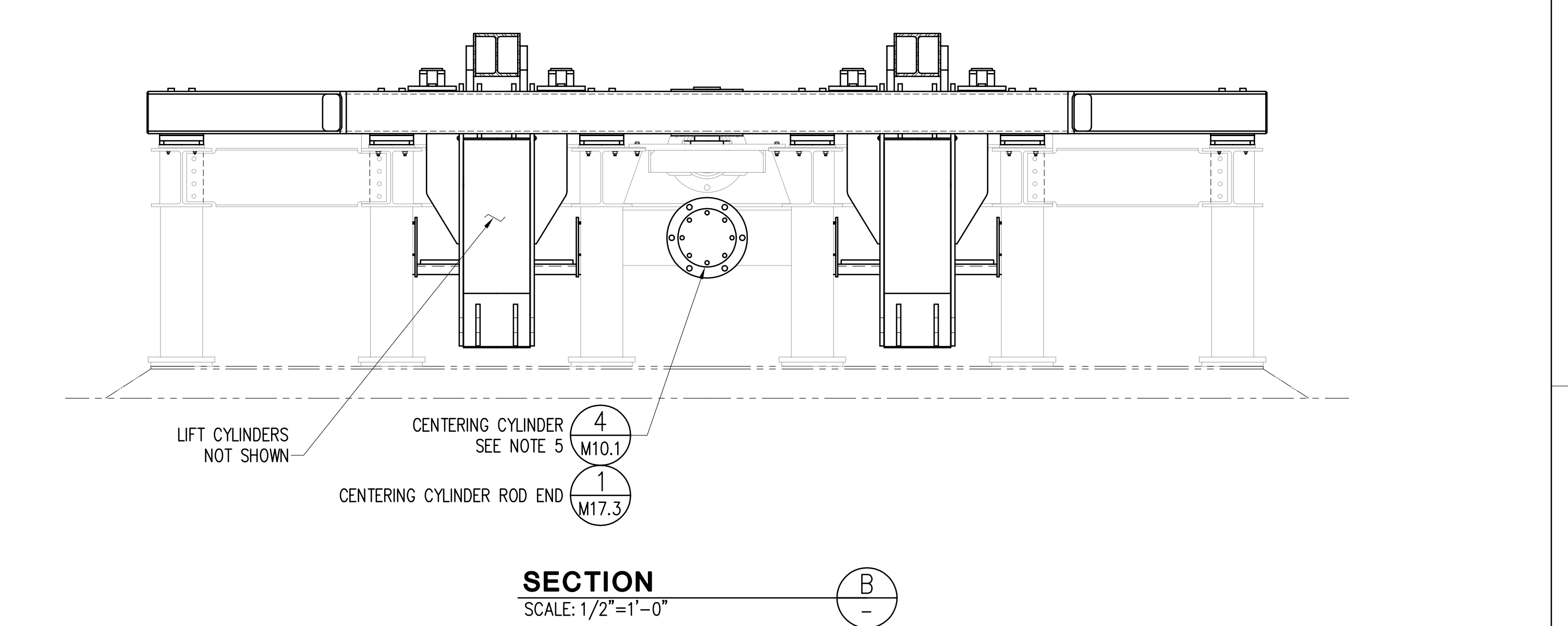
DESIGN RECORD DRAWING



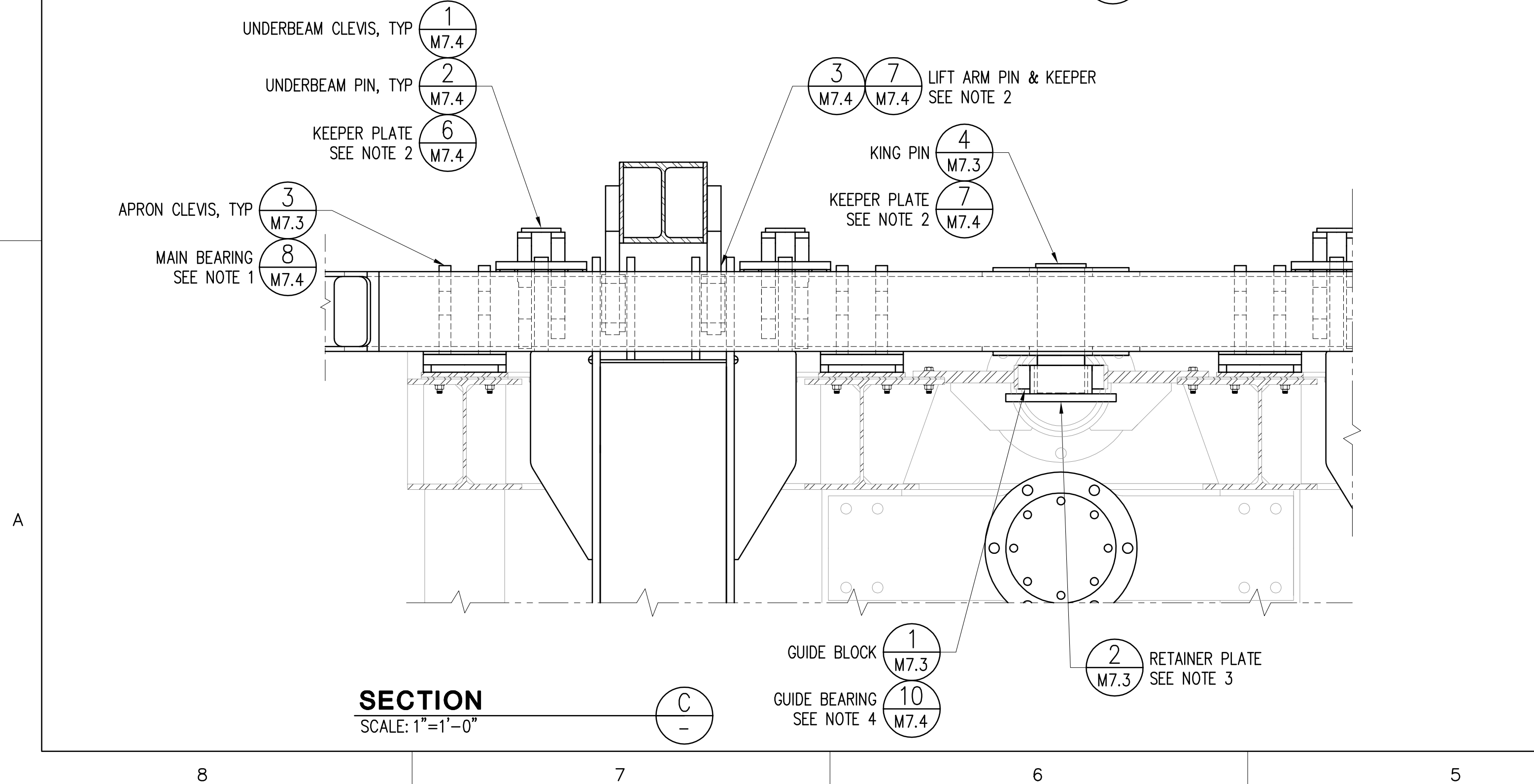
**APRON LIFT SYSTEM  
LIFT FRAME ASSEMBLY**  
SCALE: 1/2"=1'-0"



**ELEVATION**  
SCALE: 1/2"=1'-0"



**SECTION**  
SCALE: 1/2"=1'-0"

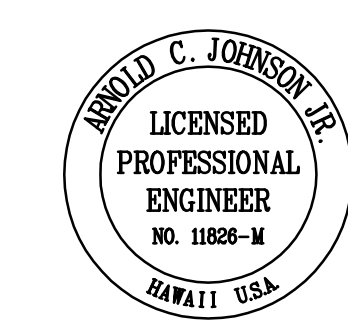


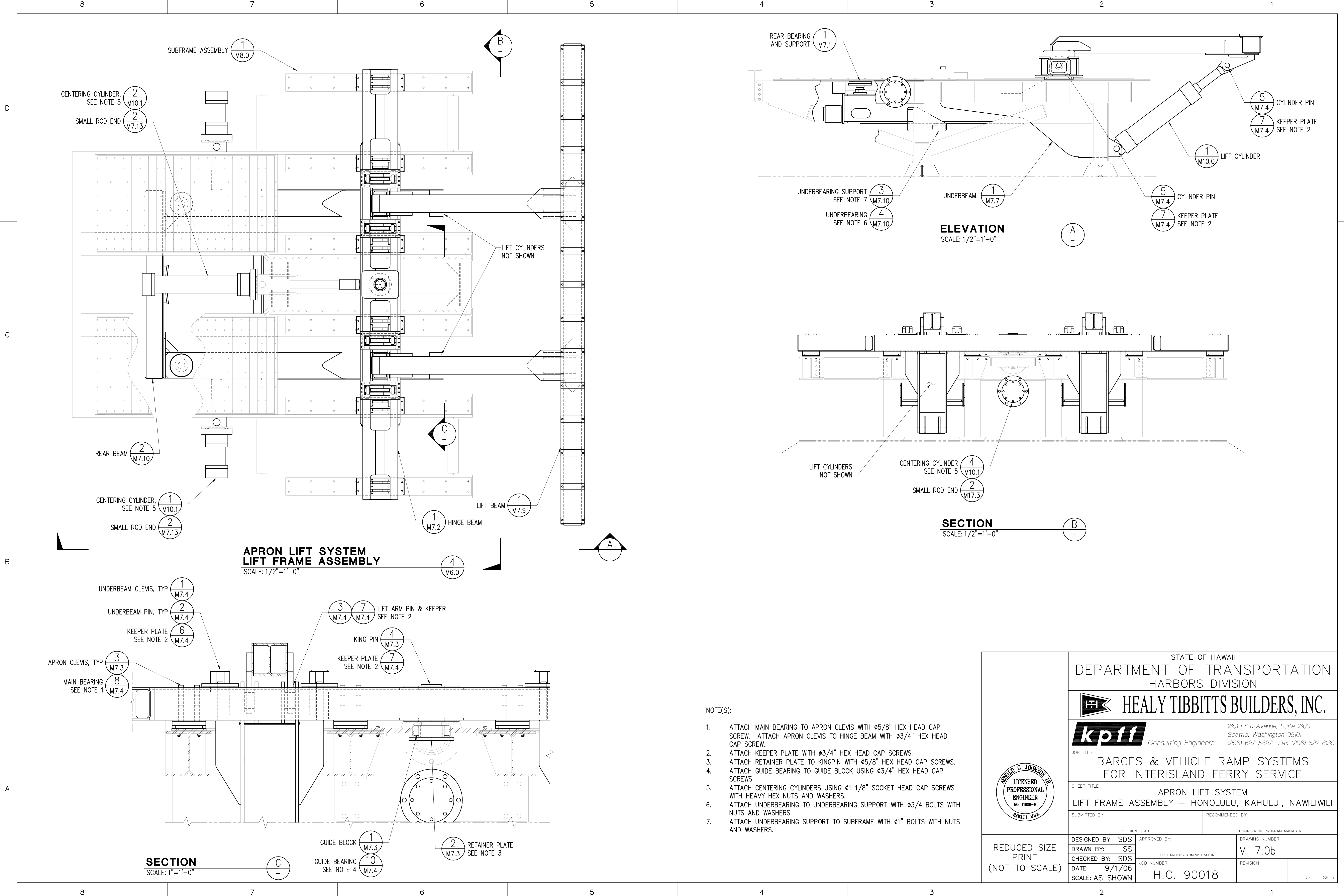
**SECTION**  
SCALE: 1"=1'-0"

NOTE(S):

1. ATTACH MAIN BEARING TO APRON CLEVIS WITH  $\phi 5/8"$  HEX HEAD CAP SCREW. ATTACH APRON CLEVIS TO HINGE BEAM WITH  $\phi 3/4"$  HEX HEAD CAP SCREW.
2. ATTACH KEEPER PLATE WITH  $\phi 3/4"$  HEX HEAD CAP SCREWS.
3. ATTACH RETAINER PLATE TO KINGPIN WITH  $\phi 5/8"$  HEX HEAD CAP SCREWS.
4. ATTACH GUIDE BEARING TO GUIDE BLOCK USING  $\phi 3/4"$  HEX HEAD CAP SCREWS.
5. ATTACH CENTERING CYLINDERS USING  $\phi 1 1/4"$  SOCKET HEAD CAP SCREWS WITH HEAVY HEX NUTS AND WASHERS.
6. ATTACH UNDERBEARING TO UNDERBEARING SUPPORT WITH  $\phi 3/4"$  BOLTS WITH NUTS AND WASHERS.
7. ATTACH UNDERBEARING SUPPORT TO SUBFRAME WITH  $\phi 1"$  BOLTS WITH NUTS AND WASHERS.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<b>kpff</b> Consulting Engineers	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>APRON LIFT SYSTEM LIFT FRAME ASSEMBLY - KAWAIIHAE</b>	
SUBMITTED BY:	RECOMMENDED BY:
DESIGNED BY: SDS	APPROVED BY:
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR
CHECKED BY: SDS	JOB NUMBER
DATE: 9/1/06	H.C. 90018
SCALE: AS SHOWN	REVISION
REDUCED SIZE PRINT (NOT TO SCALE)	DRAWING NUMBER <b>M-7.0a</b>
	REVISION





**APRON LIFT SYSTEM  
LIFT FRAME ASSEMBLY**

SCALE: 1/2"=1'-0"

**ELEVATION**

SCALE: 1/2"=1'-0"

**SECTION**

SCALE: 1/2"=1'-0"

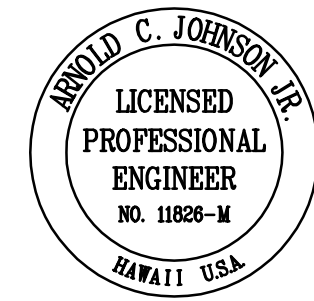
**SECTION**

SCALE: 1"=1'-0"

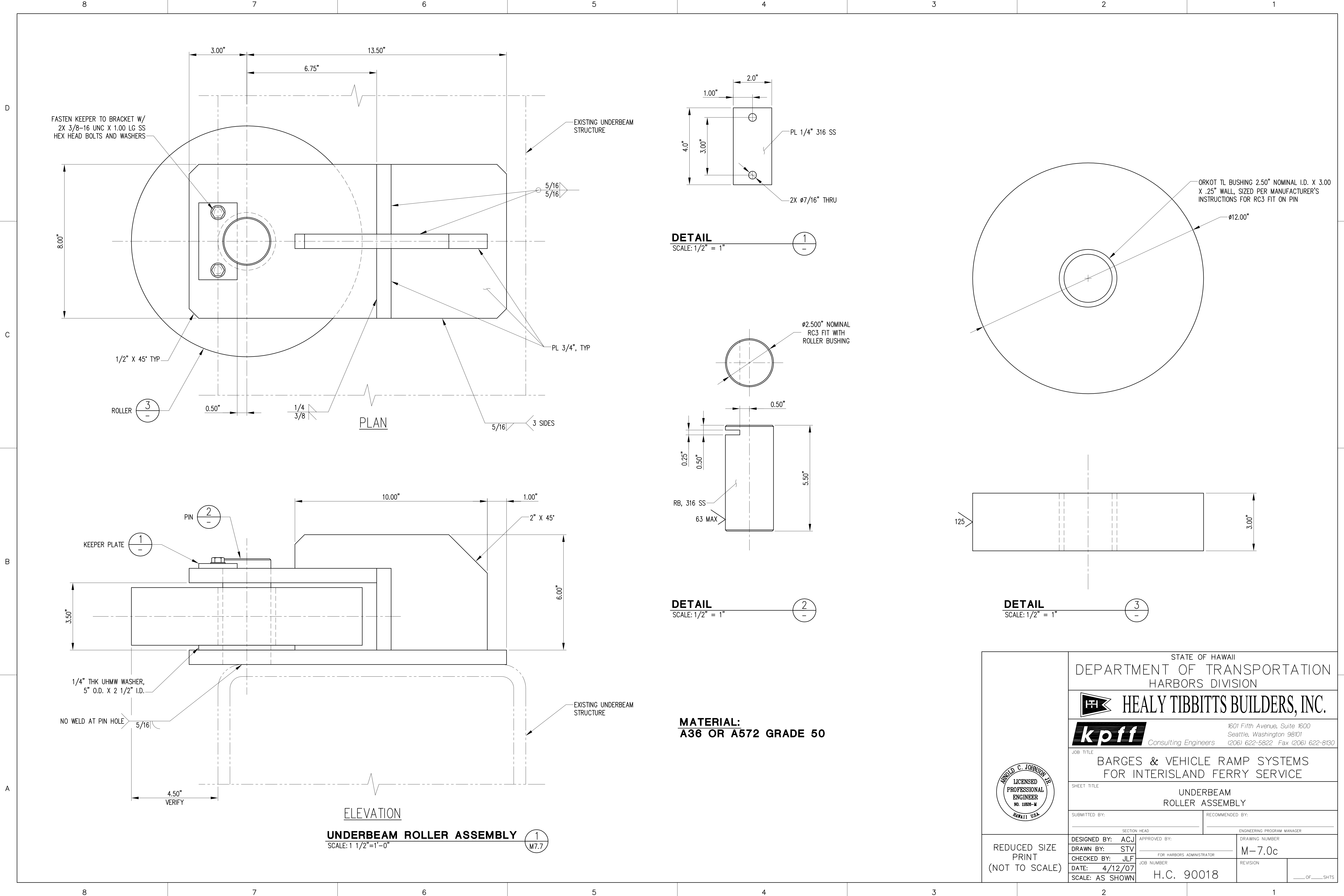
NOTE(S):

1. ATTACH MAIN BEARING TO APRON CLEVIS WITH  $\phi 5/8"$  HEX HEAD CAP SCREW. ATTACH APRON CLEVIS TO HINGE BEAM WITH  $\phi 3/4"$  HEX HEAD CAP SCREW.
2. ATTACH KEEPER PLATE WITH  $\phi 3/4"$  HEX HEAD CAP SCREWS.
3. ATTACH RETAINER PLATE TO KINGPIN WITH  $\phi 5/8"$  HEX HEAD CAP SCREWS.
4. ATTACH GUIDE BEARING TO GUIDE BLOCK USING  $\phi 3/4"$  HEX HEAD CAP SCREWS.
5. ATTACH CENTERING CYLINDERS USING  $\phi 1 1/8"$  SOCKET HEAD CAP SCREWS WITH HEAVY HEX NUTS AND WASHERS.
6. ATTACH UNDERBEARING TO UNDERBEARING SUPPORT WITH  $\phi 3/4"$  BOLTS WITH NUTS AND WASHERS.
7. ATTACH UNDERBEARING SUPPORT TO SUBFRAME WITH  $\phi 1"$  BOLTS WITH NUTS AND WASHERS.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
Consulting Engineers		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>APRON LIFT SYSTEM LIFT FRAME ASSEMBLY – HONOLULU, KAHULUI, NAWILIWILI</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: SS		FOR HARBORS ADMINISTRATOR	
CHECKED BY: SDS		JOB NUMBER	
DATE: 9/1/06		REVISION	
SCALE: AS SHOWN		H.C. 90018	
DRAWING NUMBER <b>M-7.0b</b>		REVISION	
(NOT TO SCALE)		___ OF ___ SHEETS	



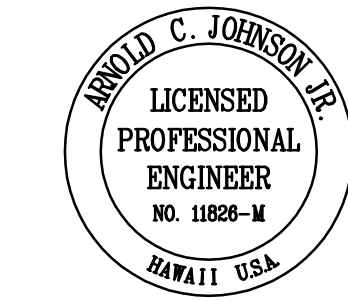
DESIGN RECORD DRAWING



**UNDERBEAM ROLLER ASSEMBLY** 1  
 SCALE: 1 1/2"=1'-0" (M7.7)

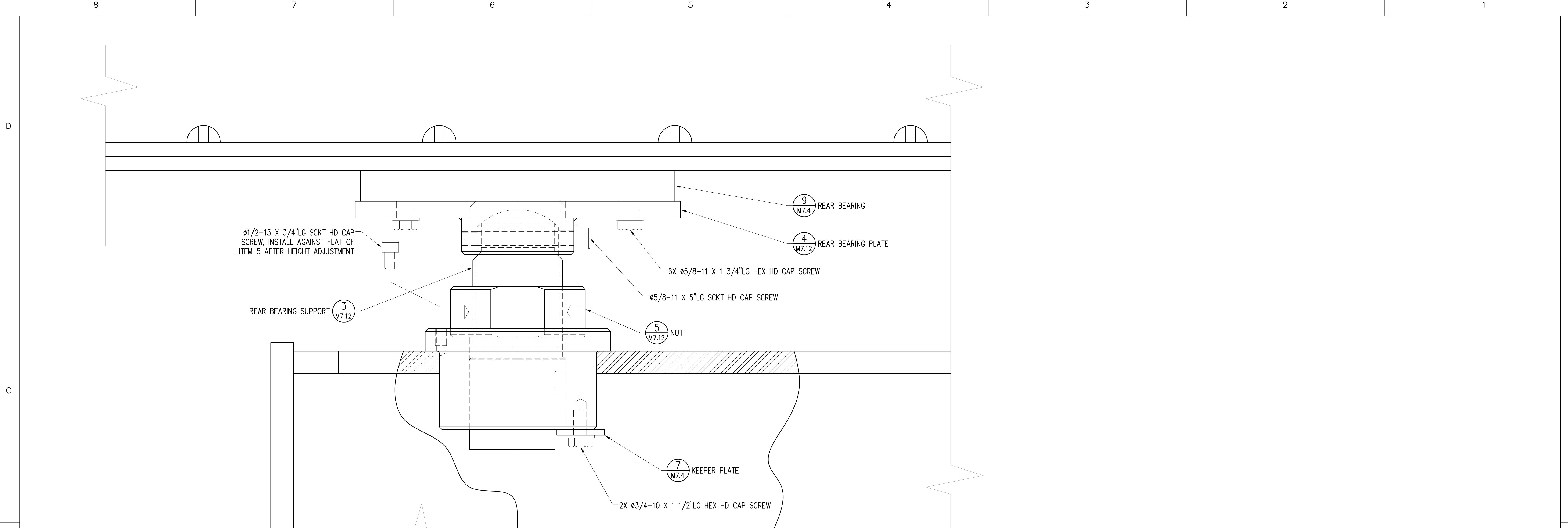
**MATERIAL:**  
**A36 OR A572 GRADE 50**

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>UNDERBEAM ROLLER ASSEMBLY</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: ACJ	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: STV	FOR HARBORS ADMINISTRATOR	M-7.0c	
CHECKED BY: JLF	JOB NUMBER	REVISION	OF SHOTS
DATE: 4/12/07	H.C. 90018		
SCALE: AS SHOWN			



REDUCED SIZE  
 PRINT  
 (NOT TO SCALE)

DESIGN RECORD DRAWING

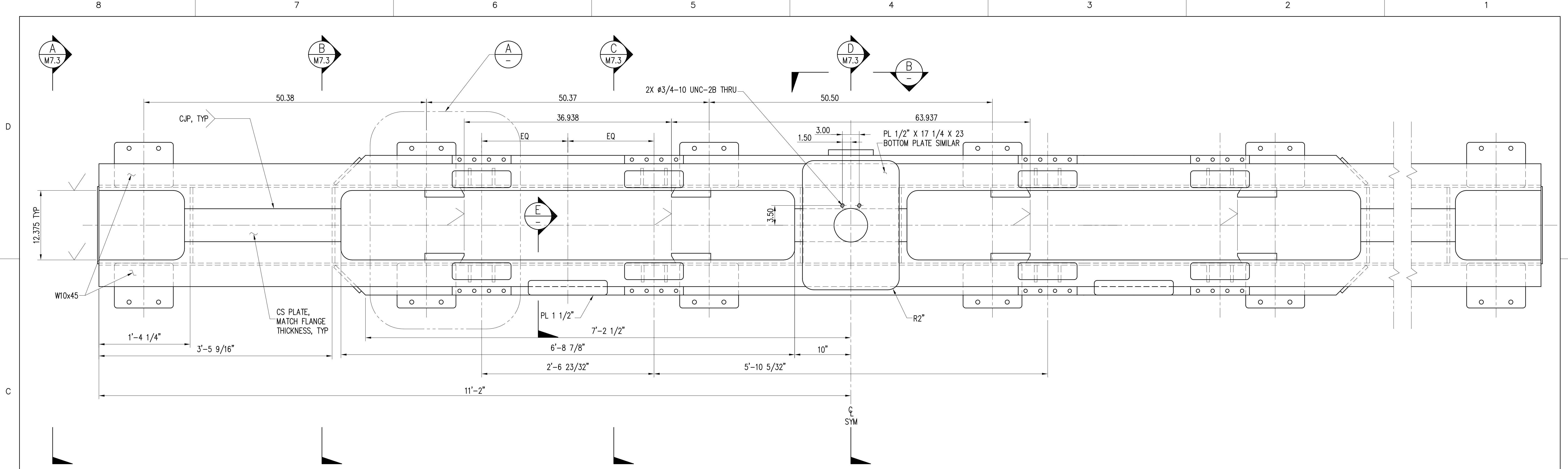


**REAR BEARING ASSEMBLY**  
SCALE: 6"=1'-0"

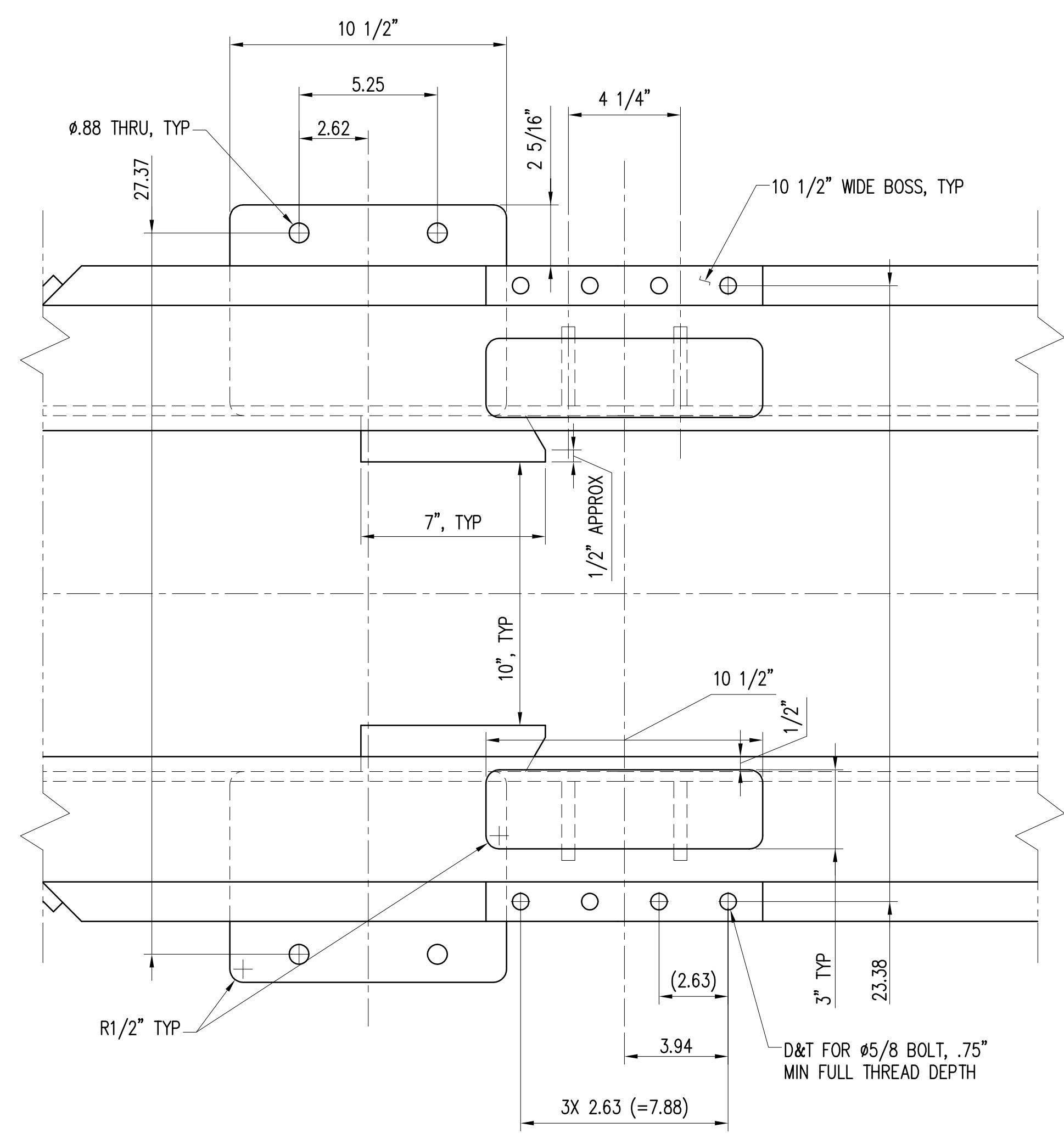
	STATE OF HAWAII	
	DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	 HEALY TIBBITTS BUILDERS, INC. 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
SHEET TITLE APRON LIFT SYSTEM LIFT FRAME ASSEMBLY		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-7.1
CHECKED BY: SDS	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS
SCALE: AS SHOWN		

REDUCED SIZE  
PRINT  
(NOT TO SCALE)

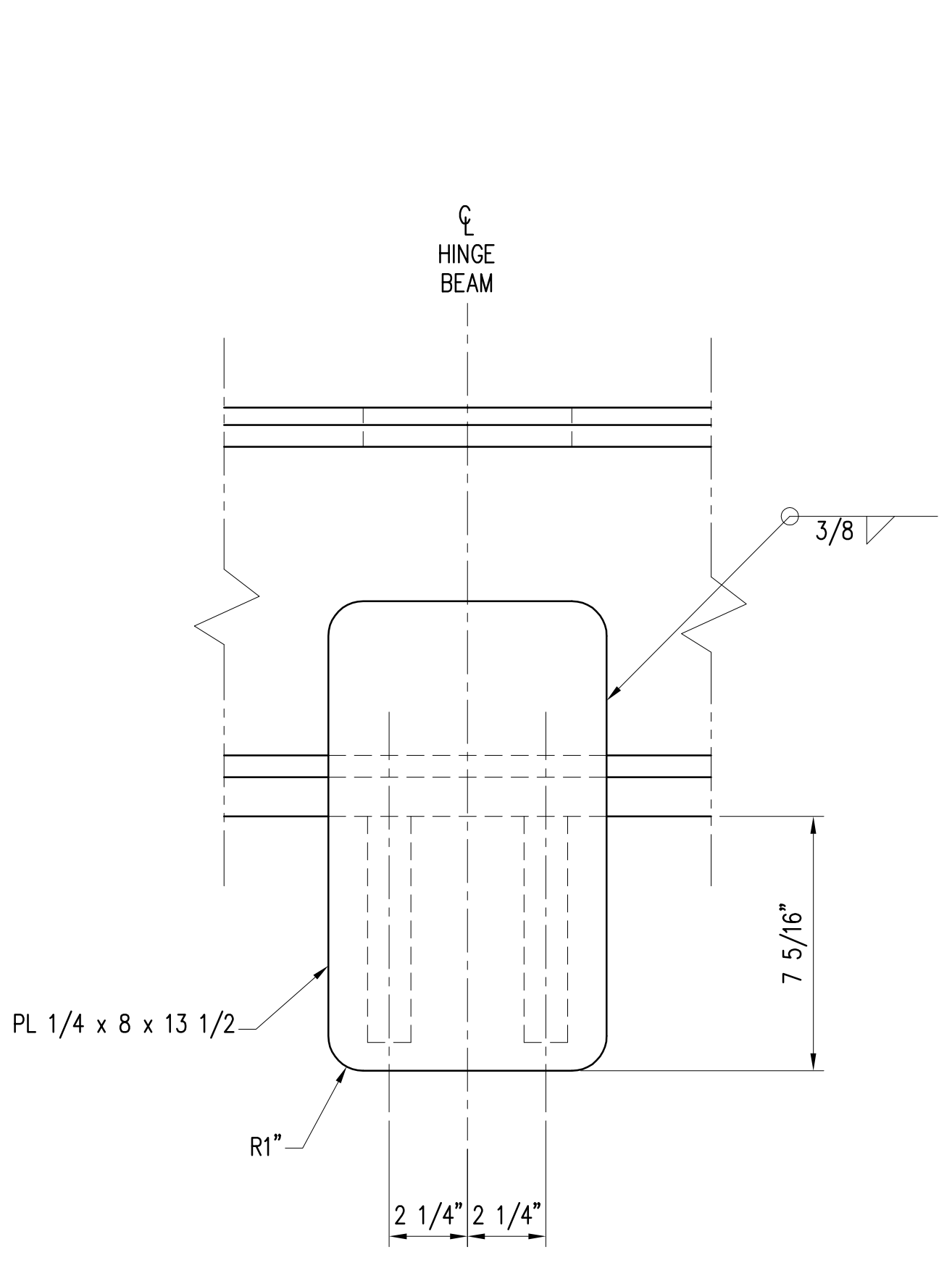
DESIGN RECORD DRAWING



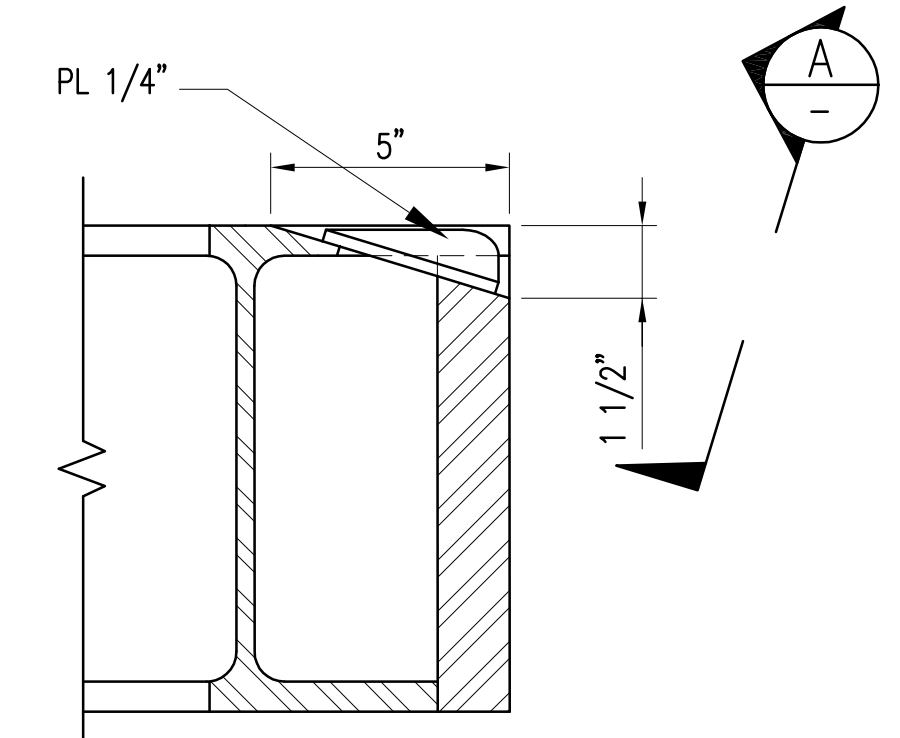
**HINGE BEAM DETAIL**  
SCALE: 1 1/2"=1'-0" (1 M7.0)



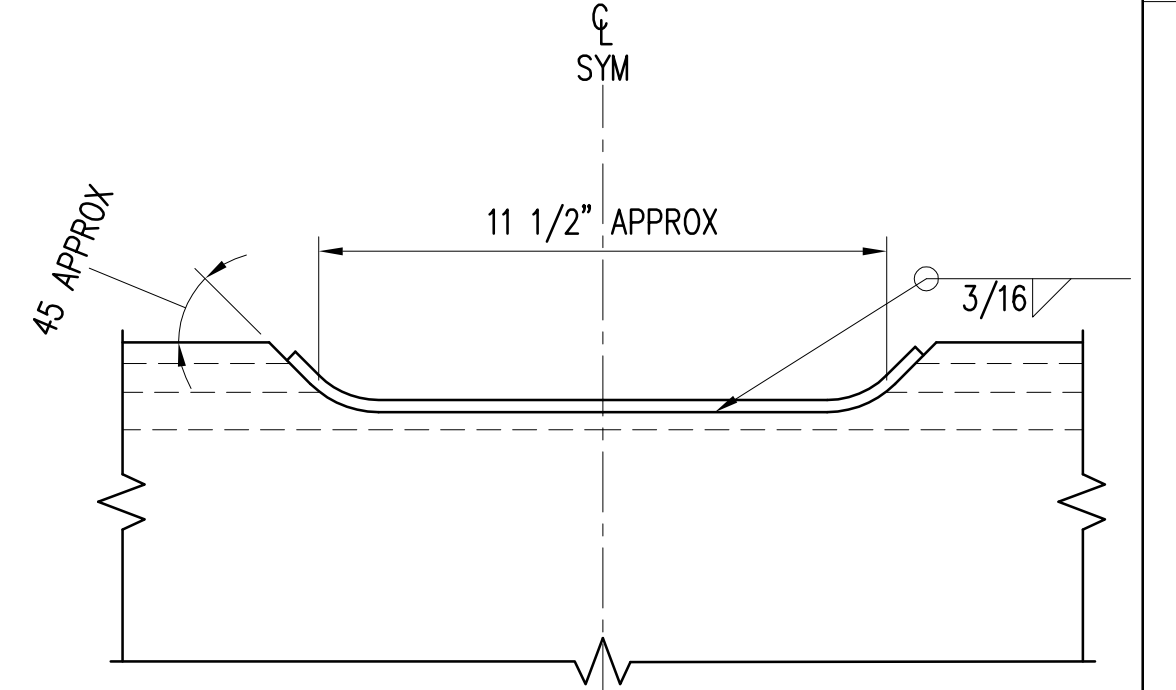
**DETAIL**  
SCALE: 3"=1'-0" (A)



**VIEW**  
SCALE: 3"=1'-0" (B)

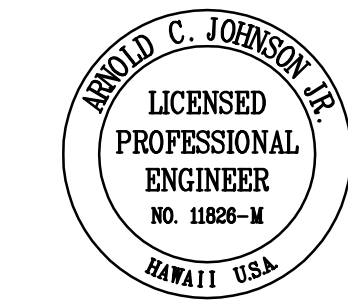


**SECTION**  
SCALE: 1 1/2"=1'-0" (E)



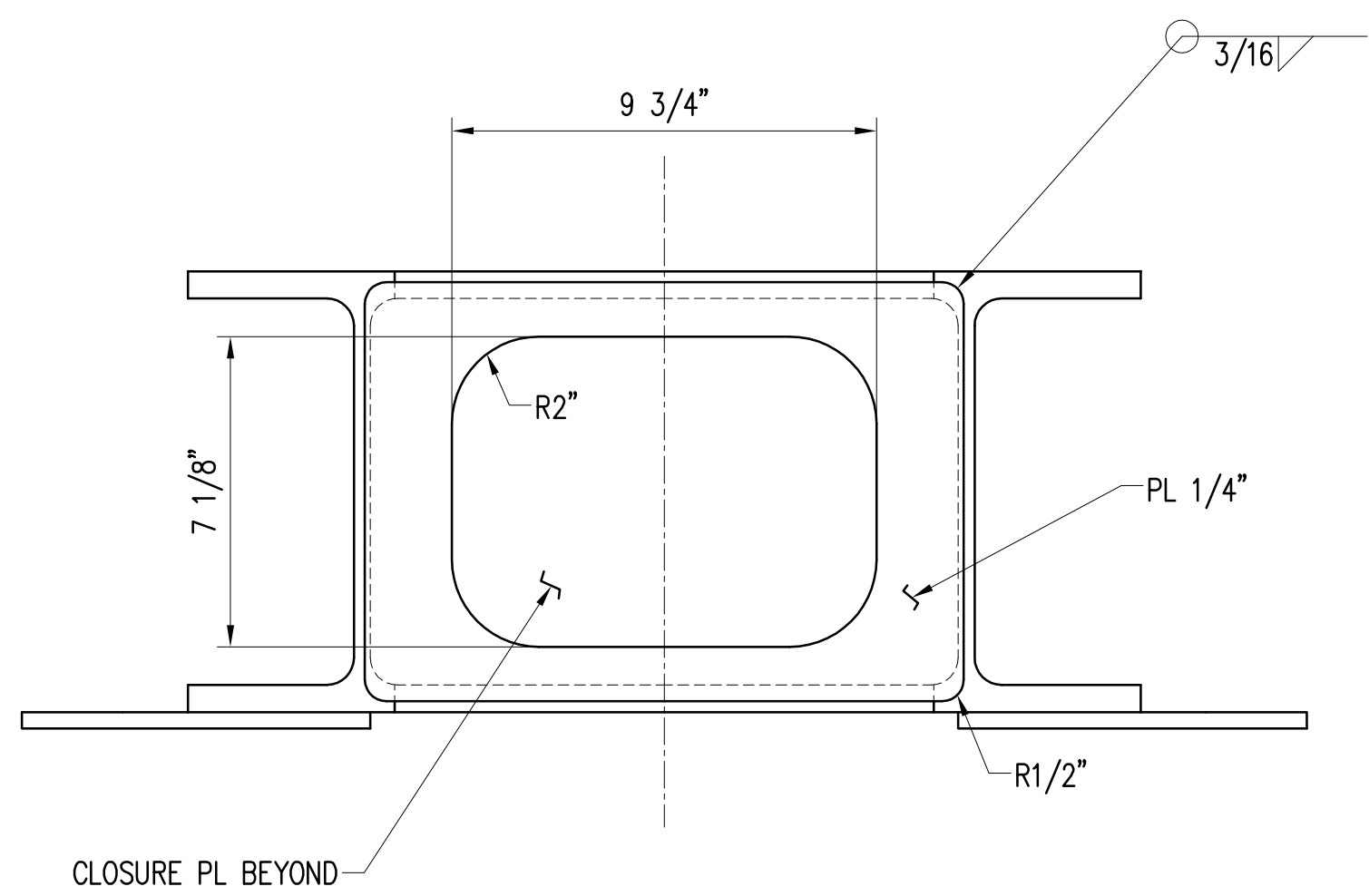
**VIEW**  
SCALE: 1 1/2"=1'-0" (A)

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>HINGE BEAM PRIMARY WELDMENT DETAILS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	<b>M-7.2</b>	
CHECKED BY: SDS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	OF ____ SHTS	
SCALE: AS SHOWN			

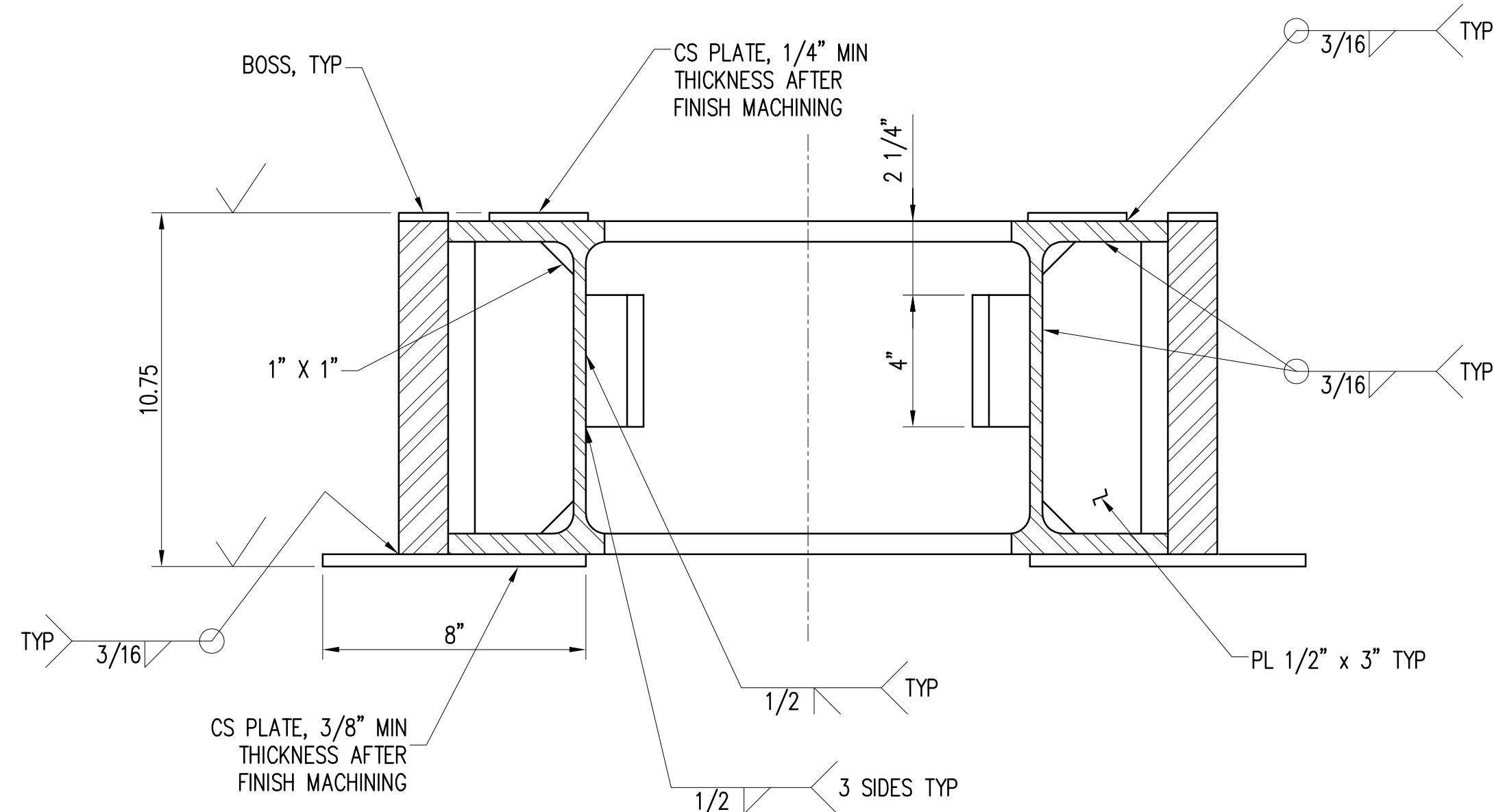


REDUCED SIZE  
PRINT  
(NOT TO SCALE)

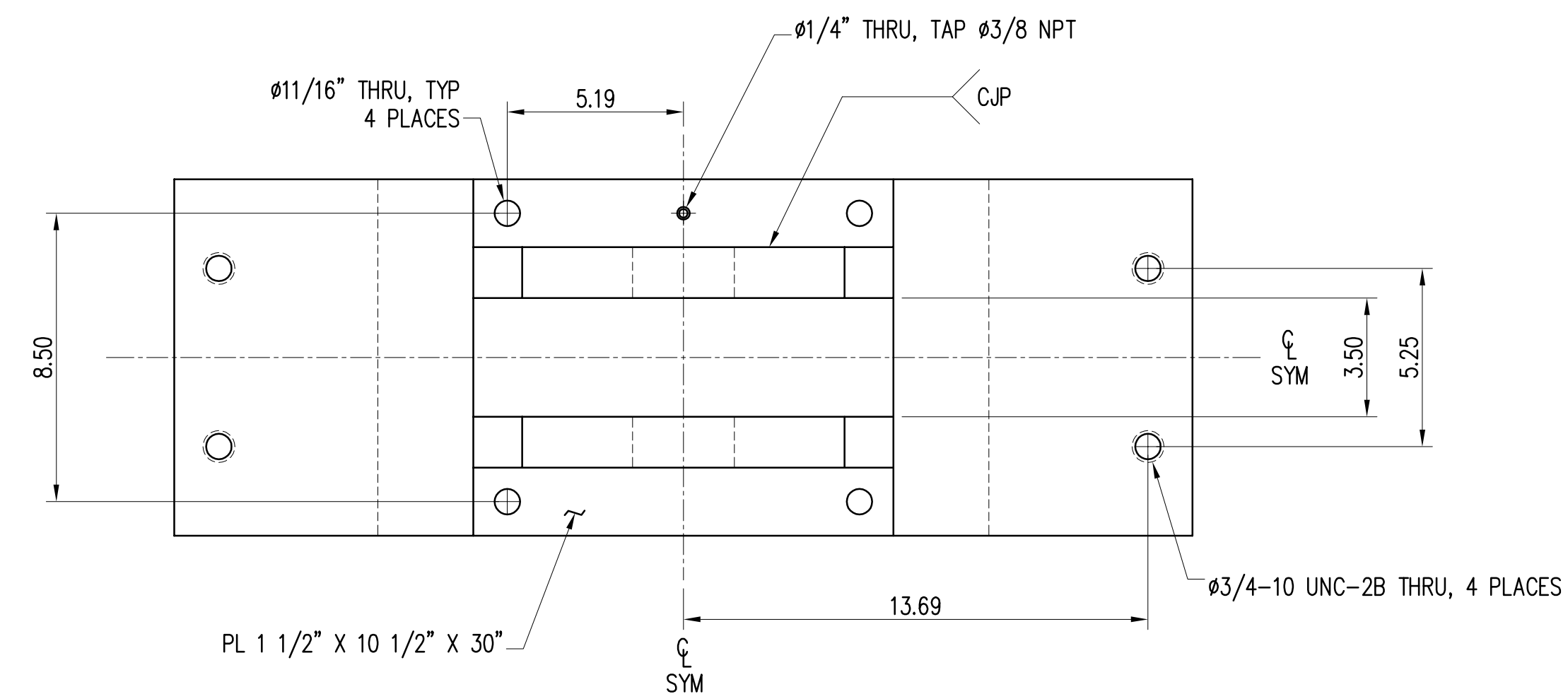
DESIGN RECORD DRAWING



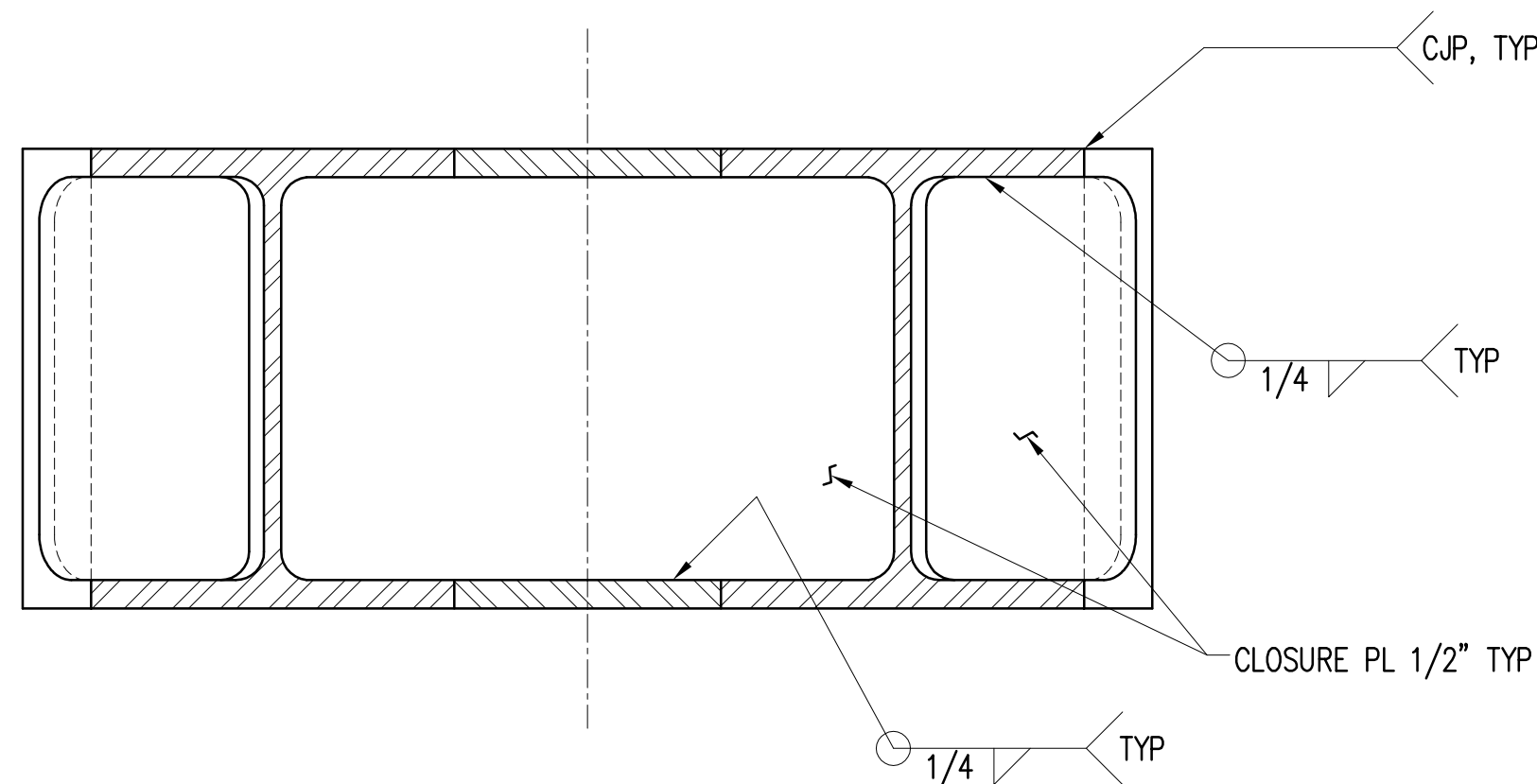
**VIEW**  
SCALE: 3"=1'-0"  
A  
M7.2



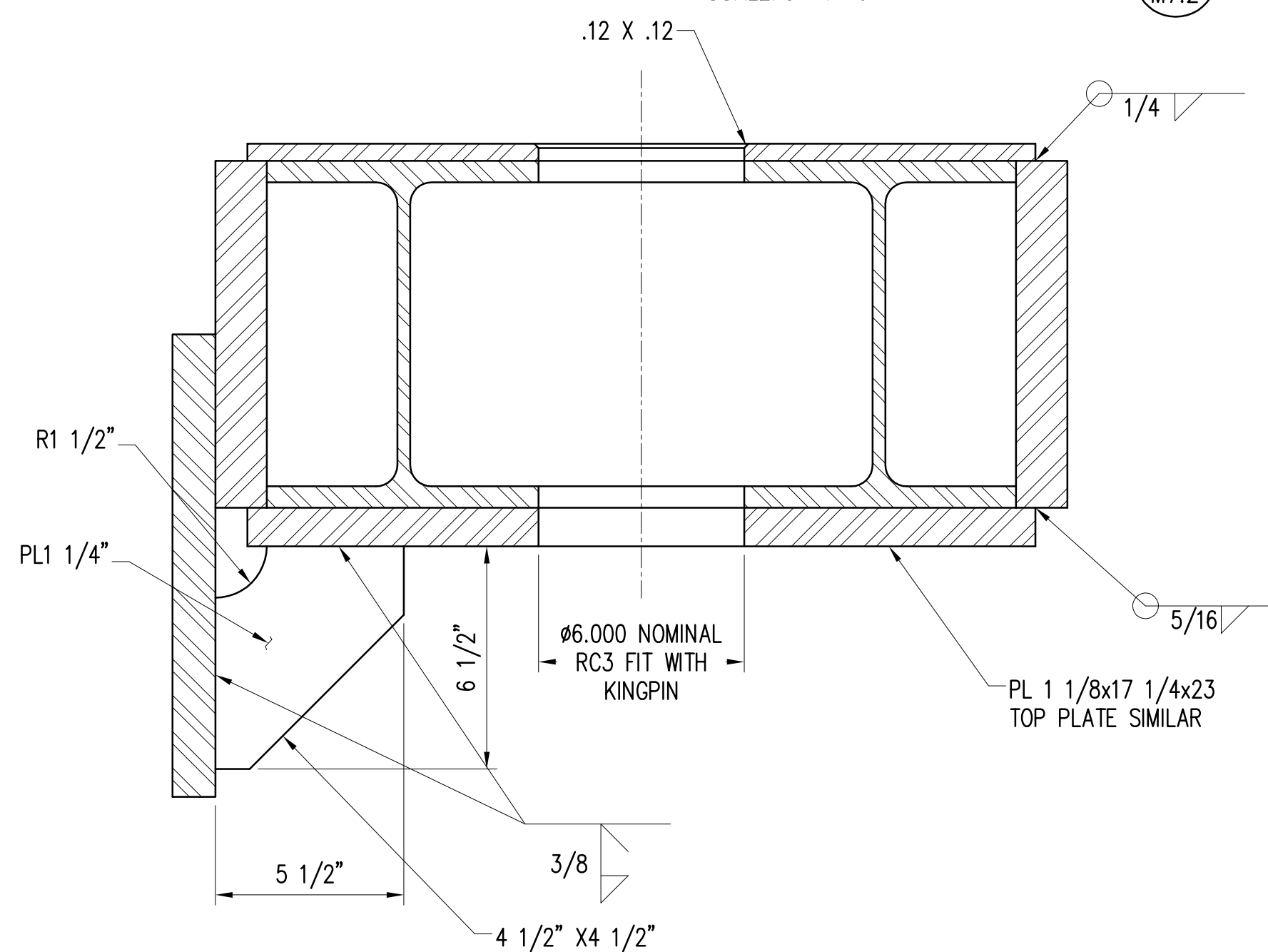
**SECTION**  
SCALE: 3"=1'-0"  
C  
M7.2



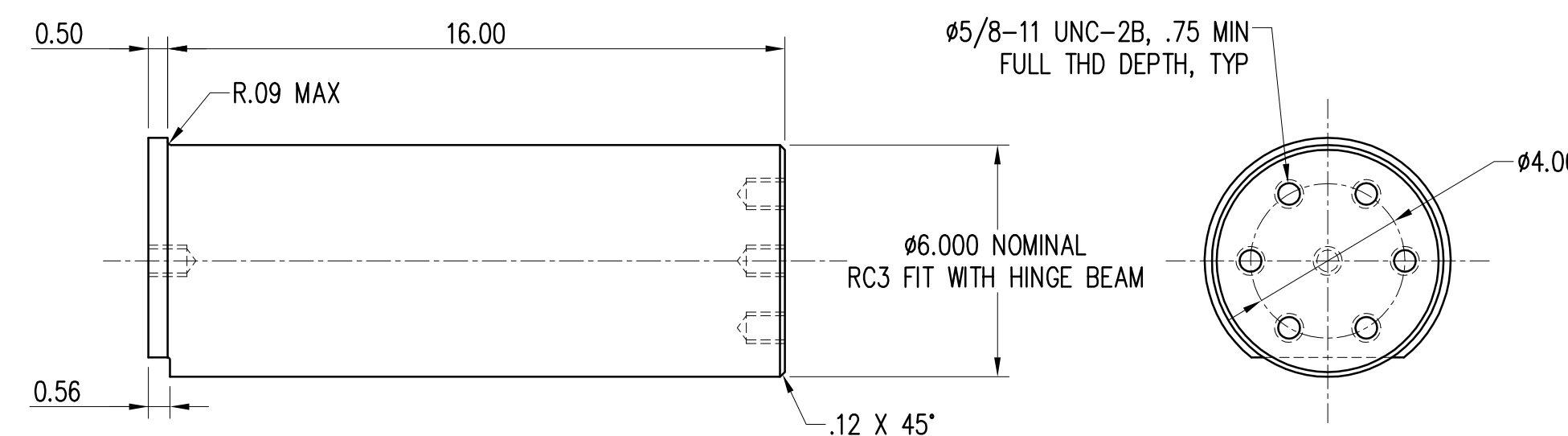
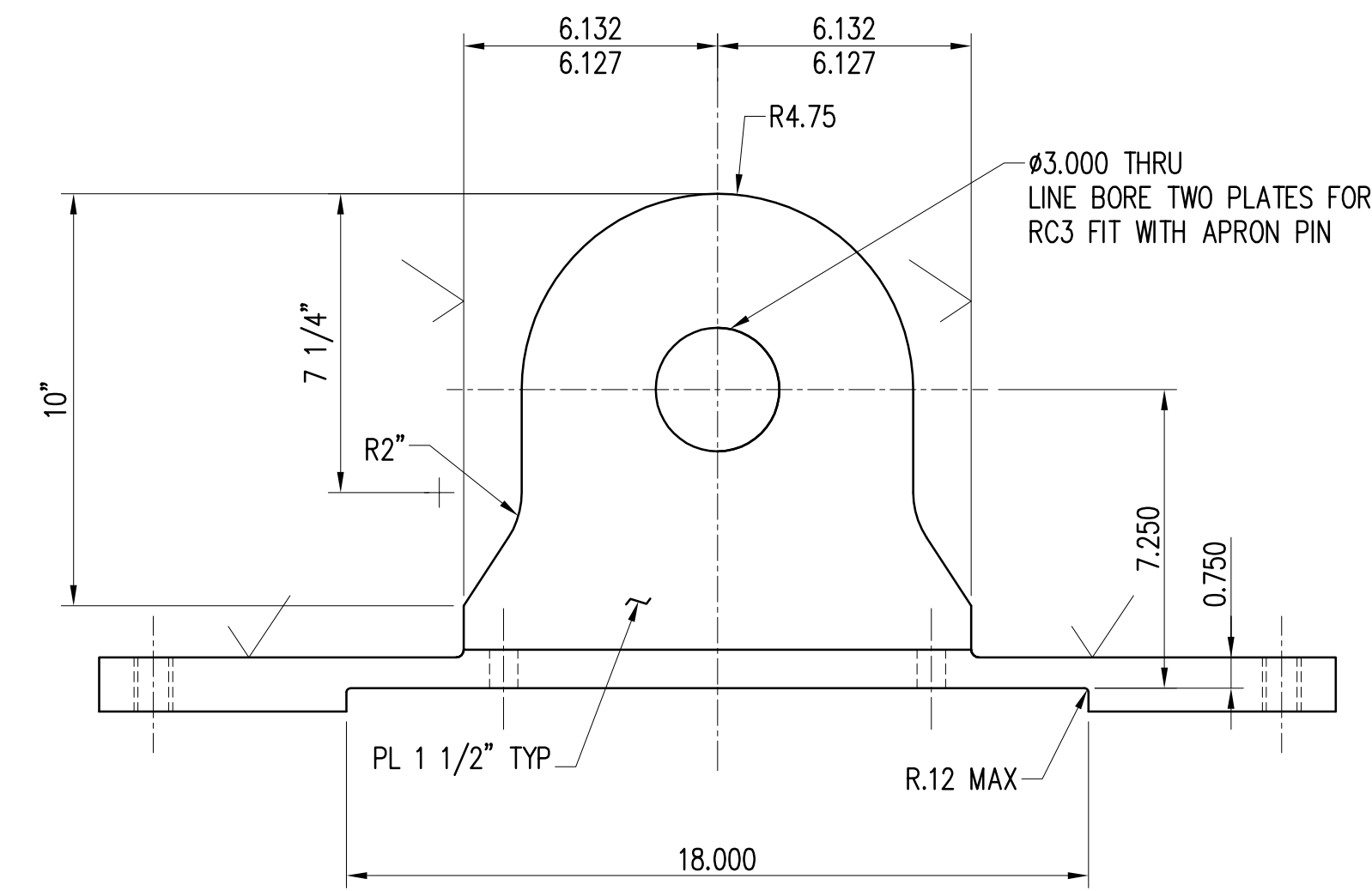
**APRON CLEVIS DETAIL**  
SCALE: 3"=1'-0"  
3  
M7.0



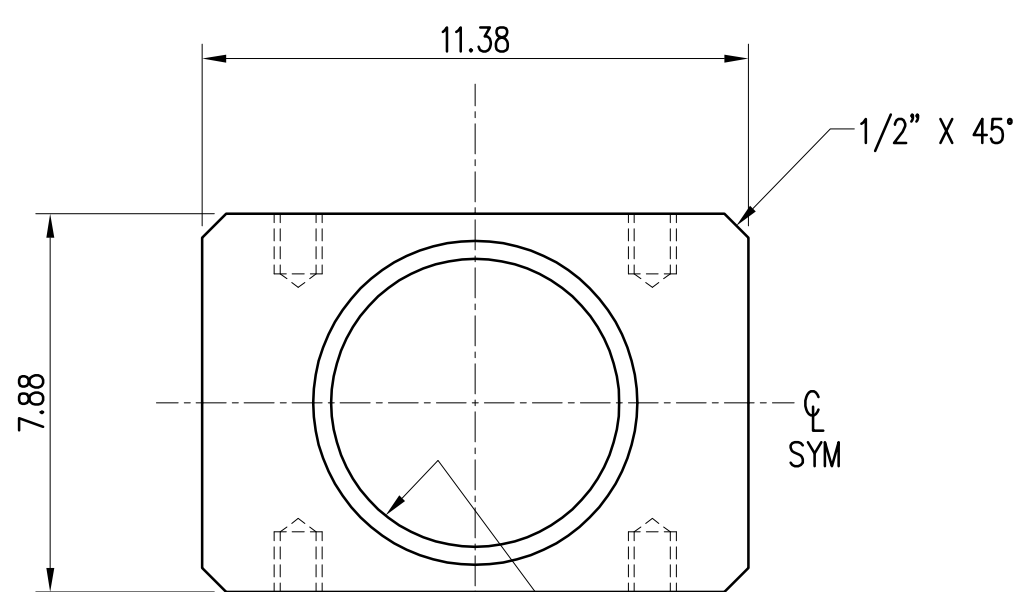
**SECTION**  
SCALE: 3"=1'-0"  
B  
M7.2



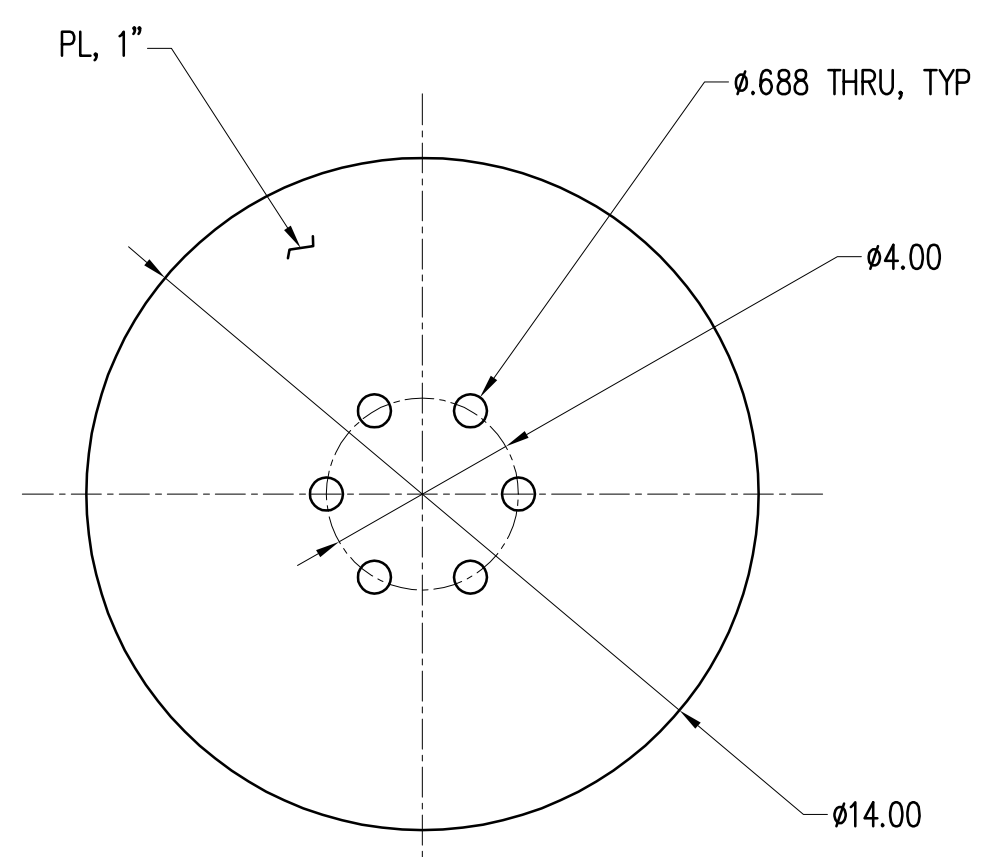
**SECTION**  
SCALE: 3"=1'-0"  
D  
M7.2



**KINGPIN**  
SCALE: 3"=1'-0"  
MATERIAL: 17-4 PH H1150 STAINLESS STEEL  
4  
M7.0



**GUIDE BLOCK**  
SCALE: 3"=1'-0"  
MATERIAL: CARBON STEEL  
1  
M7.0



**RETAINER PLATE**  
SCALE: 3"=1'-0"  
MATERIAL: CARBON STEEL  
2  
M7.0

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**

**kpff** Consulting Engineers  
1601 Fifth Avenue, Suite 1600  
Seattle, Washington 98101  
(206) 622-5822 Fax (206) 622-8130

JOB TITLE  
**BARGES & VEHICLE RAMP SYSTEMS  
FOR INTERISLAND FERRY SERVICE**

SHEET TITLE  
**HINGE BEAM PRIMARY WELDMENT  
SECTIONS & DETAILS**

SUBMITTED BY: \_\_\_\_\_ RECOMMENDED BY: \_\_\_\_\_

SECTION HEAD: \_\_\_\_\_ ENGINEERING PROGRAM MANAGER: \_\_\_\_\_

REDUCED SIZE PRINT  
(NOT TO SCALE)

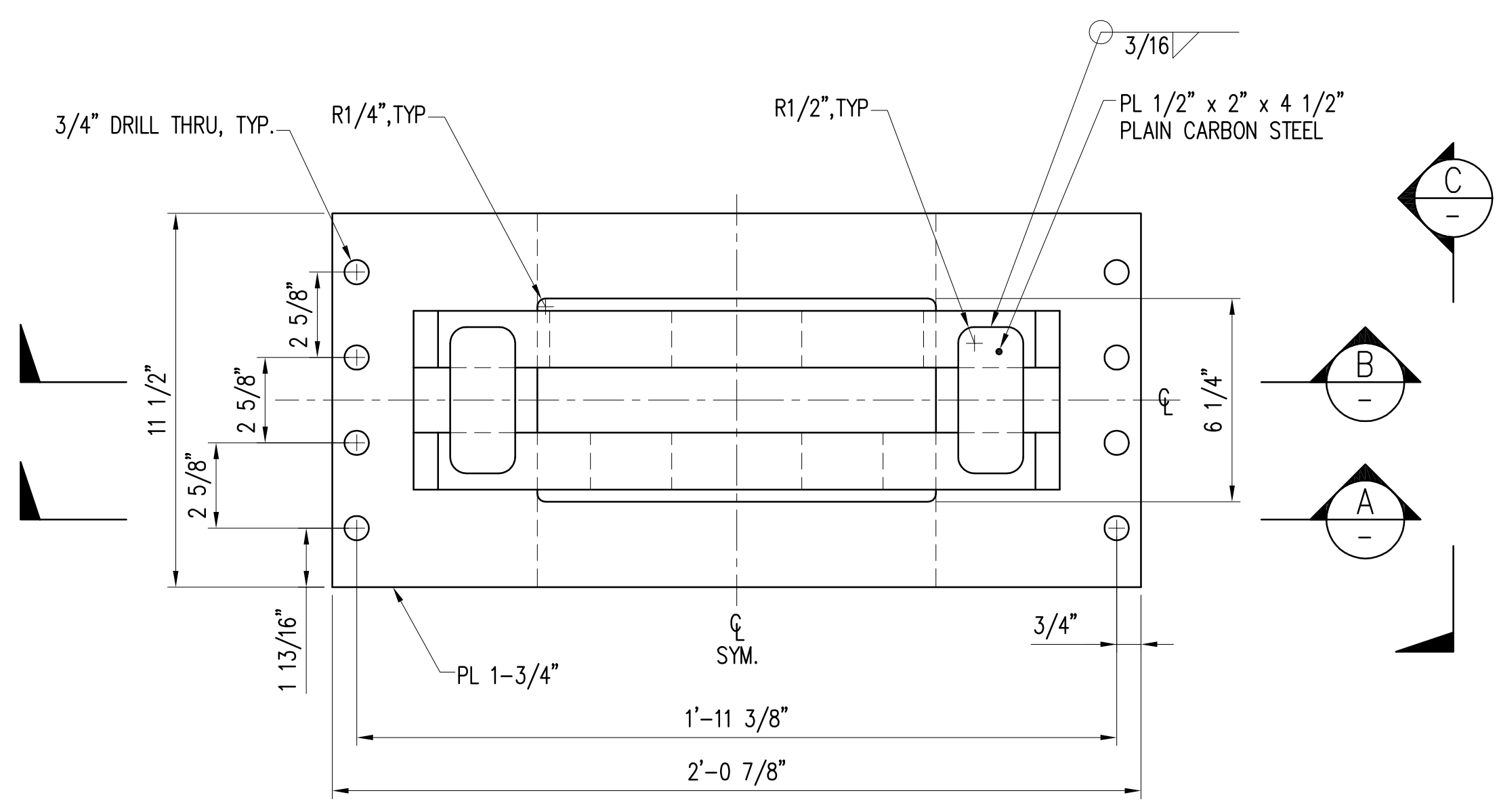
DESIGNED BY: SDS APPROVED BY: \_\_\_\_\_ DRAWING NUMBER: M-7.3

DRAWN BY: SS FOR HARBORS ADMINISTRATOR

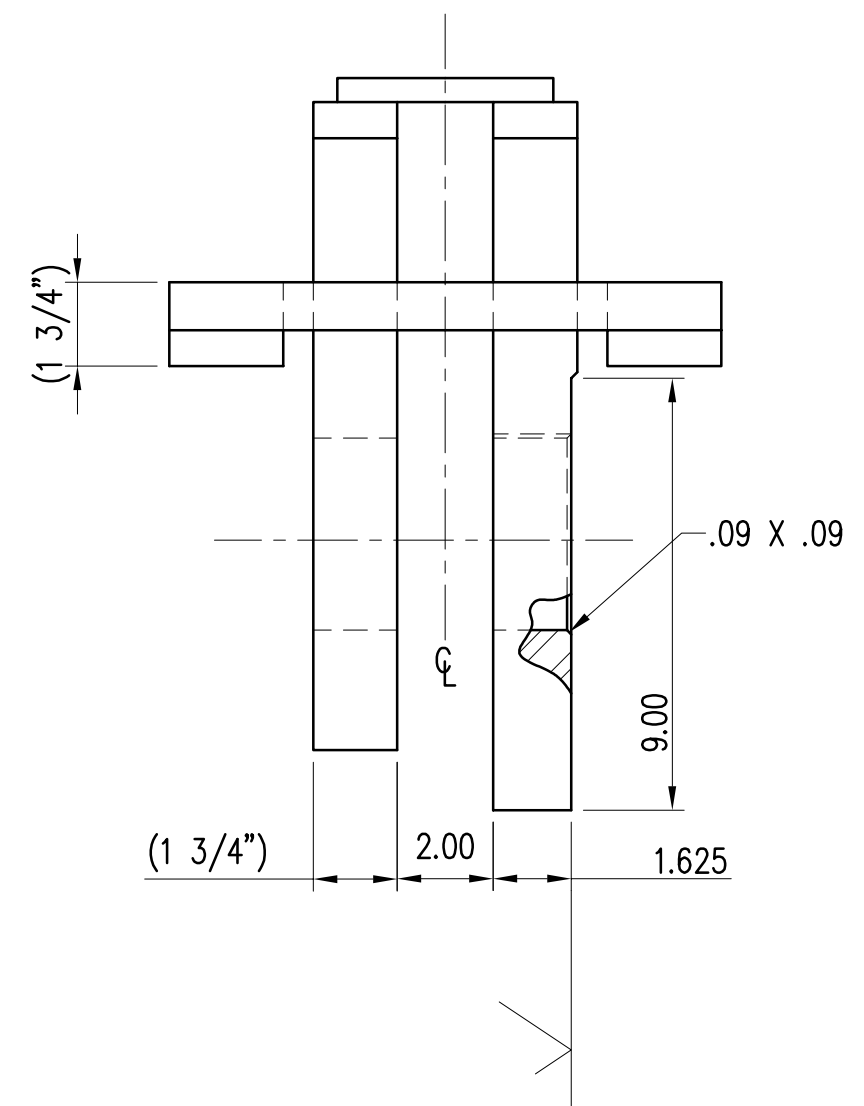
CHECKED BY: SDS JOB NUMBER: H.C. 90018

DATE: 9/1/06 SCALE: AS SHOWN REVISION: \_\_\_\_\_ OF \_\_\_\_\_ SHEETS

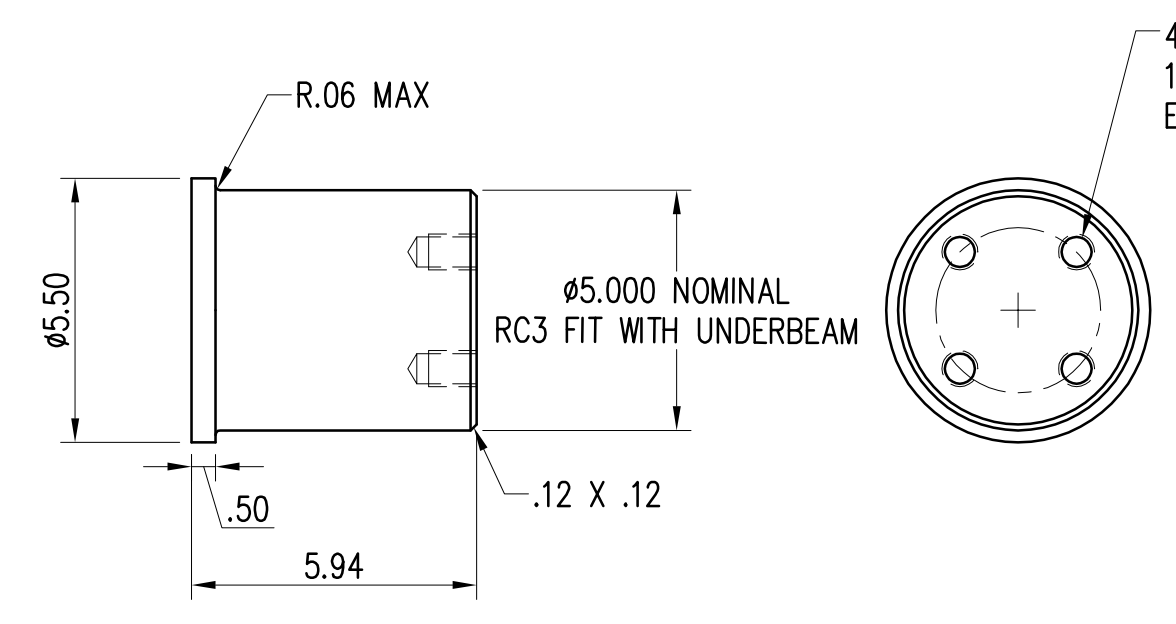
DESIGN RECORD DRAWING



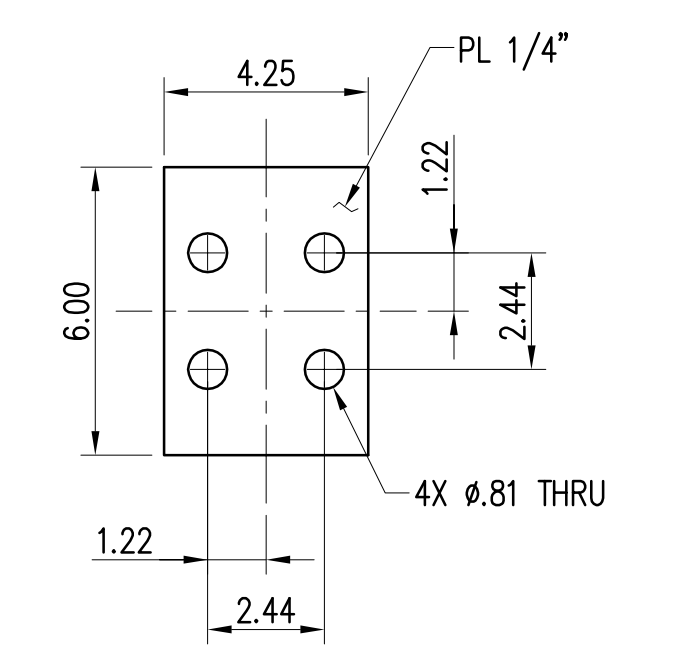
**DETAIL-UNDERBEAM CLEVIS**  
SCALE: 3" = 1'-0"  
MATERIAL: ASTM A514 GRADE B, UNLESS NOTED OTHERWISE  
MINIMUM YIELD STRENGTH=100 KSI  
100% UT RAW MATERIAL-NO INDICATIONS ALLOWED



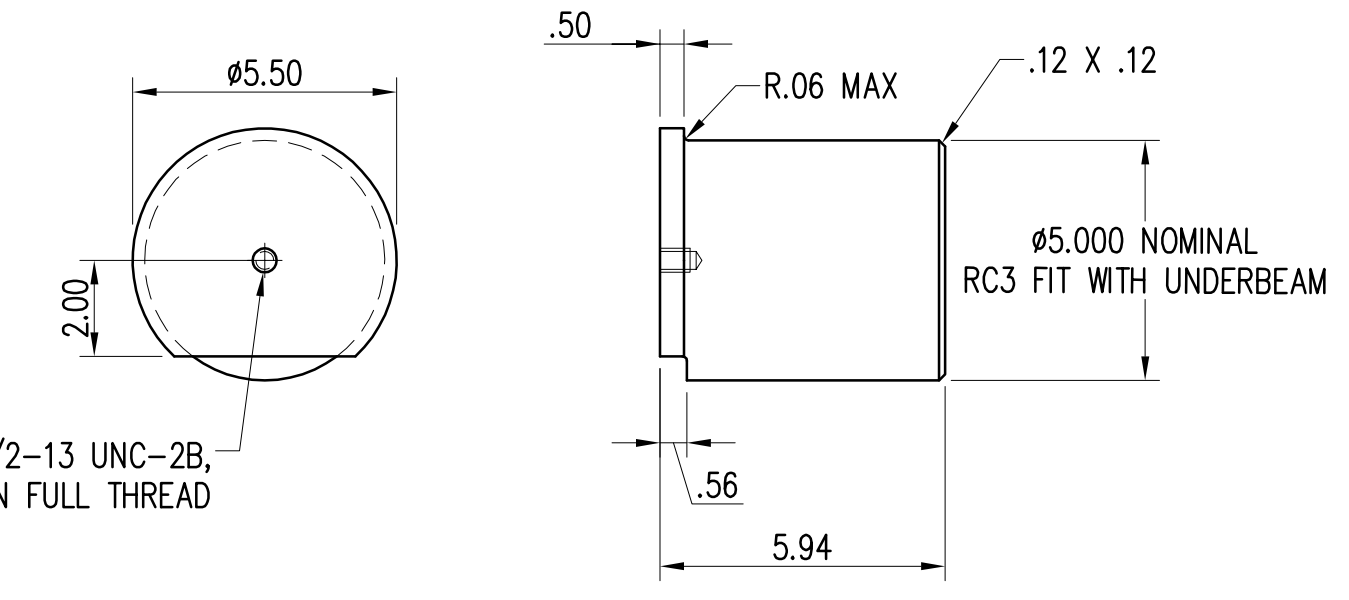
**VIEW**  
SCALE: 3" = 1'-0"



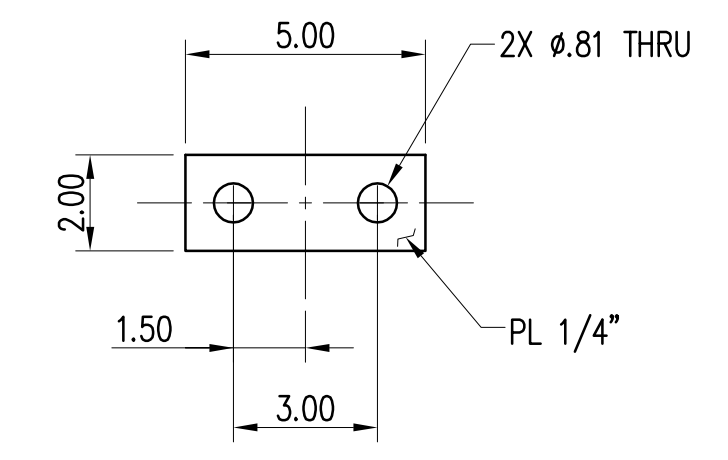
**UNDERBEAM PIN**  
SCALE: 3" = 1'-0"  
MATERIAL: 17-4 PH STAINLESS STEEL



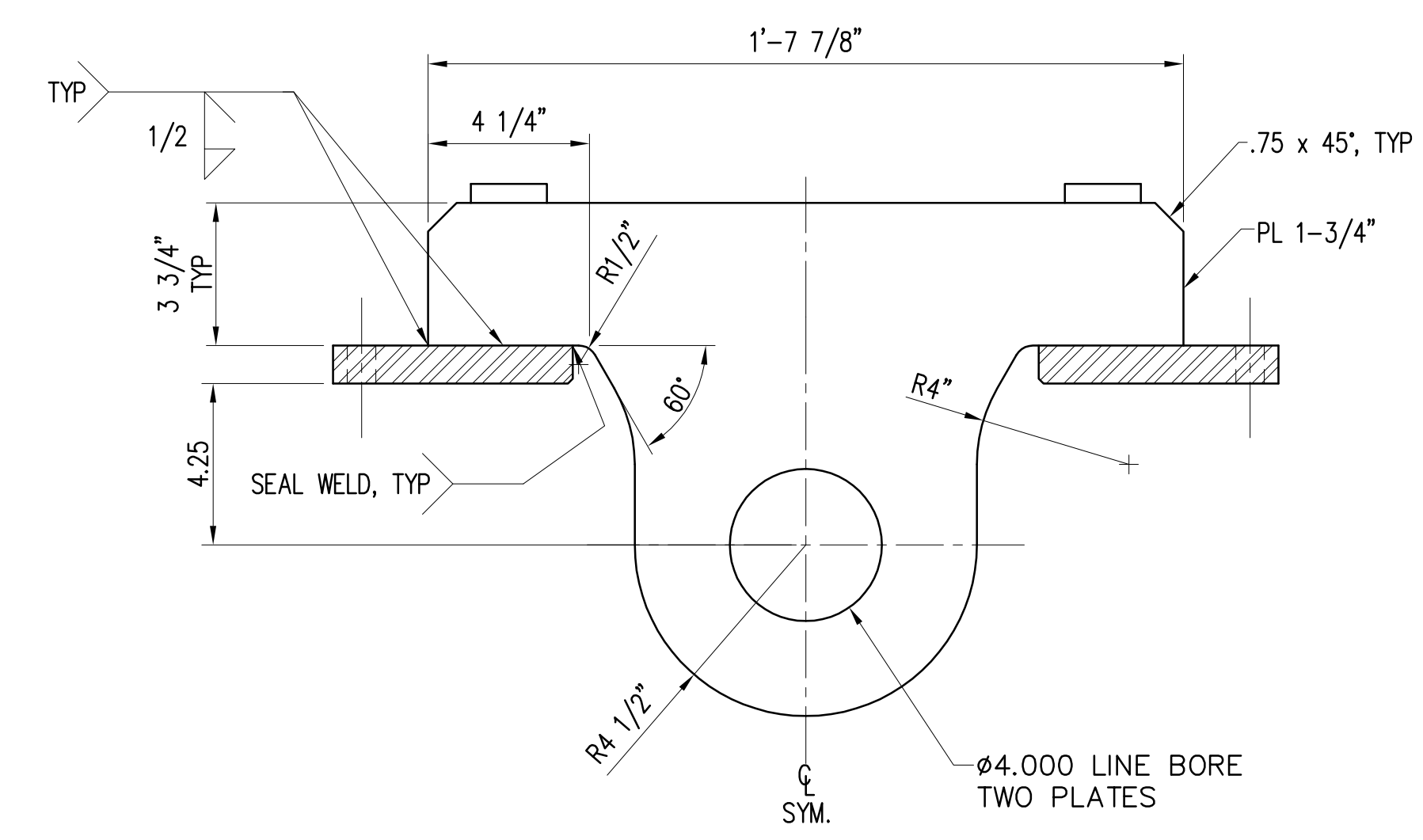
**UNDERBEAM KEEPER**  
SCALE: 3" = 1'-0"  
MATERIAL: STAINLESS STEEL



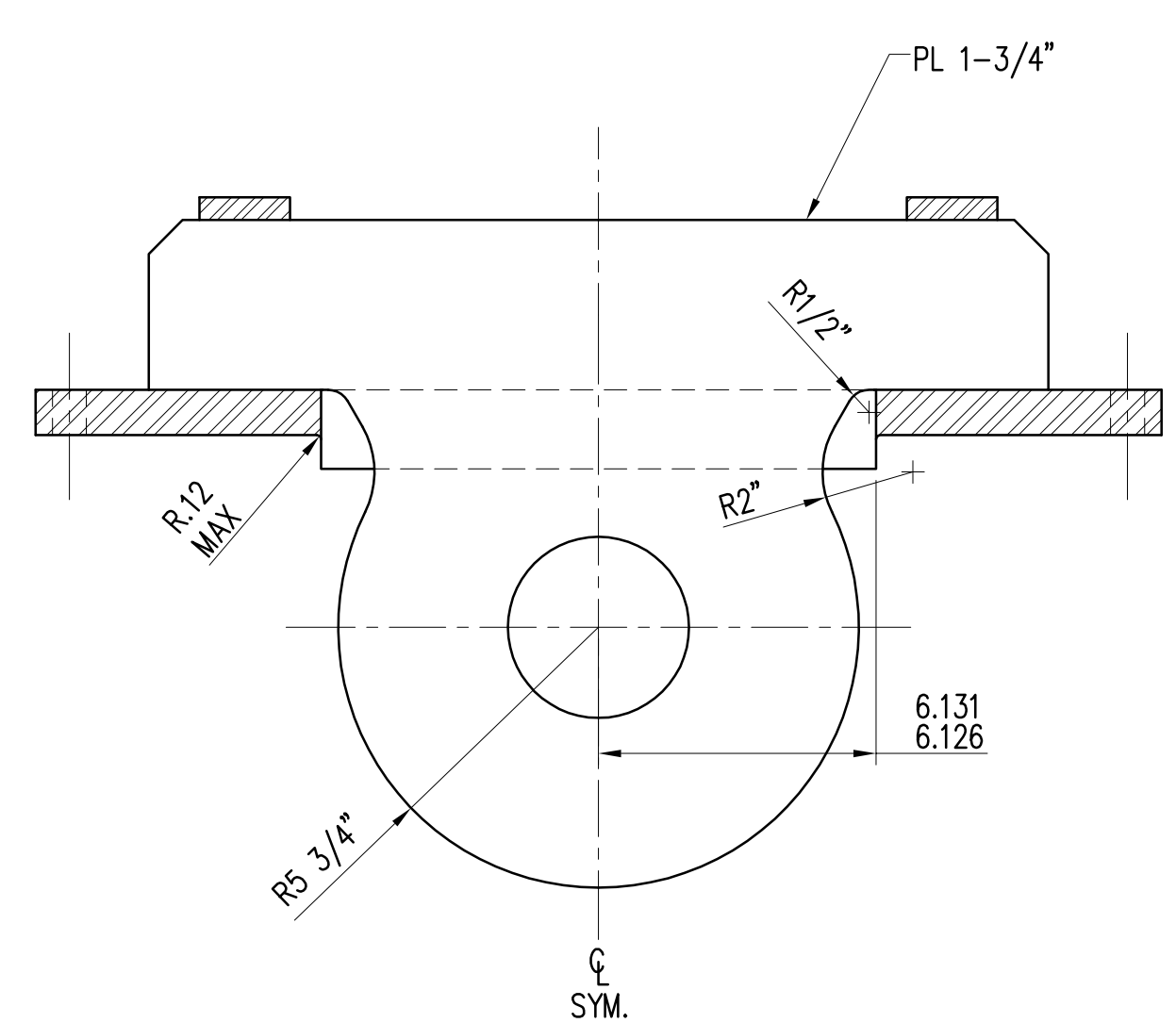
**LIFT ARM PIN**  
SCALE: 3" = 1'-0"  
MATERIAL: 17-4 PH STAINLESS STEEL



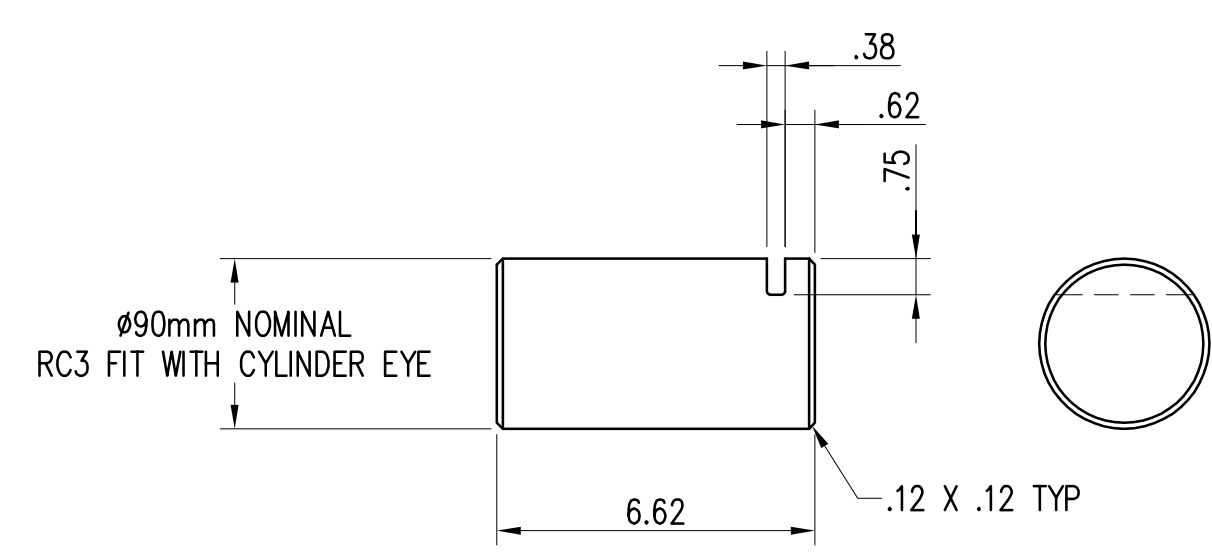
**KEEPER PLATE**  
SCALE: 3" = 1'-0"  
MATERIAL: STAINLESS STEEL



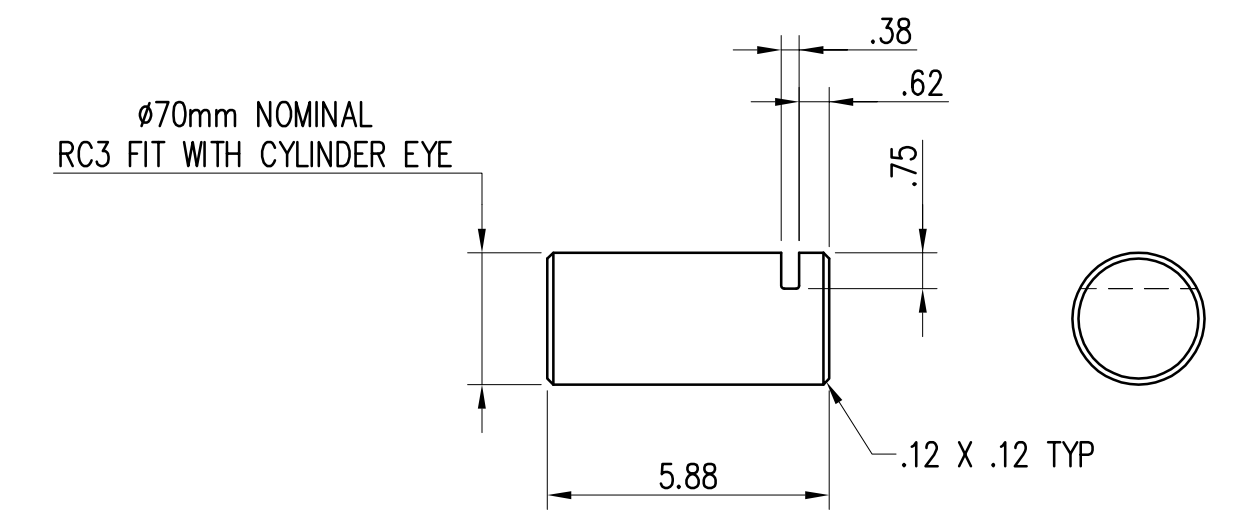
**SECTION A**  
SCALE: 3" = 1'-0"



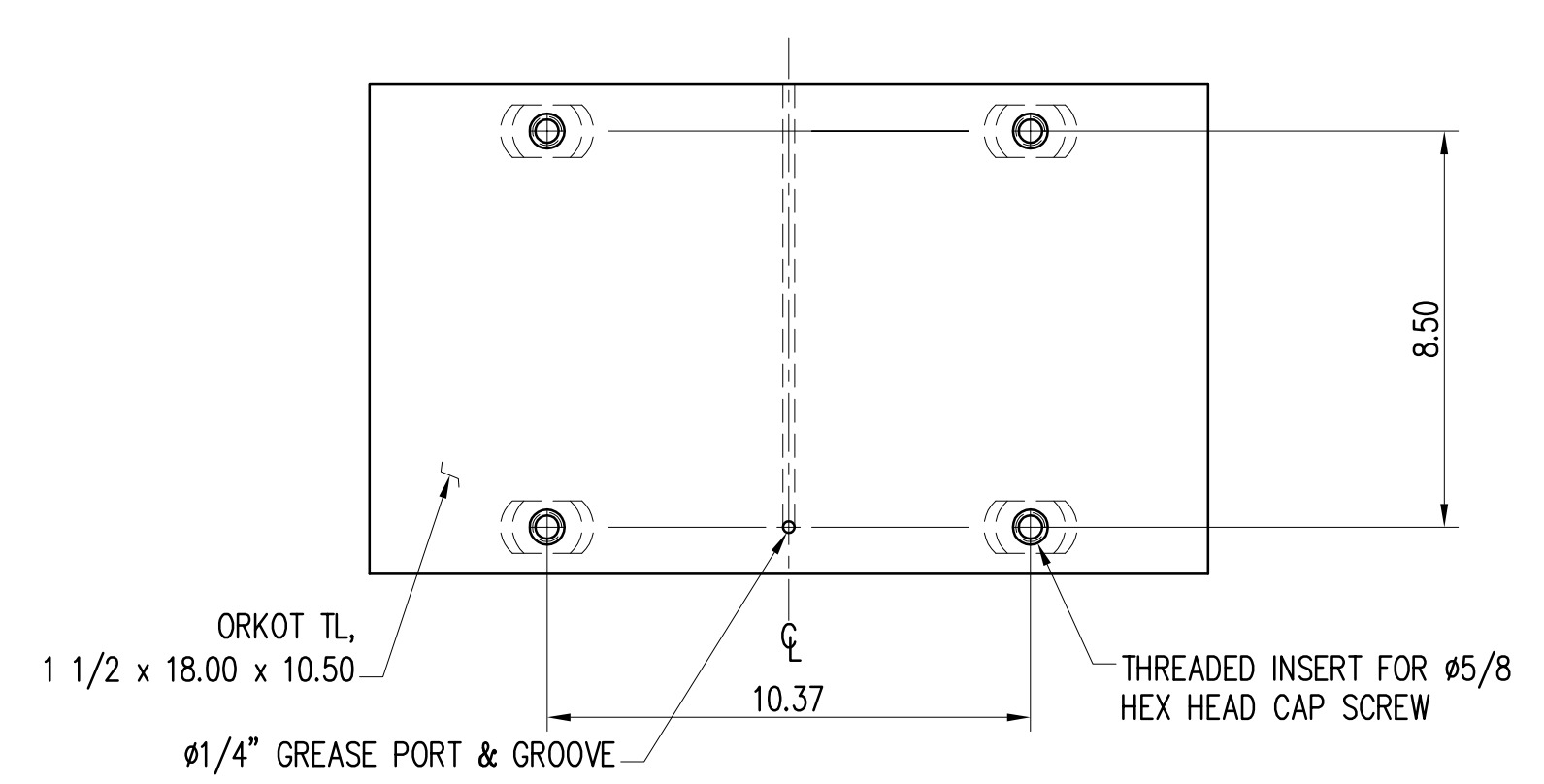
**SECTION B**  
SCALE: 3" = 1'-0"



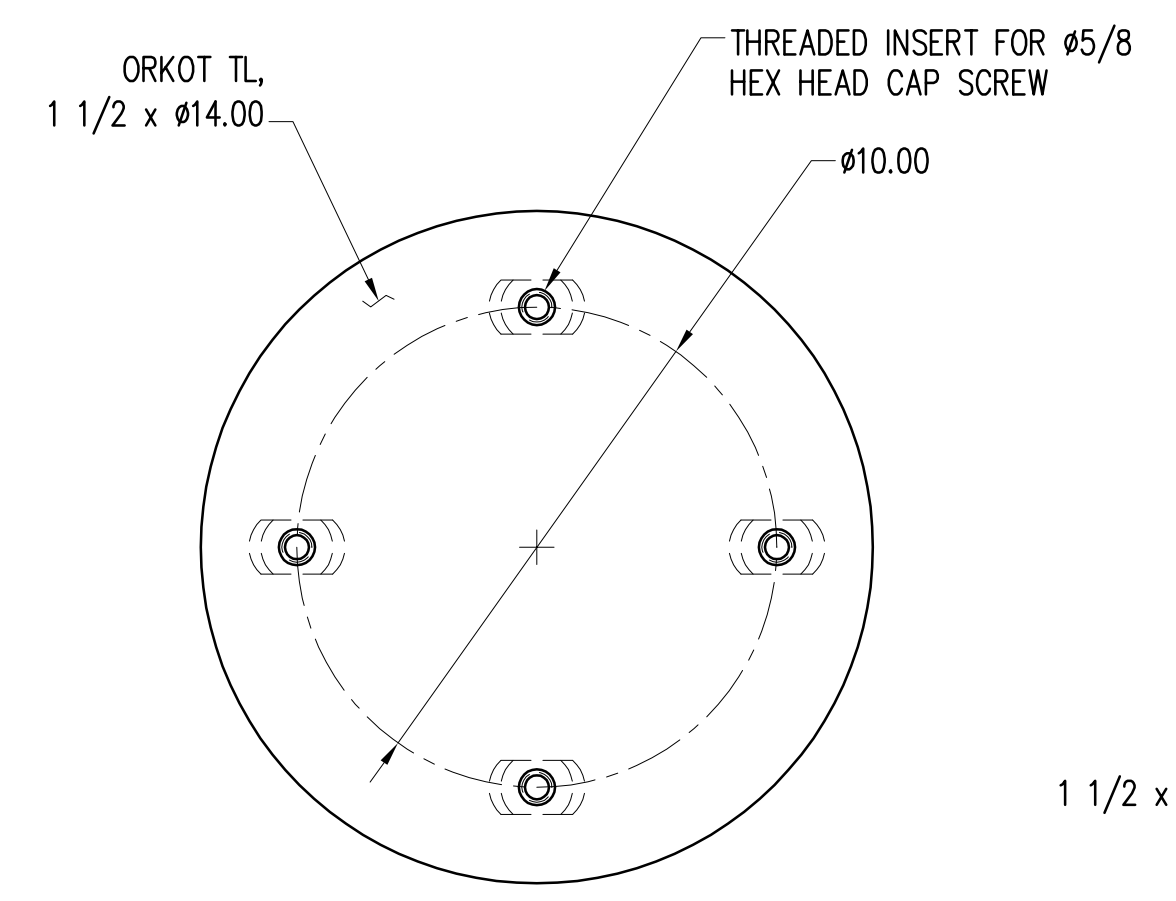
**LARGE CYLINDER PIN**  
SCALE: 3" = 1'-0"  
MATERIAL: 17-4 PH STAINLESS STEEL



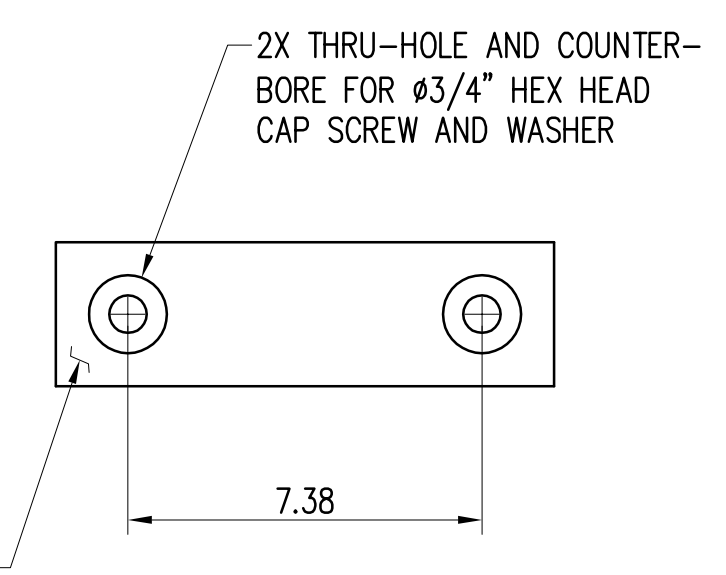
**SMALL CYLINDER PIN**  
SCALE: 3" = 1'-0"  
MATERIAL: 17-4 PH STAINLESS STEEL



**MAIN BEARING**  
SCALE: 3" = 1'-0"



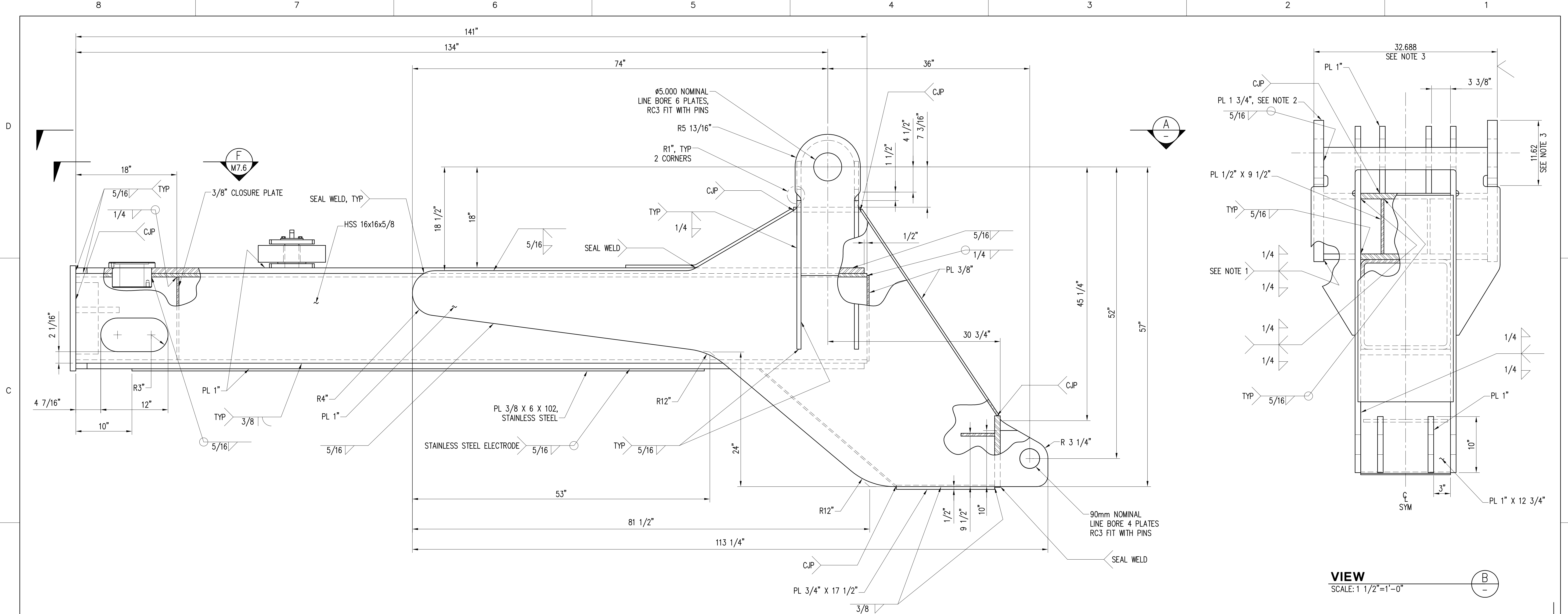
**REAR BEARING**  
SCALE: 3" = 1'-0"



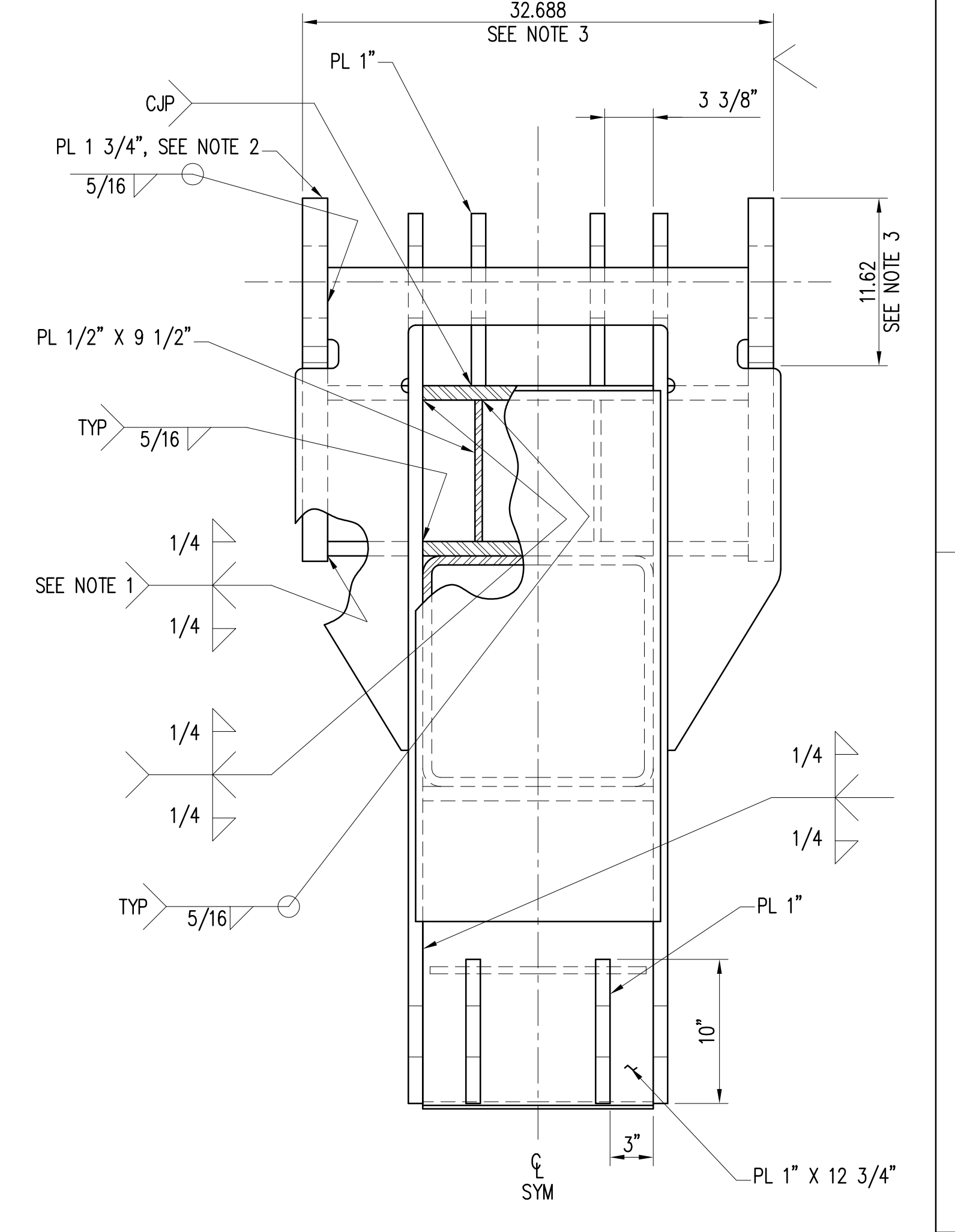
**GUIDE BEARING**  
SCALE: 3" = 1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 Consulting Engineers (206) 622-5822 Fax (206) 622-8130		
JOB TITLE: BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
SHEET TITLE: UNDERBEAM CLEVIS		
SUBMITTED BY:		RECOMMENDED BY:
DESIGNED BY: SDS		APPROVED BY:
DRAWN BY: JLF		DRAWING NUMBER: M-7.4
CHECKED BY: ACJ		FOR HARBORS ADMINISTRATOR
DATE: 9/1/06		JOB NUMBER: H.C. 90018
SCALE: AS SHOWN		REVISION: _____ OF _____ SHOTS

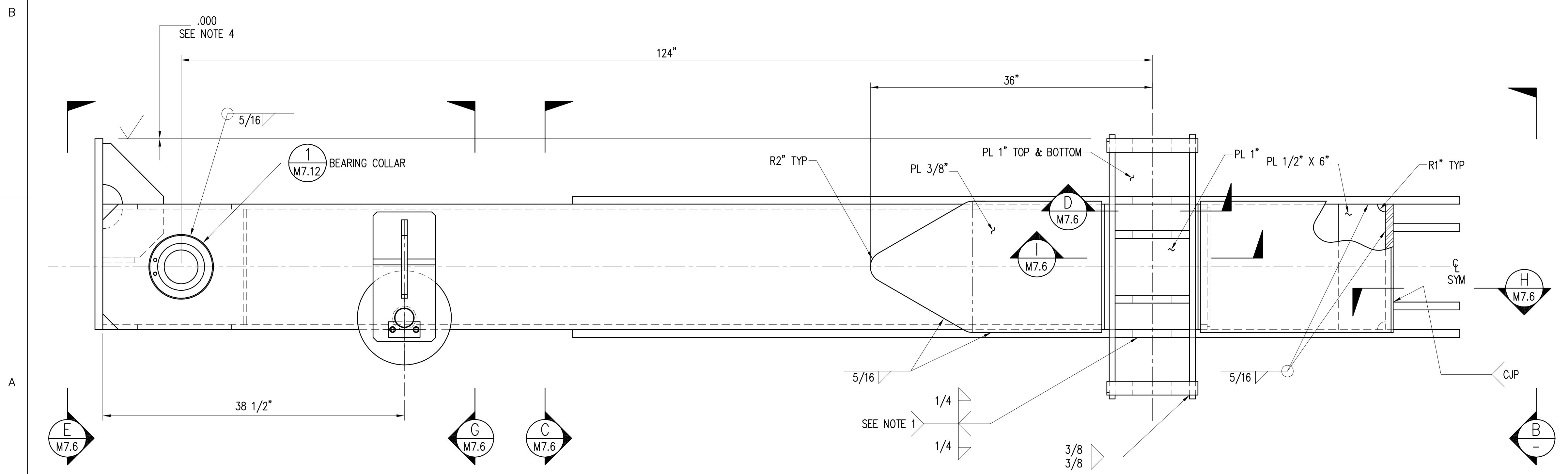




**38' APRON UNDERBEAM DETAIL**  
 SCALE: 1 1/2"=1'-0"  
 M7.0g



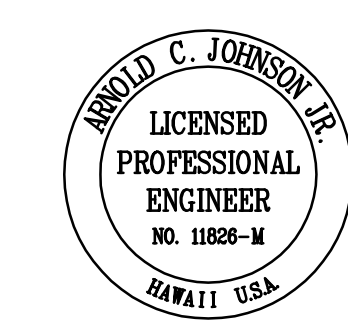
**VIEW**  
 SCALE: 1 1/2"=1'-0"  
 B



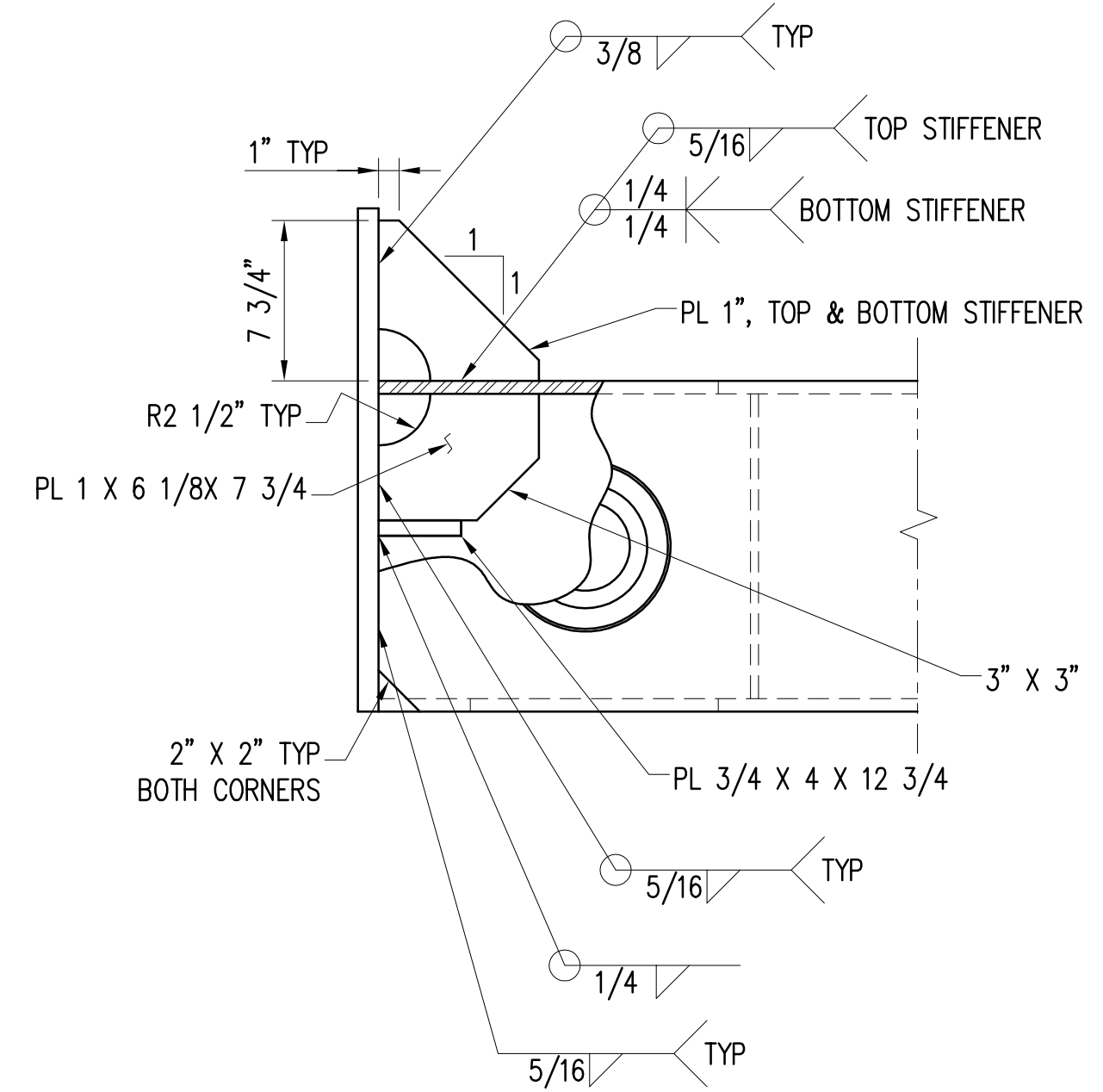
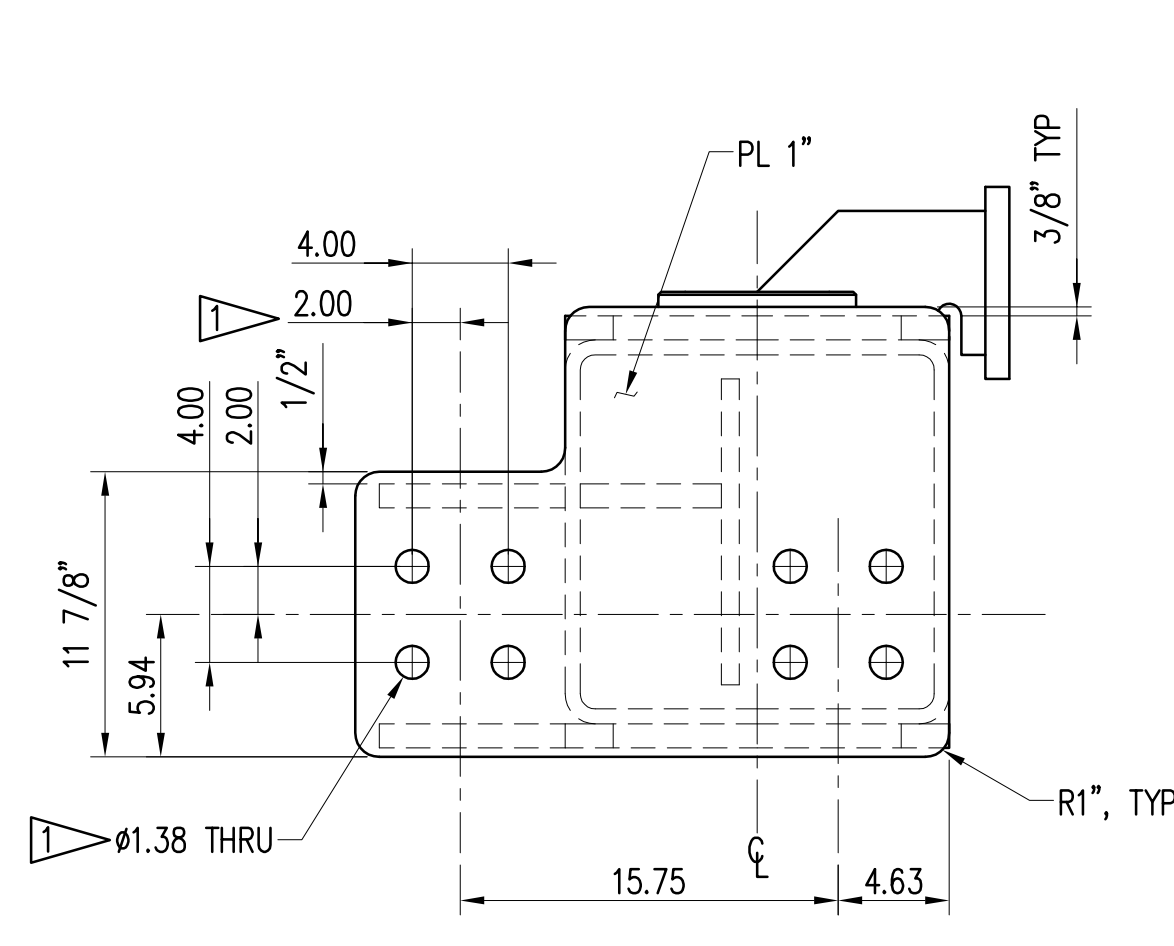
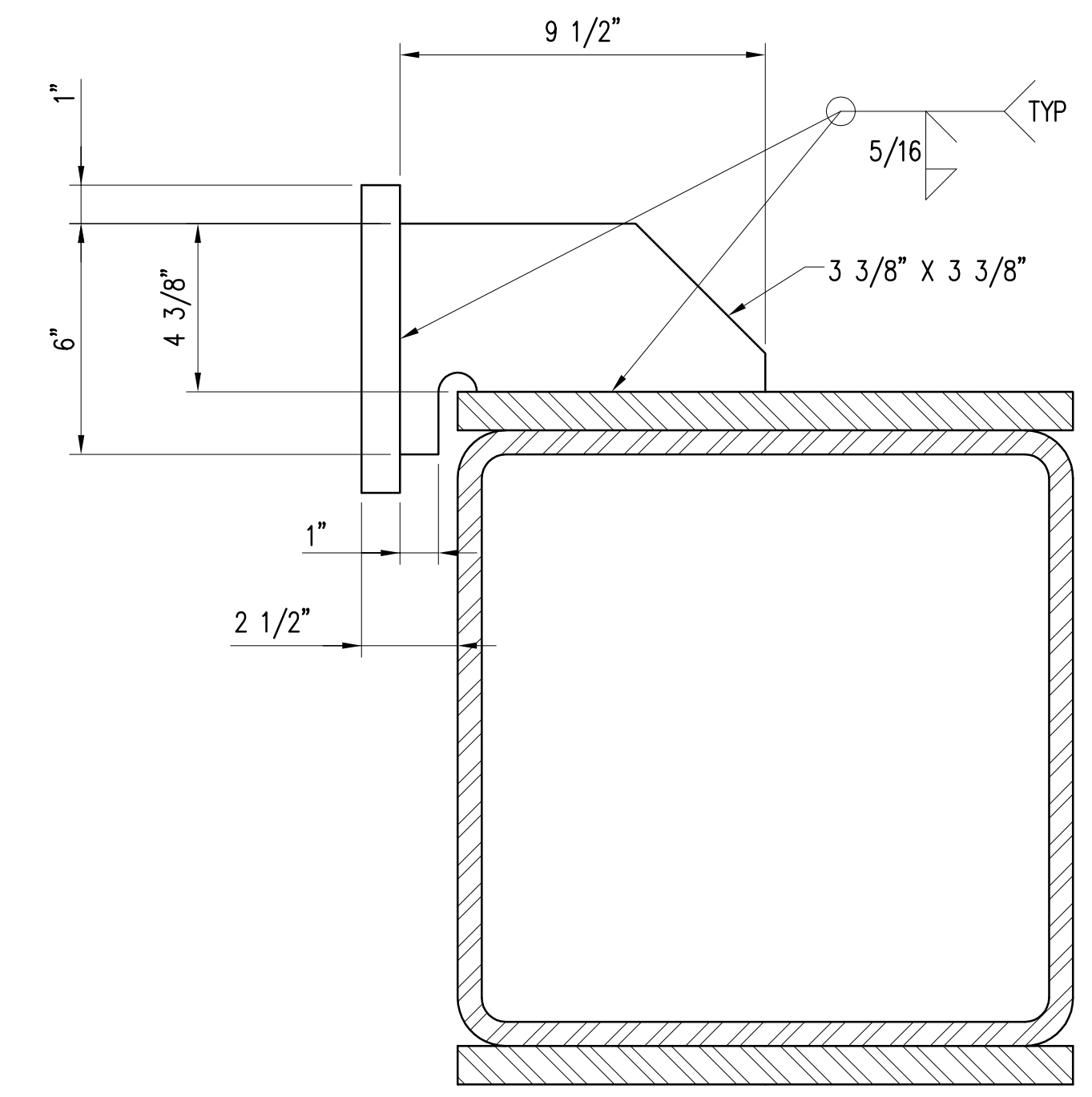
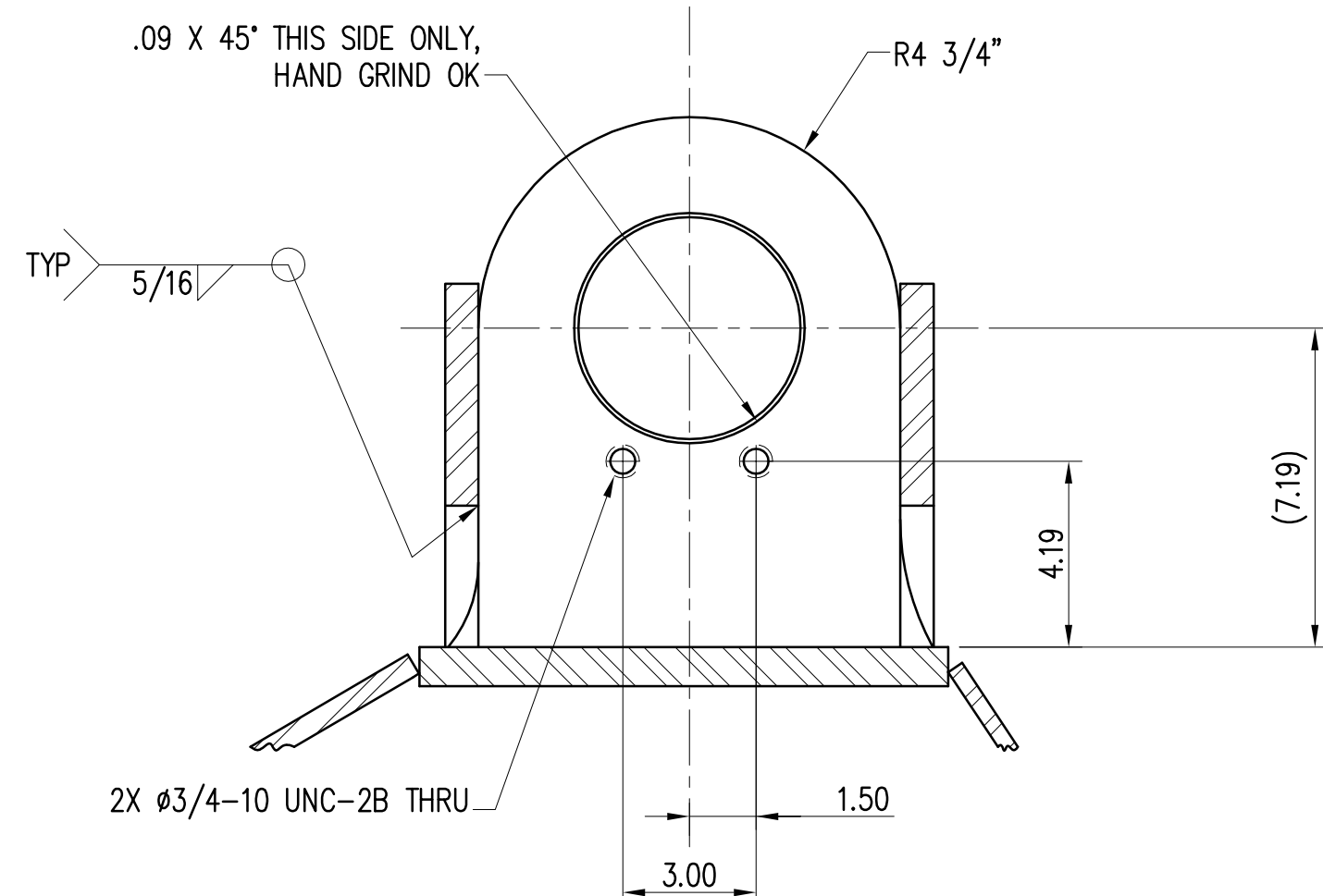
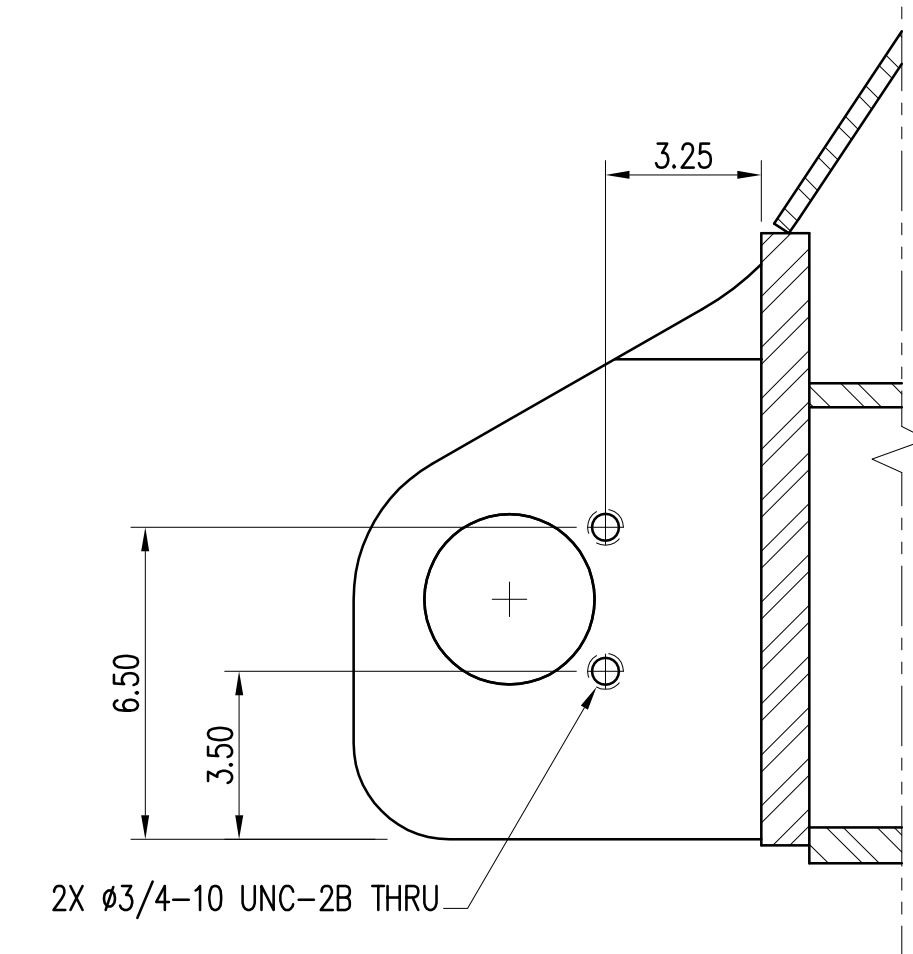
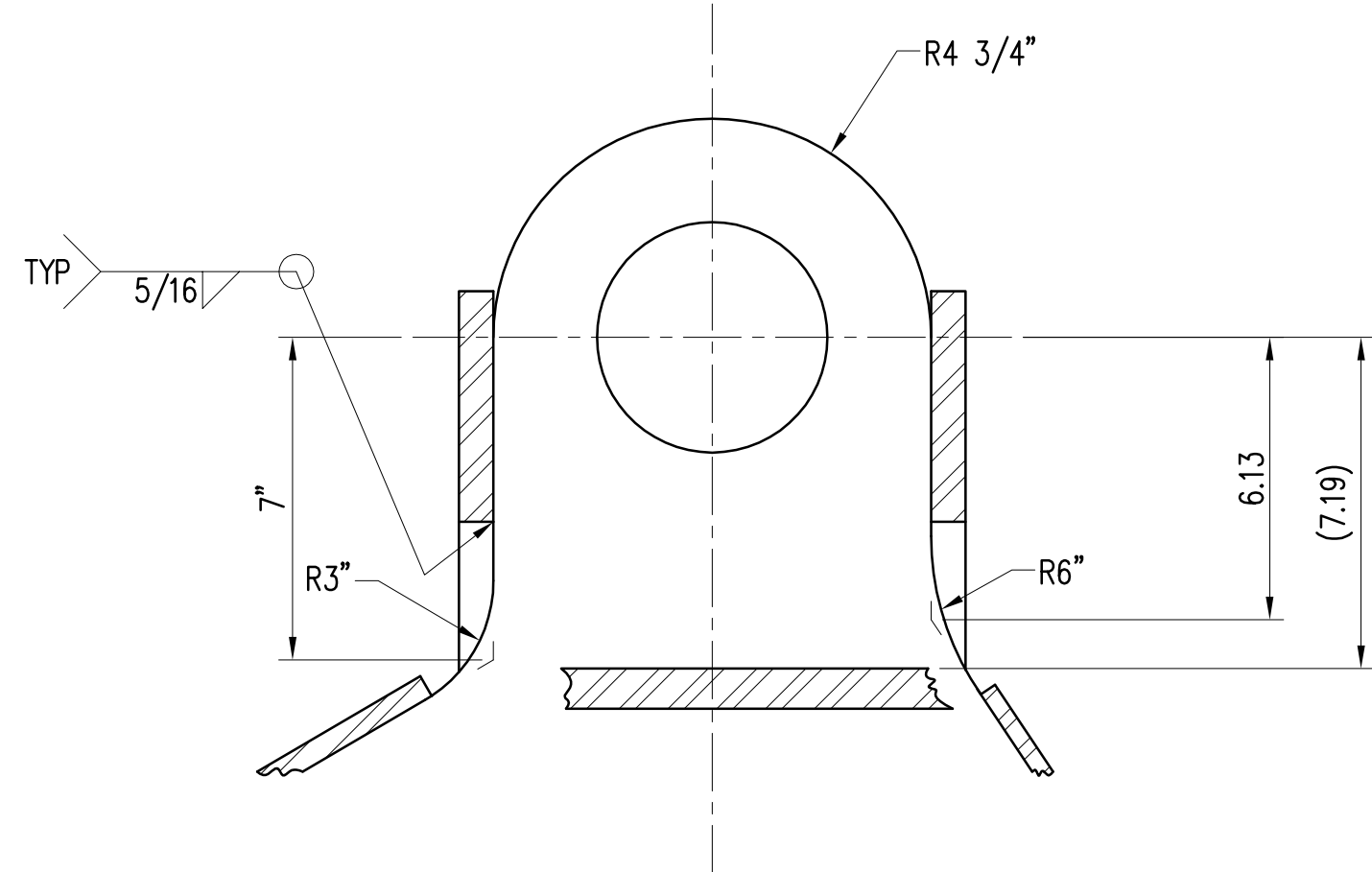
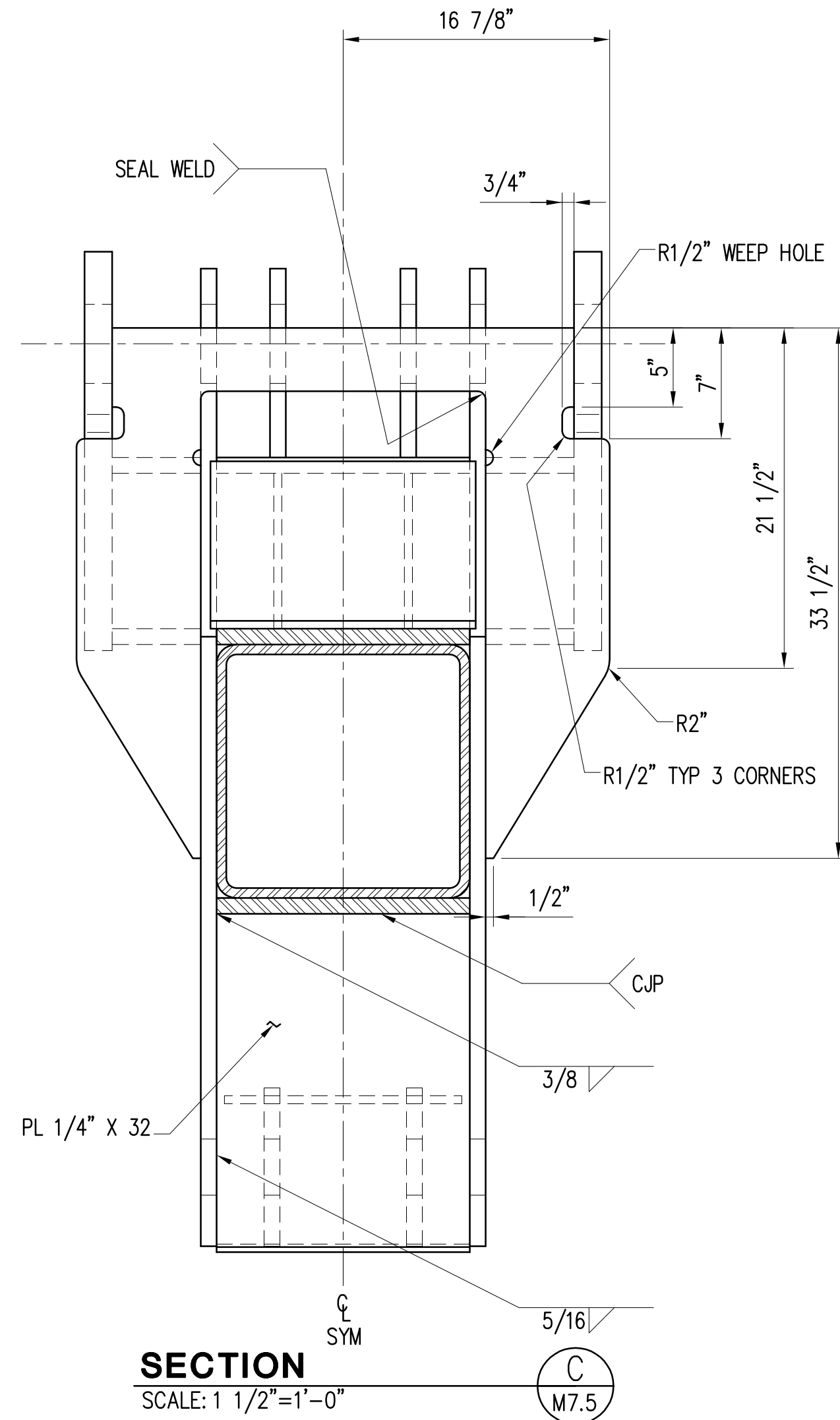
**VIEW**  
 SCALE: 1 1/2"=1'-0"  
 A

- NOTE(S):
1. TYPICAL 4 SIDES. SEAL WELD CORNERS.
  2. ASTM A514 GRADE B, 100 KSI MINIMUM YIELD STRENGTH, 100% UT - NO INDICATIONS ALLOWED.
  3. MACHINE CLEAN-UP ONE SIDE (.06 MAX) ON PADEYE FACE INDICATED IF NECESSARY TO OBTAIN SPECIFIED WIDTH.
  4. MACHINE CLEAN-UP INSIDE EDGE OF PLATE TO MATCH PADEYE FACE.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>38' APRON UNDERBEAM PLAN AND ELEVATION VIEWS</b>			
DESIGNED BY: SDS		APPROVED BY: _____	
DRAWN BY: SS		FOR HARBORS ADMINISTRATOR	
CHECKED BY: SDS		DATE: 9/1/06	
SCALE: AS SHOWN		H.C. 90018	
RECOMMENDED BY: _____		ENGINEERING PROGRAM MANAGER	
SECTION HEAD		DRAWING NUMBER <b>M-7.5</b>	
DESIGNED BY: SDS		JOB NUMBER	
DRAWN BY: SS		REVISION	
CHECKED BY: SDS		DATE: 9/1/06	
SCALE: AS SHOWN		H.C. 90018	



DESIGN RECORD DRAWING



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**  
1601 Fifth Avenue, Suite 1600  
Seattle, Washington 98101  
(206) 622-5822 Fax (206) 622-8130

**kpff** Consulting Engineers

JOB TITLE: **BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE**

SHEET TITLE: **38' APRON UNDERBEAM DETAILS**

DESIGNED BY: SDS  
DRAWN BY: SS  
CHECKED BY: SDS  
DATE: 9/1/06  
SCALE: AS SHOWN

APPROVED BY: [Signature]  
FOR HARBORS ADMINISTRATOR

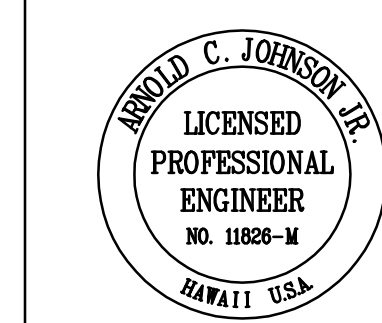
RECOMMENDED BY: [Signature]  
ENGINEERING PROGRAM MANAGER

DRAWING NUMBER: **M-7.6**

REVISION: \_\_\_\_\_

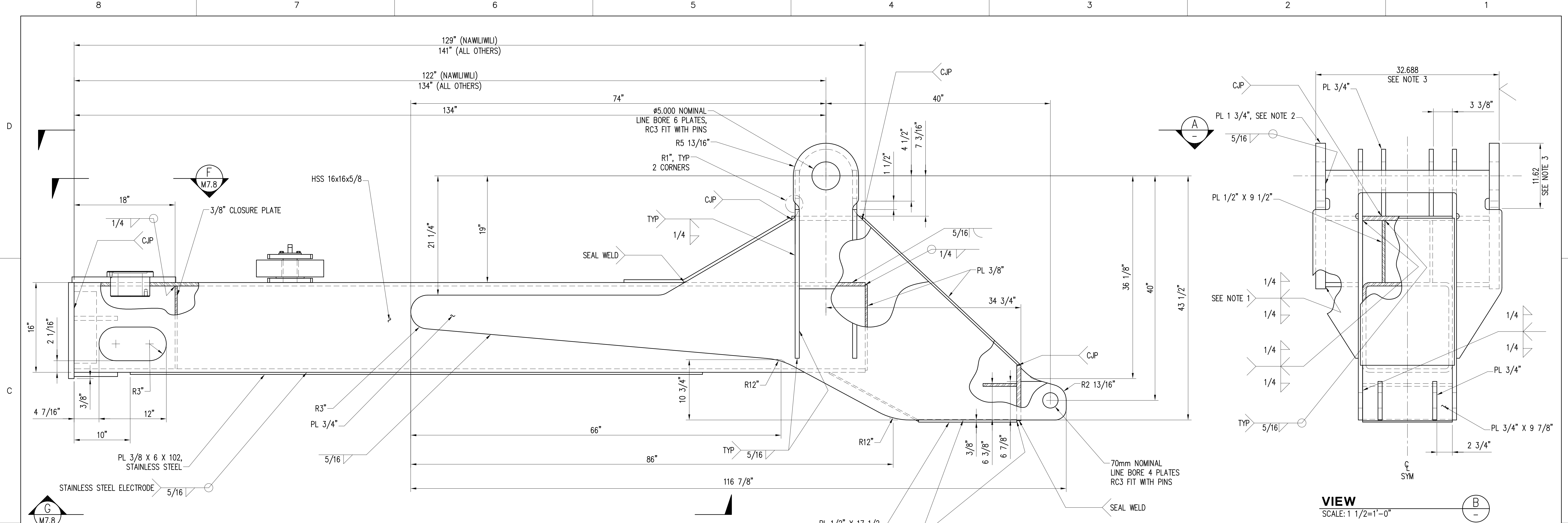
REVISION: \_\_\_\_\_

REVISION: \_\_\_\_\_

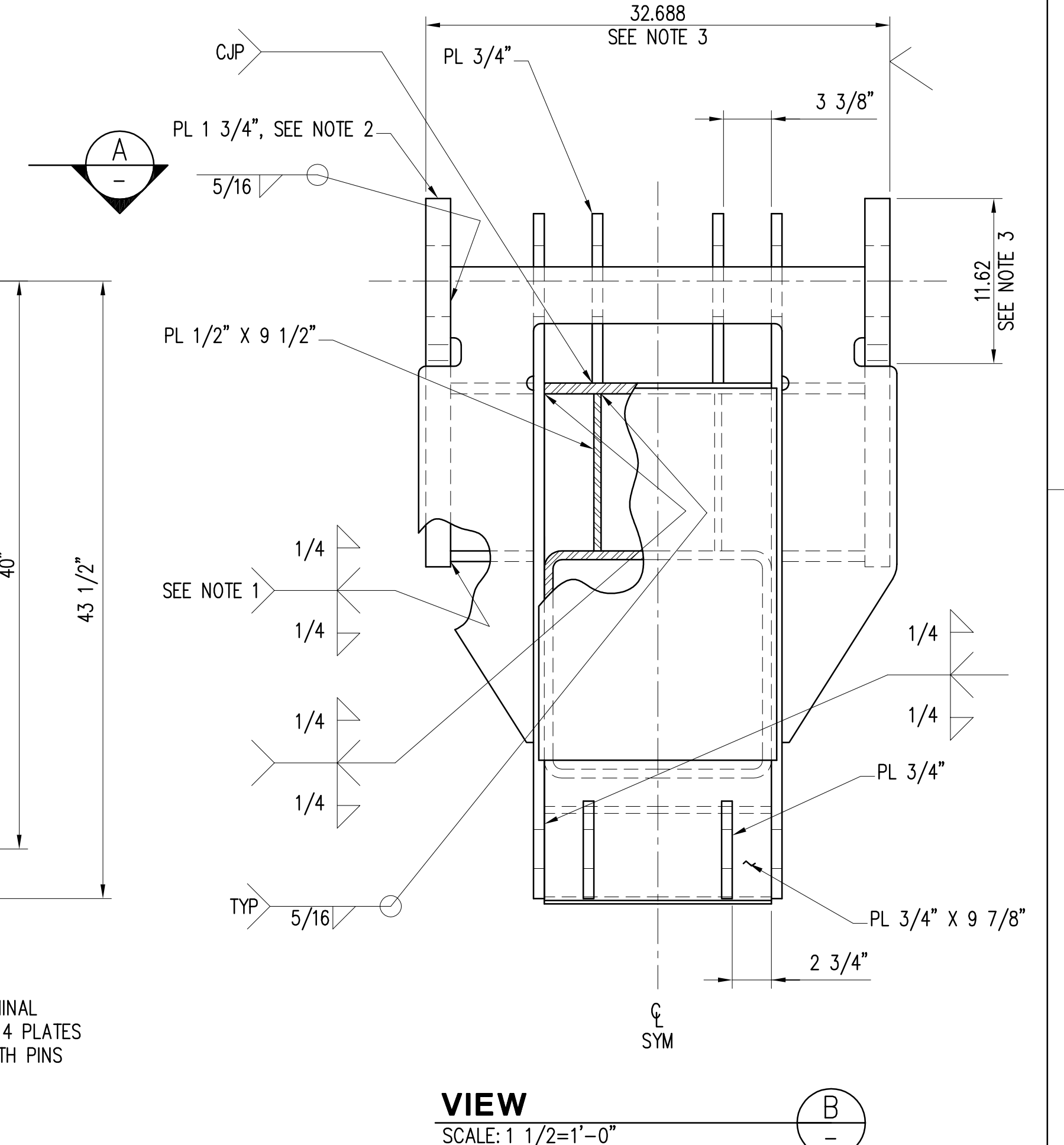


REDUCED SIZE PRINT  
(NOT TO SCALE)

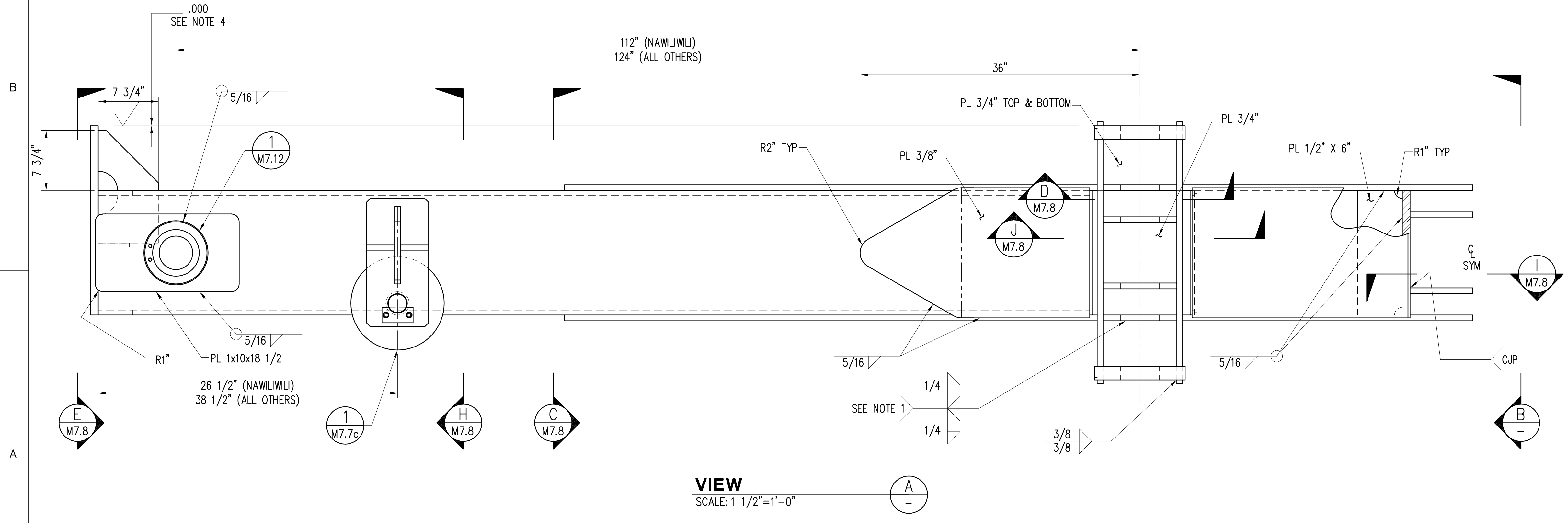
DESIGN RECORD DRAWING



**28' APRON UNDERBEAM DETAIL**  
SCALE: 1 1/2"=1'-0"



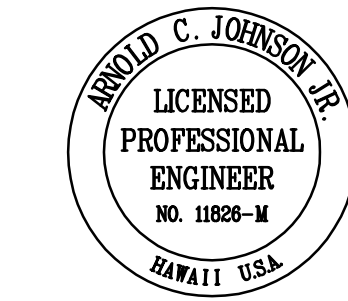
**VIEW**  
SCALE: 1 1/2"=1'-0"



**VIEW**  
SCALE: 1 1/2"=1'-0"

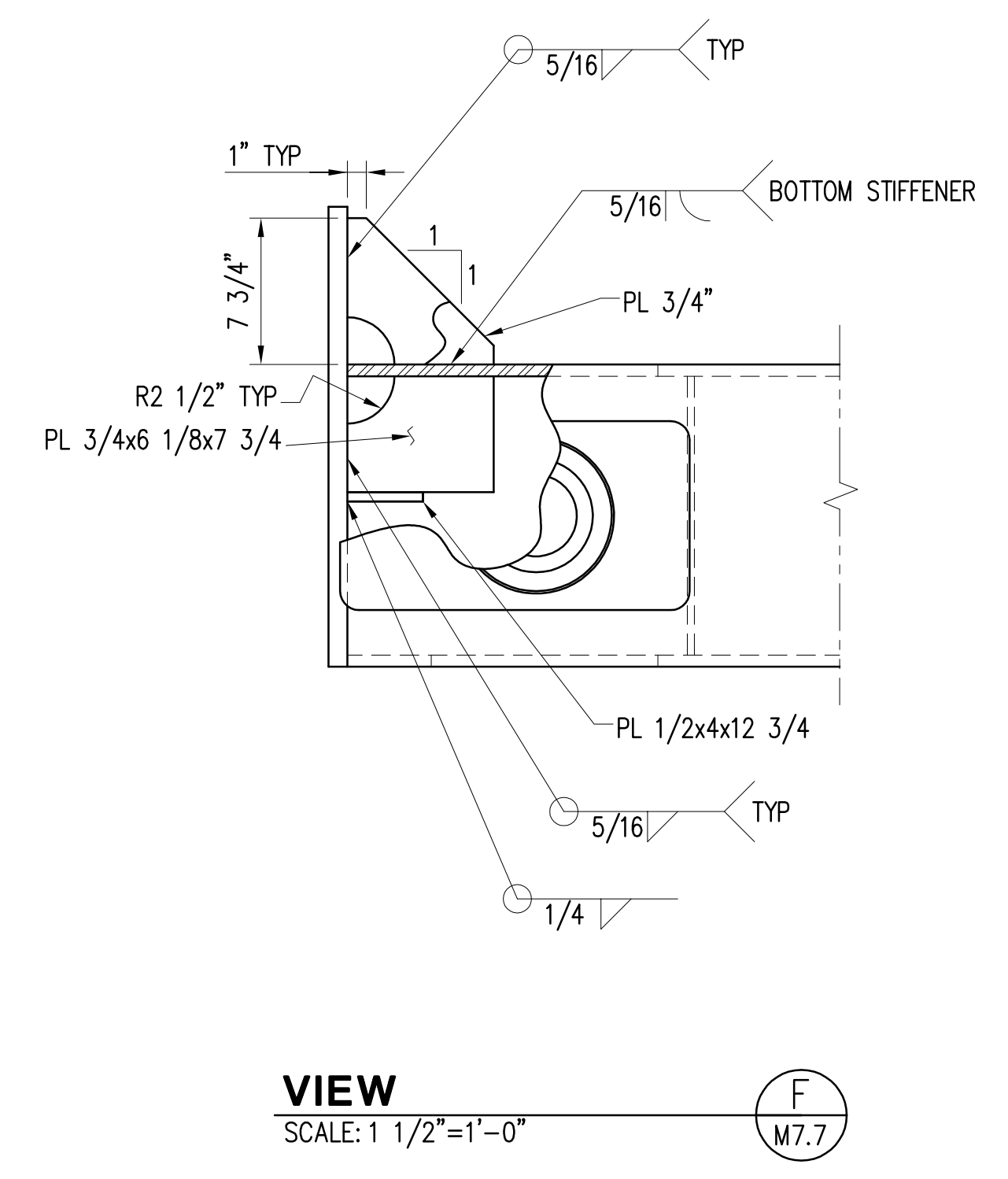
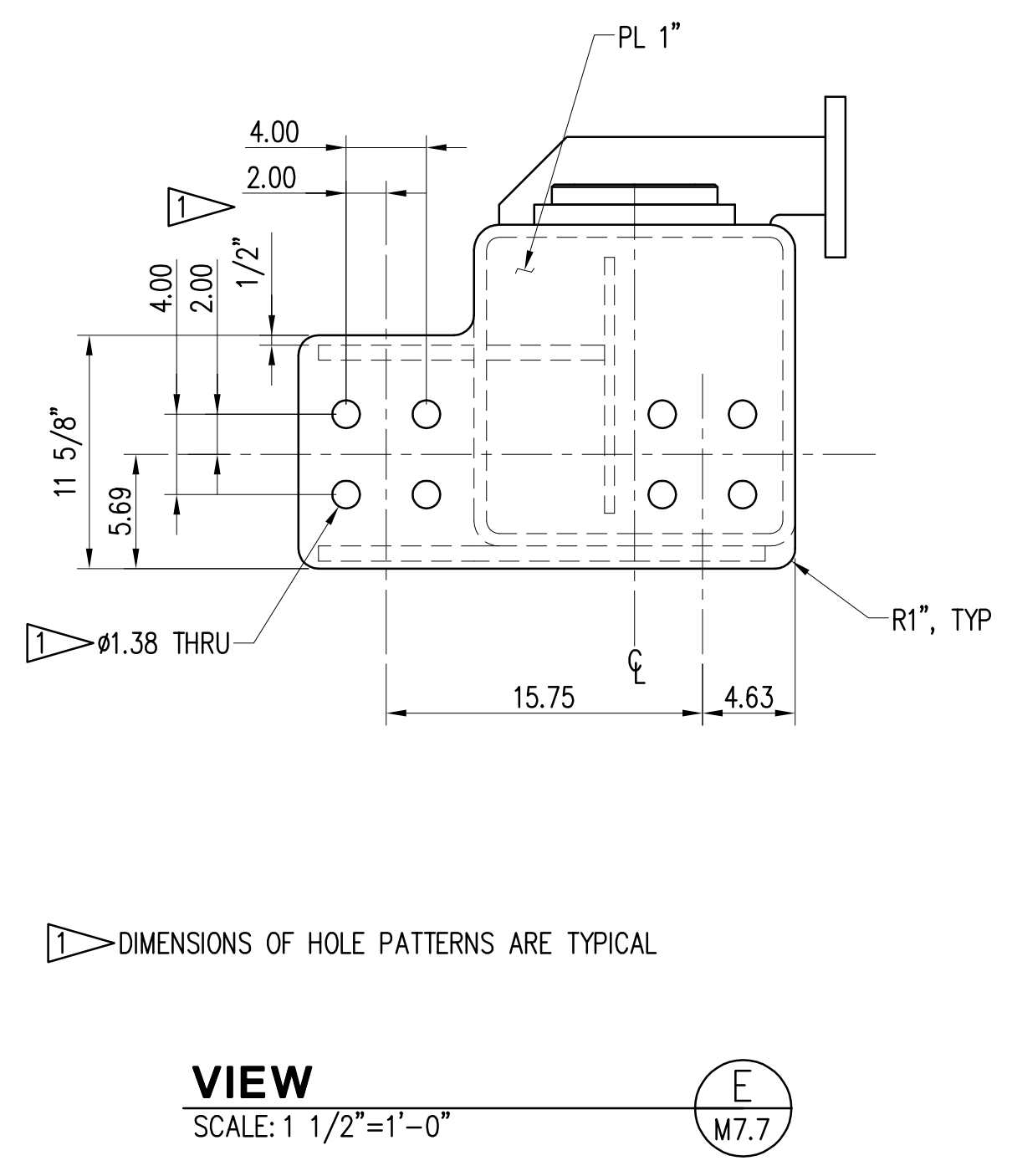
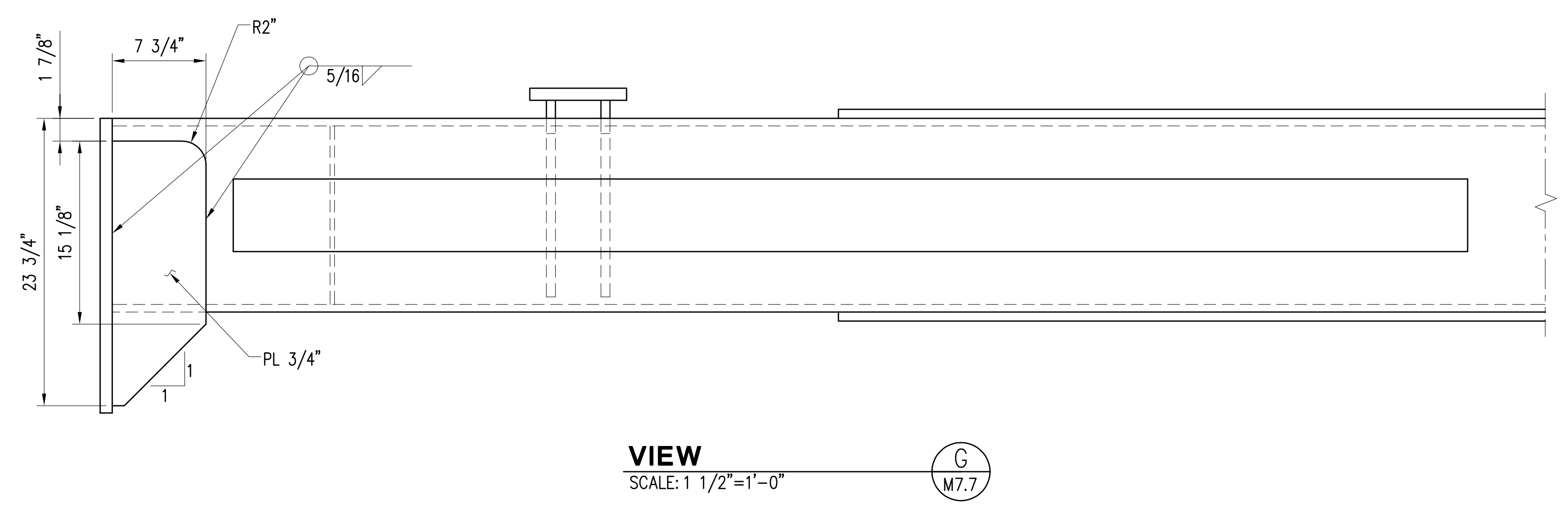
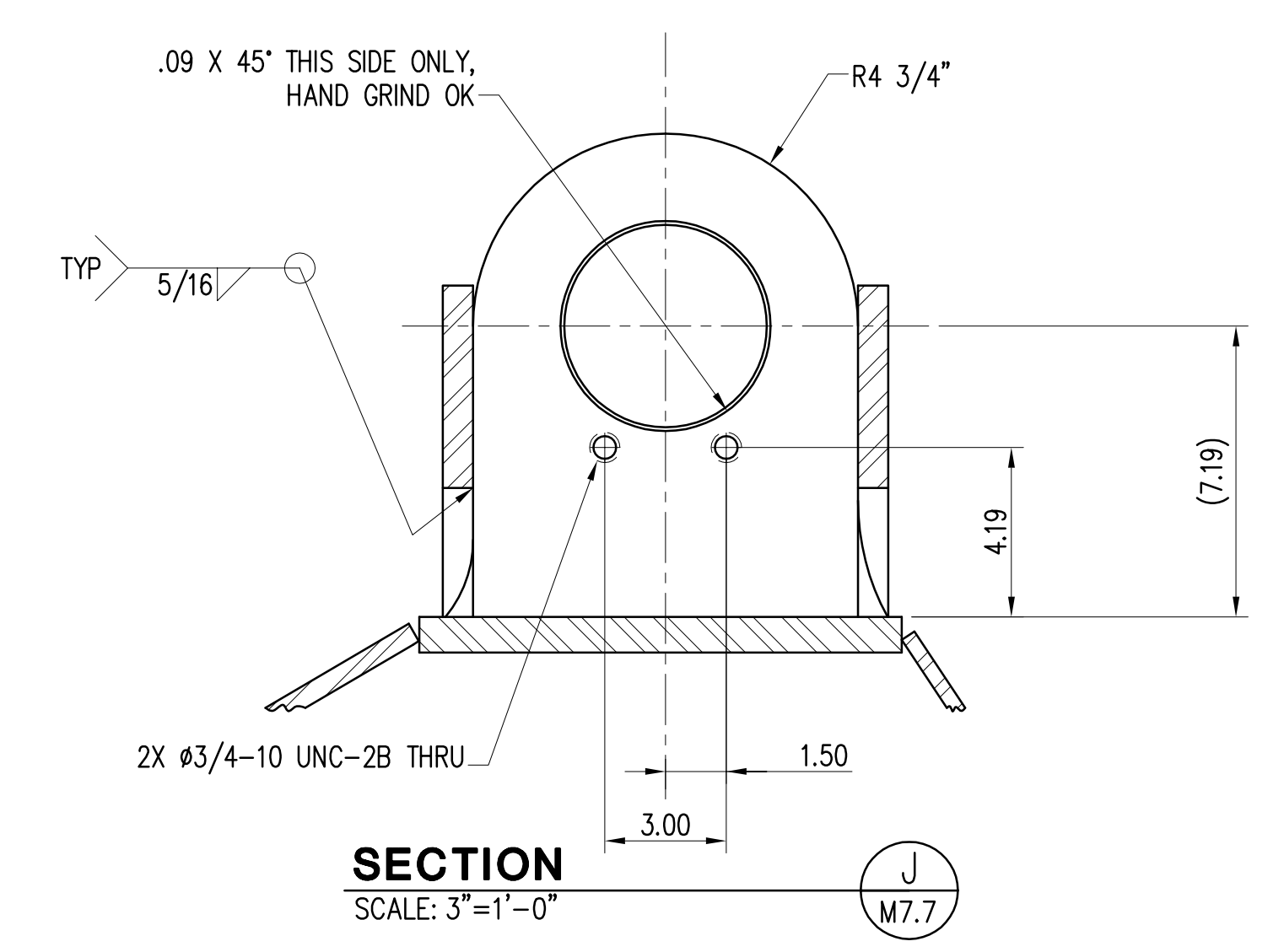
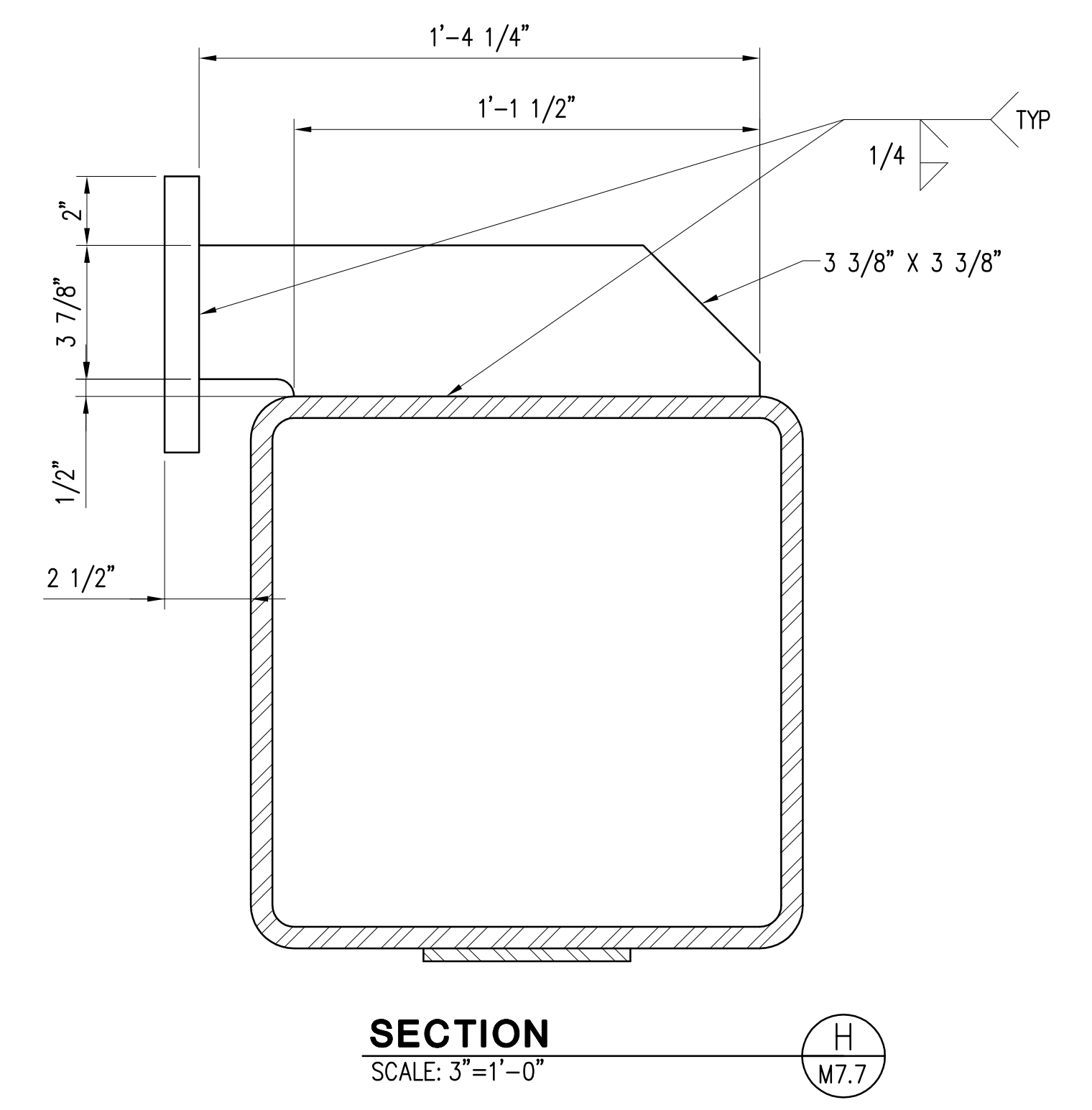
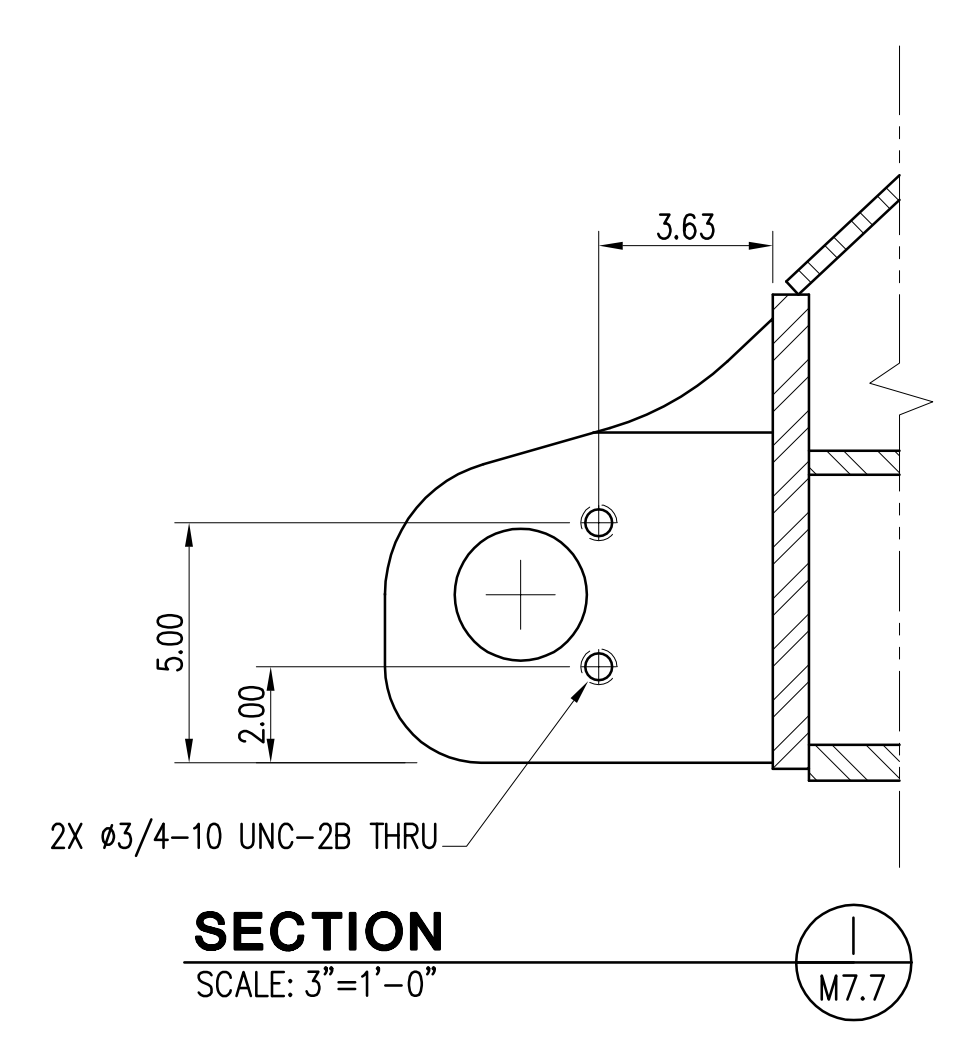
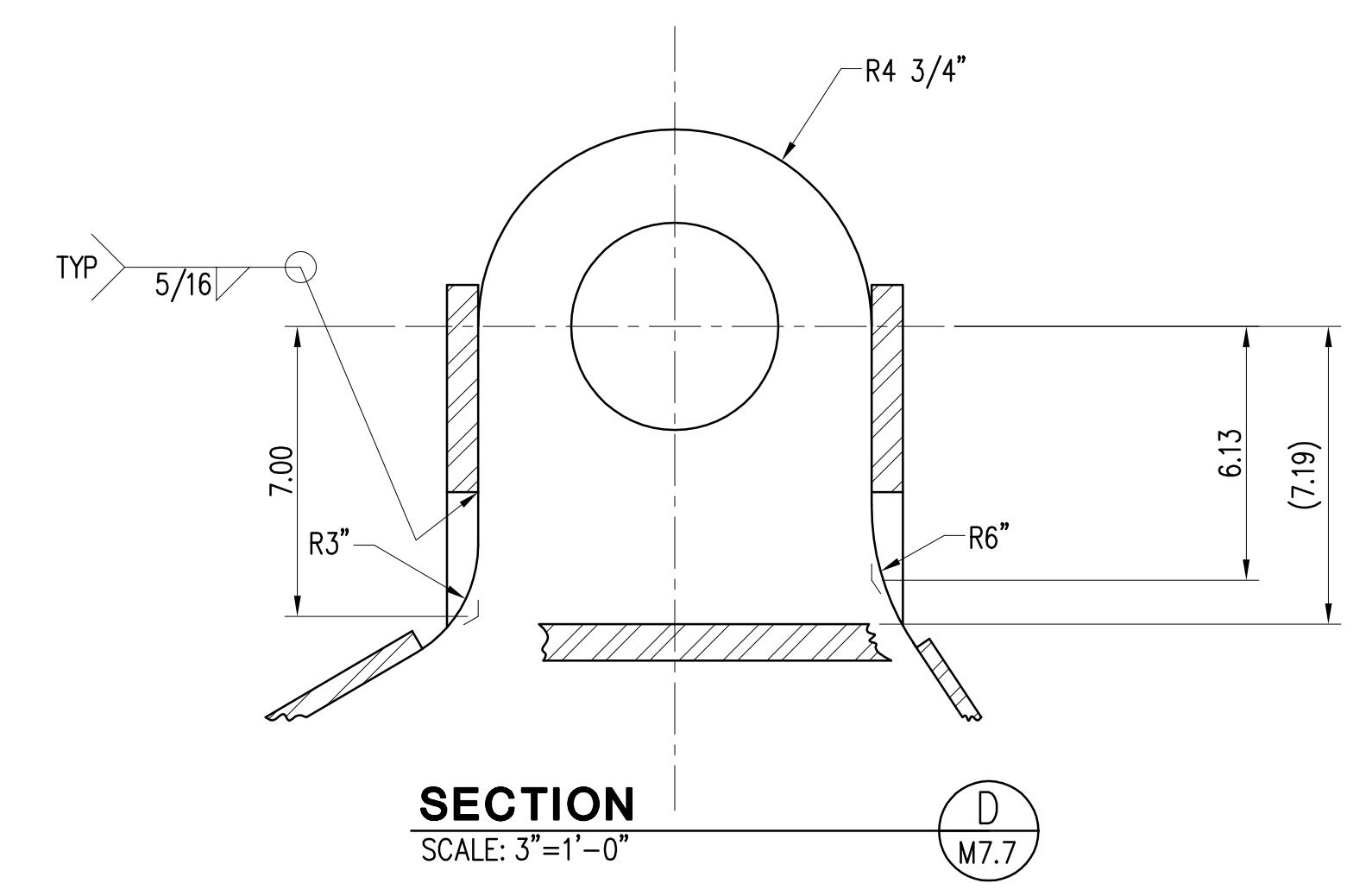
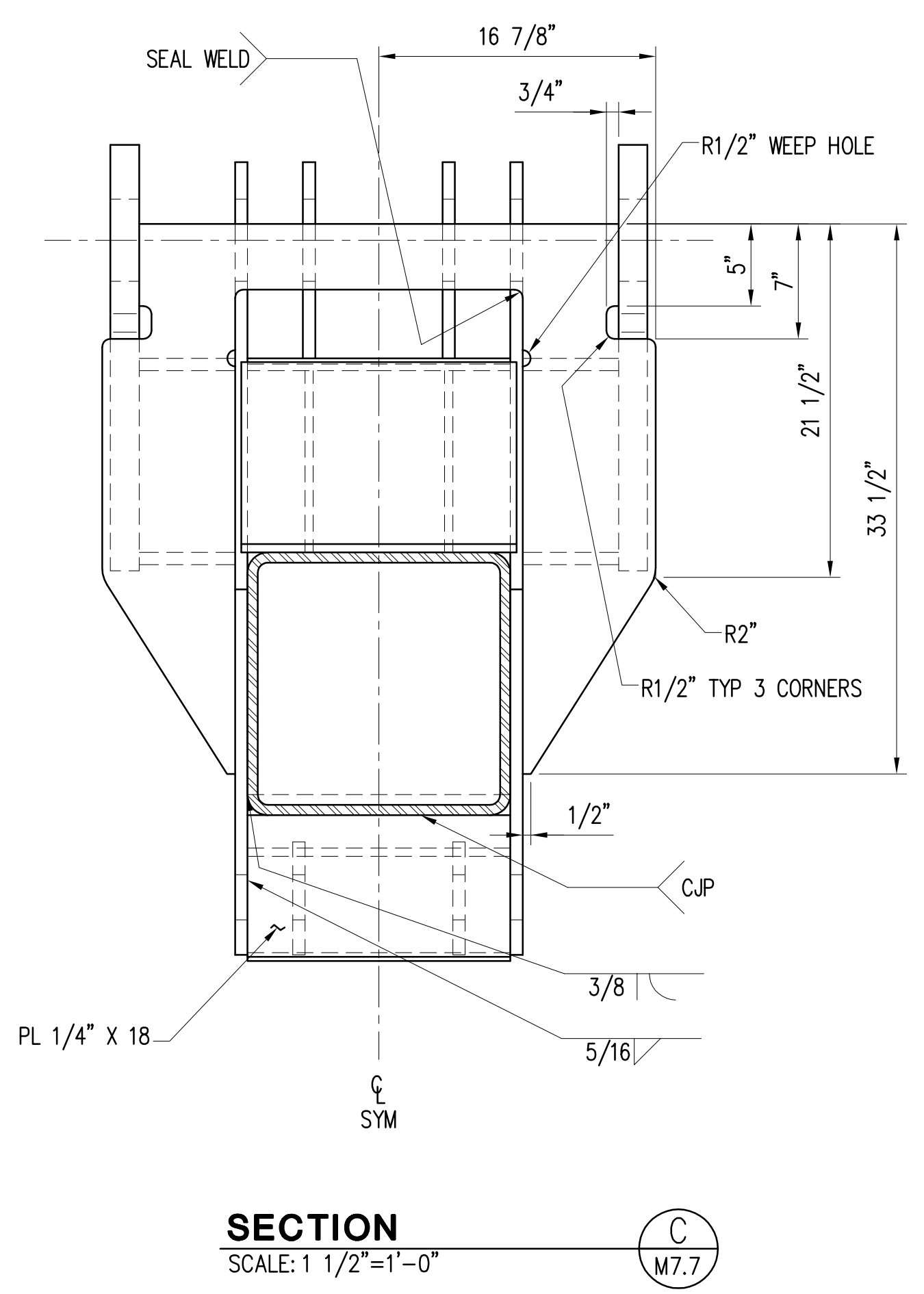
- NOTE(S):
1. TYPICAL 4 SIDES. SEAL WELD CORNERS.
  2. ASTM A514 GRADE B, 100 KSI MINIMUM YIELD STRENGTH, 100% UT - NO INDICATIONS ALLOWED.
  3. MACHINE CLEAN-UP ONE SIDE (.06 MAX) ON PADEYE FACE INDICATED IF NECESSARY TO OBTAIN SPECIFIED WIDTH.
  4. MACHINE CLEAN-UP INSIDE EDGE OF PLATE TO MATCH PADEYE FACE.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>28' APRON UNDERBEAM PLAN AND ELEVATION VIEWS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	<b>M-7.7</b>	
CHECKED BY: SDS	JOB NUMBER	REVISION	OF SHOTS
DATE: 9/1/06	H.C. 90018		
SCALE: AS SHOWN			



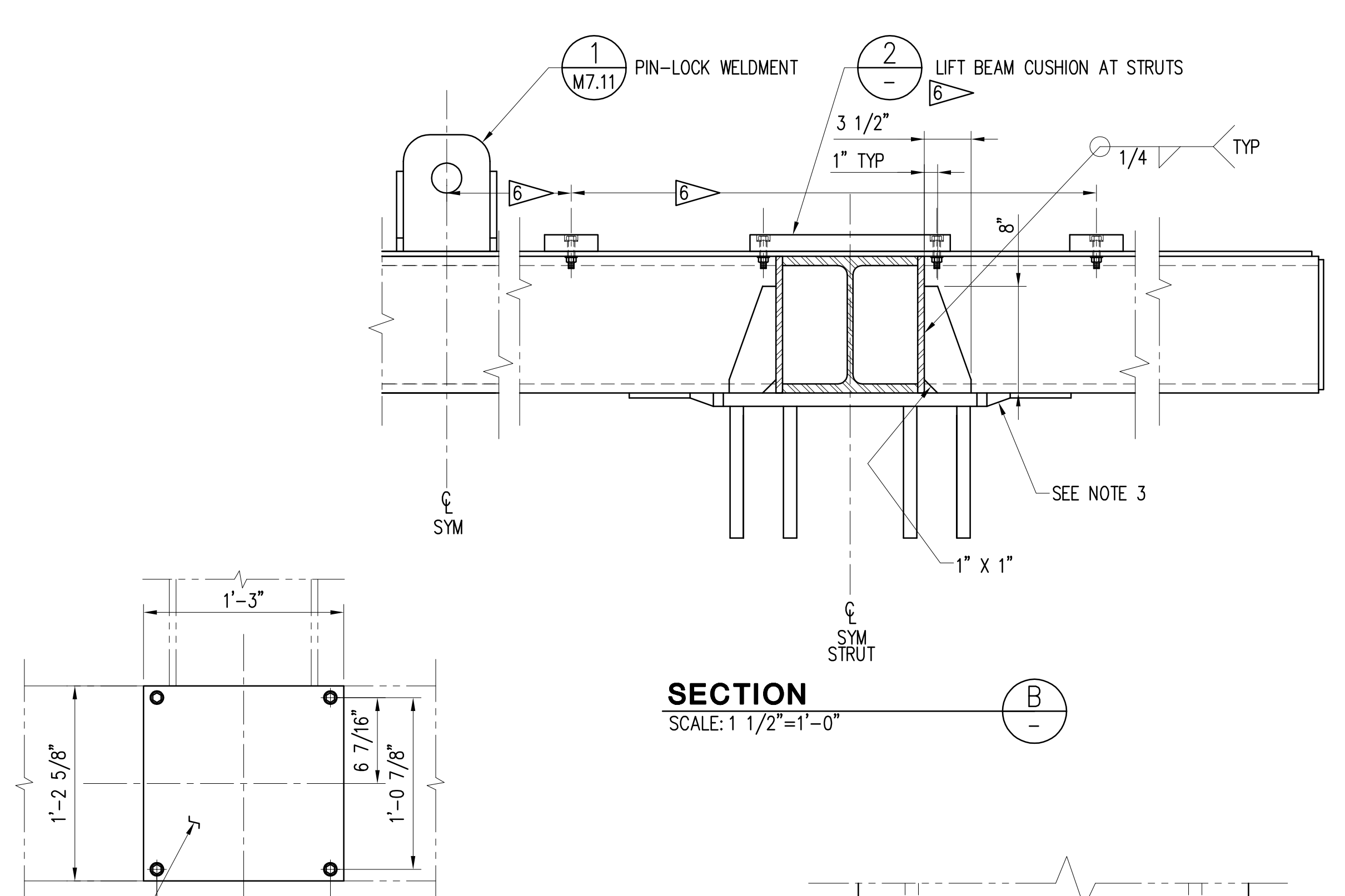
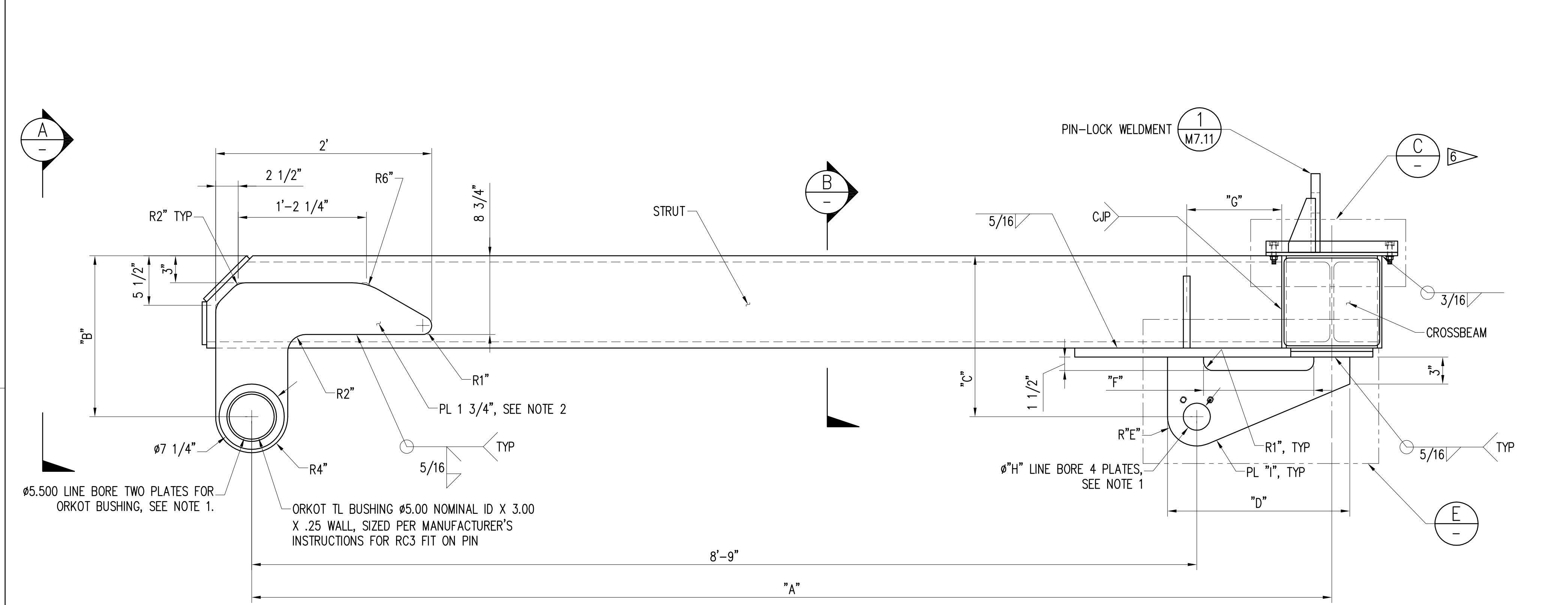
REDUCED SIZE  
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(NOT TO SCALE)

DESIGN RECORD DRAWING



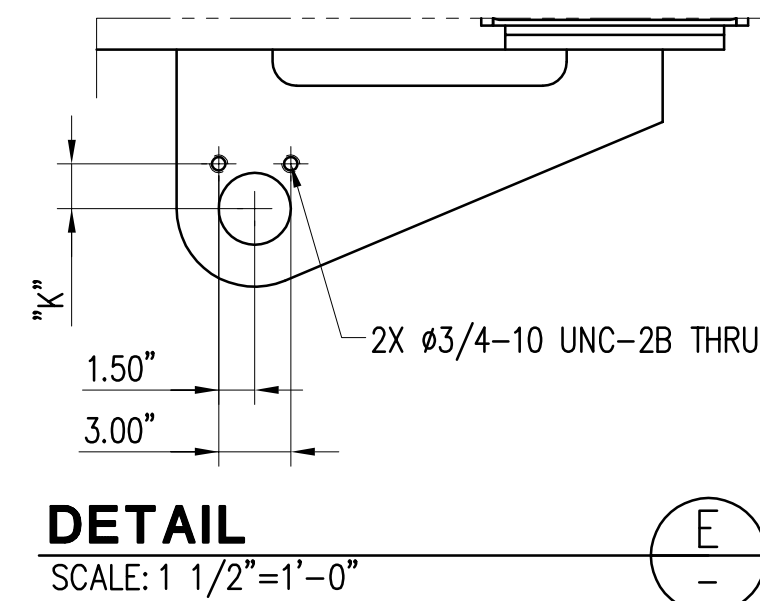
▷ DIMENSIONS OF HOLE PATTERNS ARE TYPICAL

		STATE OF HAWAII	
		DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
		<b>kpff</b> Consulting Engineers	
JOB TITLE		BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
SHEET TITLE		28' APRON UNDERBEAM DETAILS	
SUBMITTED BY:		RECOMMENDED BY:	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: SS		FOR HARBORS ADMINISTRATOR	
CHECKED BY: SDS		DRAWING NUMBER: M-7.8	
DATE: 9/1/06		JOB NUMBER: H.C. 90018	
SCALE: AS SHOWN		REVISION: _____	
REDUCED SIZE PRINT (NOT TO SCALE)		_____ OF ____ SHTS	

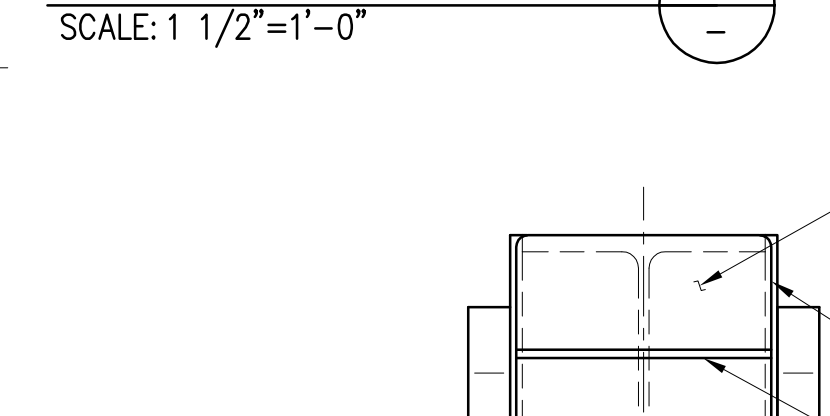


**DIMENSION TABLE**

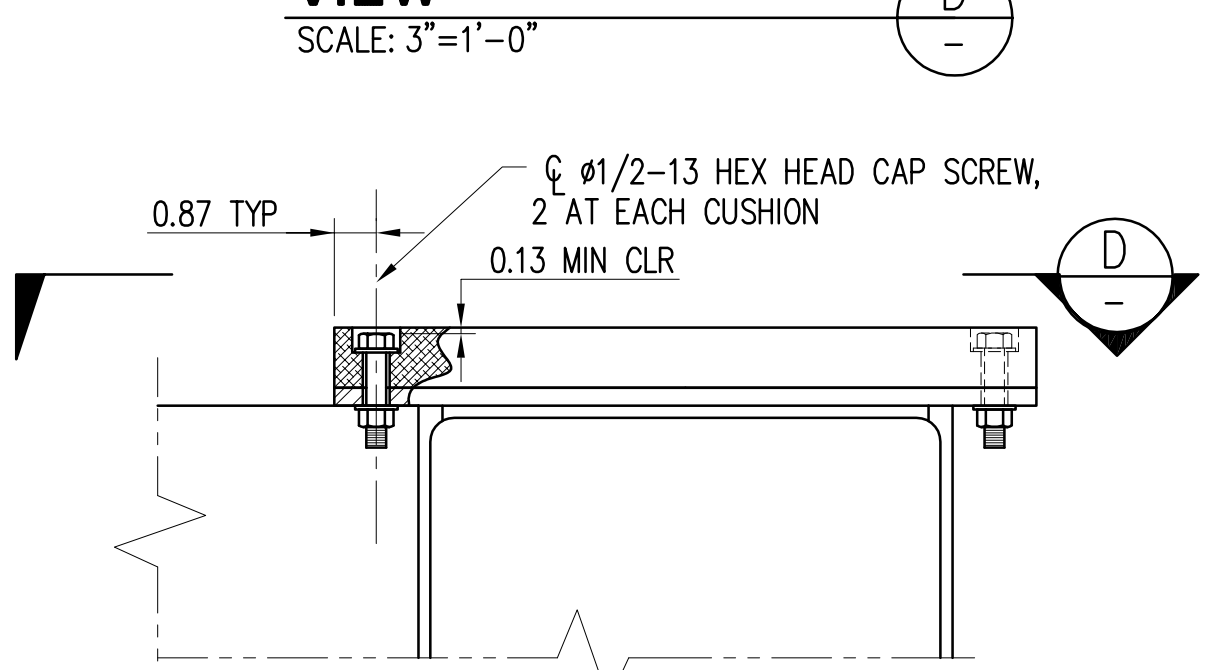
DIMENSION	LIFT ARM CONFIGURATION	
	38' LIFT ARM	28' LIFT ARM
"A"	10'	8'-8"
"B"	17.88"	16.88"
"C"	17.88"	15.25"
"D"	1'-8 1/4"	1'-8 13/16"
"E"	3 1/4"	2 13/16"
"F"	1'-1/4"	1'-1/4"
"G"	10 9/16"	10 31/32"
"H"	SEE NOTE 4	SEE NOTE 5
"I"	1"	3/4"
"J"	3"	2 3/4"
"K"	2.00"	1.63"



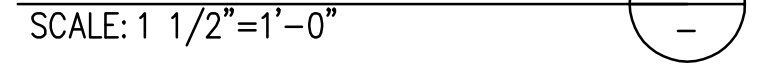
**DETAIL 2**



**VIEW D**



**VIEW A**



**DETAIL C**



- NOTE(S):**
1. FABRICATE AND STRESS RELIEVE STRUT. LINE BORE PRIOR TO ATTACHMENT OF CROSSBEAM. SUBSEQUENT STRESS RELIEF NOT REQUIRED.
  2. ASTM A514 GRADE B, 100 KSI MINIMUM YIELD STNGTH, 100% UT - NO INDICATIONS ALLOWED.
  3. TAPER 2.5 : 1 MINIMUM TO MATCH THICKNESS OF THINNER PLATE.
  4. 90mm NOMINAL LINE BORE 4 PLATES, RC3 FIT WITH PINS.
  5. 70mm NOMINAL LINE BORE 4 PLATES, RC3 FIT WITH PINS.

6. PLACEMENT OF UHMW LIFT BEAM CUSHIONS TO COINCIDE WITH UNDERSIDE OF W1'S OF 28' AND 38' APRONS SHOWN ON S-21 AND S-22 RESPECTIVELY. QUANTITY AS REQUIRED TO CUSHION ALL INTERFACING AREAS OF LIFT BEAM AND APRON. USE ITEM 1 TO CUSHION AREAS THAT COINCIDE WITH LIFT BEAM STRUTS.

**LIFT ARM DETAIL**  
SCALE: 1 1/2"=1'-0" M7.0

STATE OF HAWAII  
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1601 Fifth Avenue, Suite 1600  
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(206) 622-5822 Fax (206) 622-8130

**kpff** Consulting Engineers

JOB TITLE: **BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE**

SHEET TITLE: **LIFT FRAME DETAILS 38' AND 28' APRON SYSTEMS**

DESIGNED BY: SDS  
DRAWN BY: SS  
CHECKED BY: SDS  
DATE: 9/1/06  
SCALE: AS SHOWN

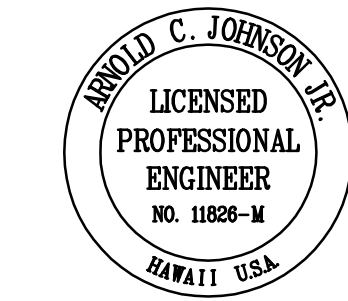
APPROVED BY: [Signature]  
FOR HARBORS ADMINISTRATOR

ENGINEERING PROGRAM MANAGER: [Signature]  
DRAWING NUMBER: **M-7.9**

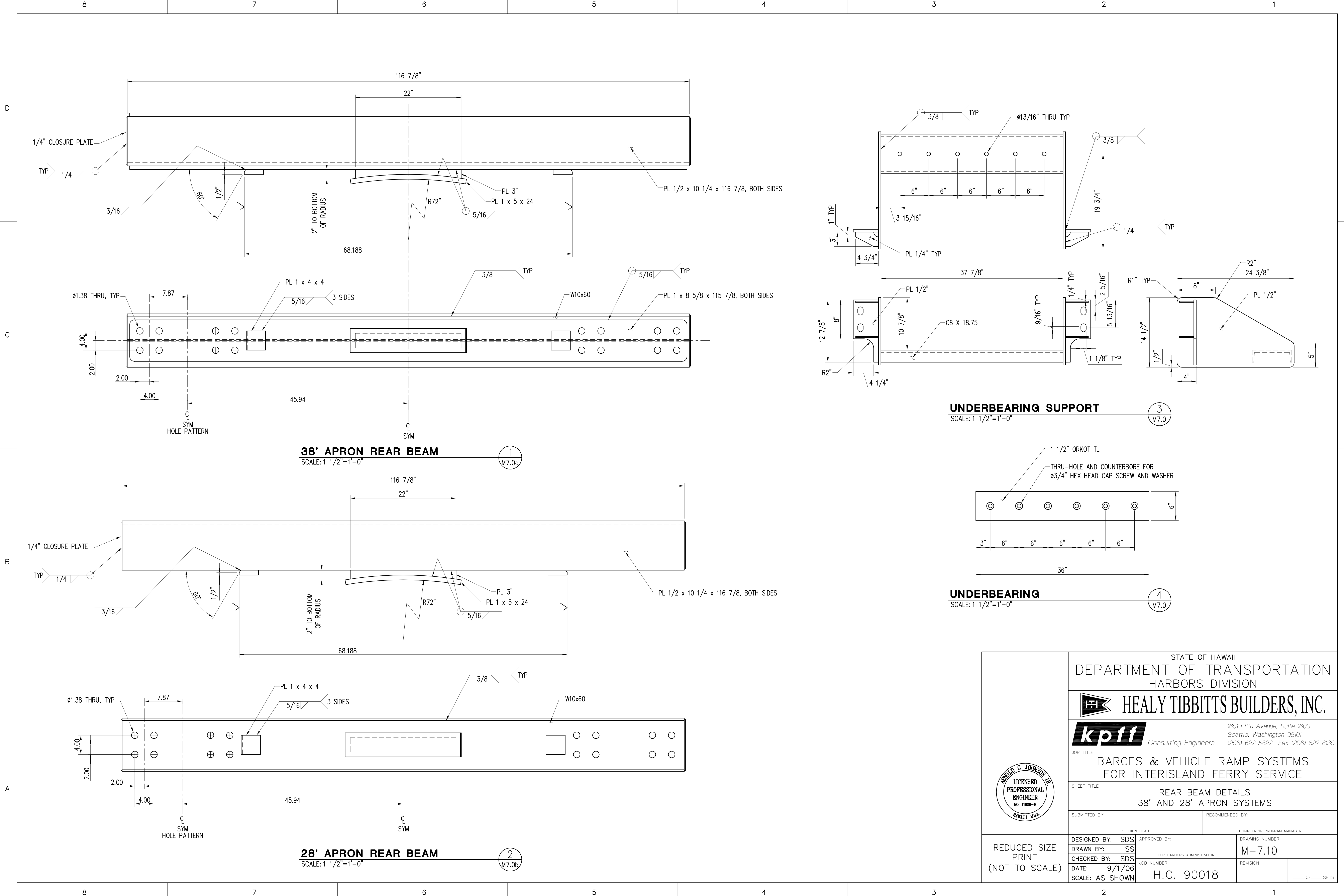
REVISION: [Table]

RECOMMENDED BY: [Signature]

REVISION: [Table]



REDUCED SIZE PRINT  
(NOT TO SCALE)



**38' APRON REAR BEAM**  
SCALE: 1 1/2"=1'-0"

1  
M7.0g

**28' APRON REAR BEAM**  
SCALE: 1 1/2"=1'-0"

2  
M7.0b

**UNDERBEARING SUPPORT**  
SCALE: 1 1/2"=1'-0"

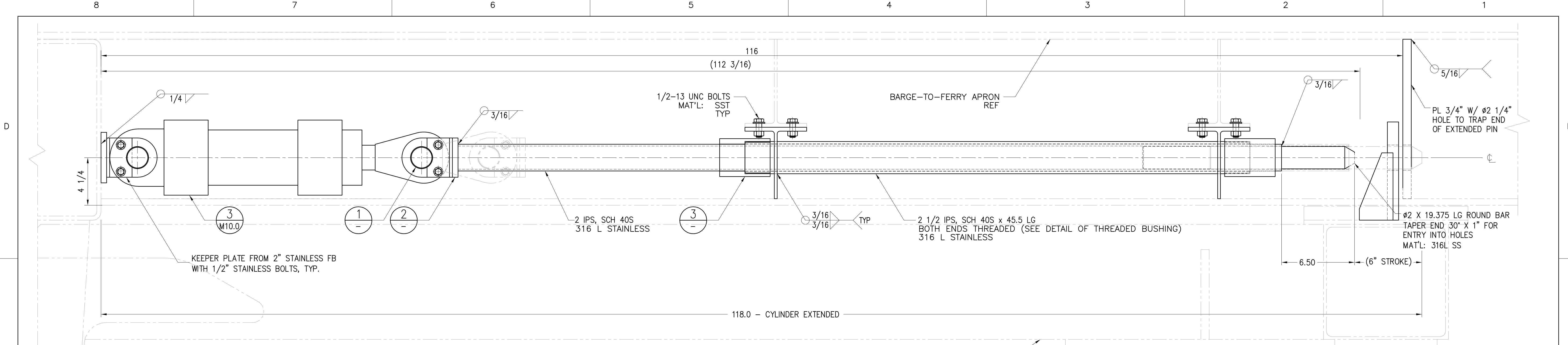
3  
M7.0

**UNDERBEARING**  
SCALE: 1 1/2"=1'-0"

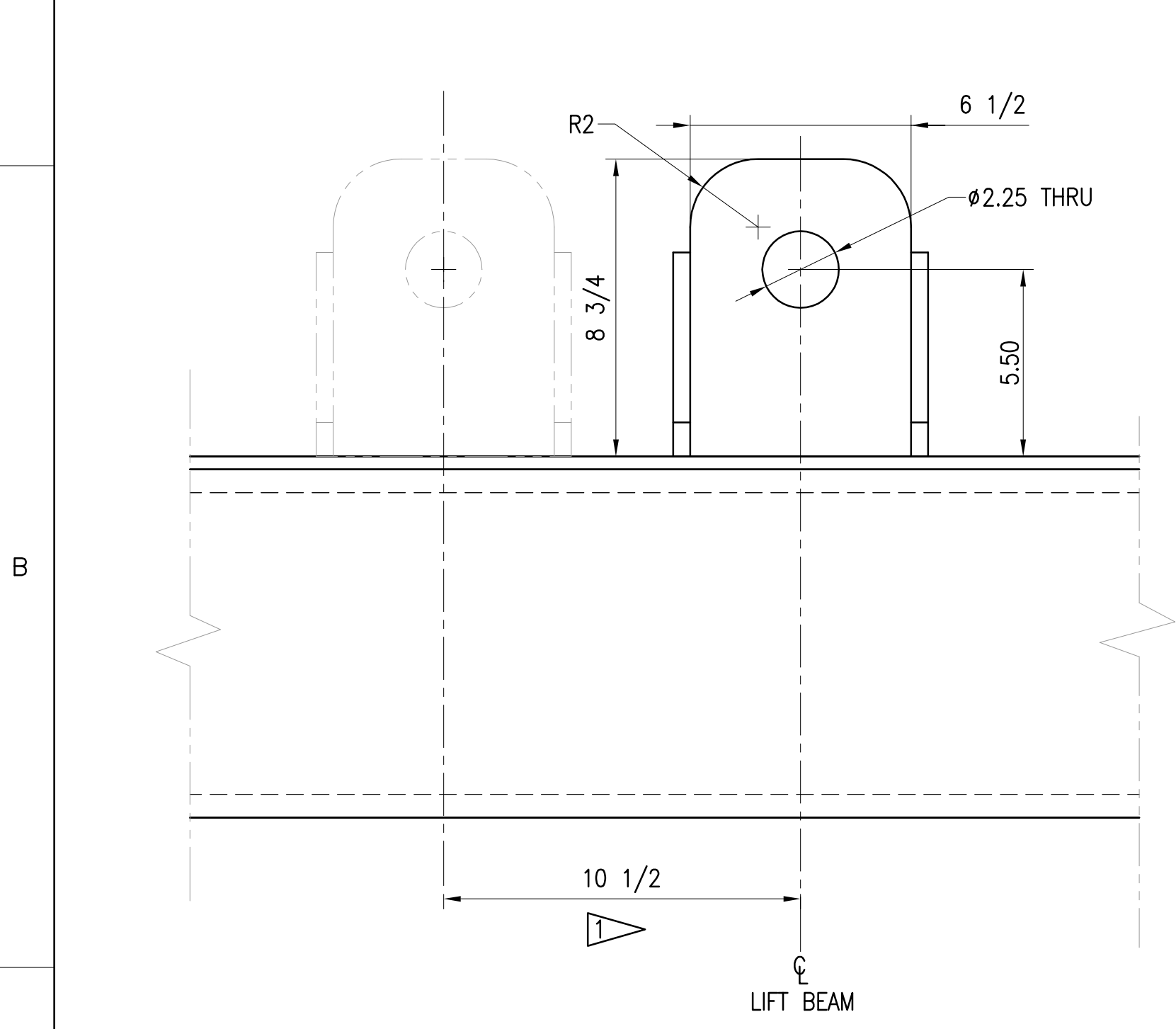
4  
M7.0

		STATE OF HAWAII	
		DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE		BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
SHEET TITLE		REAR BEAM DETAILS 38' AND 28' APRON SYSTEMS	
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS		APPROVED BY:	
DRAWN BY: SS		FOR HARBORS ADMINISTRATOR	
CHECKED BY: SDS		JOB NUMBER	
DATE: 9/1/06		H.C. 90018	
SCALE: AS SHOWN		REVISION	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER M-7.10	
		REVISION	
		___ OF ___ SHTS	

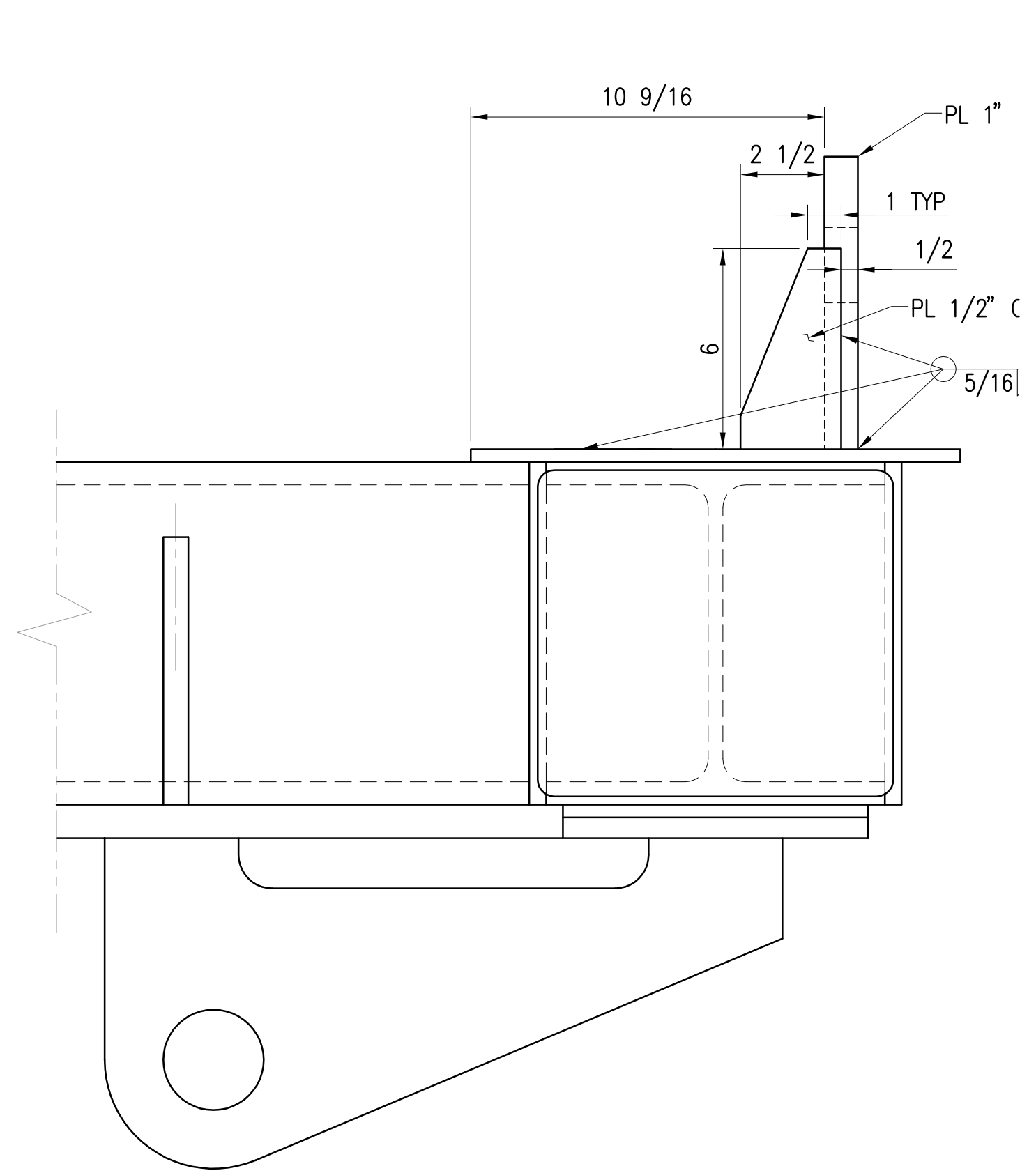
DESIGN RECORD DRAWING



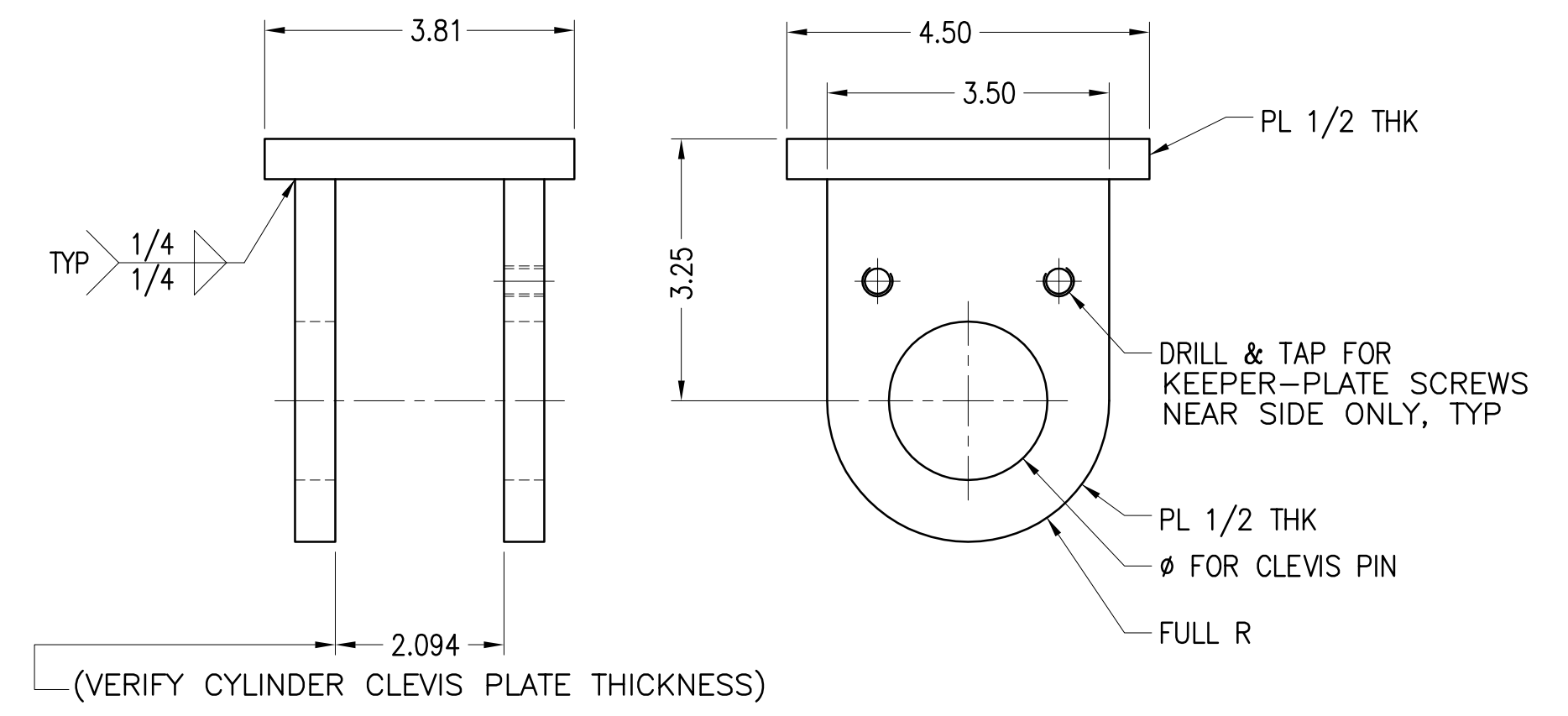
**ELEVATION  
LIFT-FRAME LOCK**  
SCALE: 3"=1'-0"  
REFER TO S-21 AND 2-22  
FOR PLAN VIEW LOCATIONS



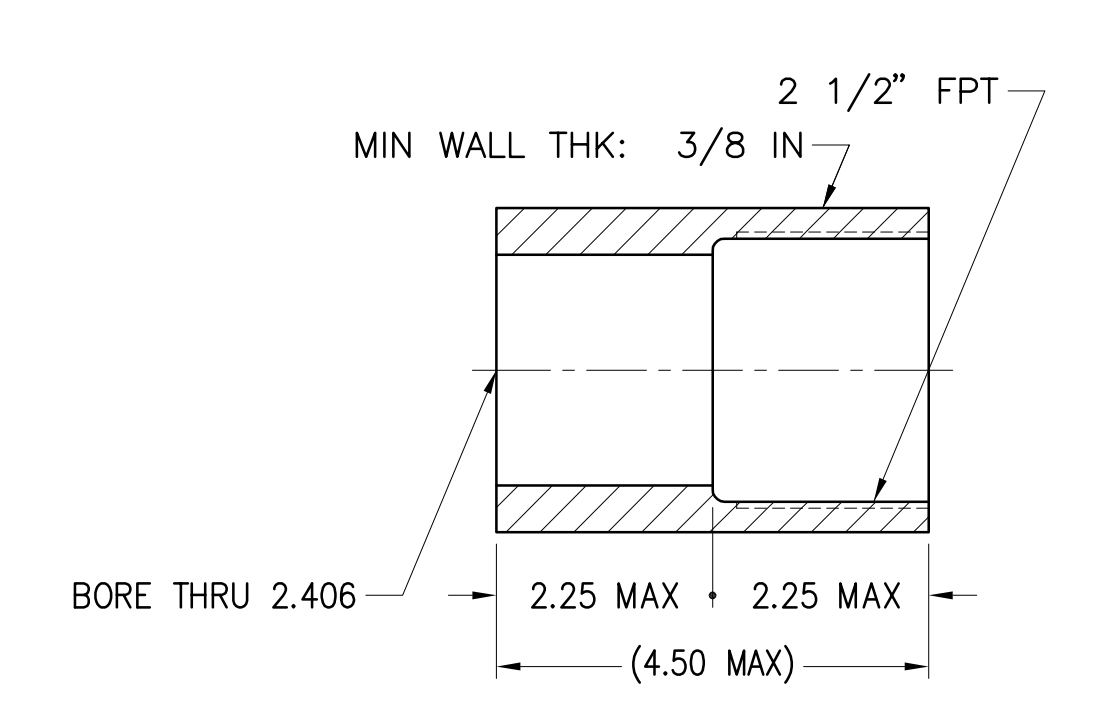
**PIN-LOCK WELDMENT**  
SCALE: 3"=1'-0"  
M7.9



**CLEVIS BRACKET**  
SCALE: 6"=1'-0"  
2



**CLEVIS PIN**  
SCALE: 6"=1'-0"  
MATERIAL: ASTM A564, TYPE 630, COND H1100  
1

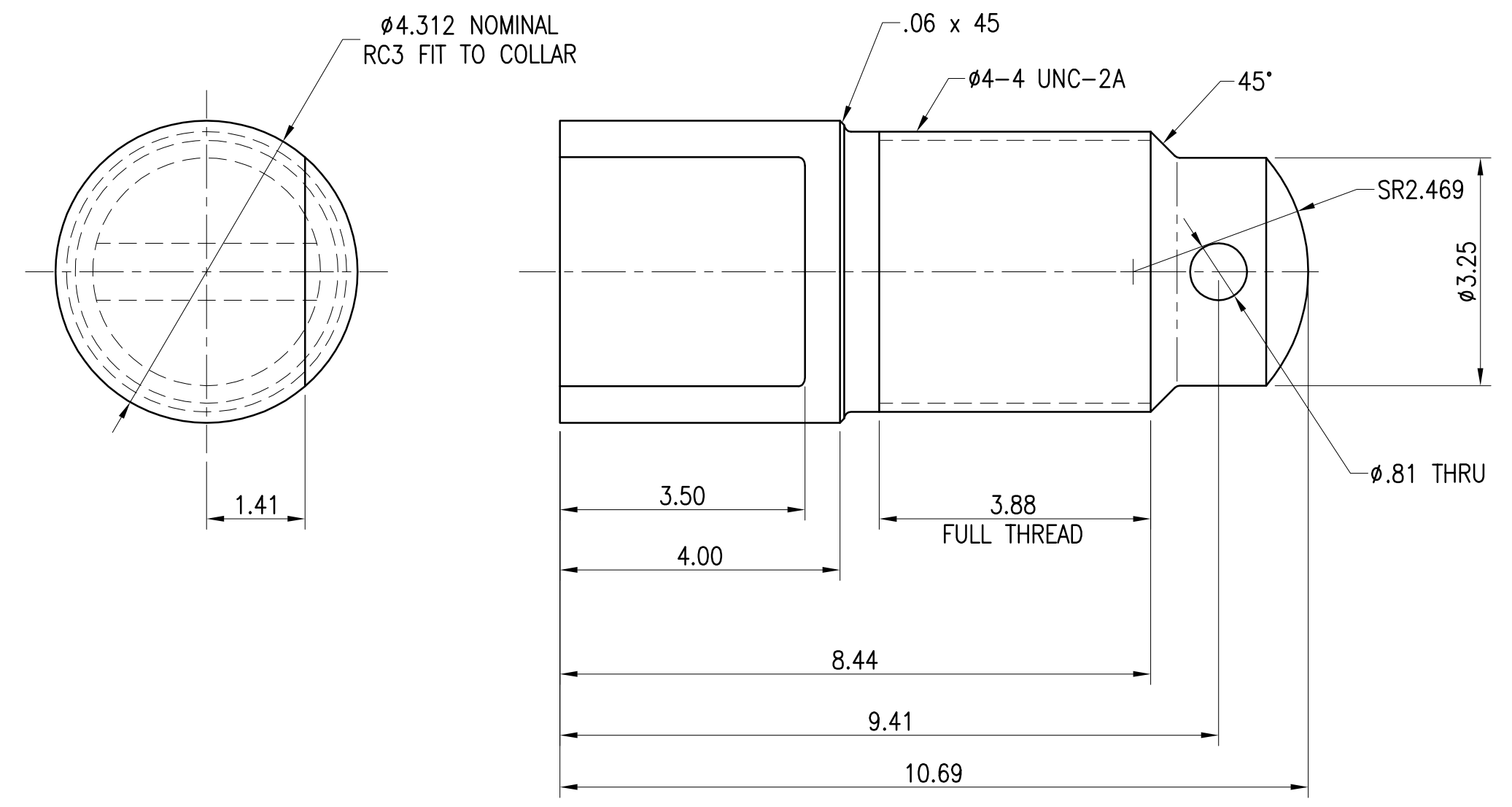
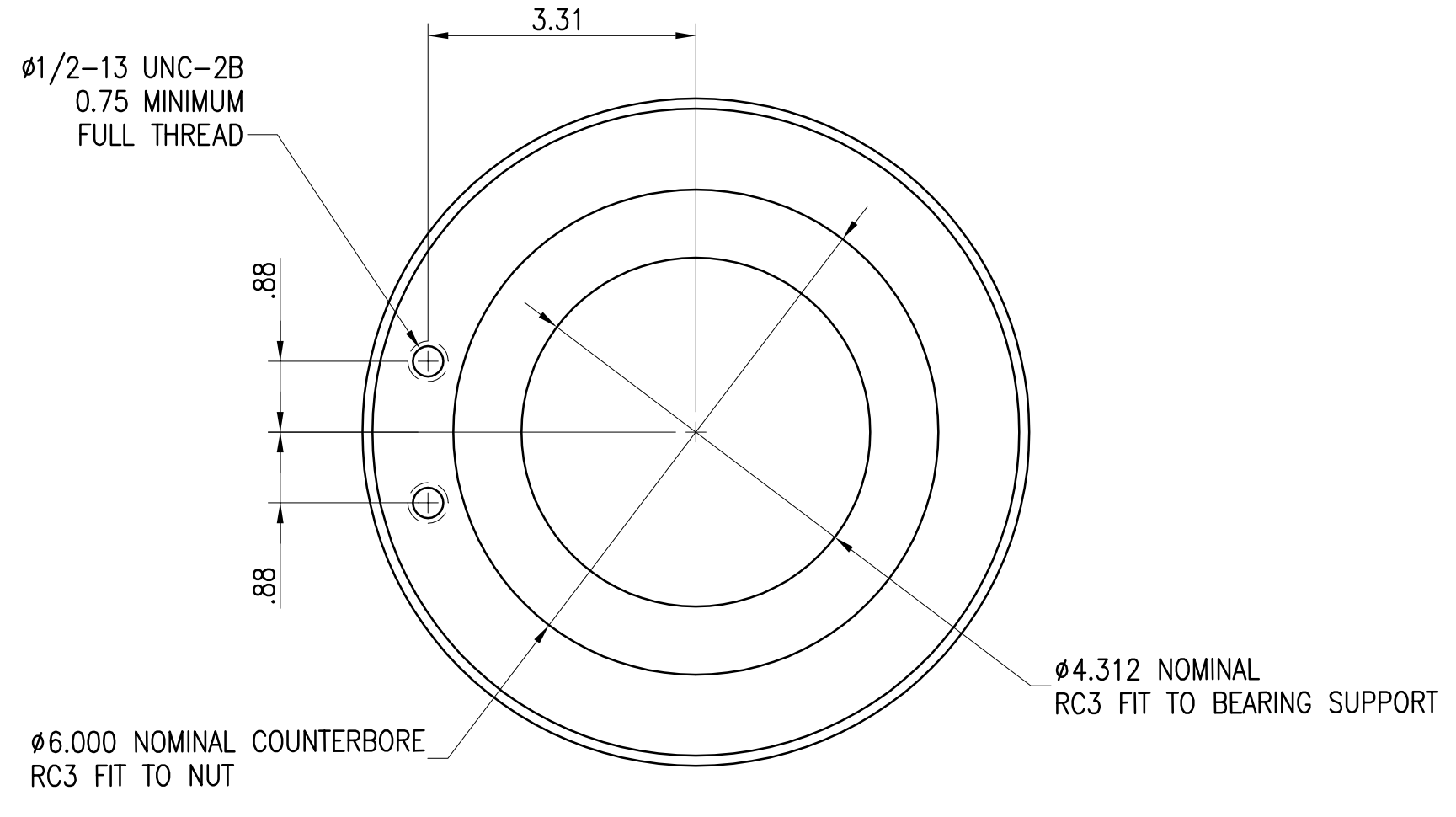


**SECTION  
THREADED BUSHING**  
SCALE: 6"=1'-0"  
3

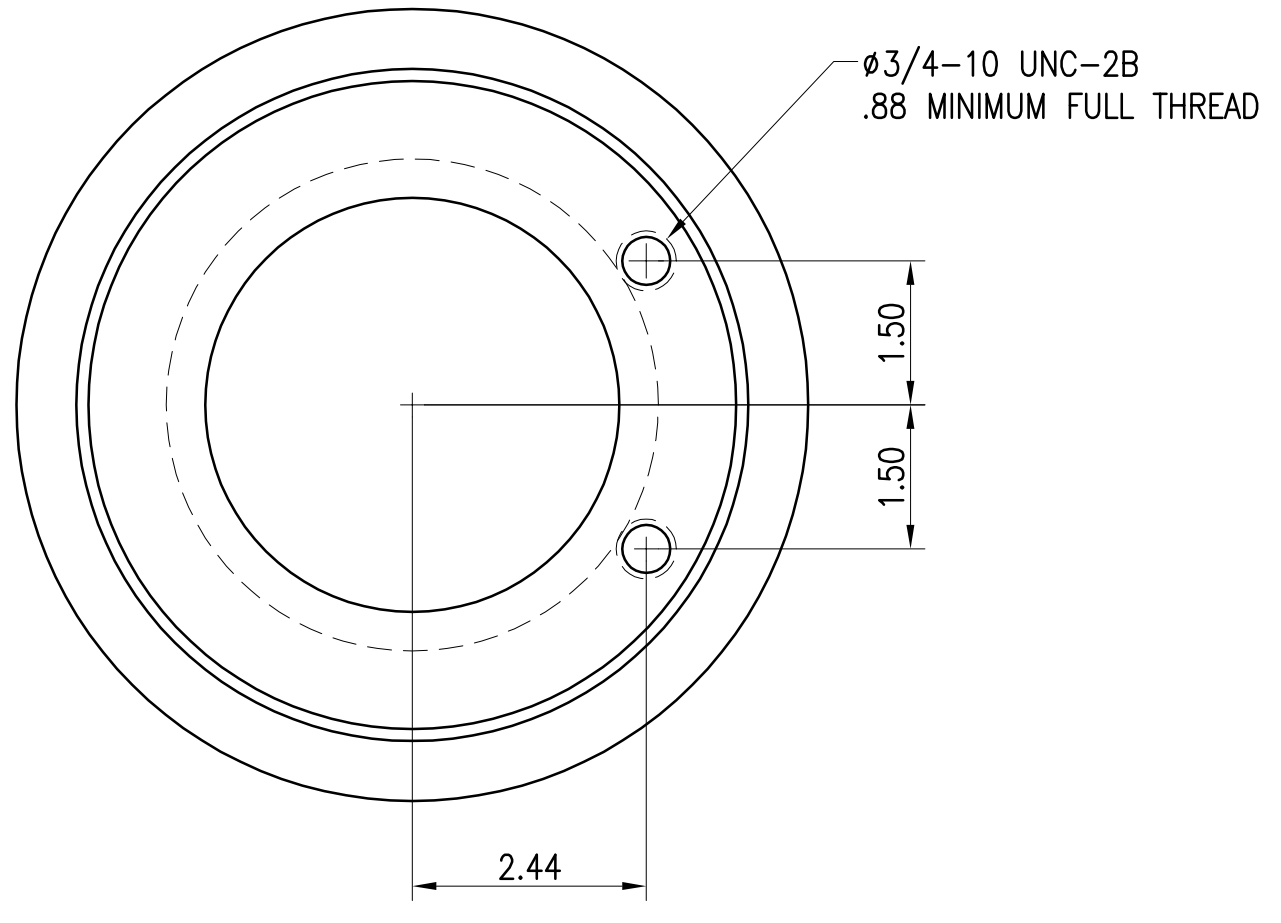
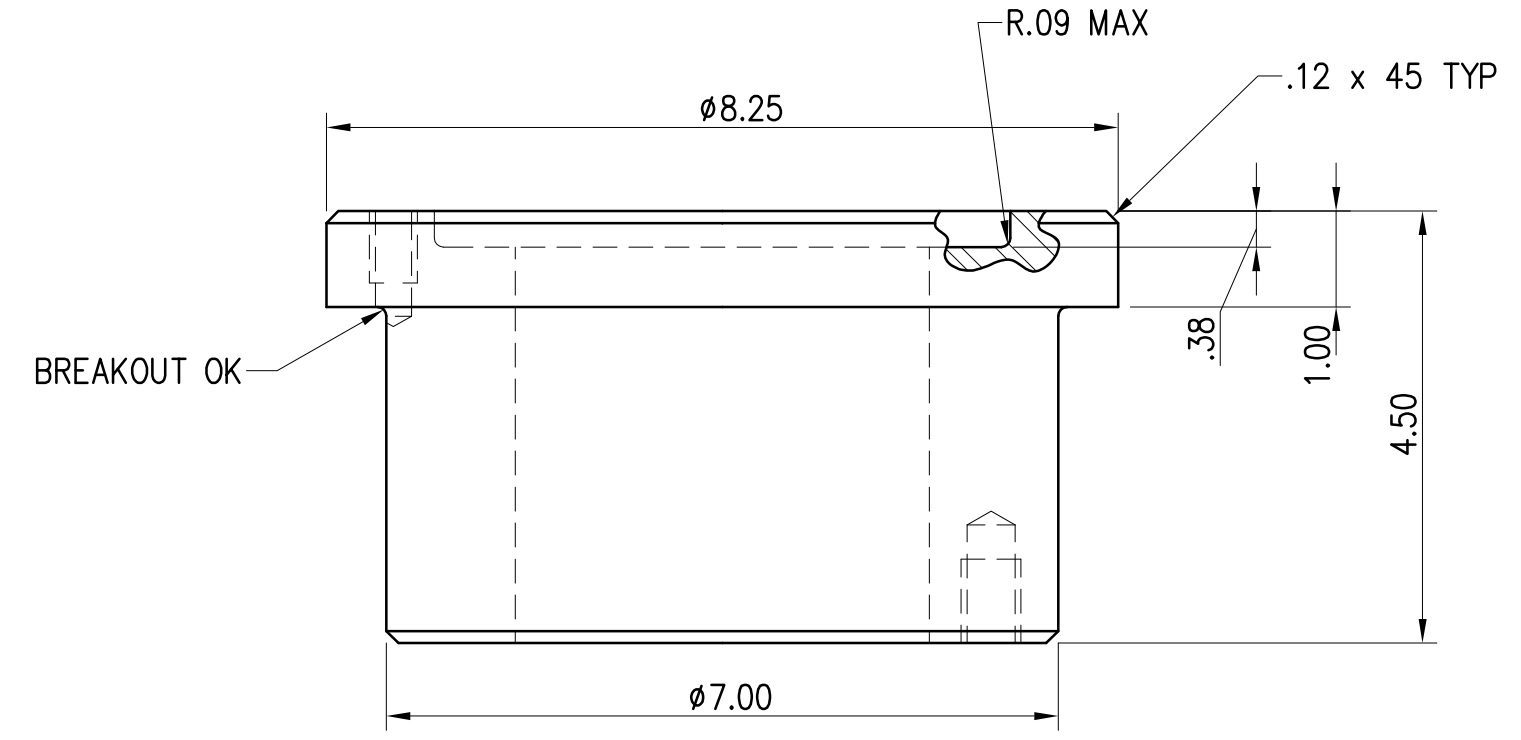
PLACEMENT OF PIN-LOCK TO BE ON CENTER FOR 28' APRON LIFT BEAMS AND 10 1/2" LEFT OF CENTER ON 38' APRON LIFT BEAM (SEE S-21 AND S-22).

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		CONSULTING ENGINEERS	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		SHEET TITLE <b>FERRY APRON LOCKING SYSTEM</b>	
SUBMITTED BY: _____		RECOMMENDED BY: _____	
SECTION HEAD DESIGNED BY: MJE DRAWN BY: MJE CHECKED BY: ACJ DATE: 6/30/06 SCALE: AS SHOWN		APPROVED BY: _____ FOR HARBORS ADMINISTRATOR H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER <b>M-7.11</b> REVISION _____ OF _____ SHTS	

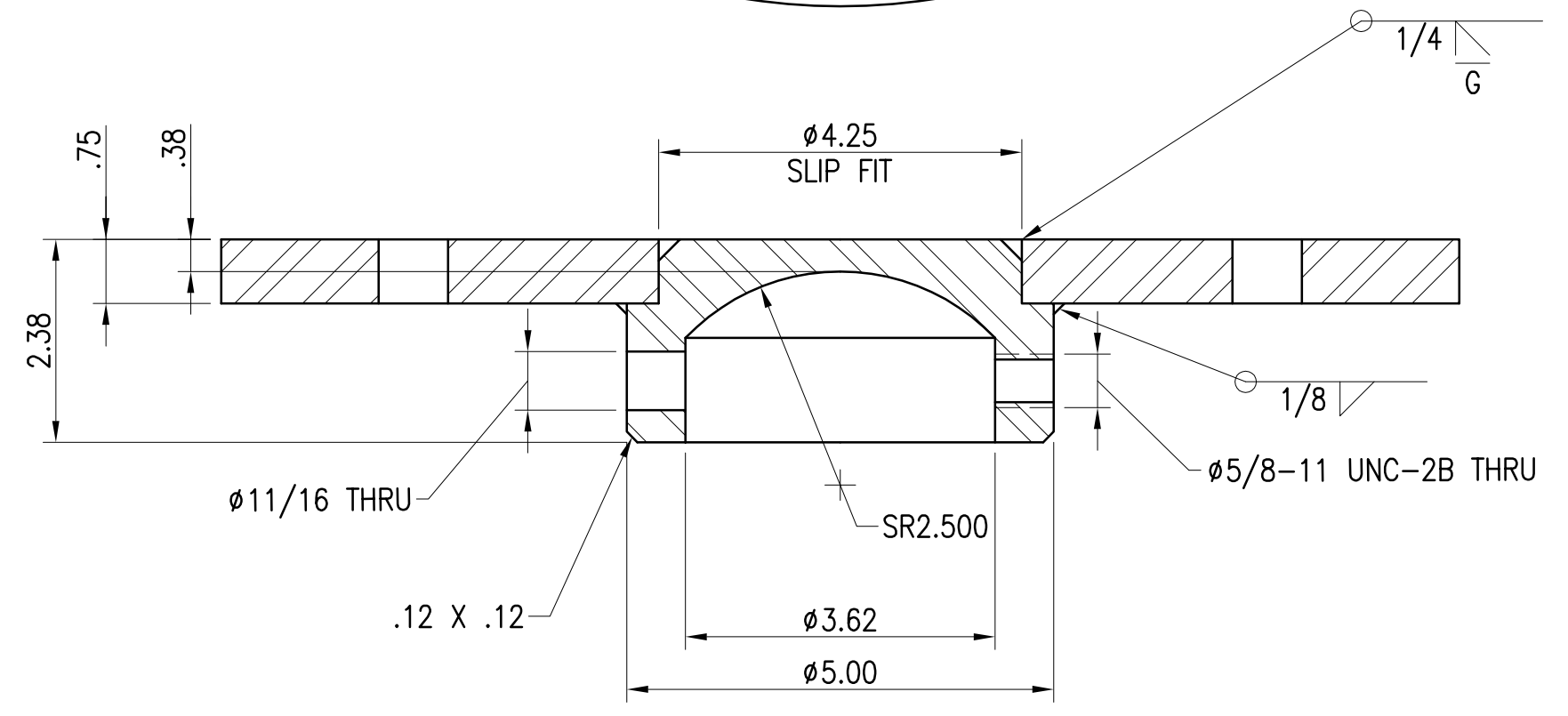
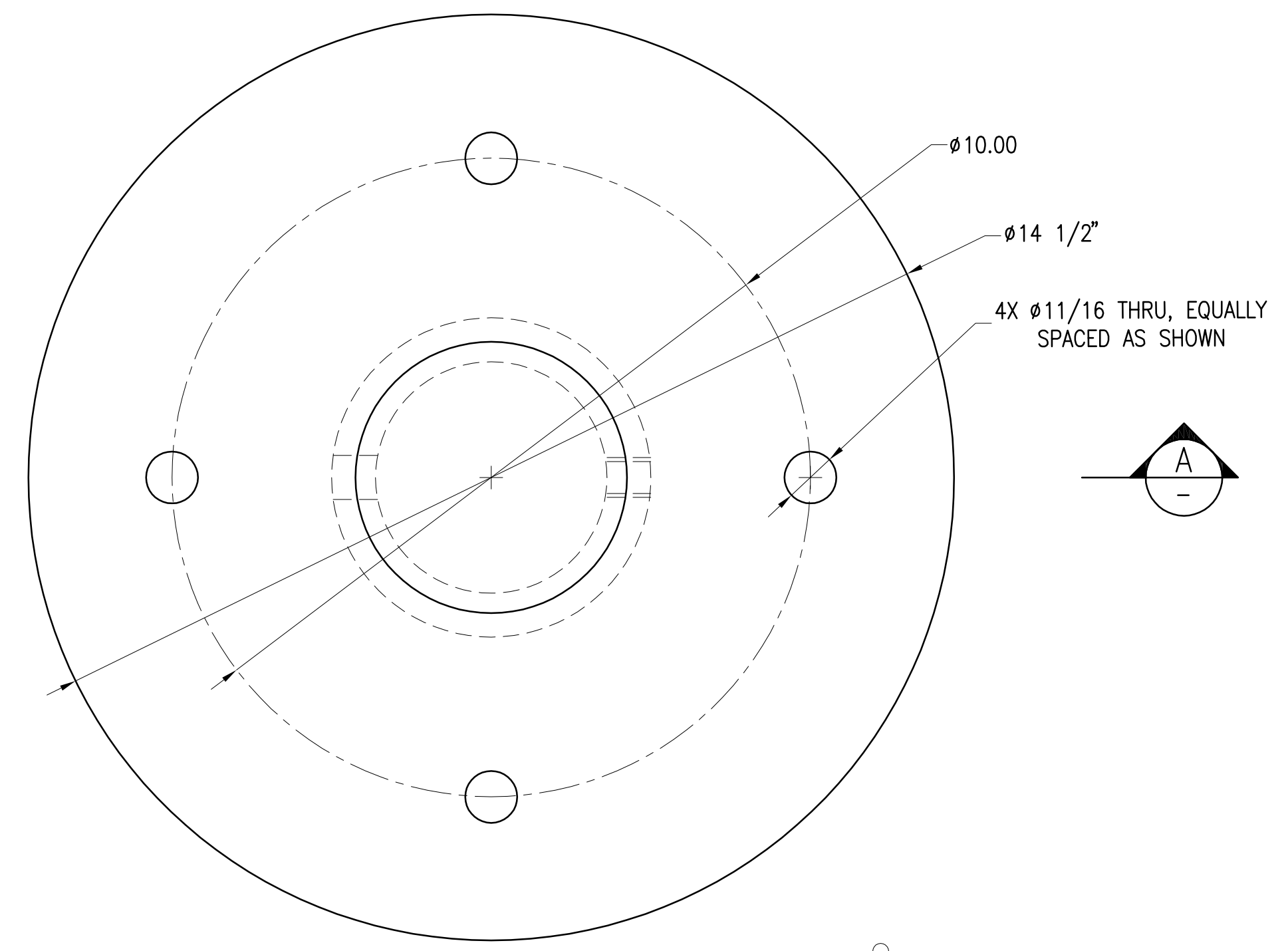
DESIGN RECORD DRAWING



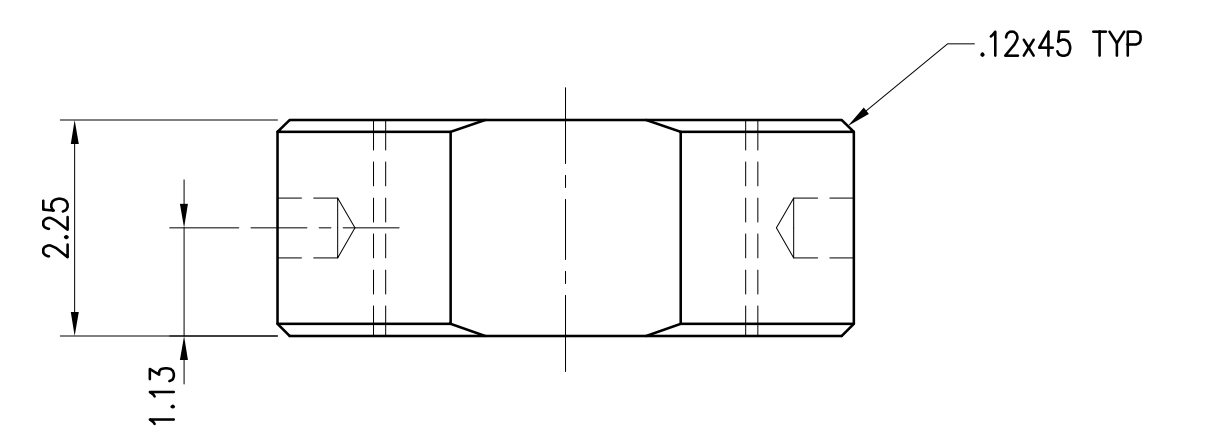
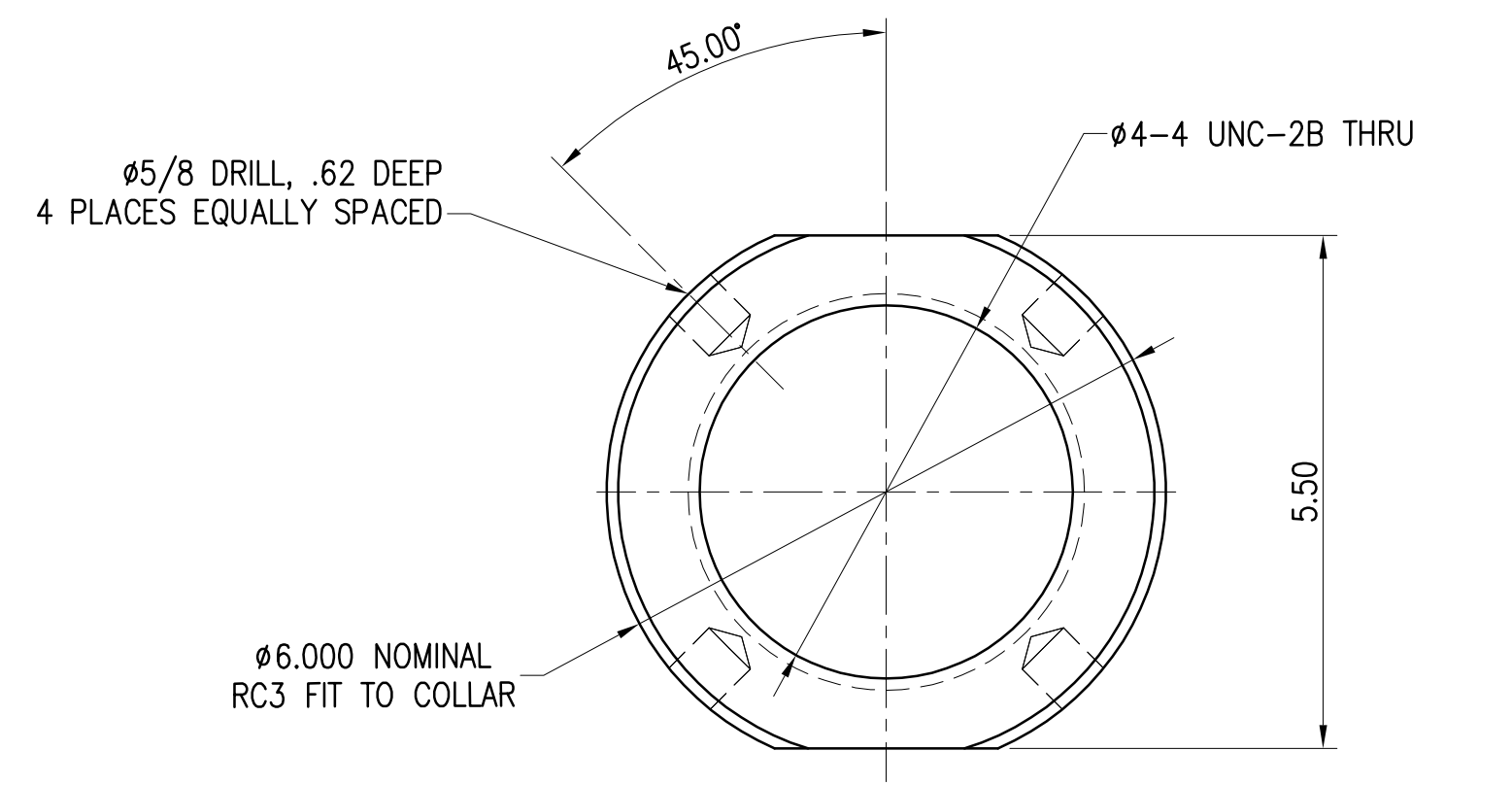
**REAR BEARING SUPPORT**  
 SCALE: 6"=1'-0"  
 MATL: 17-4 PH STAINLESS STEEL



**COLLAR**  
 SCALE: 6"=1'-0"  
 MATL: CARBON STEEL, MINIMUM 50 KSI  
 MINIMUM YIELD STRENGTH

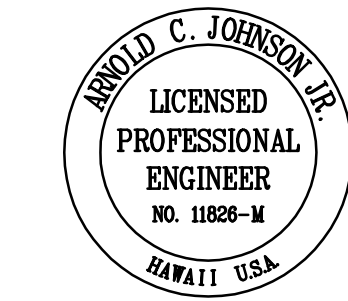


**REAR BEARING PLATE**  
 SCALE: 6"=1'-0"



**NUT**  
 SCALE: 6"=1'-0"  
 MATL: 17-4 PH STAINLESS STEEL

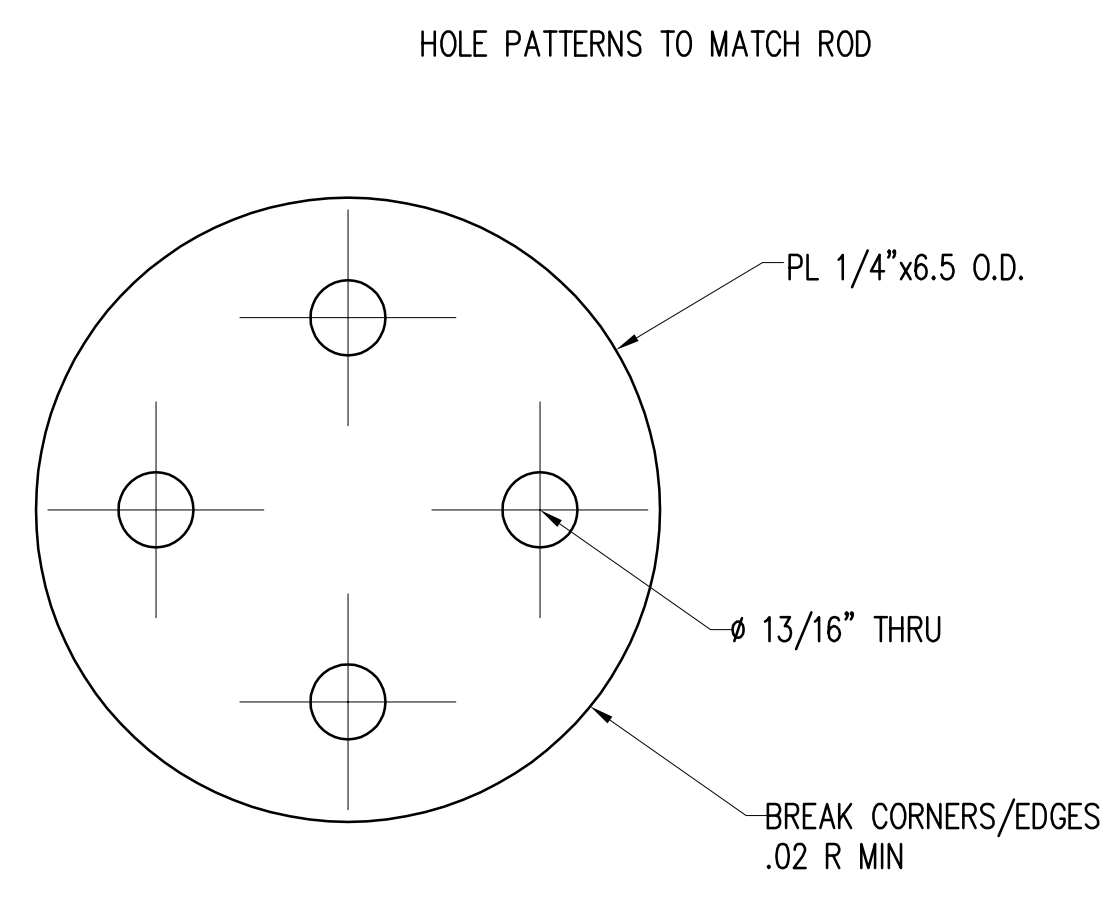
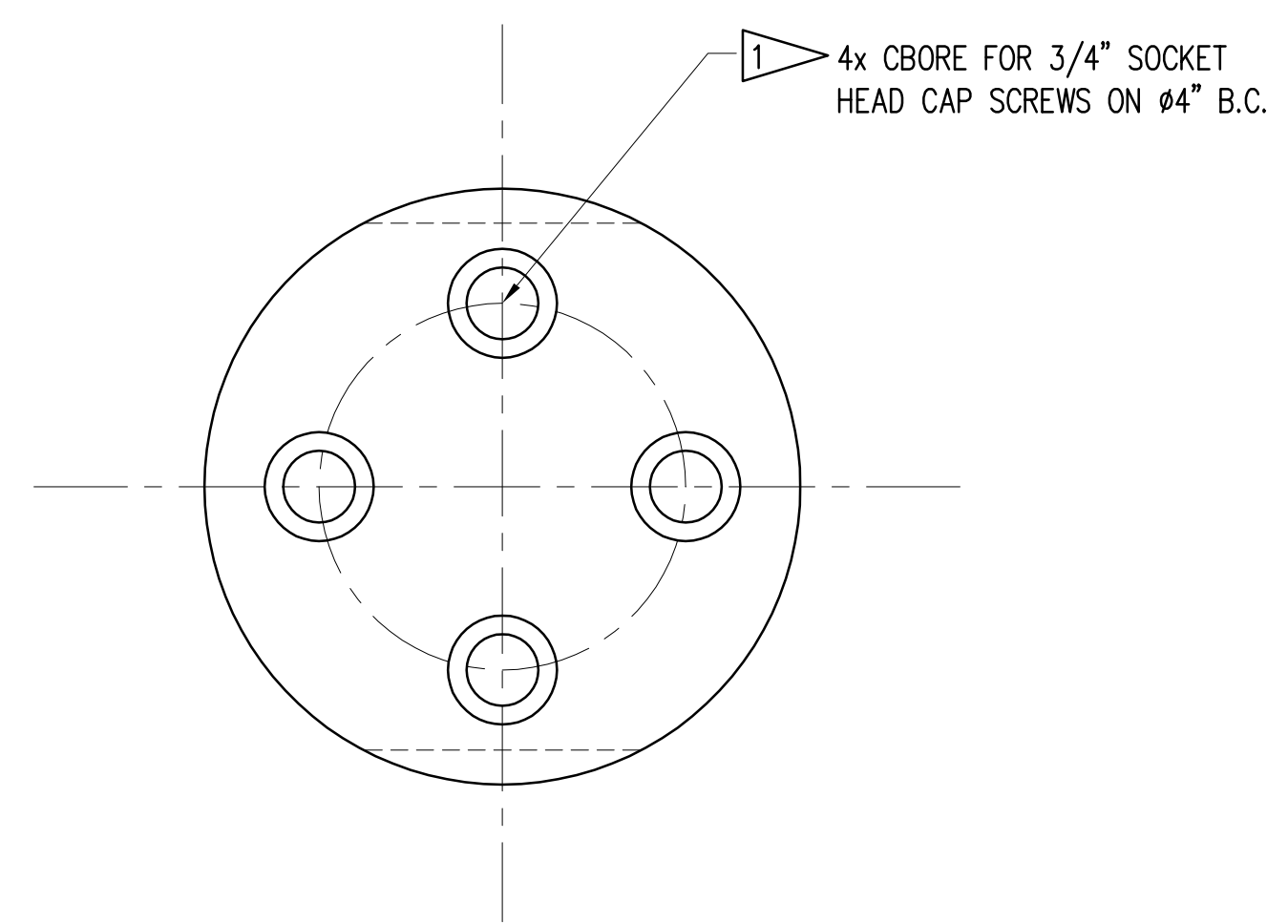
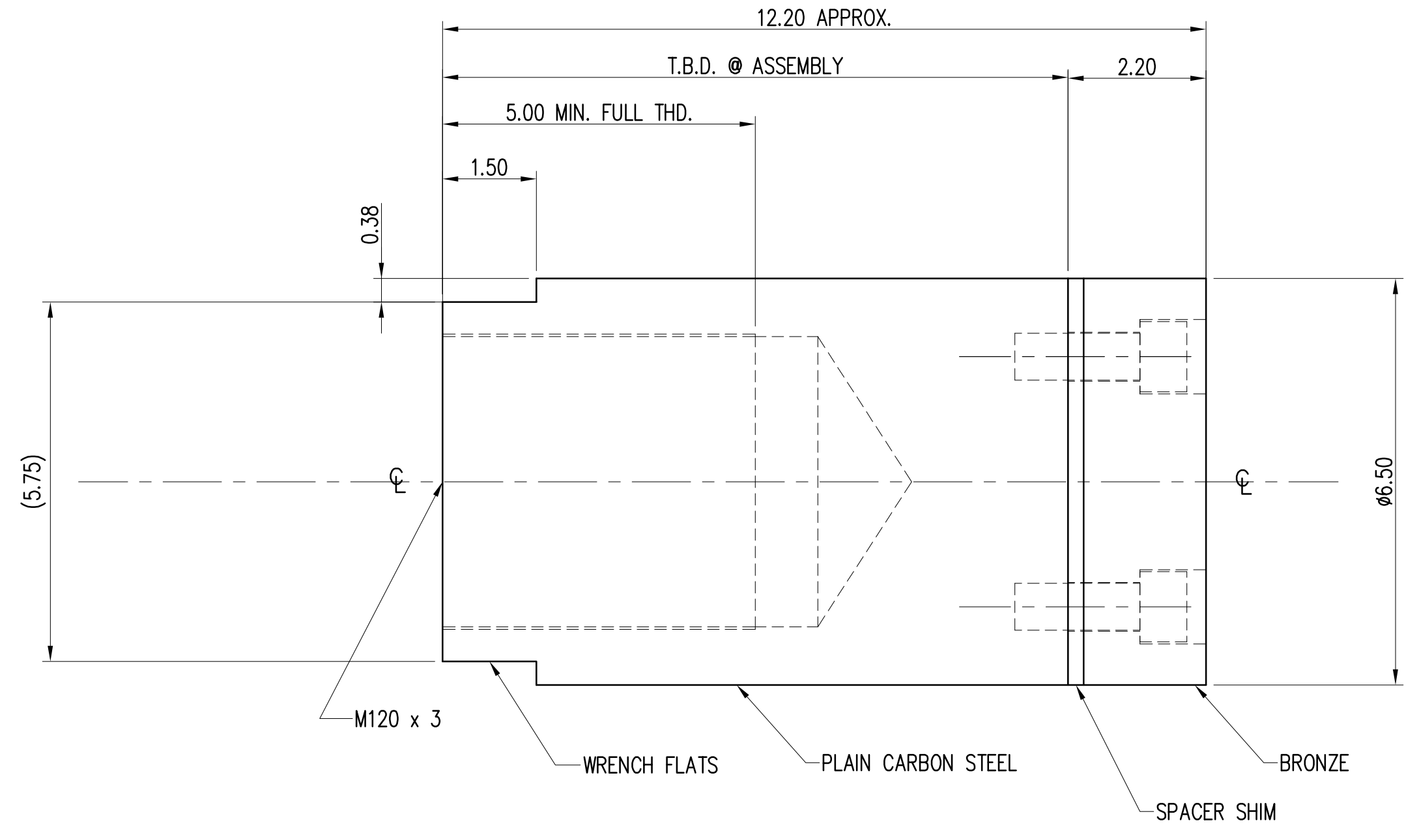
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>LIFT FRAME DETAILS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: HH	FOR HARBORS ADMINISTRATOR	M-7.12	
CHECKED BY: SS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	OF SHTS	
SCALE: AS SHOWN			



REDUCED SIZE  
PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING

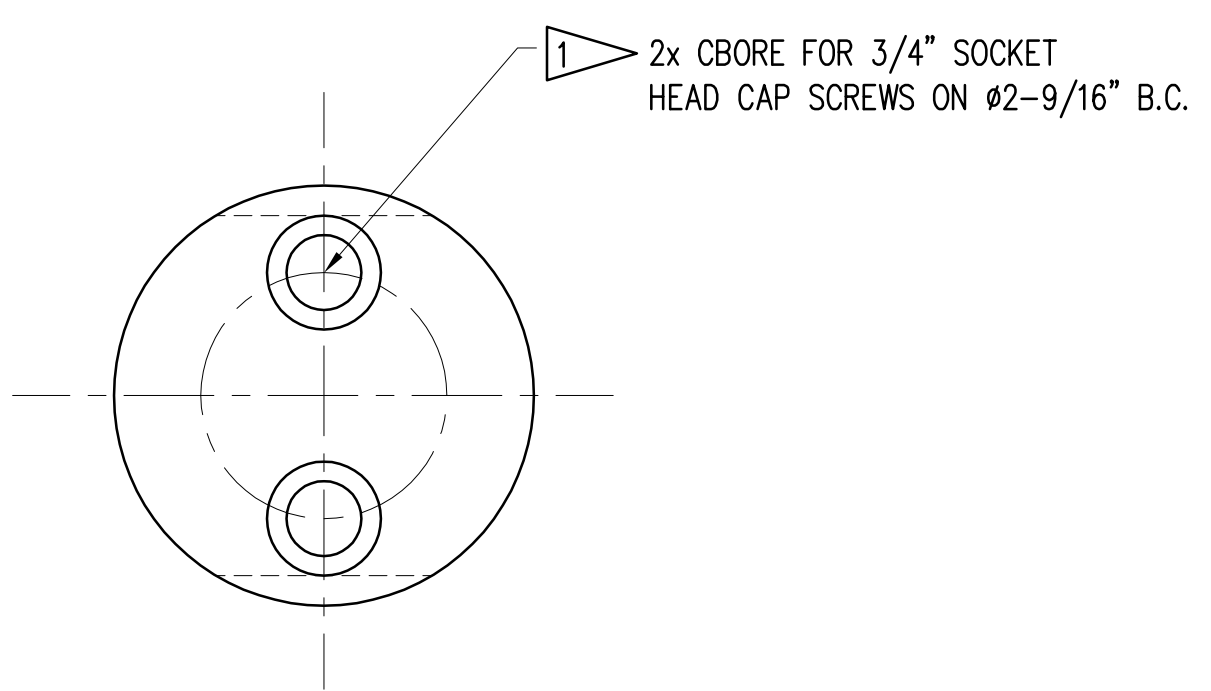
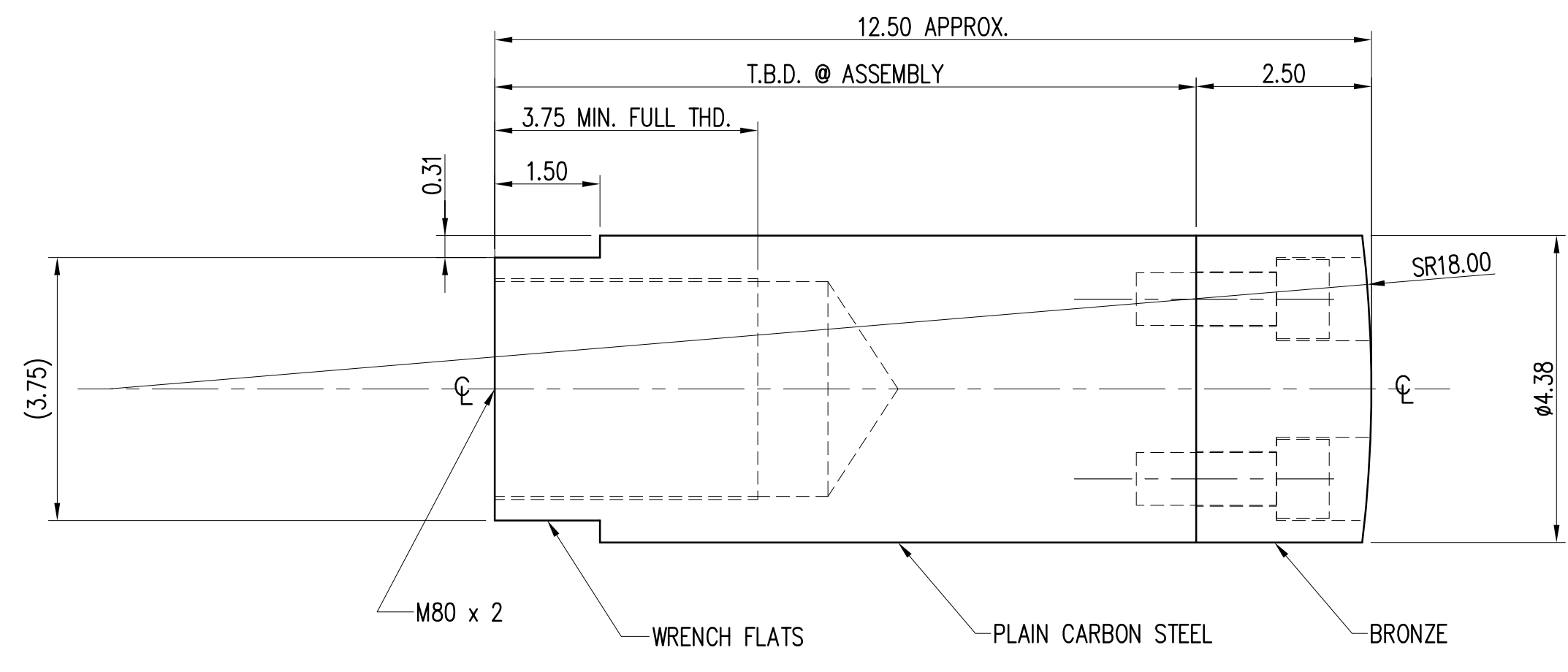




**SPACER SHIM**

**LARGE ROD END**  
SCALE: 6"=1'-0"

1  
M7.0



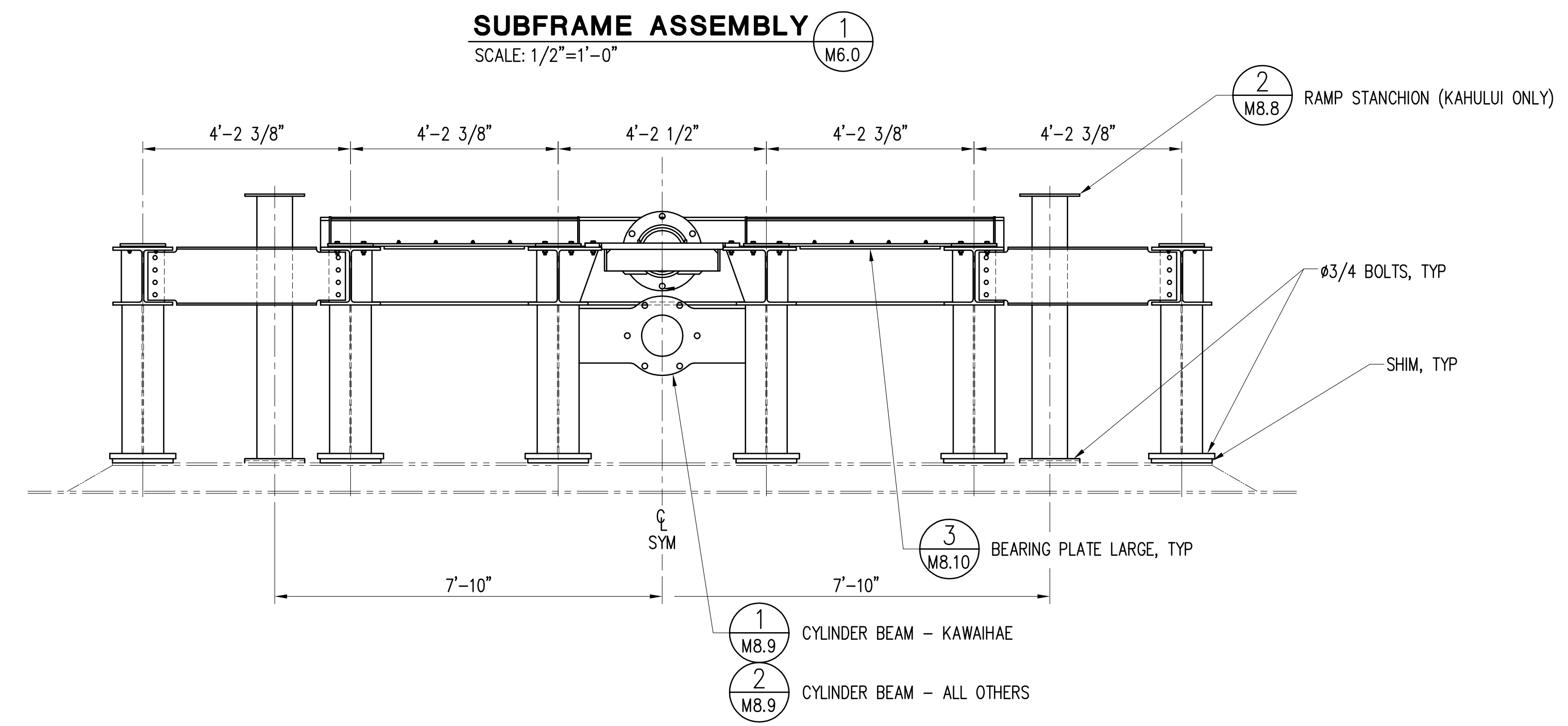
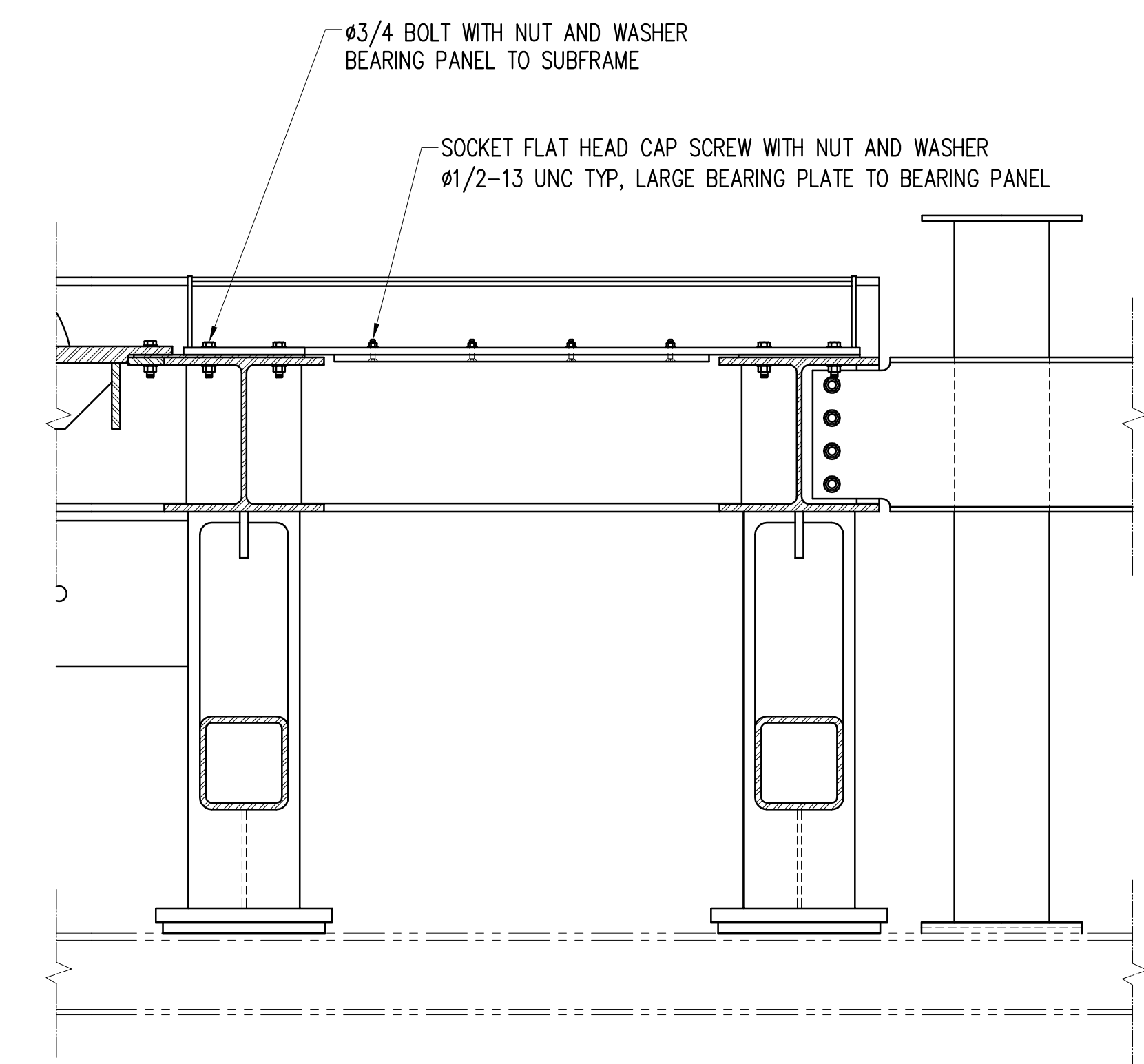
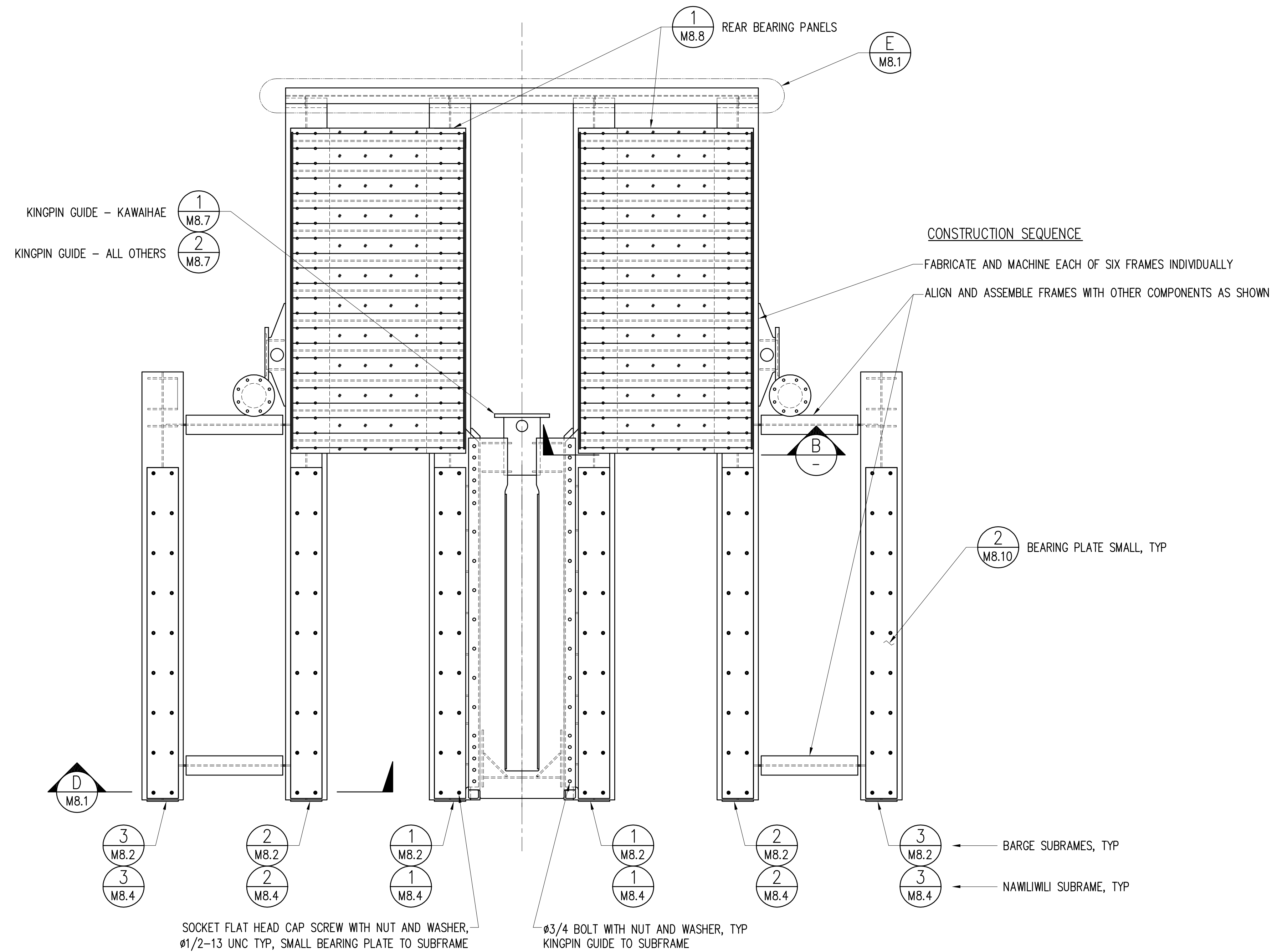
**SMALL ROD END**  
SCALE: 6"=1'-0"

2  
M7.0

1 MINIMUM (1) DIAMETER OF THREAD ENGAGEMENT REQUIRED FOR 3/4" CAP SCREWS.

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	CONSULTING ENGINEERS	
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
<b>SHEET TITLE</b> CENTERING CYLINDER ROD END		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER
DRAWN BY: JLF	FOR HARBORS ADMINISTRATOR	M-7.13
CHECKED BY: SDS	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS
SCALE: AS SHOWN		

REDUCED SIZE PRINT  
(NOT TO SCALE)

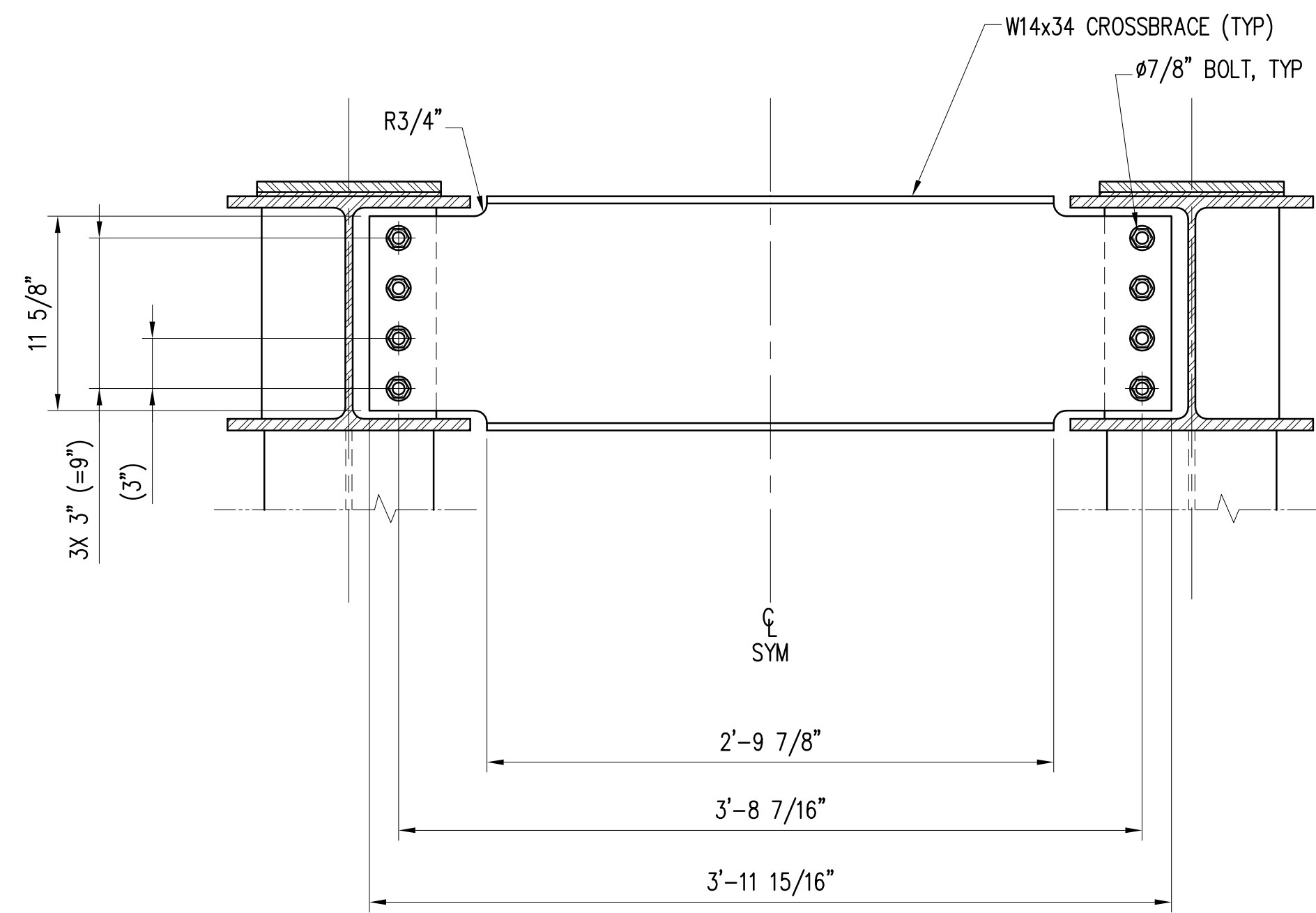


**SUBFRAME ASSEMBLY** (1 M6.0)  
 SCALE: 1/2"=1'-0"

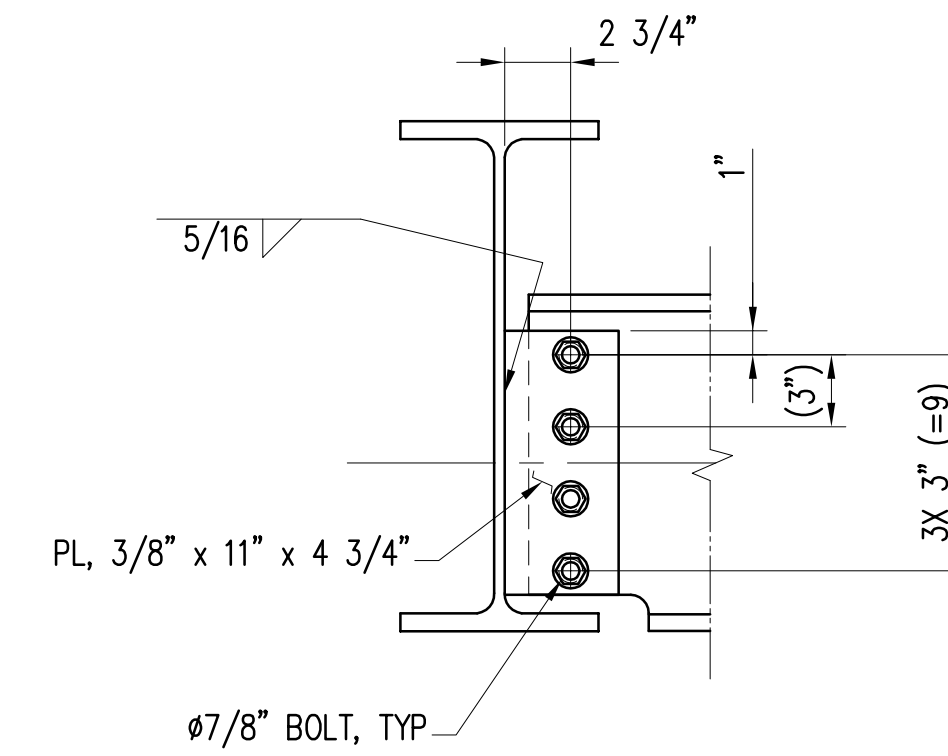
	STATE OF HAWAII	
	DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
JOB TITLE: BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
SHEET TITLE: SUBFRAME ASSEMBLY		
SUBMITTED BY: _____		RECOMMENDED BY: _____
ENGINEERING PROGRAM MANAGER: _____		DRAWING NUMBER: M-8.0
DESIGNED BY: SDS		APPROVED BY: _____
DRAWN BY: SS		FOR HARBORS ADMINISTRATOR
CHECKED BY: SDS		REVISION: _____
DATE: 9/1/06		JOB NUMBER: H.C. 90018
SCALE: AS SHOWN		_____ OF _____ SHEETS

REDUCED SIZE PRINT  
(NOT TO SCALE)

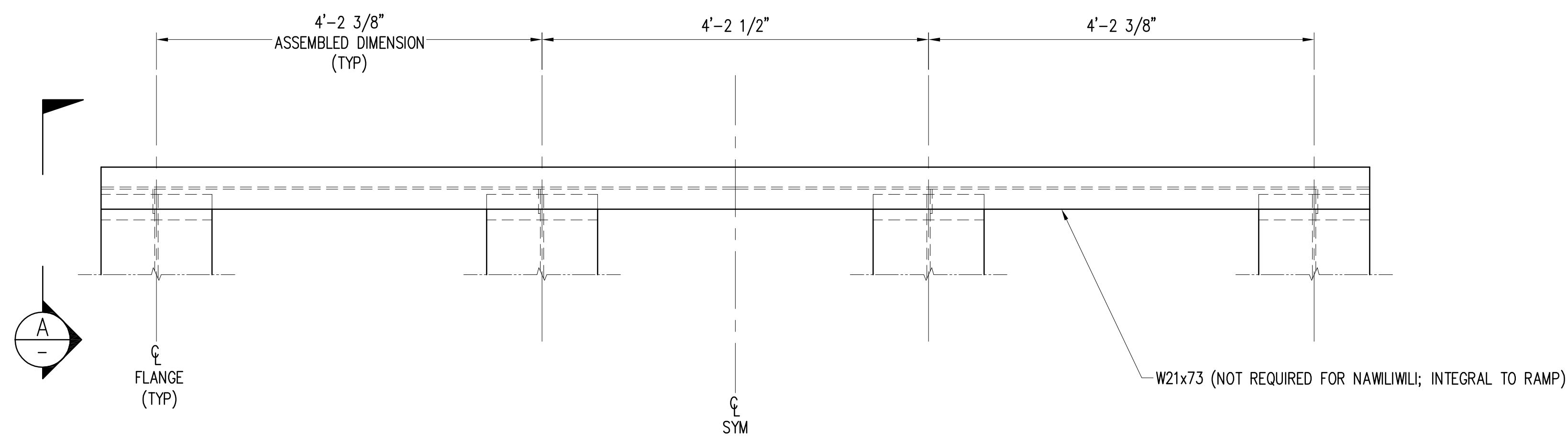
DESIGN RECORD DRAWING



**SECTION**  
 SCALE: 1 1/2"=1'-0"  
 D  
 M-8.0  
 FOUR CROSSBRACES REQUIRED FOR BARGE INSTALLATIONS  
 TWO CROSSBRACES REQUIRED FOR NAWILIWILI

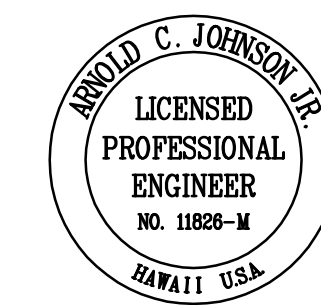


**VIEW**  
 SCALE: 1 1/2"=1'-0"  
 A

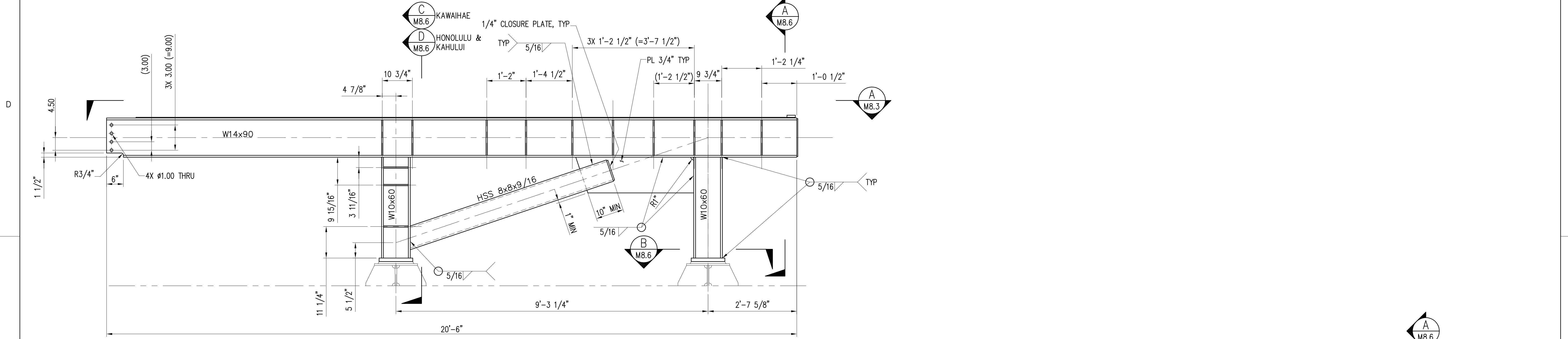


**VIEW**  
 SCALE: 1"=1'-0"  
 E  
 M8.0

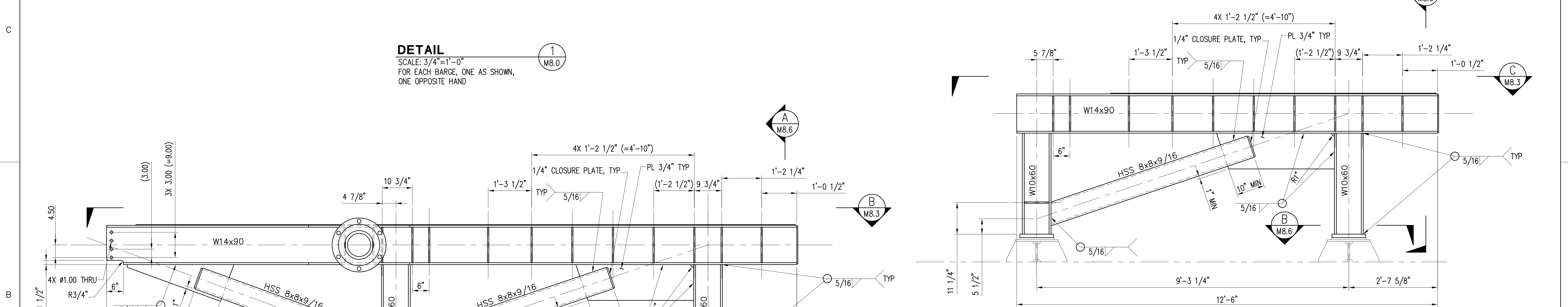
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
HEALY TIBBITTS BUILDERS, INC.			
Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE			
SHEET TITLE SUBFRAME ASSEMBLY DETAILS			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-8.1	
CHECKED BY: SDS	JOB NUMBER	REVISION	OF _____ SHTS
DATE: 9/1/06	H.C. 90018		
SCALE: AS SHOWN			



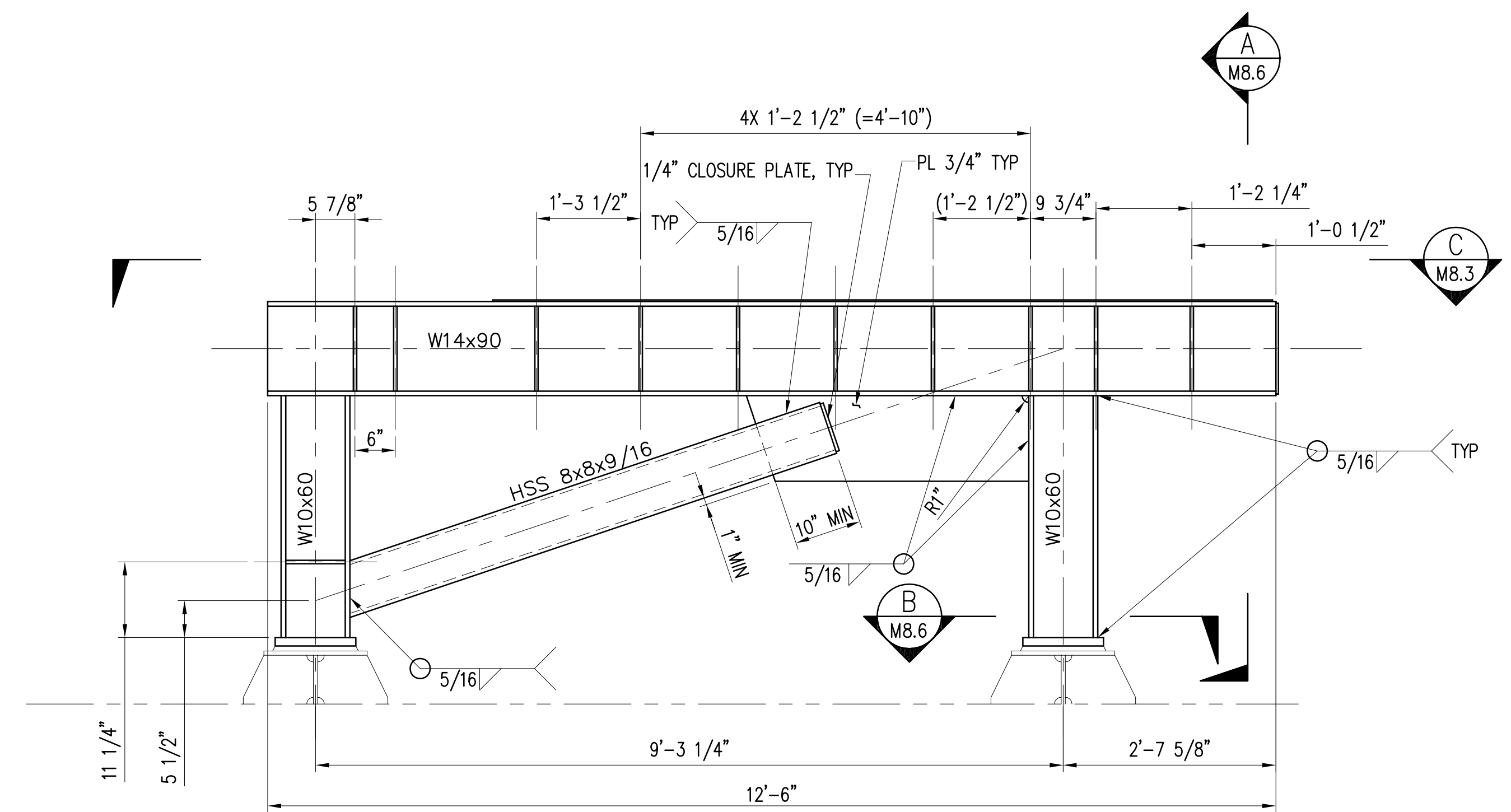
REDUCED SIZE  
 PRINT  
 (NOT TO SCALE)



**DETAIL 1**  
 SCALE: 3/4"=1'-0"  
 FOR EACH BARGE, ONE AS SHOWN,  
 ONE OPPOSITE HAND

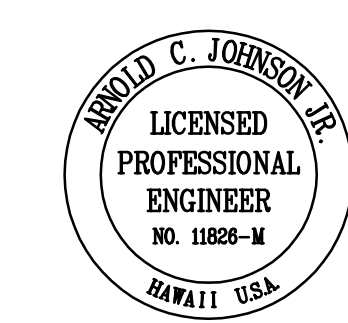


**DETAIL 2**  
 SCALE: 3/4"=1'-0"  
 FOR EACH BARGE, ONE AS SHOWN,  
 ONE OPPOSITE HAND

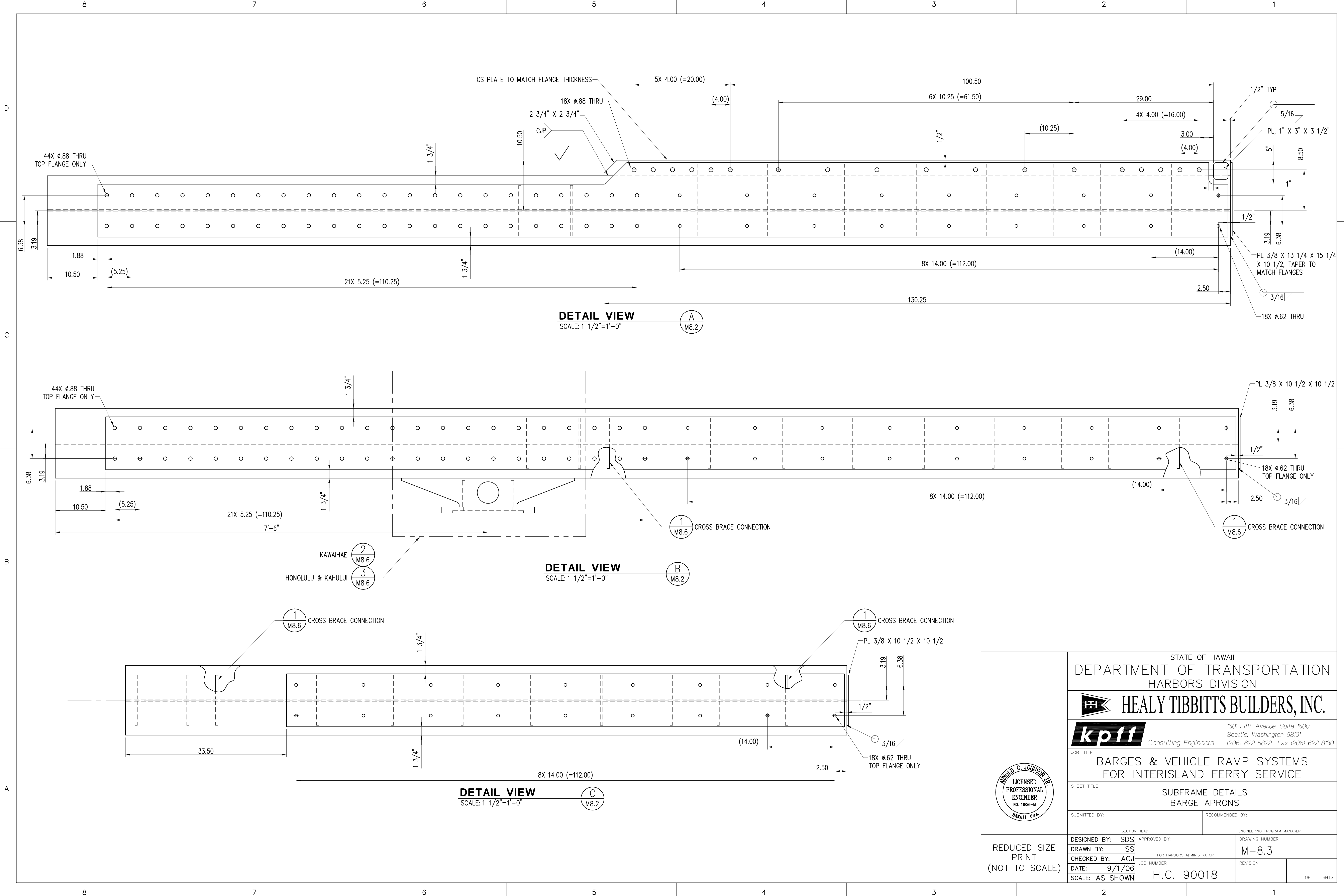


**DETAIL 3**  
 SCALE: 3/4"=1'-0"  
 FOR EACH BARGE, ONE AS SHOWN,  
 ONE OPPOSITE HAND

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SUBFRAME DETAILS BARGE APRONS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	<b>M-8.2</b>	
CHECKED BY: ACJ	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: AS SHOWN			



REDUCED SIZE  
 PRINT  
 (NOT TO SCALE)



**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0" (A) M8.2

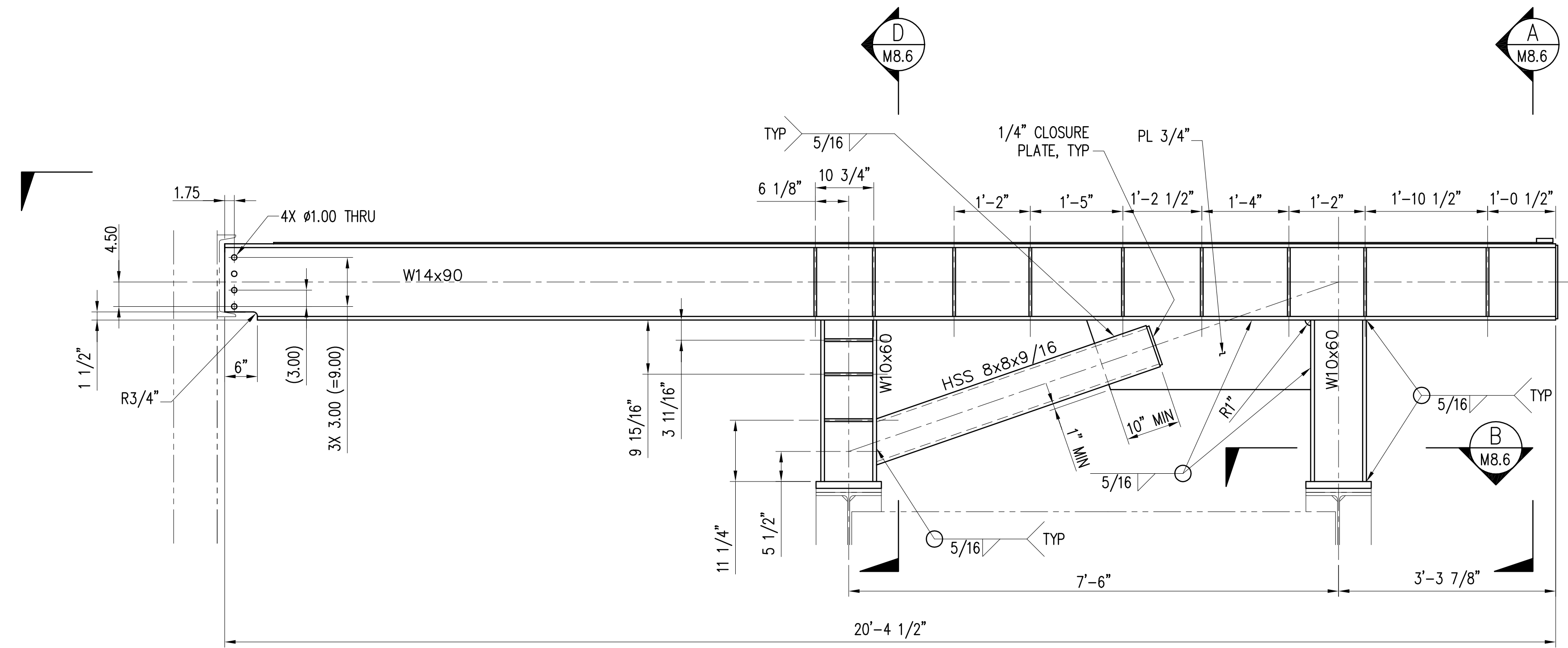
**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0" (B) M8.2

**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0" (C) M8.2

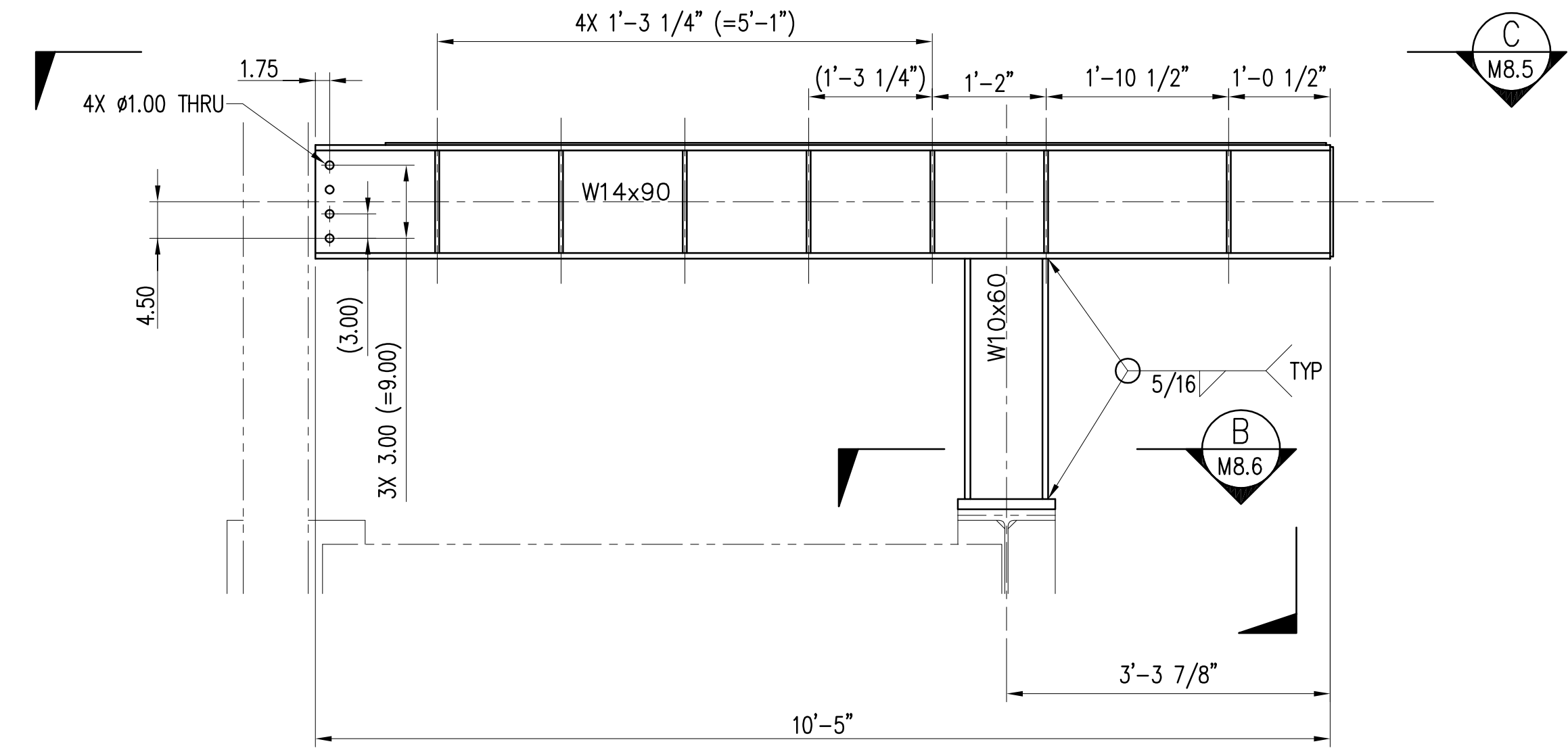
	STATE OF HAWAII	
	DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	Consulting Engineers	
	<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
	<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
	<b>SHEET TITLE</b> SUBFRAME DETAILS BARGE APRONS	
	<small>SUBMITTED BY:</small> _____	<small>RECOMMENDED BY:</small> _____
	<small>SECTION HEAD</small> _____	<small>ENGINEERING PROGRAM MANAGER</small> _____
	<small>DESIGNED BY:</small> SDS	<small>APPROVED BY:</small> _____
<small>DRAWN BY:</small> SS	<small>DRAWING NUMBER</small> M-8.3	
<small>CHECKED BY:</small> ACJ	<small>FOR HARBORS ADMINISTRATOR</small>	
<small>DATE:</small> 9/1/06	<small>JOB NUMBER</small> H.C. 90018	
<small>SCALE:</small> AS SHOWN	<small>REVISION</small> _____ OF _____ SHTS	

REDUCED SIZE PRINT  
(NOT TO SCALE)

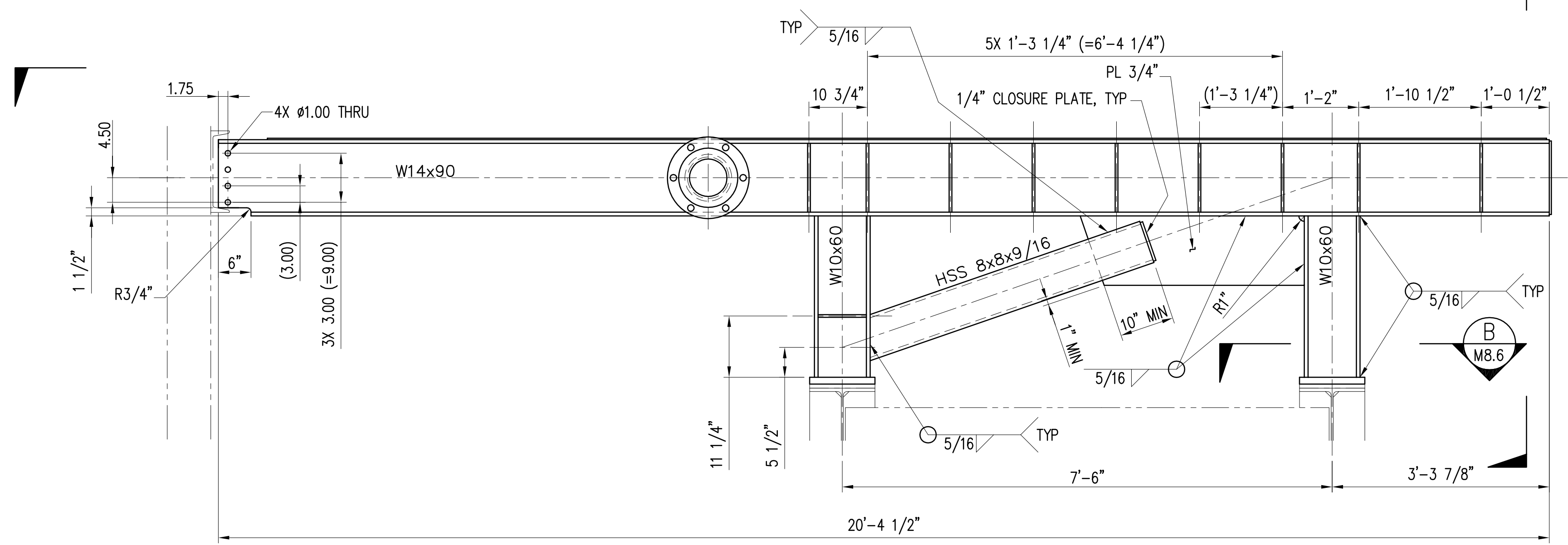
DESIGN RECORD DRAWING



**DETAIL 1**  
SCALE: 3/4"=1'-0"  
ONE WELDMENT AS SHOWN,  
ONE OPPOSITE HAND

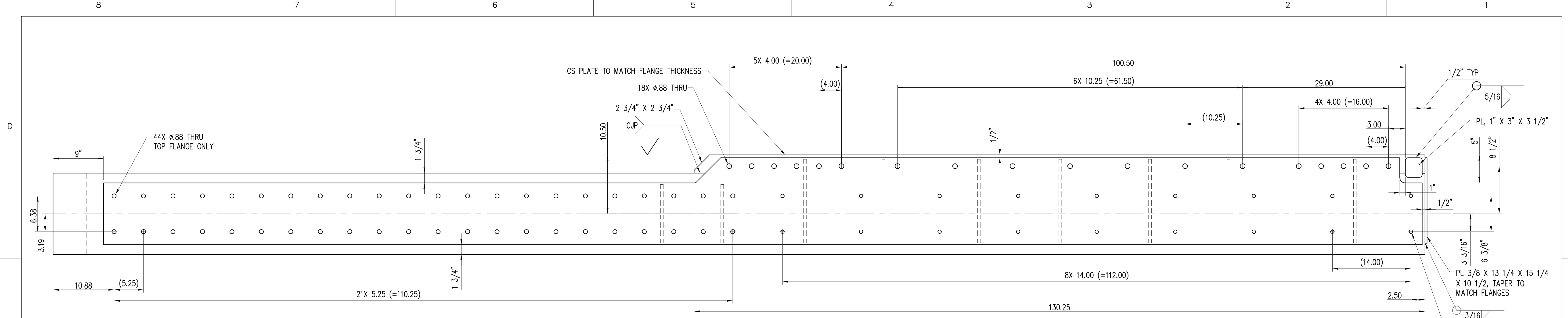


**DETAIL 3**  
SCALE: 3/4"=1'-0"  
ONE WELDMENT AS SHOWN,  
ONE OPPOSITE HAND

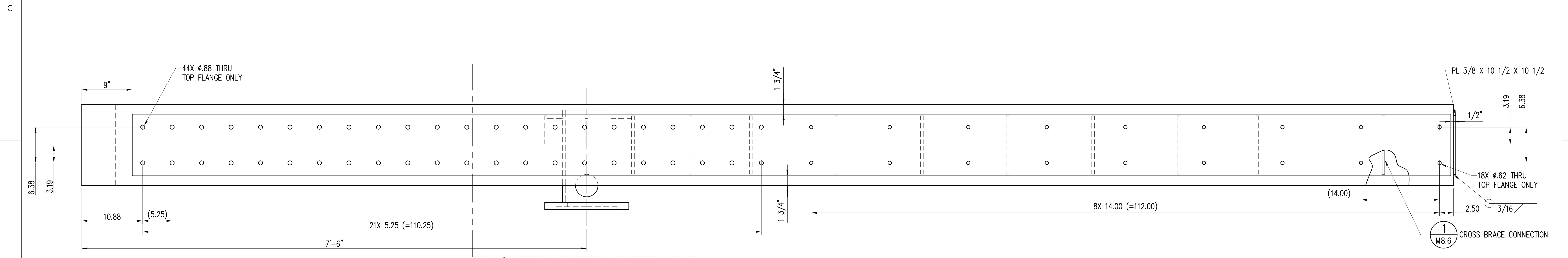


**DETAIL 2**  
SCALE: 3/4"=1'-0"  
ONE WELDMENT AS SHOWN,  
ONE OPPOSITE HAND

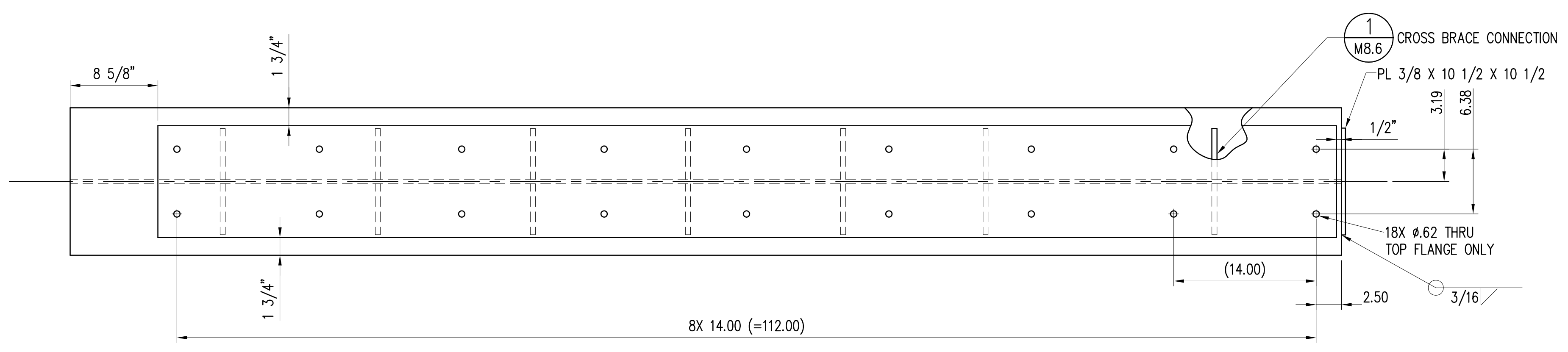
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	HEALY TIBBITTS BUILDERS, INC. 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
Consulting Engineers		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS                  FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SUBFRAME DETAILS                  NAWILIWILI APRON</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD _____		ENGINEERING PROGRAM MANAGER _____
DESIGNED BY: SDS DRAWN BY: SS CHECKED BY: SDS DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-8.4</b> REVISION _____
REDUCED SIZE PRINT (NOT TO SCALE)		JOB NUMBER <b>H.C. 90018</b> _____ OF _____ SHTS



**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0"  
A  
M8.4

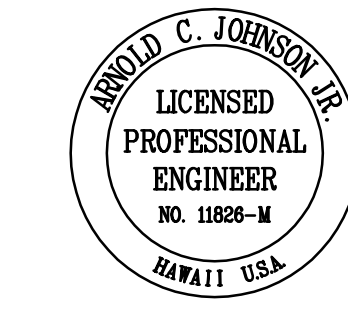


**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0"  
B  
M8.4  
3  
M8.6



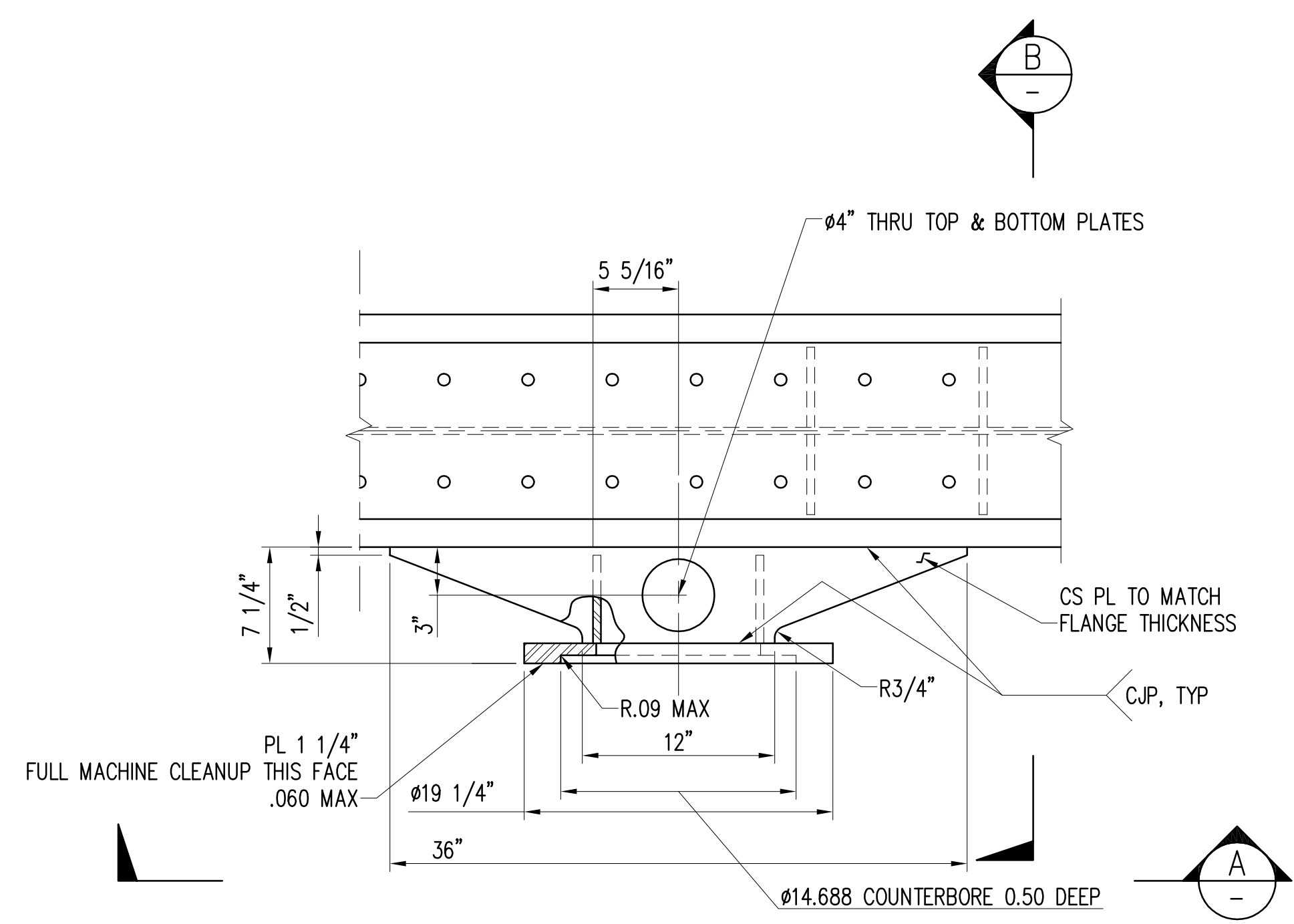
**DETAIL VIEW**  
SCALE: 1 1/2"=1'-0"  
C  
M8.4

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
<b>kpff</b> Consulting Engineers			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SUBFRAME DETAILS NAWILIWILI APRON</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	<b>M-8.5</b>	
CHECKED BY: SDS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	_____ OF _____ SHOTS	
SCALE: AS SHOWN			

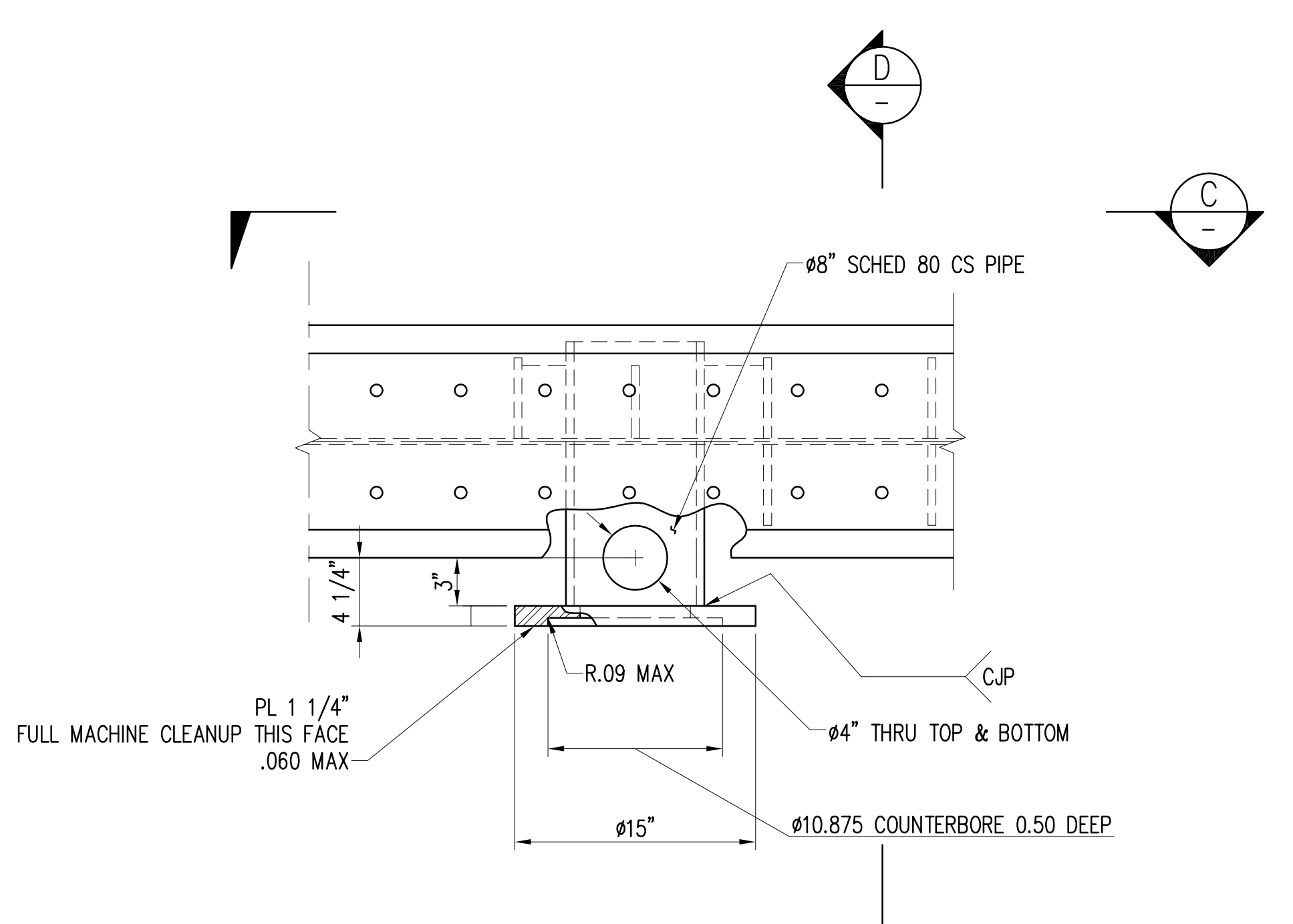


REDUCED SIZE  
PRINT  
(NOT TO SCALE)

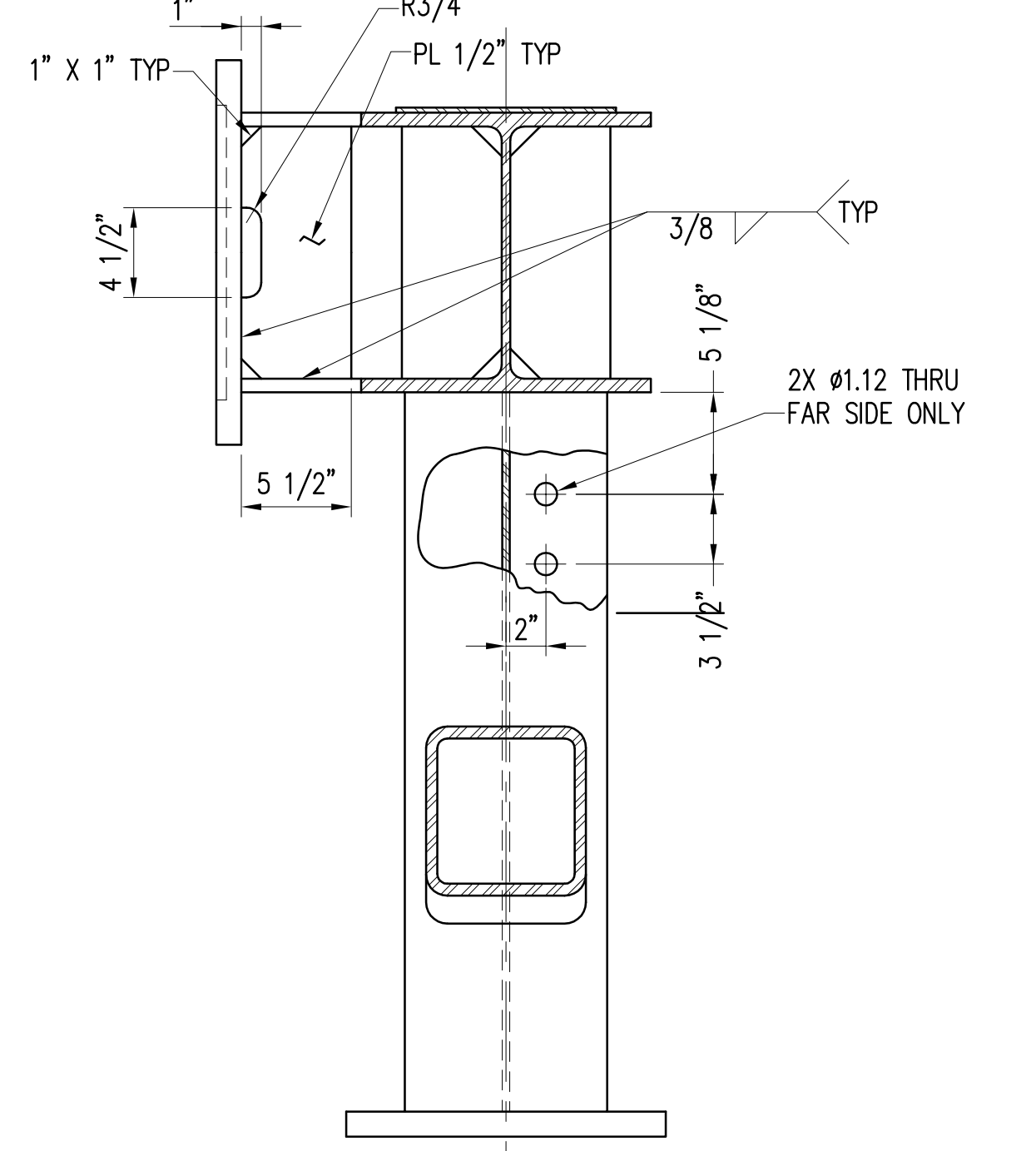
DESIGN RECORD DRAWING



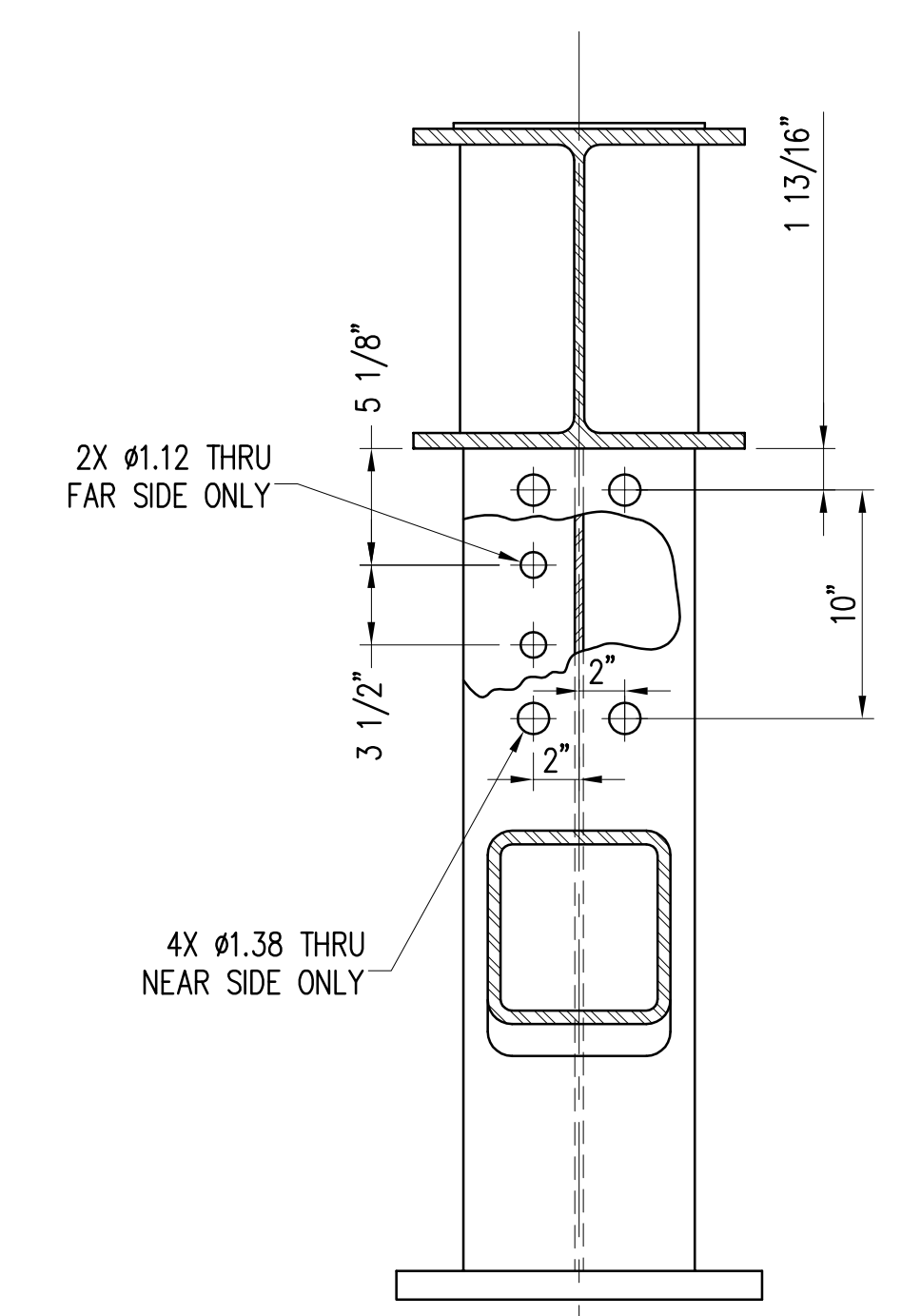
**DETAIL 2**  
SCALE: 1 1/2"=1'-0"  
M8.3



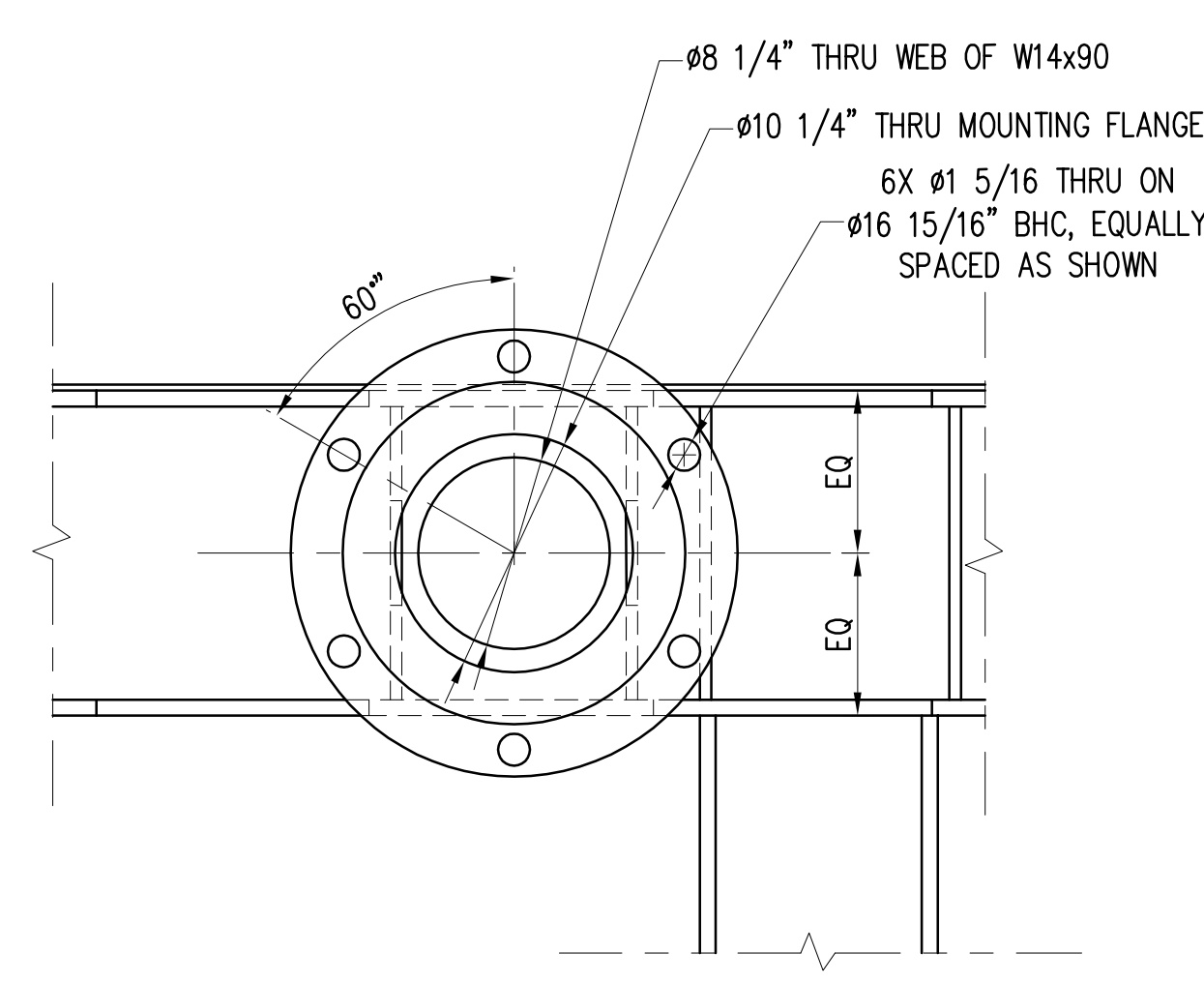
**DETAIL 3**  
SCALE: 1 1/2"=1'-0"  
M8.3, M8.5



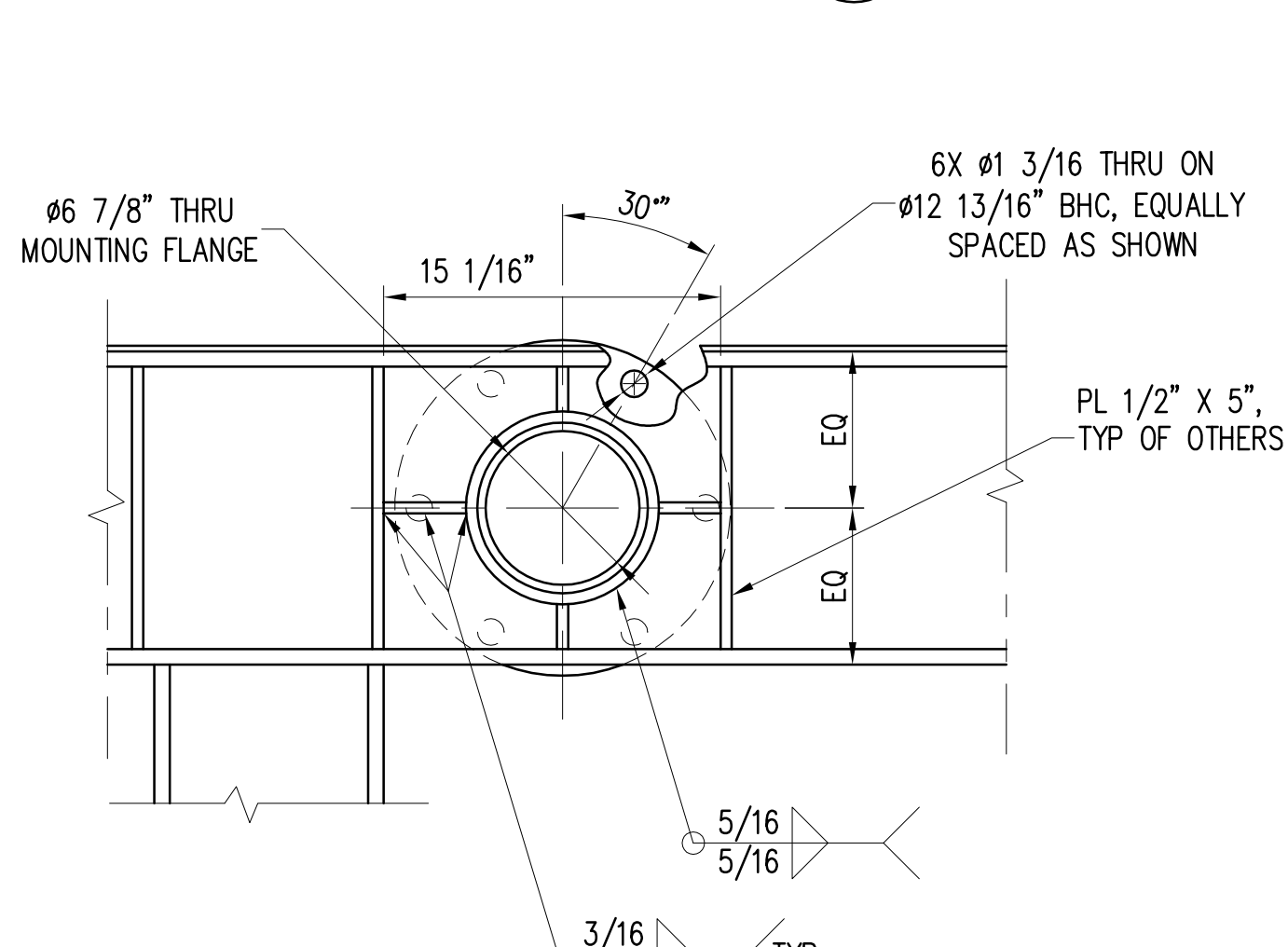
**SECTION B**  
SCALE: 1 1/2"=1'-0"  
M8.2



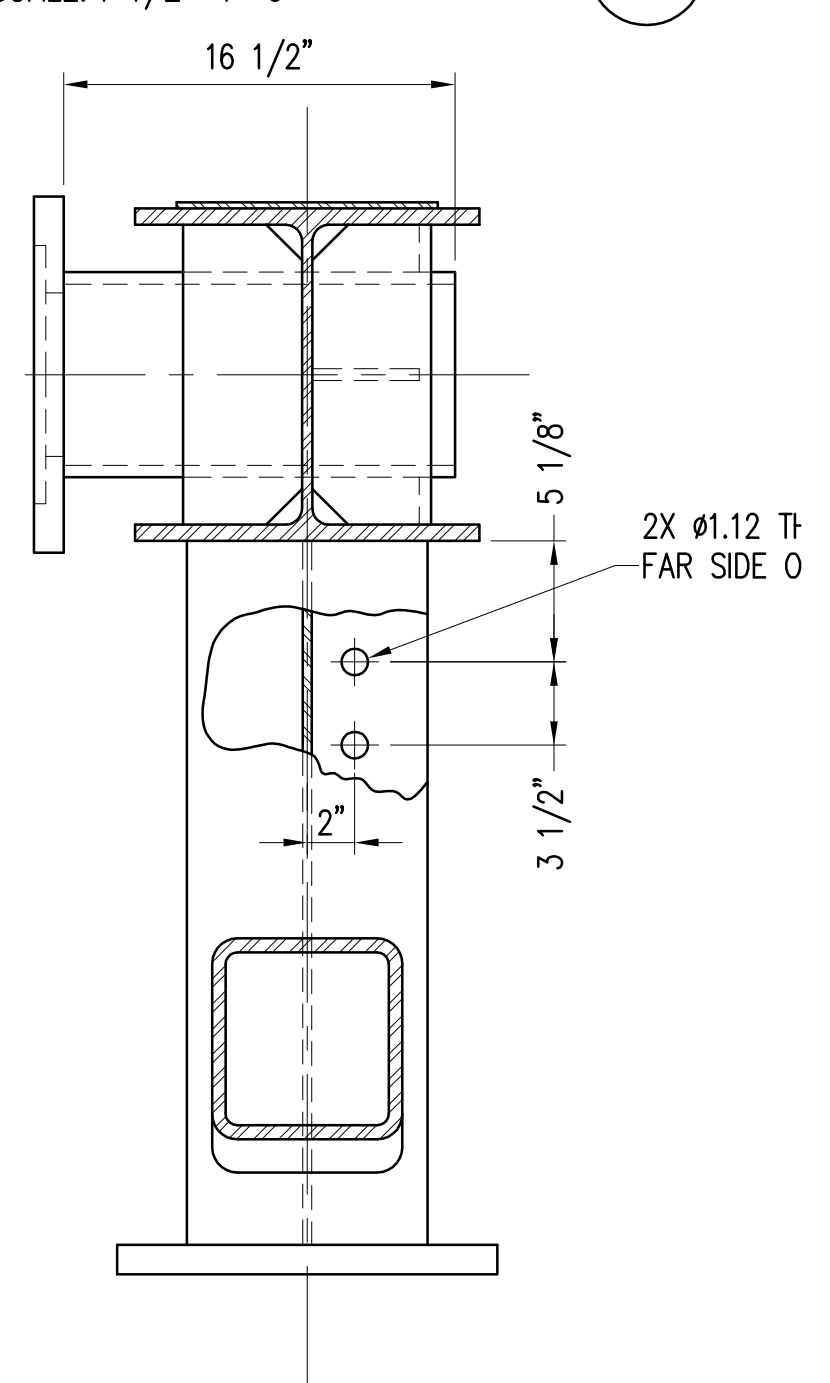
**SECTION C**  
SCALE: 1 1/2"=1'-0"  
M8.2



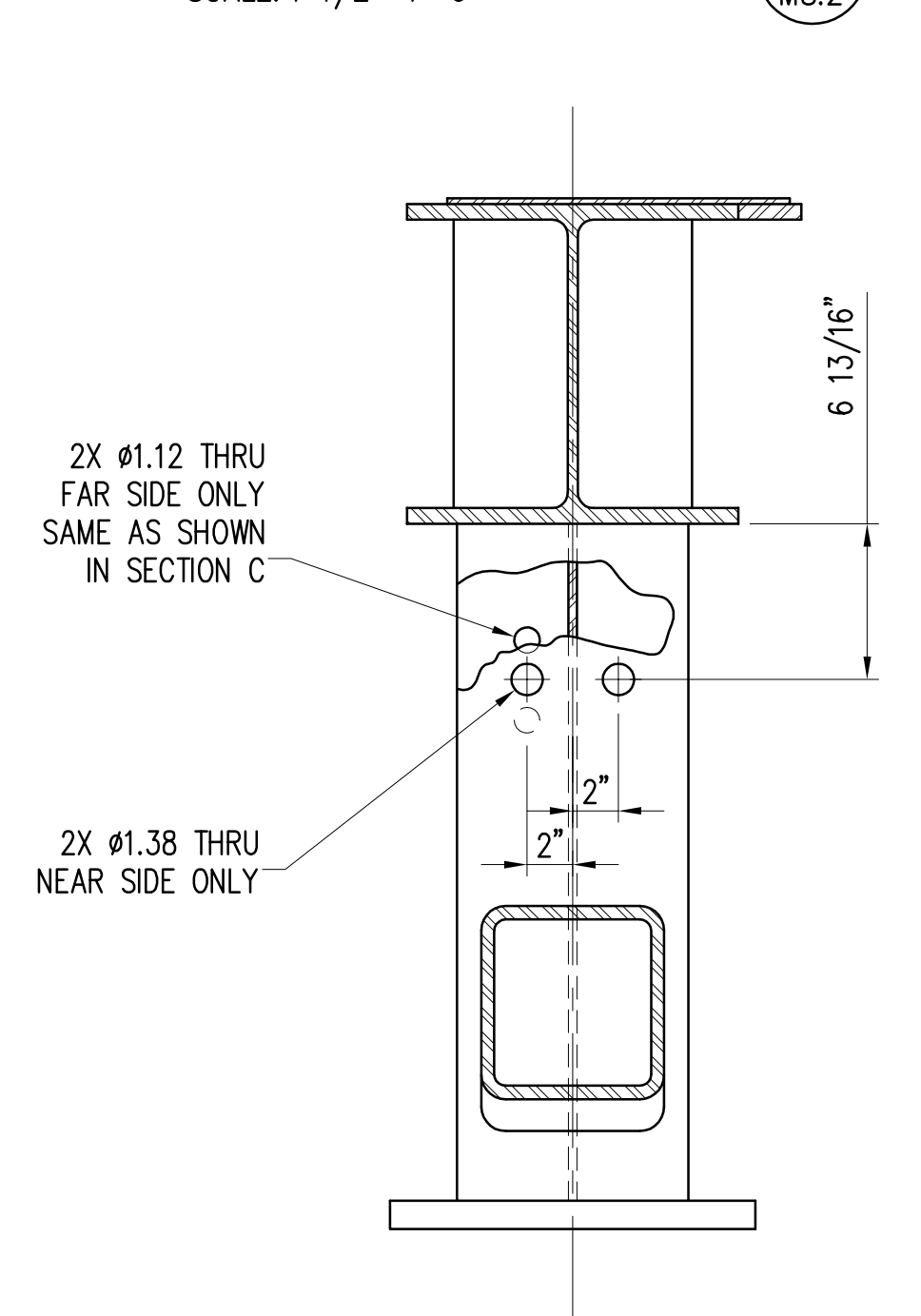
**VIEW A**  
SCALE: 1 1/2"=1'-0"  
M8.2



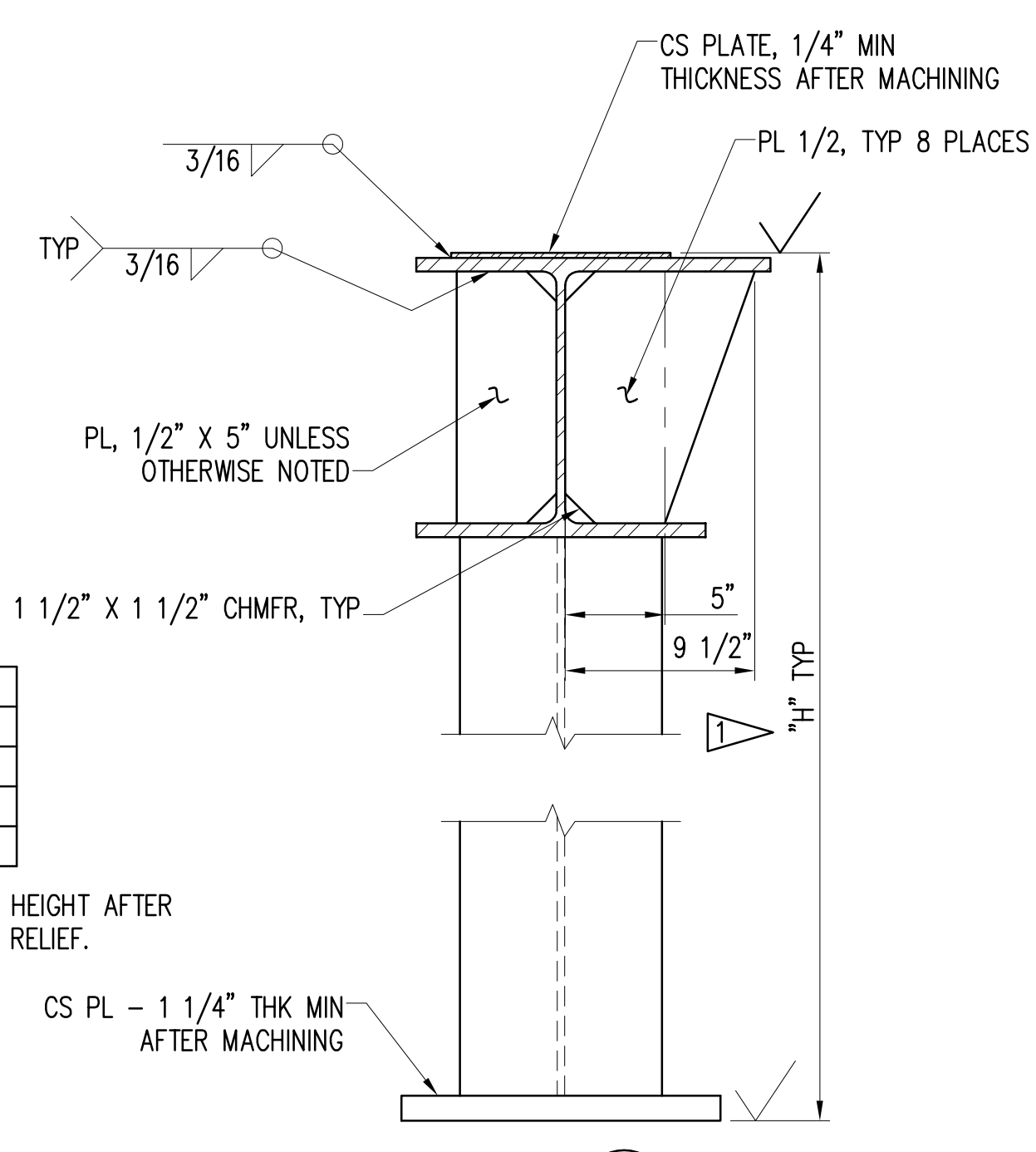
**VIEW C**  
SCALE: 1 1/2"=1'-0"  
M8.2



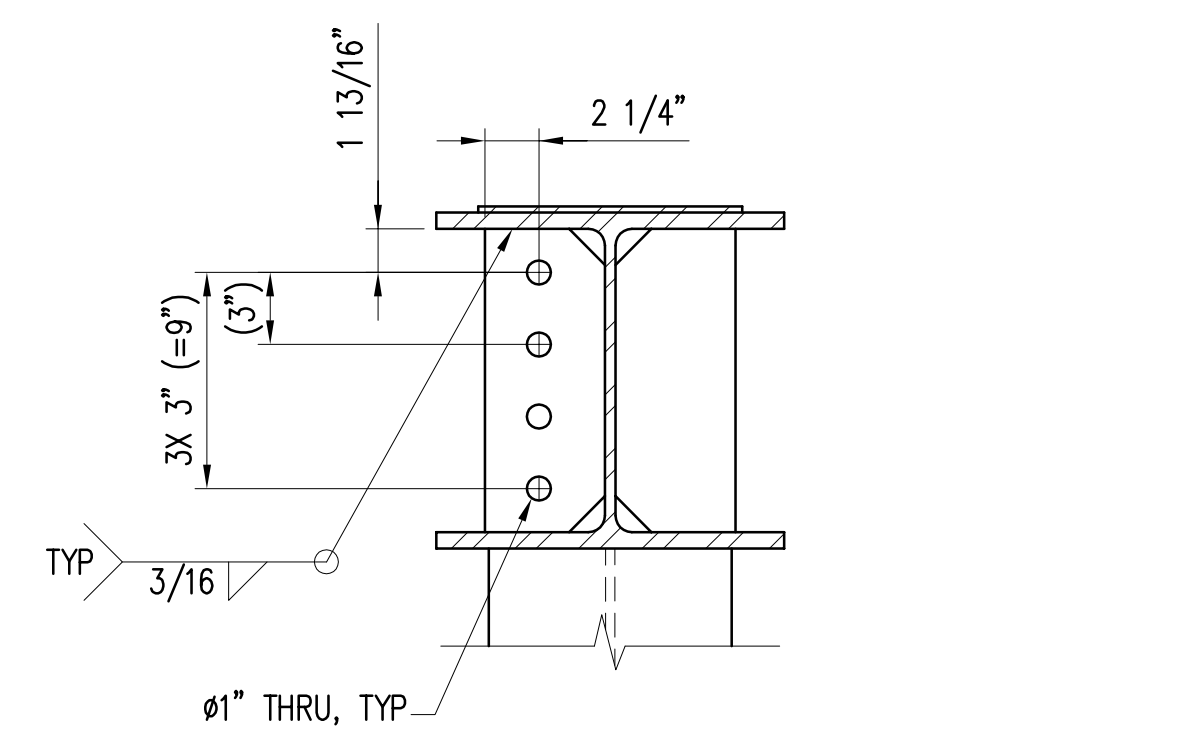
**SECTION D**  
SCALE: 1 1/2"=1'-0"  
M8.2, M8.4



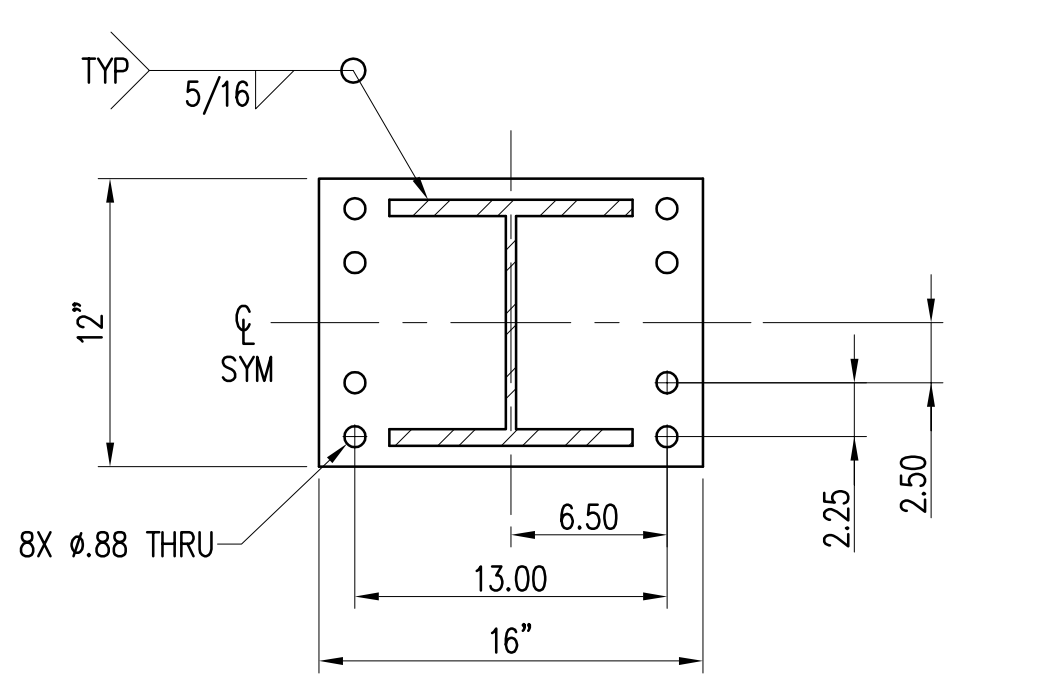
**SECTION D**  
SCALE: 1 1/2"=1'-0"  
M8.2, M8.4



**SECTION A**  
SCALE: 1 1/2"=1'-0"  
M8.2, M8.4



**CROSBACE CONNECTION**  
SCALE: 1 1/2"=1'-0"  
OPPOSITE HAND WHERE APPLICABLE  
M8.3, M8.5



**SECTION B**  
SCALE: 1 1/2"=1'-0"  
M8.2, M8.4

	H
KAWAIHAE	51.50
KAHULUI	37.81
HONOLULU	67.31
NAWILIWILI	45.12

MACHINE TO FINISHED HEIGHT AFTER WELDING AND STRESS RELIEF.

CS PL - 1 1/4" THK MIN AFTER MACHINING

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS DIVISION

**HEALY TIBBITTS BUILDERS, INC.**  
1601 Fifth Avenue, Suite 1600  
Seattle, Washington 98101  
Consulting Engineers (206) 622-5822 Fax (206) 622-8130

**kpff**

JOB TITLE: **BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE**

SHEET TITLE: **SUBFRAME DETAILS BEARING PANEL & SECTION VIEWS**

DESIGNED BY: SDS  
DRAWN BY: SS  
CHECKED BY: ACJ  
DATE: 9/1/06  
SCALE: AS SHOWN

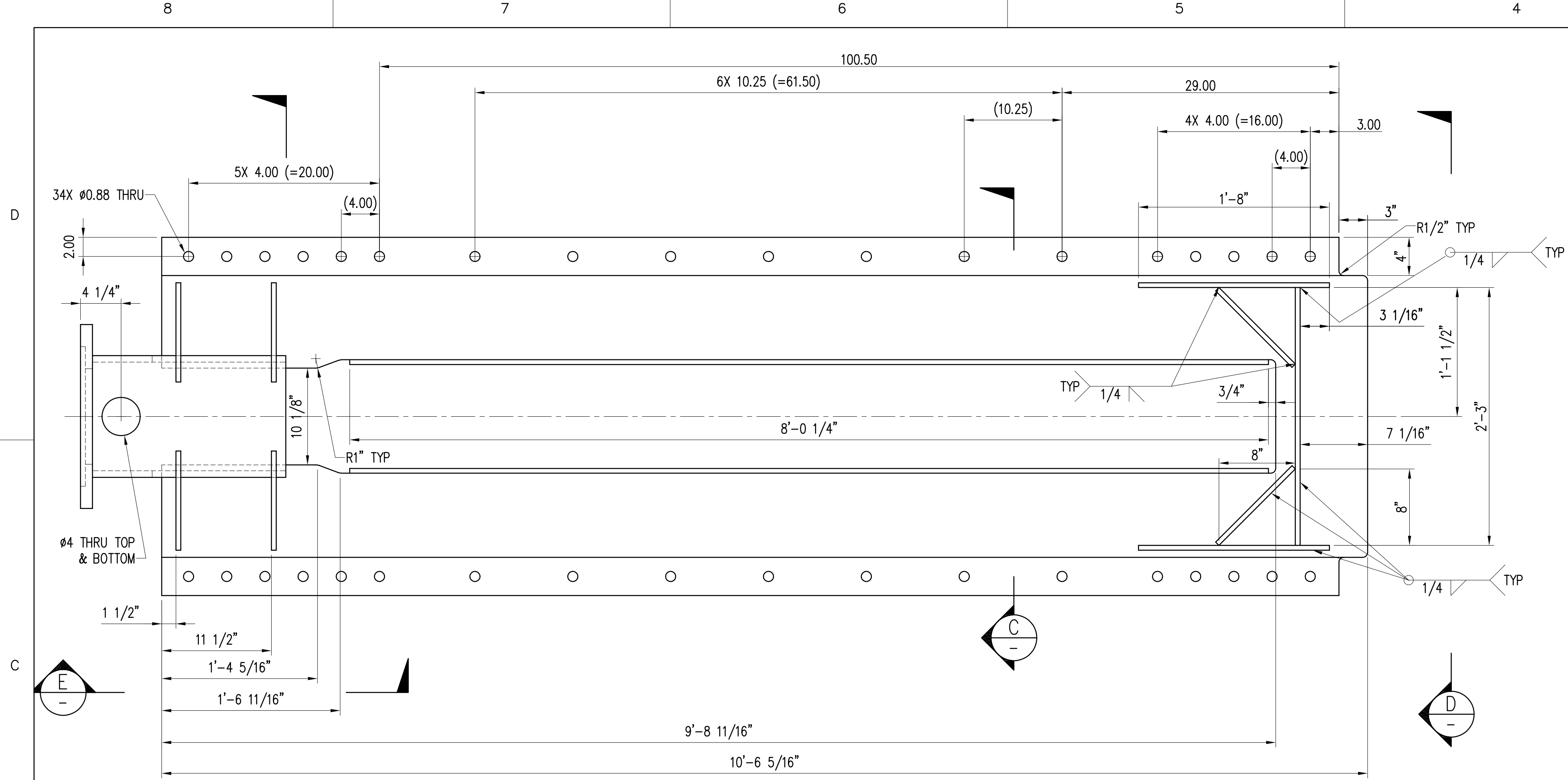
APPROVED BY: [Signature]  
FOR HARBORS ADMINISTRATOR

ENGINEERING PROGRAM MANAGER: [Signature]  
DRAWING NUMBER: **M-8.6**  
REVISION: \_\_\_\_\_  
OF \_\_\_\_\_ SHTS

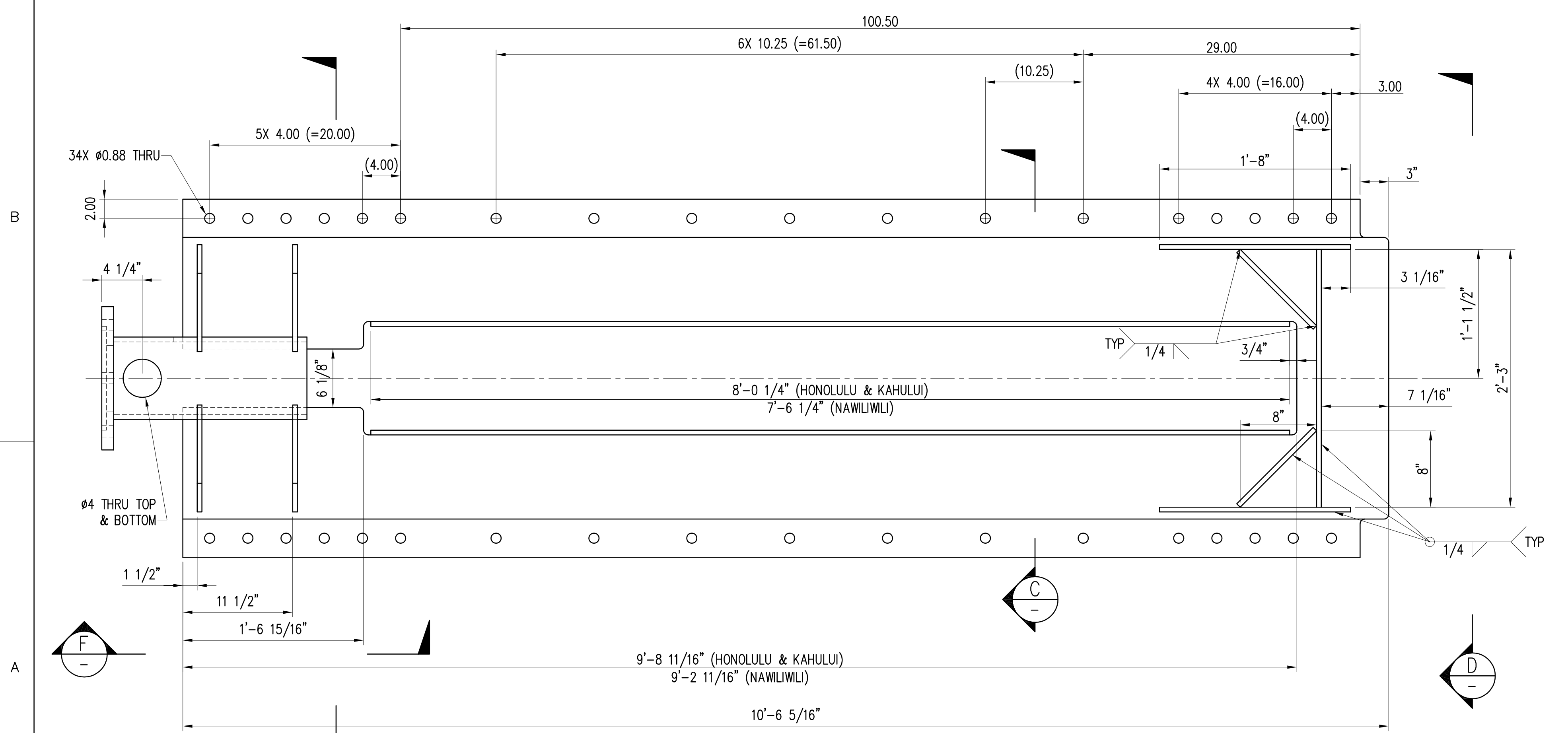
REduced SIZE PRINT (NOT TO SCALE)

DESIGN RECORD DRAWING

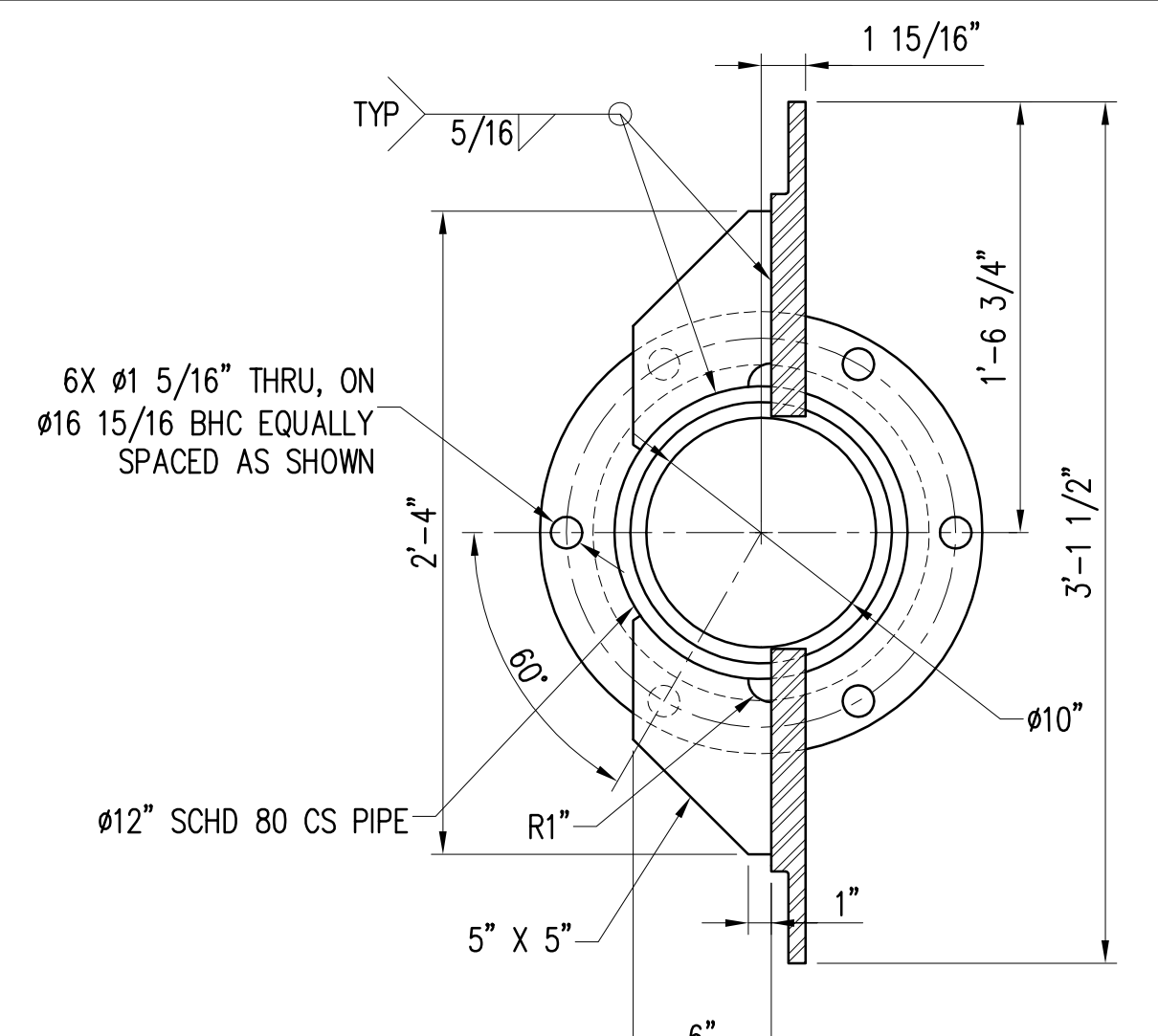




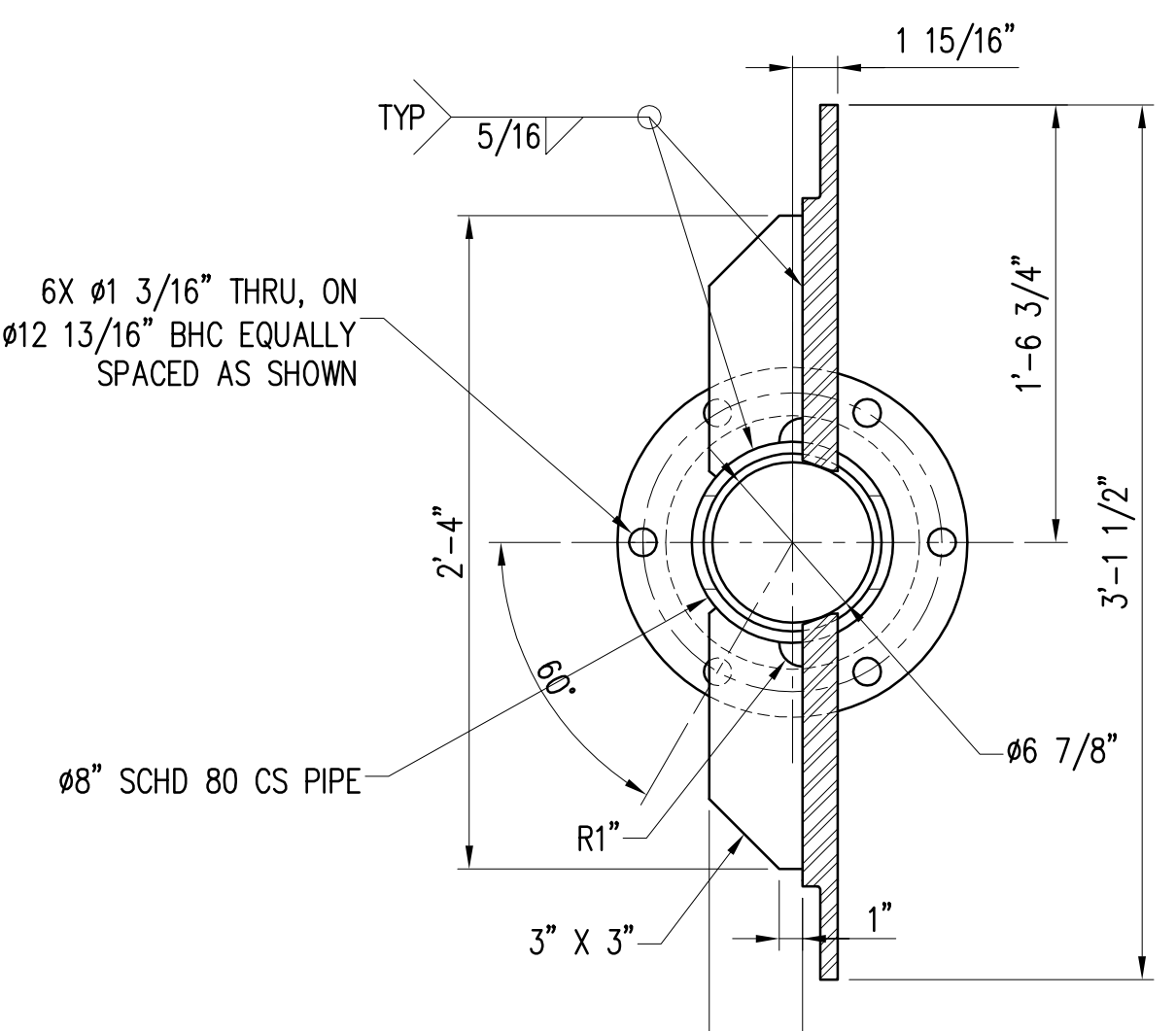
**DETAIL KINGPIN GUIDE - 38' APRON**  
 SCALE: 1-1/2"=1'-0"  
 VIEWED FROM UNDERSIDE



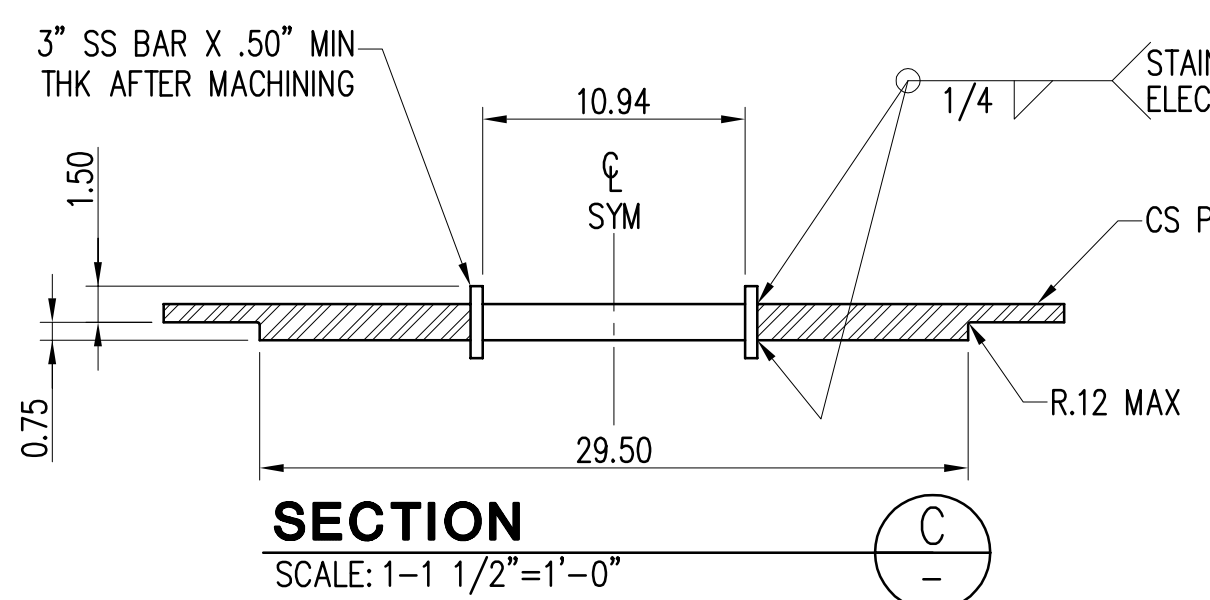
**DETAIL KINGPIN GUIDE - 28' APRON**  
 SCALE: 1-1/2"=1'-0"  
 VIEWED FROM UNDERSIDE



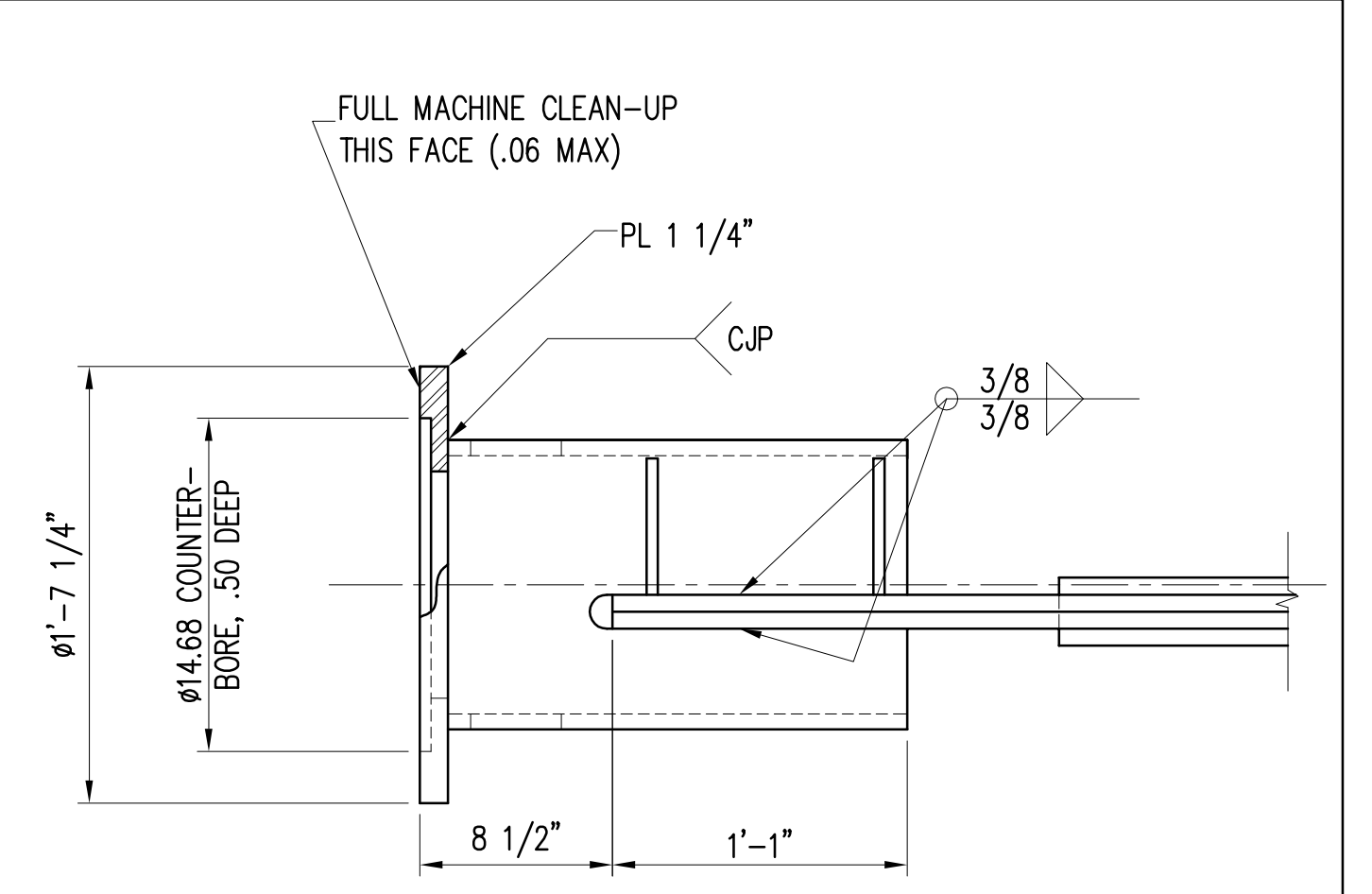
**SECTION A-A**  
 SCALE: 1-1 1/2"=1'-0"



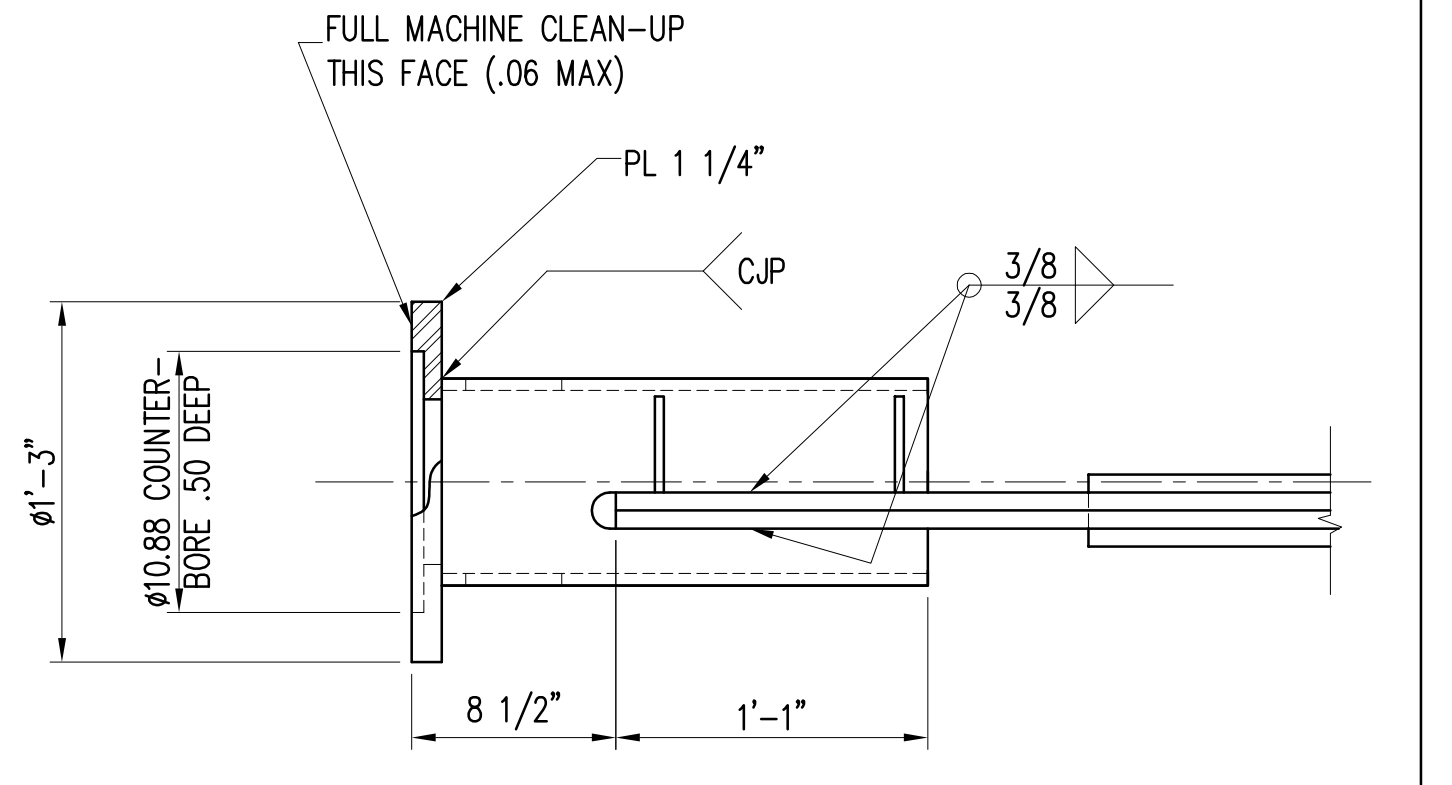
**SECTION B-B**  
 SCALE: 1-1 1/2"=1'-0"



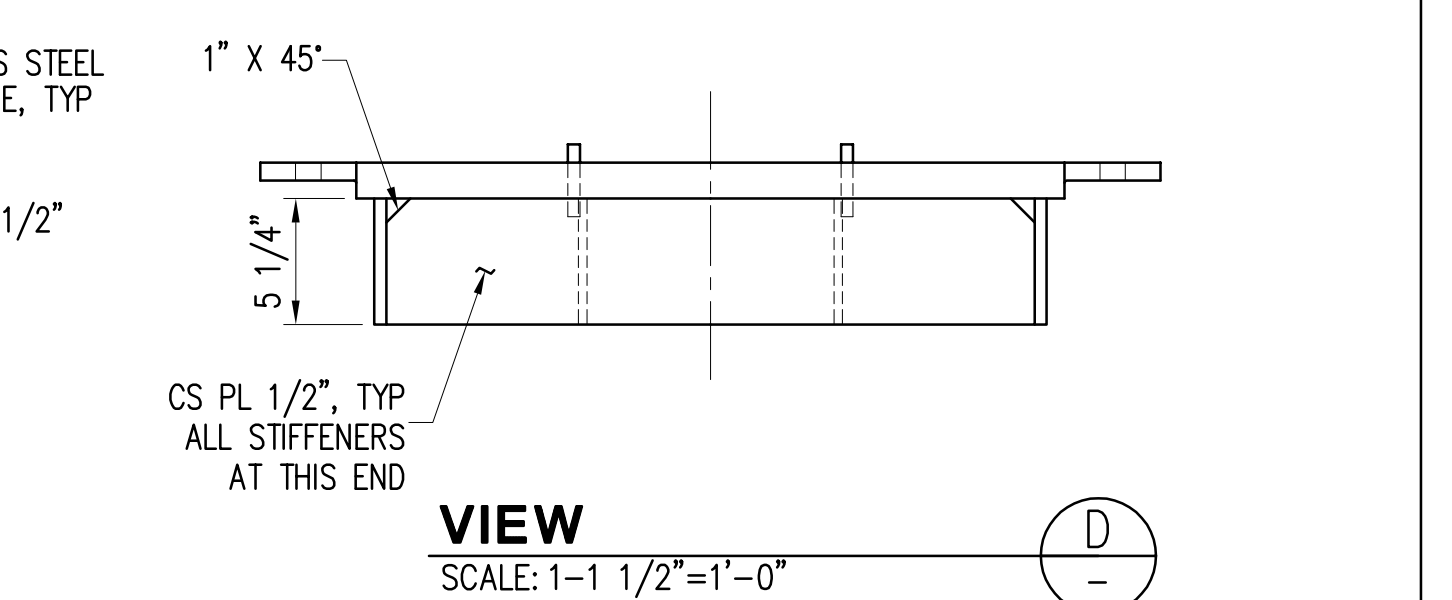
**SECTION C-C**  
 SCALE: 1-1 1/2"=1'-0"



**VIEW E-E**  
 SCALE: 1-1 1/2"=1'-0"

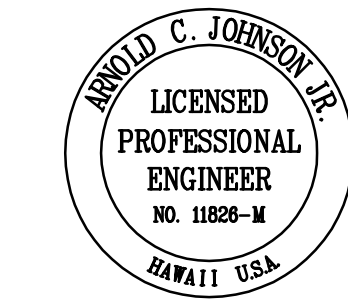


**VIEW F-F**  
 SCALE: 1-1 1/2"=1'-0"

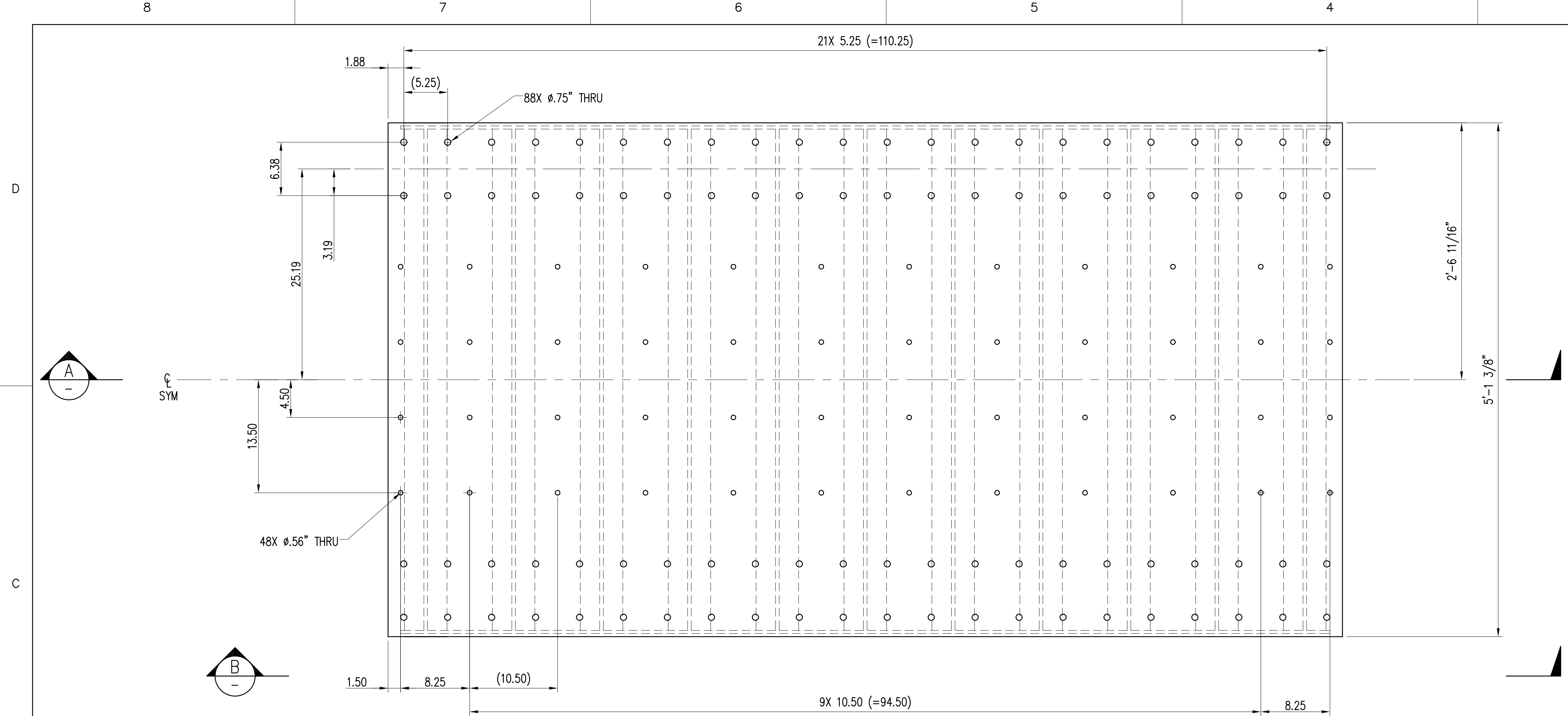


**VIEW D-D**  
 SCALE: 1-1 1/2"=1'-0"

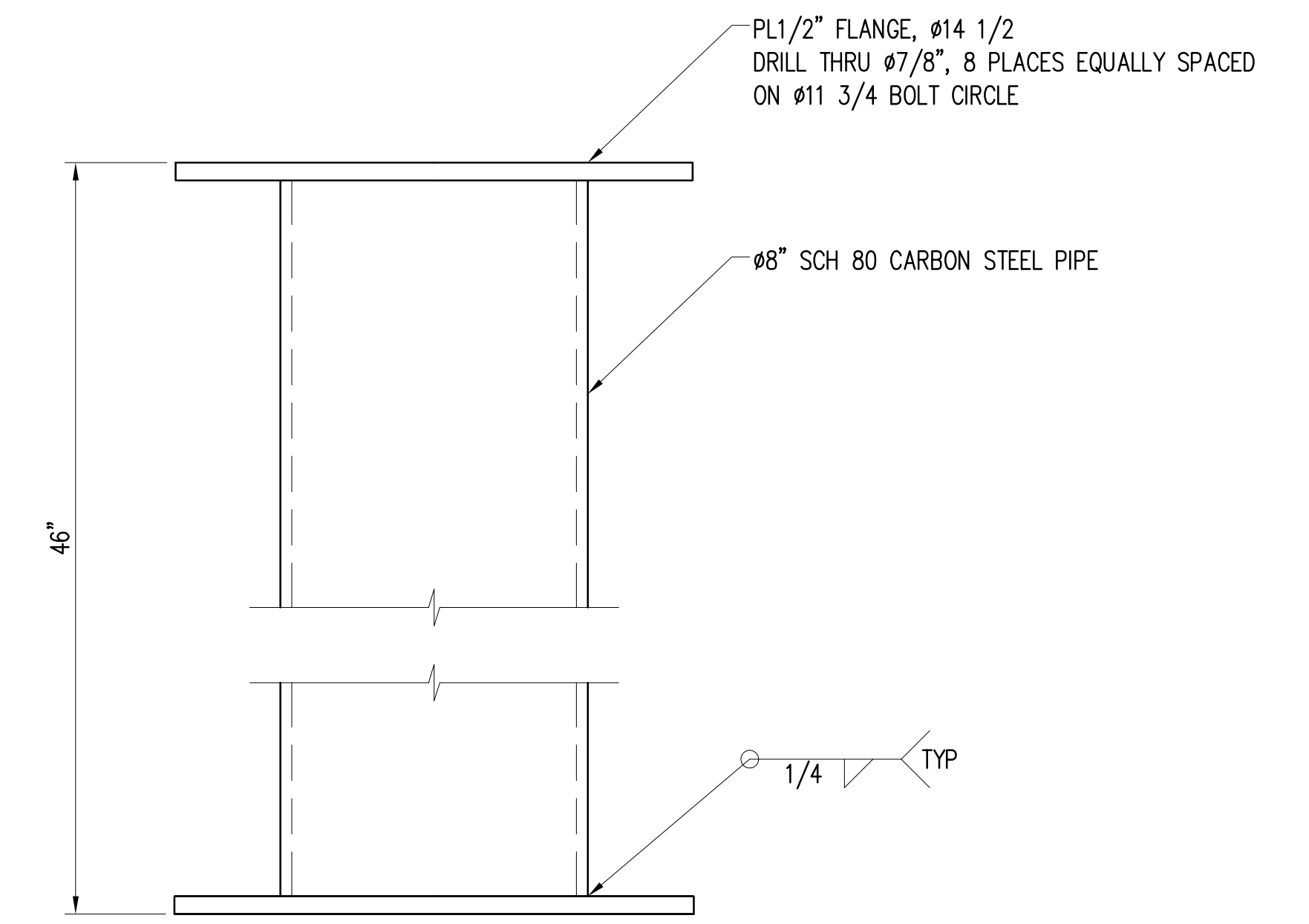
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SUBFRAME DETAILS 28' &amp; 38' KINGPIN GUIDES</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER <b>M-8.7</b>	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	REVISION	
CHECKED BY: ACJ	JOB NUMBER	H.C. 90018	
DATE: 9/1/06	SCALE: AS SHOWN	REVISION	
REDUCED SIZE PRINT (NOT TO SCALE)		DESIGN RECORD DRAWING	



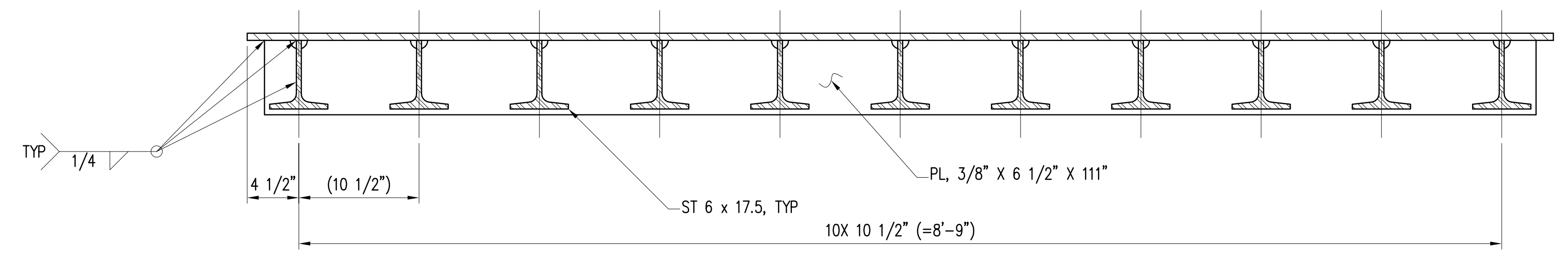
DESIGN RECORD DRAWING



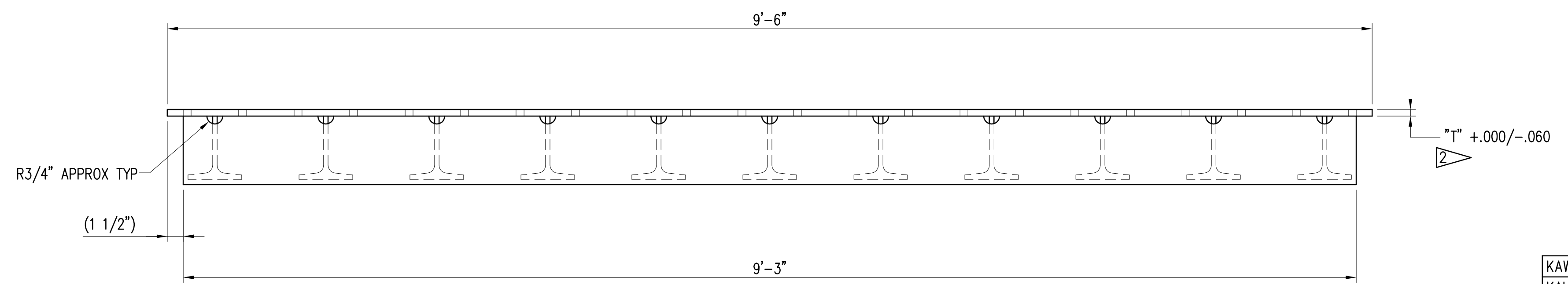
**DETAIL REAR BEARING PANEL**  
 SCALE: 1-1/2"=1'-0"  
 VIEWED FROM UNDERSIDE



**DETAIL - RAMP STANCHION (KAHULUI ONLY)**  
 SCALE: 3"=1'-0"



**SECTION**  
 SCALE: 1-1/2"=1'-0"



**ELEVATION VIEW**  
 SCALE: 1 1/2"=1'-0"

	T
KAWAIHAE	.69
KAHULUI	
HONOLULU	.50
NAWILIWILI	

T=FINAL BOTTOM PLATE THICKNESS. MACHINE CLEAN-UP FACE OF BOTTOM PLATE AFTER WELDING AND STRESS RELIEF.

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
<b>SHEET TITLE</b> SUBFRAME DETAILS BEARING PANEL & SECTION VIEWS		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD: _____		ENGINEERING PROGRAM MANAGER: _____
DESIGNED BY: SDS DRAWN BY: SS CHECKED BY: ACJ DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-8.8</b> REVISION H.C. 90018
REDUCED SIZE PRINT (NOT TO SCALE)		_____ OF _____ SHTS

DESIGN RECORD DRAWING

D

C

B

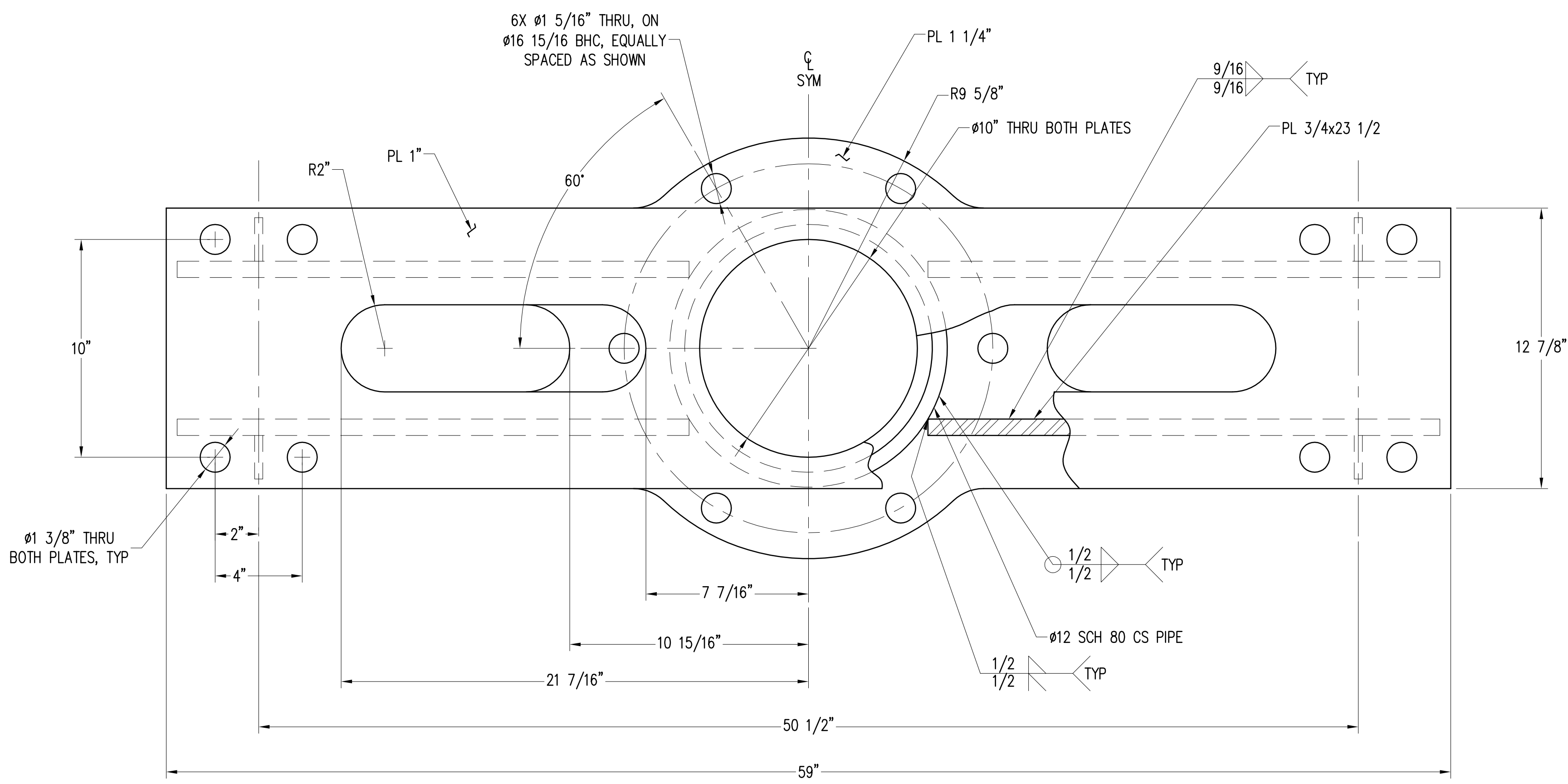
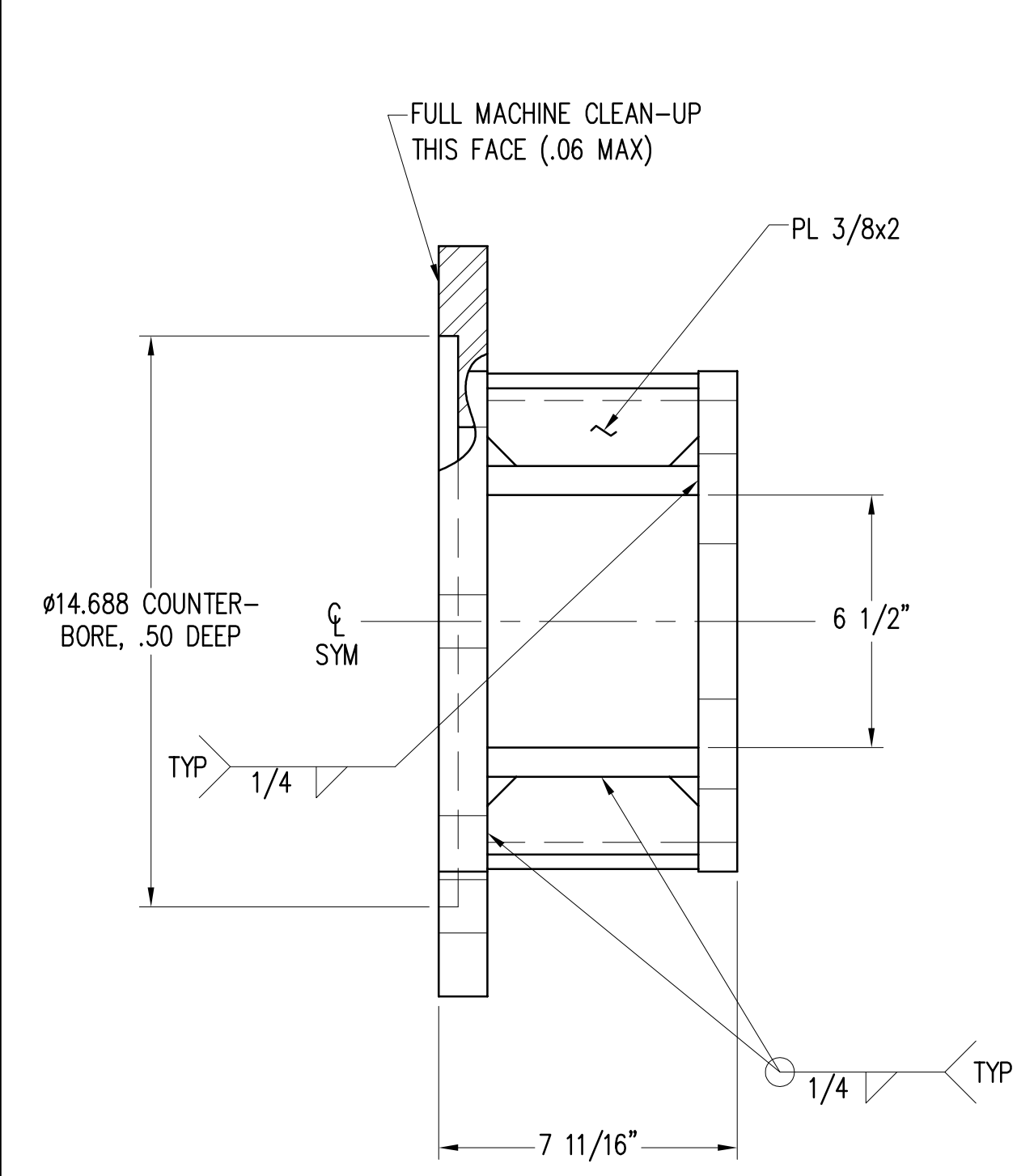
A

D

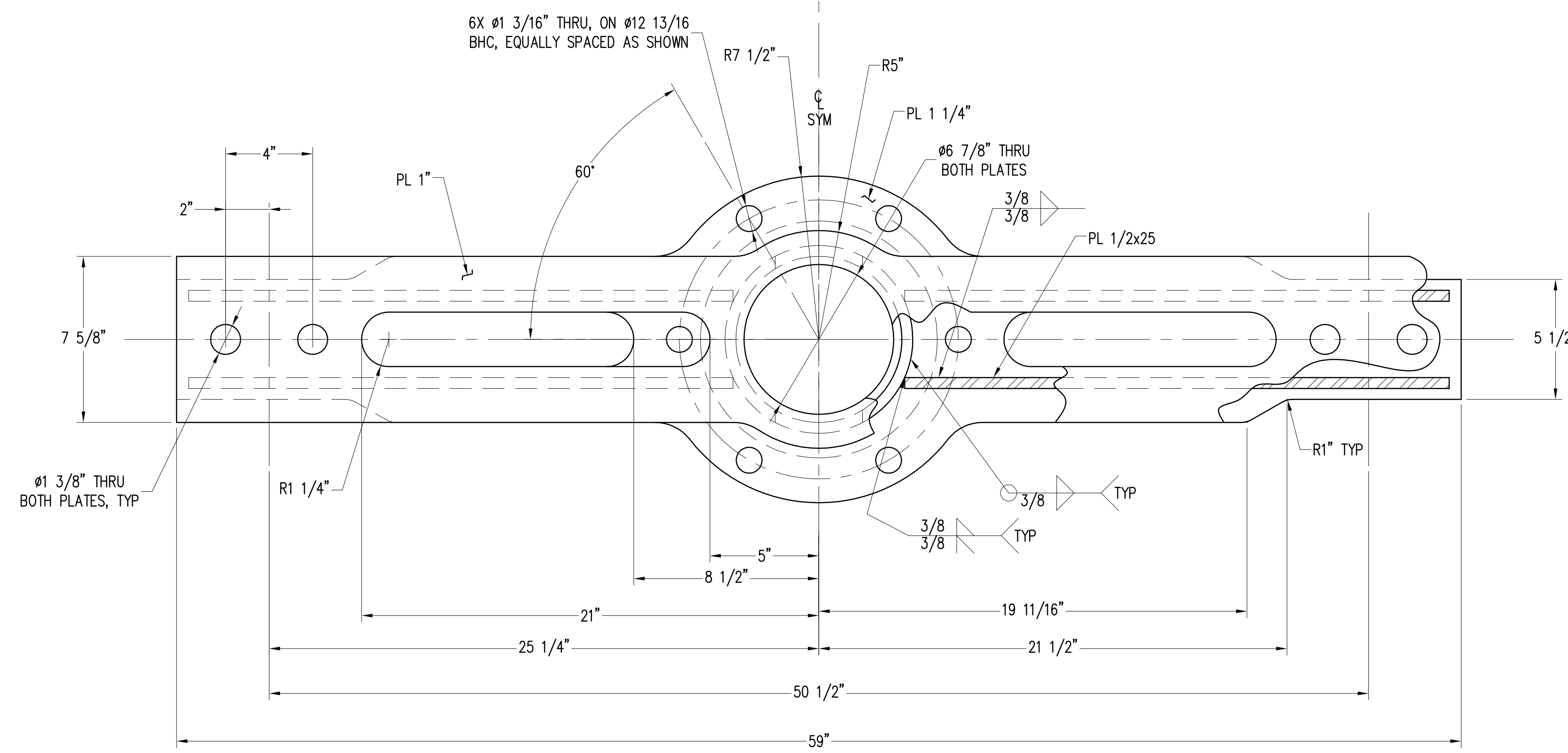
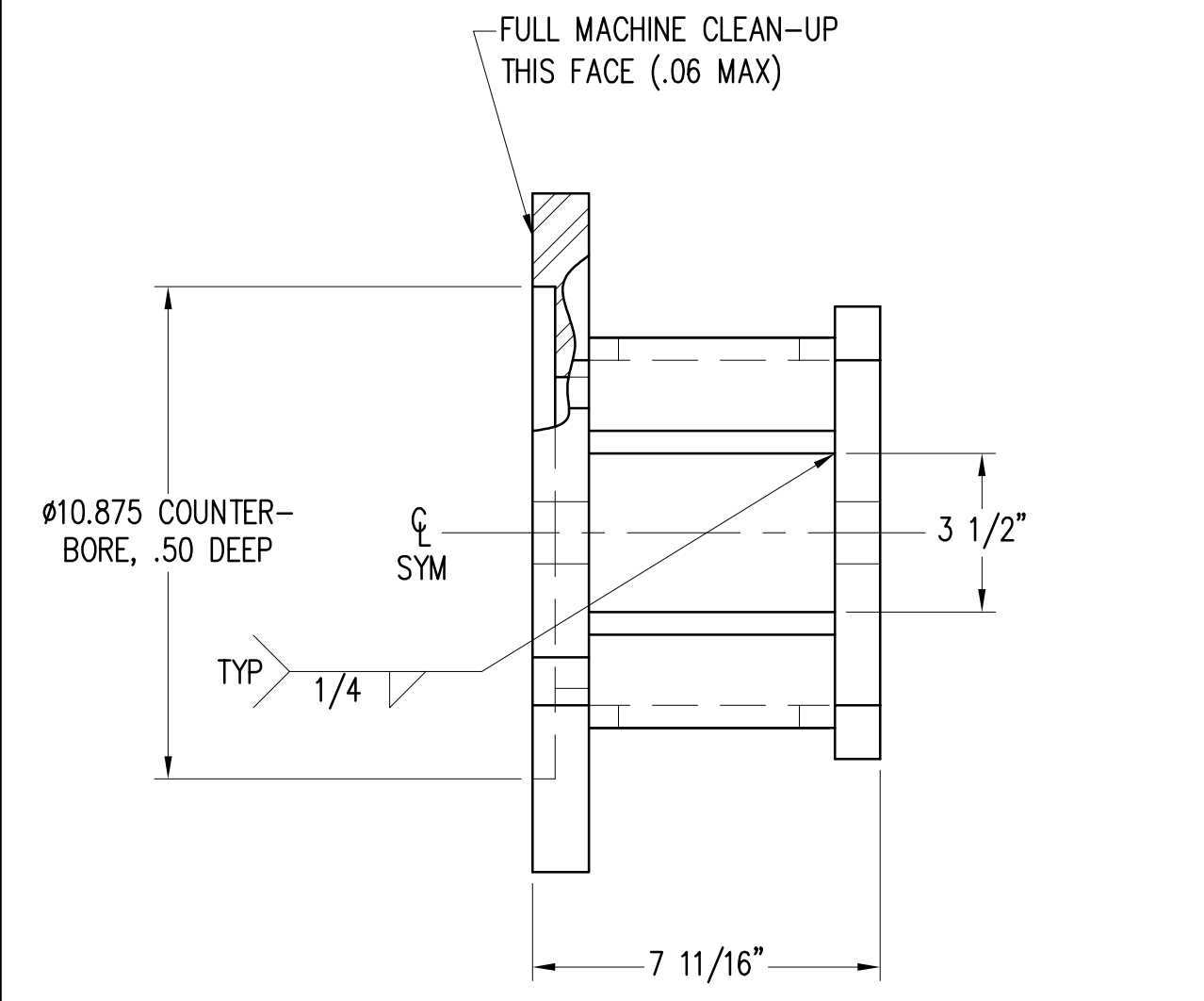
C

B

A

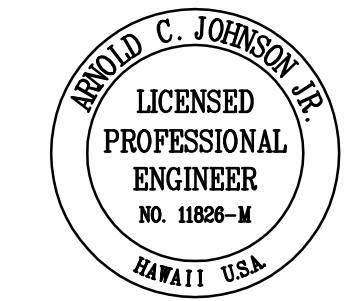


**CYLINDER BEAM - 38' APRON** ①  
SCALE: 3"=1'-0" M8.0



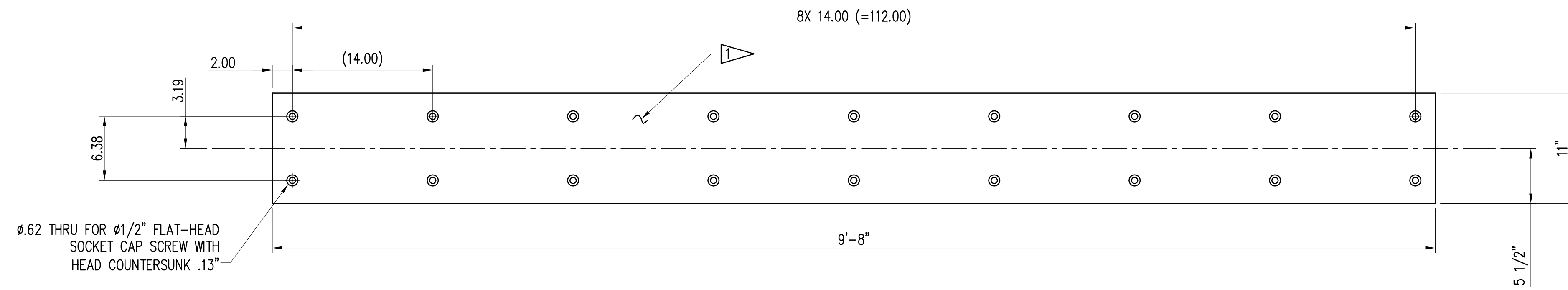
**CYLINDER BEAM - 28' APRON** ②  
SCALE: 3"=1'-0" M8.0

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>SUBFRAME DETAILS CYLINDER BEAM</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-8.9	
CHECKED BY: SDS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	____ OF ____ SHTS	
SCALE: AS SHOWN			



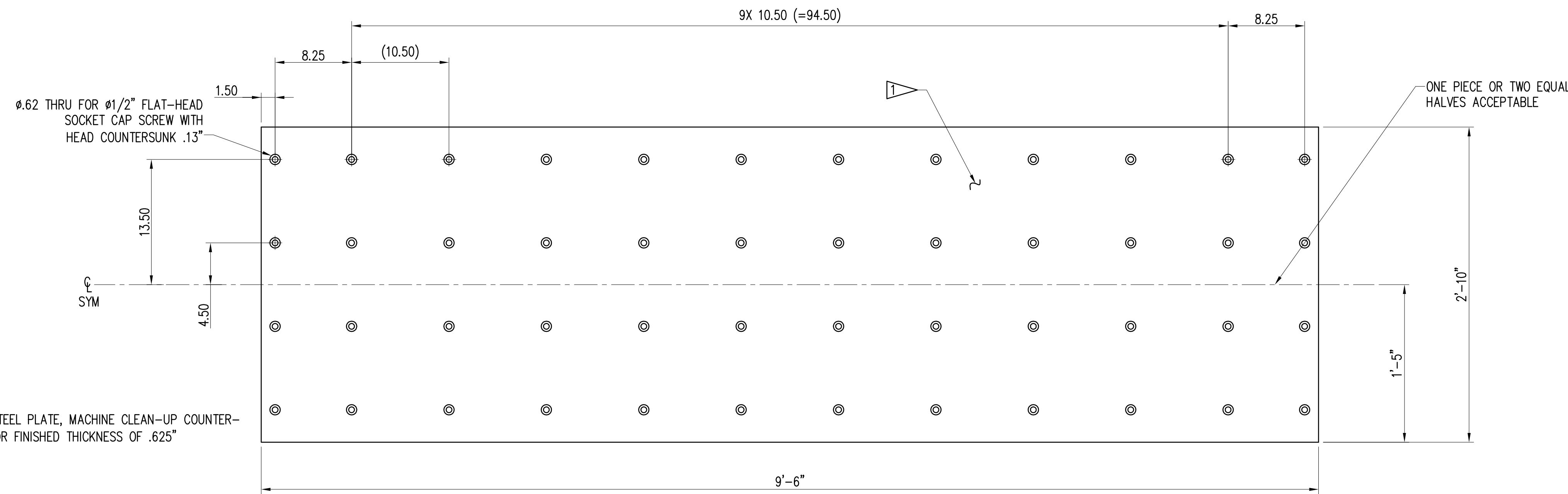
REDUCED SIZE  
PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING



**DETAIL BEARING PLATE, SMALL**  
SCALE: 1-1/2"=1'-0"

2  
M8.0



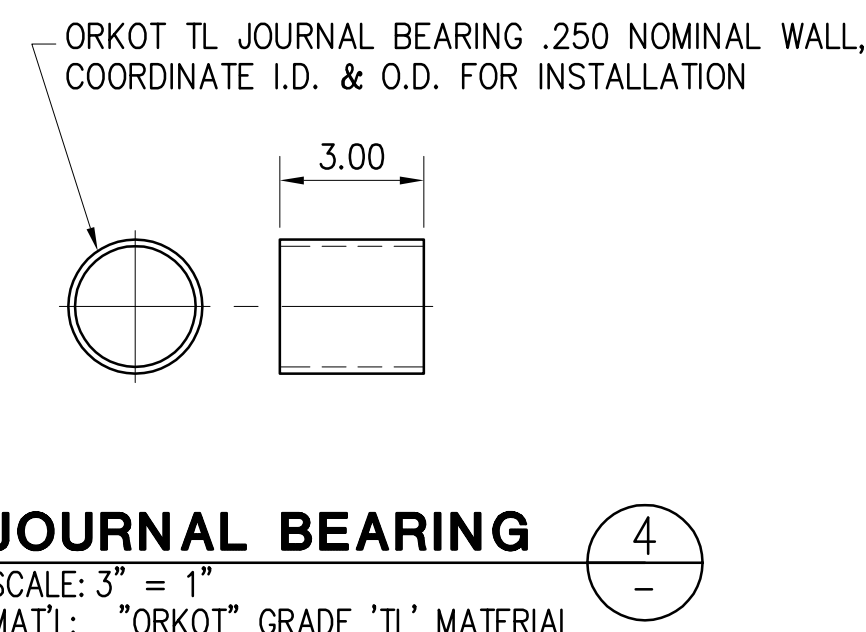
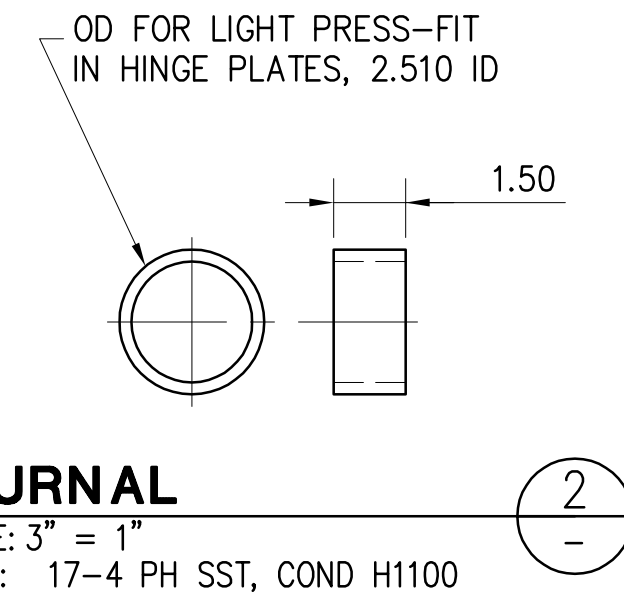
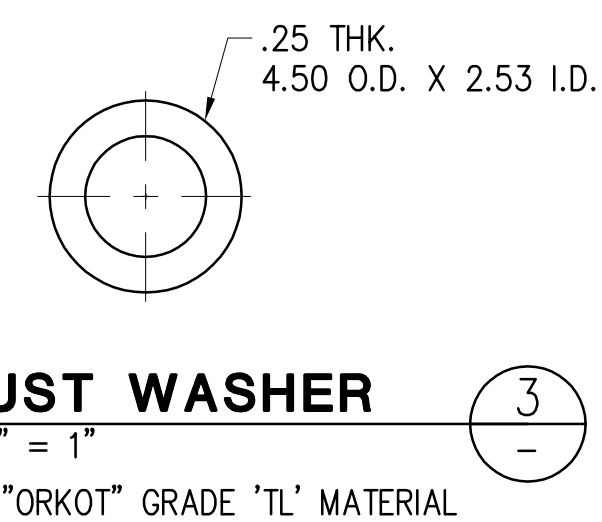
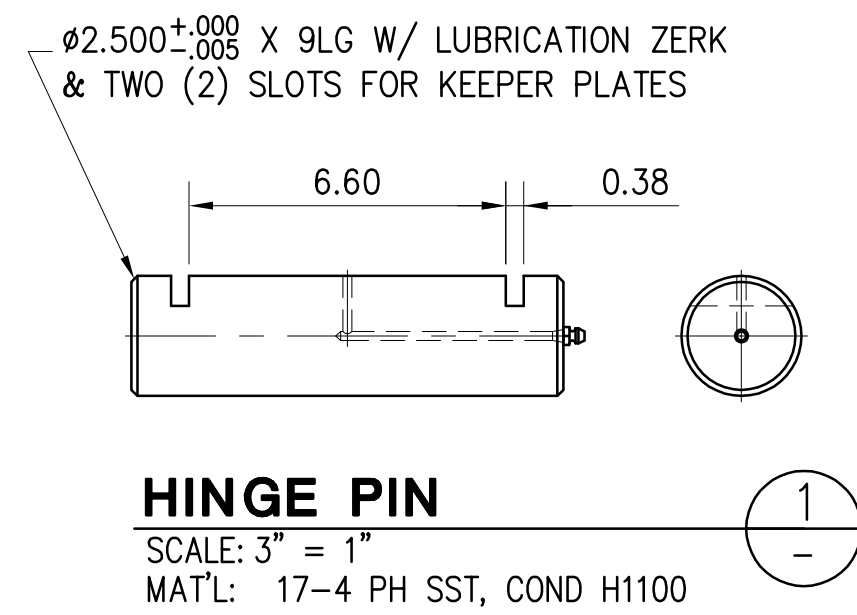
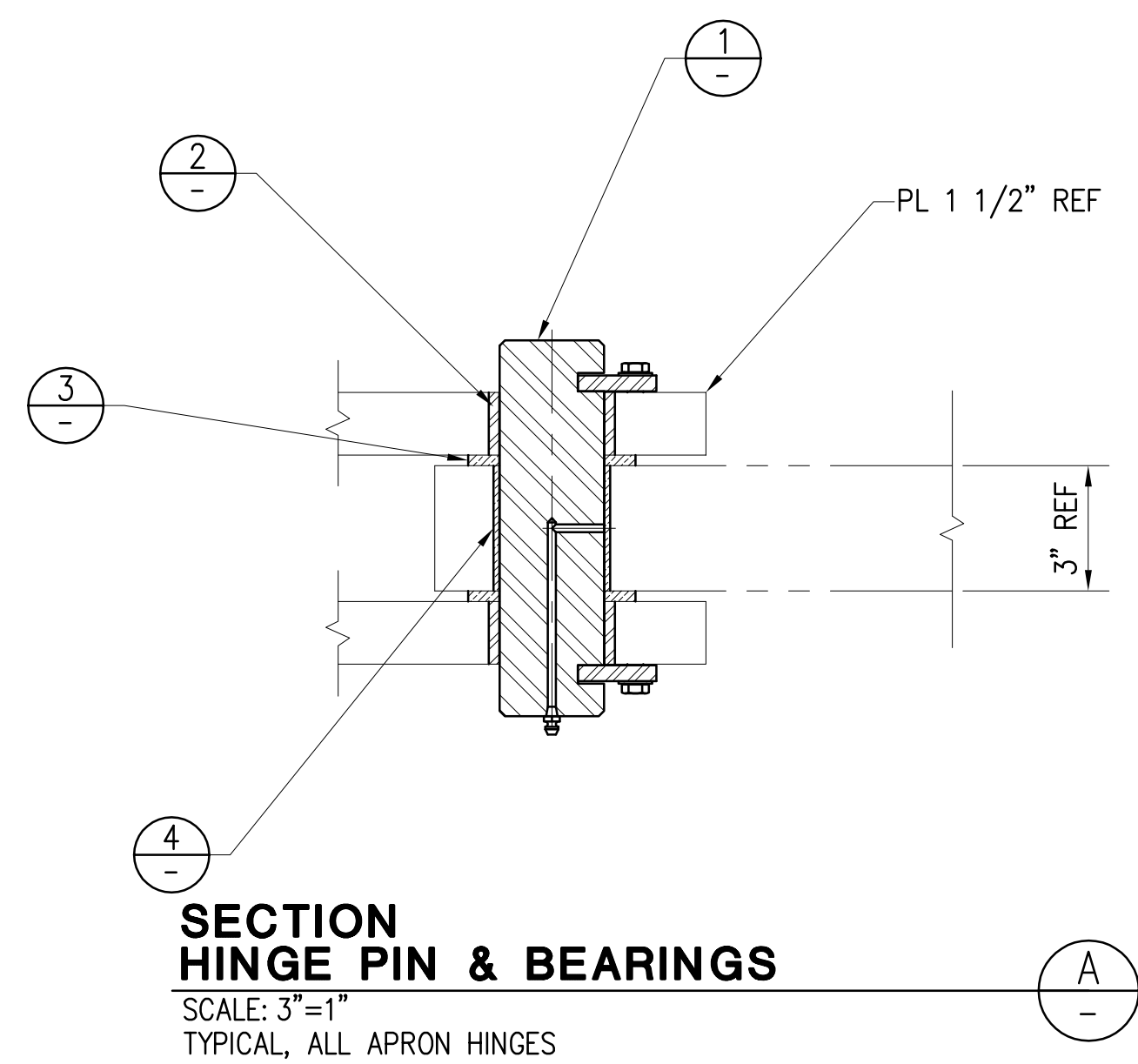
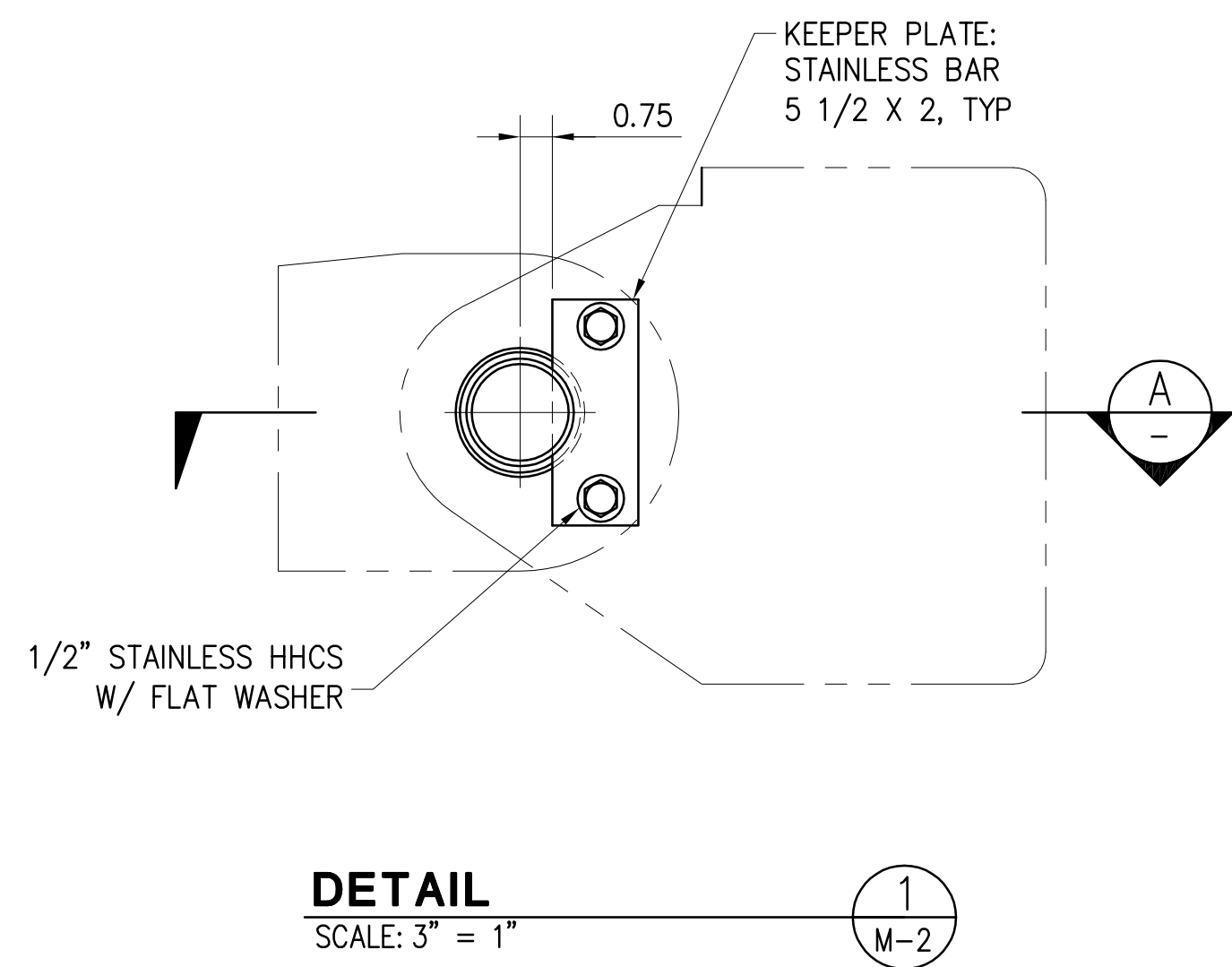
**DETAIL BEARING PLATE, LARGE**  
SCALE: 1-1/2"=1'-0"

3  
M8.0

1" STAINLESS STEEL PLATE, MACHINE CLEAN-UP COUNTER-SINK SIDE FOR FINISHED THICKNESS OF .625"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
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JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>SUBFRAME DETAILS BEARING PLATES</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY: _____	DRAWING NUMBER
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-8.10
CHECKED BY: ACJ	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	_____ OF _____ SHTS
SCALE: AS SHOWN		

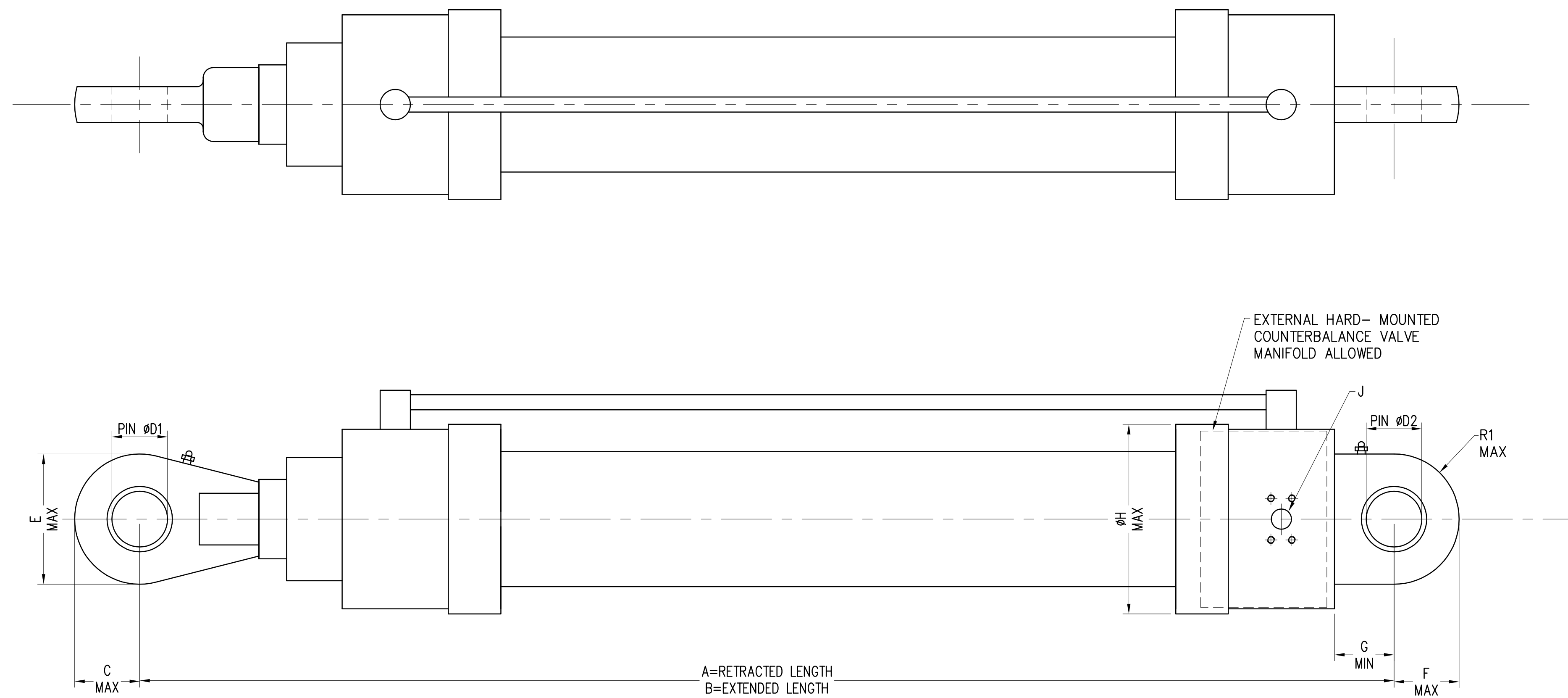
REDUCED SIZE PRINT  
(NOT TO SCALE)



TYPICAL APRON HINGE PINS & BEARINGS

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
	<b>JOB TITLE</b> BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
	<b>SHEET TITLE</b> FERRY APRON HINGES AND MISCELLANEOUS MECHANICAL DETAILS	
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY: _____	DRAWING NUMBER
DRAWN BY: MJE	FOR HARBORS ADMINISTRATOR	M-9
CHECKED BY: SDS	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	_____ OF _____ SHTS
SCALE: AS SHOWN		

REDUCED SIZE PRINT (NOT TO SCALE)



**NOTES:**

- HYDRAULIC CYLINDERS SHALL BE DOUBLE ACTING AND OF WELDED CONSTRUCTION.
- OPERATING PRESSURE: 2500 psi.
- EMERGENCY PRESSURE: 5000 psi.
- MINIMUM BURST PRESSURE AND SAFETY FACTORS SHALL CONFORM TO NFPA AND AASHTO MOVABLE BRIDGE SPECIFICATIONS.
- PRESSURE TEST AT 5000 PSI BOTH DIRECTIONS, NO EXTERNAL LEAKAGE PERMITTED.
- CYLINDER RODS SHALL BE MADE FROM STAINLESS STEEL MATERIAL, ROD SEAL AND BEARING SURFACES SHALL BE HARD CHROME PLATED IN ACCORDANCE WITH FEDERAL SPECIFICATION QQ-C-320B(1) CLASS 2E. CYLINDER DESIGNS USING CERAMIC COATED RODS SHALL BE ACCEPTABLE, PROVIDED THEY ARE MADE BY A REPUTABLE MANUFACTURER THAT HAS AT LEAST 20 YEARS SUCCESSFUL EXPERIENCE BUILDING HYDRAULIC CYLINDERS USING THIS TECHNOLOGY. IF THE CONTRACTOR UTILIZES THE CERAMIC COATED ROD OPTION, IT WILL BE PERMISSIBLE TO USE PLAIN CARBON STEEL IN THE ROD SUBSTRATE.
- COUNTERBALANCE VALVES INTEGRAL LOW LEAK POPPET TYPE WITH UNPILOTTED RELIEF PRESSURE SETTING OF 4,000psi.
- PAINT WITH HIGH QUALITY MARINE GRADE TWO PART EPOXY PAINT, PLUG ALL PORTS.
- USE OF TEFLON SEALING TAPE NOT PERMITTED ON ANY PART OF THE CYLINDER.
- SELF-ALIGNING SPHERICAL BEARINGS AT BOTH ENDS.
- CYLINDER HOSE CONNECTIONS SHALL BE SAE CODE 61 FOUR BOLT FLANGE LOCATED AS SHOWN. NO THREADED CONNECTIONS.
- SEALS SUITABLE FOR MINERAL TYPE HYDRAULIC FLUID.
- CUSHIONS AT BOTH ENDS; CUSHIONS SHALL BE SIZED FOR SOFT STOP UNDER NORMAL WORKING PRESSURE – NOT INTENDED FOR LOAD CONTROL.
- MANUFACTURER TO SUBMIT CYLINDER DRAWINGS FOR REVIEW AND RECEIVE APPROVAL BEFORE BEGINNING MANUFACTURING.
- MANUFACTURER TO FURNISH PARTS DRAWING.
- MANUFACTURER TO ATTACH METAL PLATE WITH MANUFACTURES NAME, MODEL NO., SERIAL NO., DATE OF MANUFACTURE, RATED PRESSURE RATING, MAX PRESSURE RATING.
- MANUFACTURER TO SUPPLY ALL TESTING CERTIFICATION DOCUMENTATION.
- PROVIDE ONE SPARE SEAL KIT FOR EACH CYLINDER TYPE, AND ONE SPARE COMPLETE CYLINDER AS INDICATED.

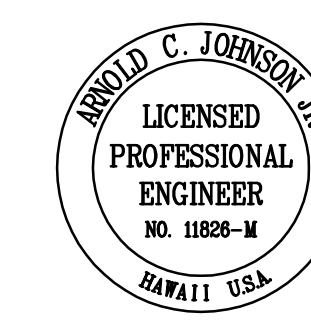
CYLINDER DATA			
	28' APRON CYLINDER	38' APRON CYLINDER	APRON/LIFT FRAME LOCK
A=RETRACTED in [mm]	61.02 [1550]	71.65 [1820]	17.69 [450]
B=EXTENDED in [mm]	96.85 [2460]	111.02 [2820]	23.69 [602]
C in [mm]	3.74 [95]	4.96 [126]	2.40 [61]
E in [mm]	6.57 [167]	8.62 [219]	4.80 [122]
F in [mm]	3.74 [95]	4.96 [126]	2.40 [61]
G in [mm]	2.95 [75]	3.54 [90]	2.13 [54]
J in	3/4" SAE CODE 61	3/4" SAE CODE 61	3/4" CODE 61
ØH in [mm]	9.92 [252]	12.51 [318]	4.80 [122]
PIN ØD1 in [mm]	2.76 [70]	3.54 [90]	1.97 [50]
PIN ØD2 in [mm]	2.76 [70]	3.54 [90]	1.97 [50]
R1 in [mm]	3.74 [95]	4.96 [126]	2.40 [61]
ØBORE in [mm]	5.51 [140]	7.09 [180]	3.94 [100]
ØROD in [mm]	3.94 [100]	4.92 [125]	2.20 [56]
STROKE in [mm]	35.83 [910]	39.37 [1000]	6.00 [152]
PROJECT QUANTITY	12	4	4
SPARES QUANTITY	1	1	0

1  
M13.0 M7.0b

2  
M13.1 M7.0a

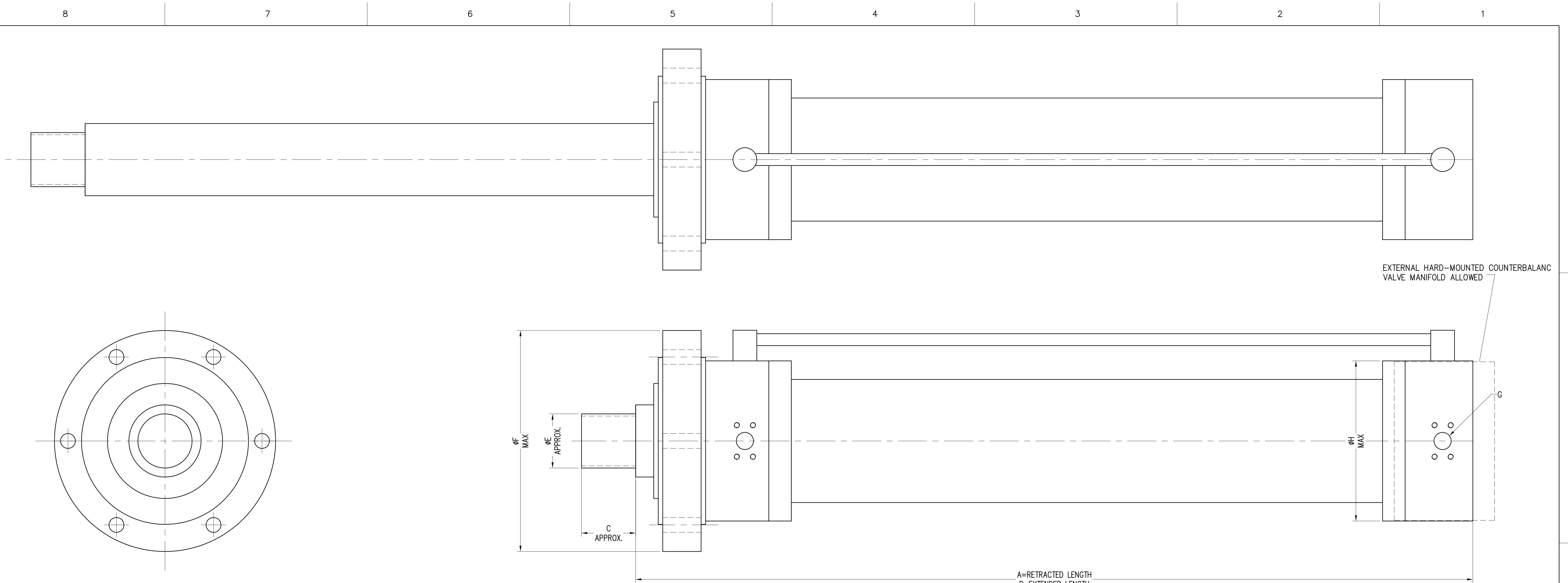
3  
M13.0 M13.1, M7.12

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>FERRY APRON HYDRAULIC LIFT &amp; LOCK CYLINDERS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: JLF	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-10.0	
CHECKED BY: SDS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: NONE			



REDUCED SIZE  
PRINT  
(NOT TO SCALE)

ESIGN RECORD DRAWING



**NOTES:**

- HYDRAULIC CYLINDERS SHALL BE DOUBLE ACTING AND OF WELDED CONSTRUCTION WITH ROUND FLANGE AT HEAD.
- OPERATING PRESSURE: 2500 psi.
- EMERGENCY PRESSURE: 5000 psi.
- MINIMUM BURST PRESSURE AND SAFETY FACTORS SHALL CONFORM TO NFPA AND AASHTO BRIDGE SPECIFICATIONS.
- PRESSURE TEST AT 5000 PSI BOTH DIRECTIONS, NO EXTERNAL LEAKAGE PERMITTED.
- CYLINDER RODS SHALL BE MADE FROM STAINLESS STEEL MATERIAL, ROD SEAL AND BEARING SURFACES SHALL BE HARD CHROME PLATED IN ACCORDANCE WITH FEDERAL SPECIFICATION QQ-C-320B(1) CLASS 2E. CYLINDER DESIGNS USING CERAMIC COATED RODS SHALL BE ACCEPTABLE, PROVIDED THEY ARE MADE BY A REPUTABLE MANUFACTURER THAT HAS AT LEAST 20 YEARS SUCCESSFUL EXPERIENCE BUILDING HYDRAULIC CYLINDERS USING THIS TECHNOLOGY. IF THE CONTRACTOR UTILIZES THE CERAMIC COATED ROD OPTION, IT WILL BE PERMISSIBLE TO USE PLAIN CARBON STEEL IN THE ROD SUBSTRATE.
- COUNTERBALANCE VALVES INTEGRAL LOW LEAK POPPET TYPE WITH UNPILOTED RELIEF PRESSURE SETTING OF 4,000psi.
- PAIN WITH HIGH QUALITY MARINE GRADE TWO PART EPOXY PAINT, PLUG ALL PORTS.
- USE OF TEFLON SEALING TAPE NOT PERMITTED ON ANY PART OF THE CYLINDER.
- HOSE CONNECTIONS SHALL BE SAE CODE 61 FOUR BOLT FLANGE LOCATED AS SHOWN. NO THREADED CONNECTIONS WILL BE ACCEPTABLE.
- SEALS SUITABLE FOR MINERAL TYPE HYDRAULIC FLUID.
- CUSHIONS AT BOTH ENDS SIZED FOR SOFT STOP UNDER WORKING PRESSURE. (NOT FOR LOAD CONTROL)
- MANUFACTURER TO SUBMIT CYLINDER DRAWINGS FOR REVIEW AND RECEIVE APPROVAL BEFORE BEGINNING MANUFACTURING.
- MANUFACTURER TO FURNISH PARTS DRAWING.
- MANUFACTURER TO ATTACH METAL PLATE WITH MANUFACTURES NAME, MODEL NO., SERIAL NO., DATE OF MANUFACTURE, RATED PRESSURE RATING, MAX PRESSURE RATING.
- MANUFACTURER TO SUPPLY ALL TESTING CERTIFICATION DOCUMENTATION.
- PROVIDE ONE SPARE SEAL KIT FOR EACH TYPE, AND ONE SPARE COMPLETE CYLINDER AS INDICATED.

	CYLINDER DATA			
	28' APRON YAW CENTERING CYLINDER	28' APRON SURGE CENTERING CYLINDER	38' APRON YAW CENTERING CYLINDER	38' APRON SURGE CENTERING CYLINDER
A=RETRACTED in [mm]	28.54 [725]	66.73 [1695]	32.87 [835]	73.03 [1855]
B=EXTENDED in [mm]	38.39 [975]	114.76 [2915]	40.75 [1035]	121.06 [3075]
C in [mm]	3.15 [80]	3.15 [80]	4.72 [120]	4.72 [120]
øE in [mm]	M80 x 2	M80 x 2	M120 x 3	M120 x 3
øF in [mm]	16.14 [410]	16.14 [410]	20.28 [515]	20.28 [515]
G in	1" SAE CODE 61	1" SAE CODE 61	1" SAE CODE 61	1" SAE CODE 61
øH in [mm]	11.41 [290]	11.41 [290]	14.96 [380]	14.96 [380]
øBORE in [mm]	6.30 [160]	6.30 [160]	8.66 [220]	8.66 [220]
øROD in [mm]	3.94 [100]	4.33 [110]	5.51 [140]	6.30 [160]
STROKE in [mm]	9.84 [250]	48.03 [1220]	7.87 [200]	48.03 [1220]
PERMISSIBLE BUCKLING STROKE in [mm] (see notes)	118.1 [3000]	118.1 [3000]	188.9 [4800]	229.13 [5820]
PROJECT QUANTITY	6	6	2	2
SPARES QUANTITY	1	1	0	0

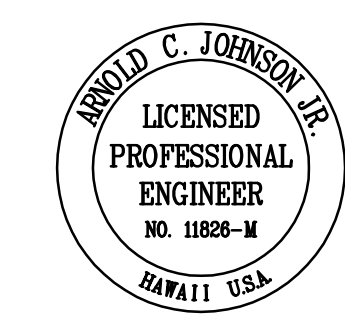
① M13.0/M7.0b

② M13.0/M7.0b

③ M13.1/M7.0a

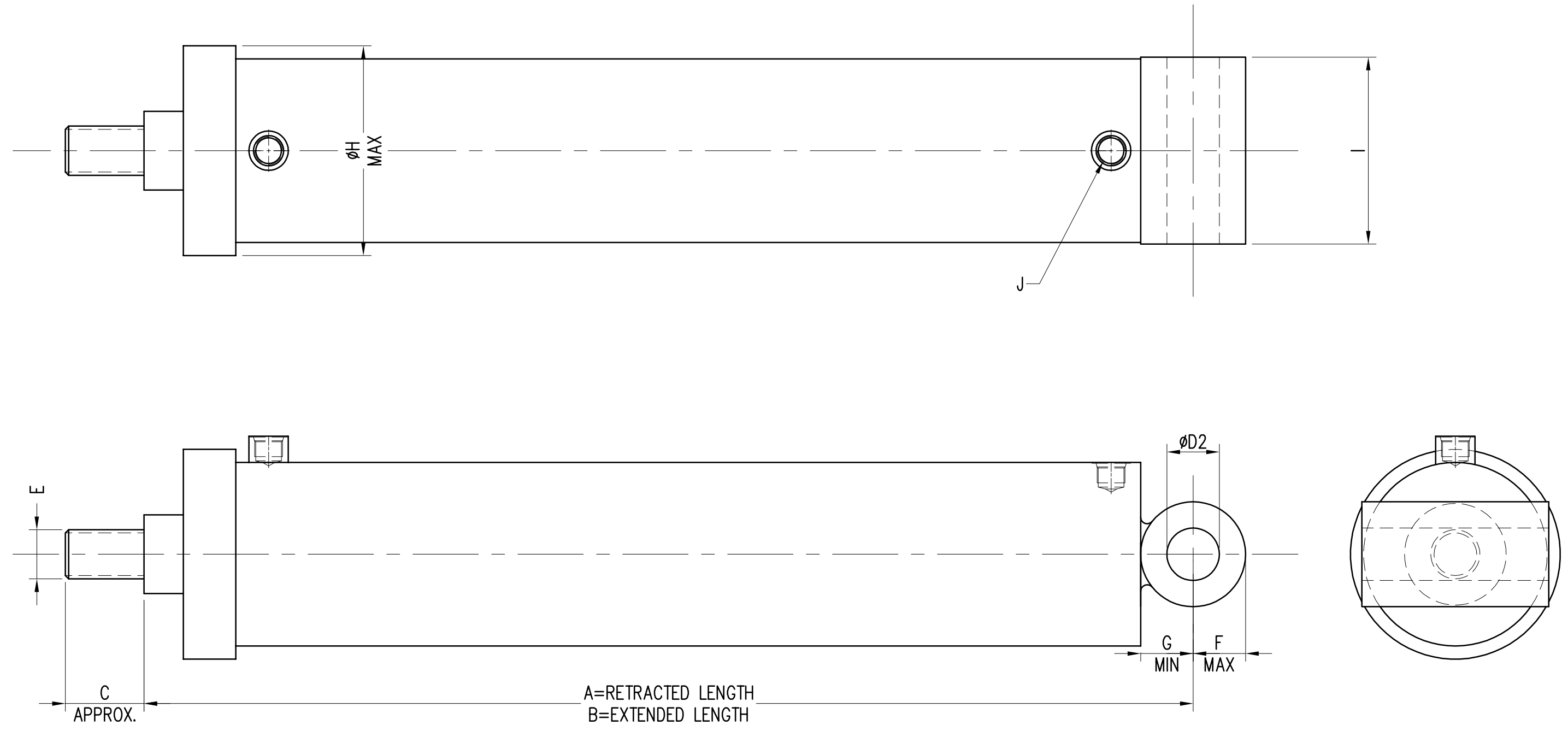
④ M13.1/M7.0a

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HEALY TIBBITTS BUILDERS, INC.			
<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>FERRY APRON HYDRAULIC SNUBBER CYLINDERS</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: JLF	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: SS	FOR HARBORS ADMINISTRATOR	M-10.1	
CHECKED BY: SDS	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: NONE			



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PRINT  
(NOT TO SCALE)

ESIGN RECORD DRAWING



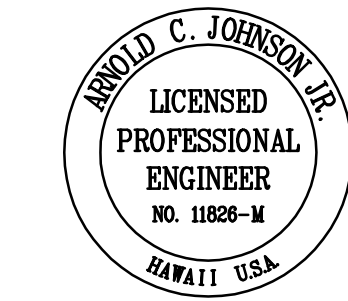
**SHORE APRON LIFT CYLINDER**  
 SCALE: 3"=1'-0" 1  
 M-3 / M13.3

CYLINDER DATA	
SHORE APRON LIFT CYLINDER	
A=RETRACTED	40.0
B=EXTENDED	68.0
C	3.0
D	-
E	ø1 7/8-12 UN 2A
F	2.0
G	2.0
øH	8.0
I	7.13
J	SAE-12
PIN øD1	-
PIN øD2	ø2.0
øBORE	ø6.0
øROD	3.0
STROKE	28.0
PROJECT QUANTITY	6

1  
 M-3

**NOTES:**

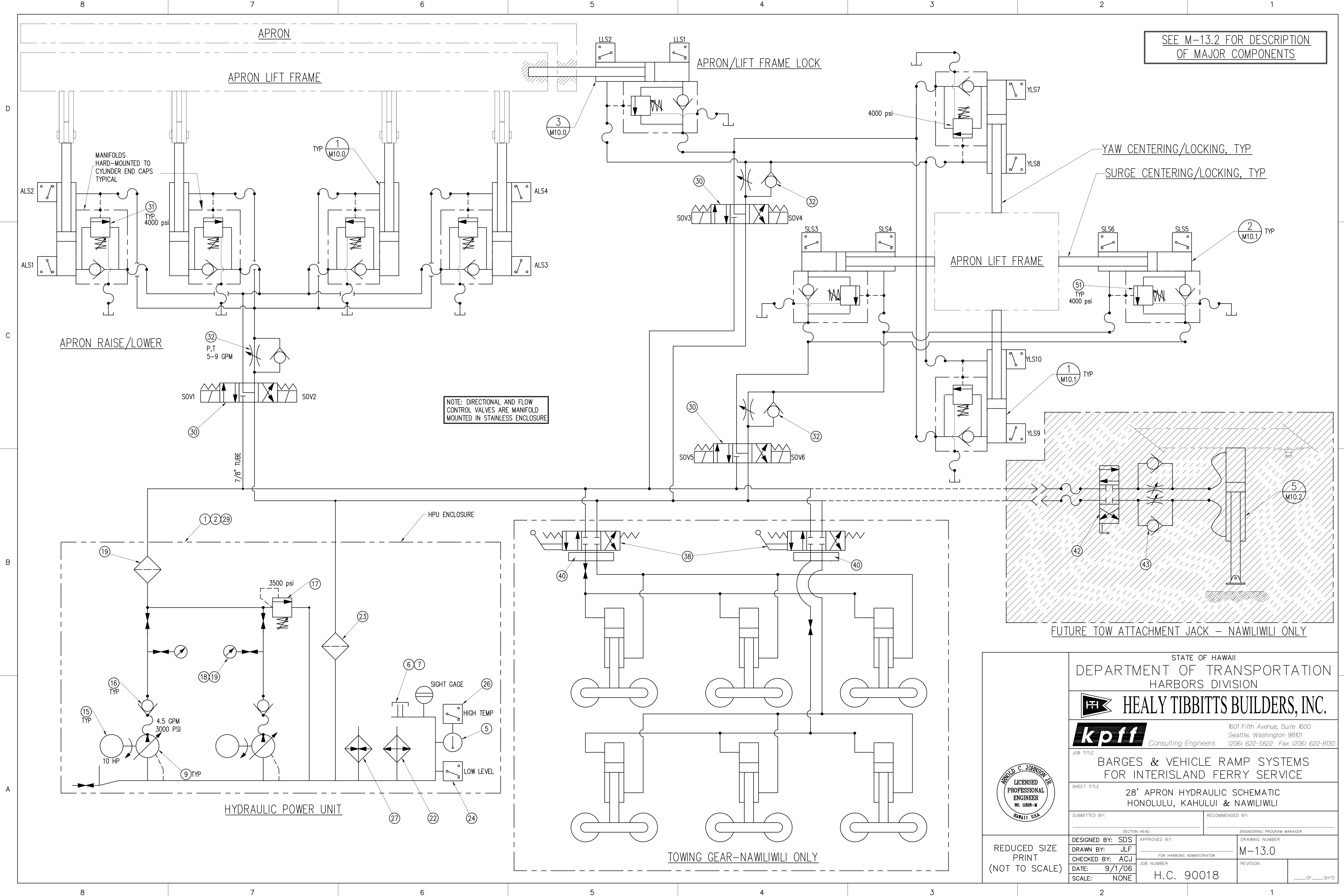
1. HYDRAULIC CYLINDERS SHALL BE DOUBLE ACTING AND OF WELDED CONSTRUCTION.
2. OPERATING PRESSURE: 2500 psi.
3. MINIMUM BURST PRESSURE AND SAFETY FACTORS SHALL CONFORM TO NFPA SPECIFICATIONS.
4. PRESSURE TEST AT 4000 PSI BOTH DIRECTIONS, NO EXTERNAL LEAKAGE PERMITTED.
5. CYLINDER RODS SHALL BE MADE FROM STAINLESS STEEL MATERIAL, ROD SEAL AND BEARING SURFACES SHALL BE HARD CHROME PLATED IN ACCORDANCE WITH FEDERAL SPECIFICATION QQ-C-320B(1) CLASS 2E.
6. PAINT WITH HIGH QUALITY MARINE GRADE TWO PART EPOXY PAINT, PLUG ALL PORTS.
7. USE OF TEFLON SEALING TAPE NOT PERMITTED ON ANY PART OF THE CYLINDER.
8. SEALS SUITABLE FOR MINERAL TYPE HYDRAULIC FLUID.
9. MANUFACTURER TO SUBMIT CYLINDER DRAWINGS FOR REVIEW AND RECEIVE APPROVAL BEFORE BEGINNING MANUFACTURING.
10. MANUFACTURER TO FURNISH PARTS DRAWING.
11. MANUFACTURER TO ATTACH METAL PLATE WITH MANUFACTURES NAME, MODEL NO., SERIAL NO., DATE OF MANUFACTURE, RATED PRESSURE RATING, MAX PRESSURE RATING.
12. MANUFACTURER TO SUPPLY ALL TESTING CERTIFICATION DOCUMENTATION.



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<b>HEALY TIBBITTS BUILDERS, INC.</b>	
<small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>	
SHEET TITLE <b>SHORE APRON AND TOW ATTACHMENT CYLINDERS</b>	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: <b>JLF</b>	APPROVED BY:
DRAWN BY: <b>SS</b>	FOR HARBORS ADMINISTRATOR
CHECKED BY: <b>SDS</b>	JOB NUMBER
DATE: <b>9/1/06</b>	<b>H.C. 90018</b>
SCALE: AS SHOWN	DRAWING NUMBER <b>M-10.2</b>
	REVISION
	___ OF ___ SHTS

REDUCED SIZE  
 PRINT  
 (NOT TO SCALE)





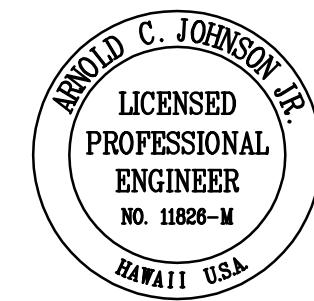
SEE M-13.2 FOR DESCRIPTION OF MAJOR COMPONENTS

NOTE: DIRECTIONAL AND FLOW CONTROL VALVES ARE MANIFOLD MOUNTED IN STAINLESS ENCLOSURE

FUTURE TOW ATTACHMENT JACK - NAWILIWILI ONLY

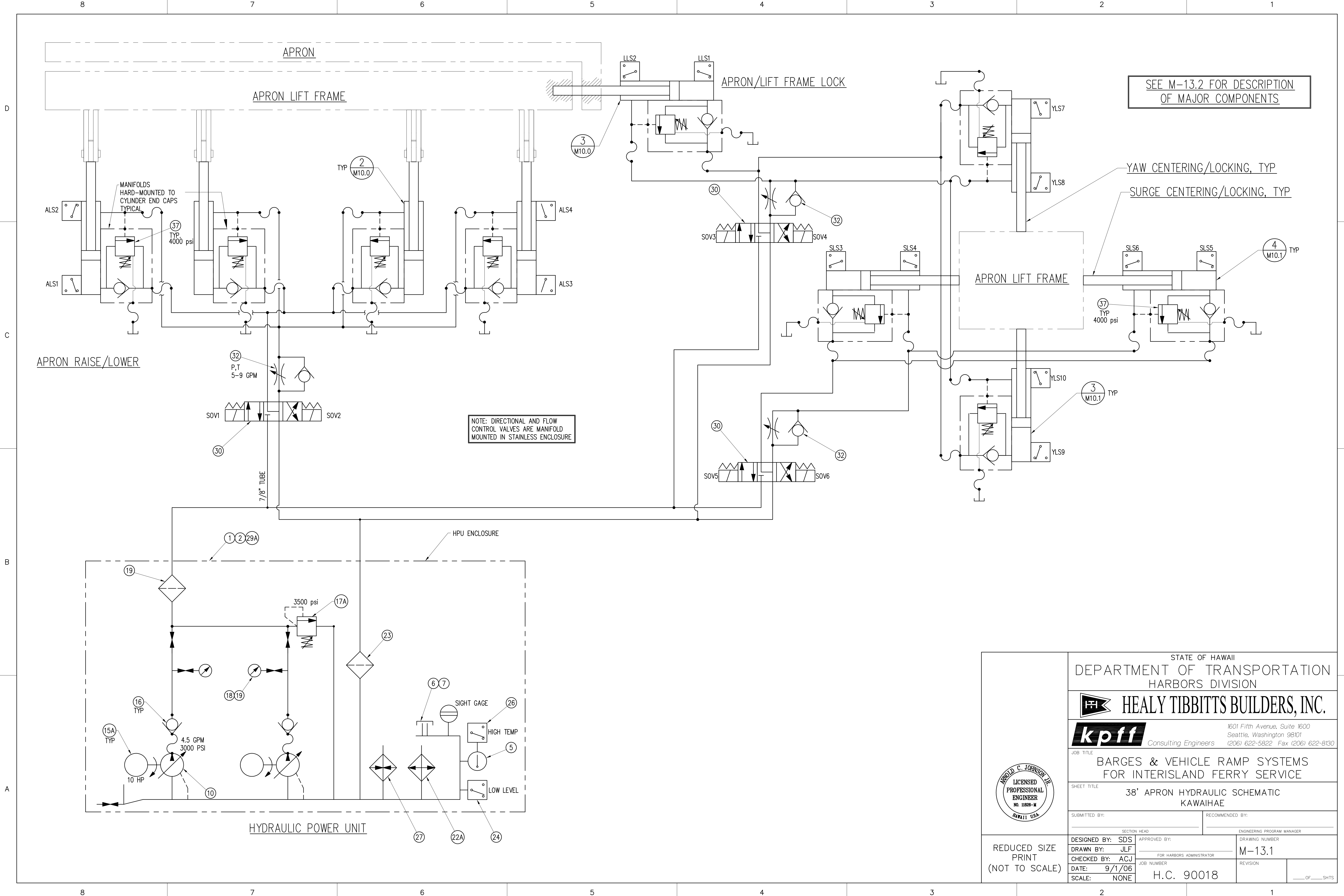
TOWING GEAR - NAWILIWILI ONLY

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers		1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>28' APRON HYDRAULIC SCHEMATIC HONOLULU, KAHULUI &amp; NAWILIWILI</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: JLF	FOR HARBORS ADMINISTRATOR	<b>M-13.0</b>	
CHECKED BY: ACJ	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: NONE			



REDUCED SIZE PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING



SEE M-13.2 FOR DESCRIPTION OF MAJOR COMPONENTS

NOTE: DIRECTIONAL AND FLOW CONTROL VALVES ARE MANIFOLD MOUNTED IN STAINLESS ENCLOSURE

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		
CONSULTING ENGINEERS		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>38' APRON HYDRAULIC SCHEMATIC KAWAIIHAE</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD _____		ENGINEERING PROGRAM MANAGER _____
DESIGNED BY: SDS DRAWN BY: JLF CHECKED BY: ACJ DATE: 9/1/06 SCALE: NONE	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR H.C. 90018	DRAWING NUMBER <b>M-13.1</b> REVISION _____ _____ OF _____ SHTS

DESIGN RECORD DRAWING

## APRON OPERATING LOGIC:

### FERRY RAMP & APRON HYDRAULIC SYSTEMS OPERATING DESCRIPTION:

#### GENERAL

THIS OPERATING DESCRIPTION APPLIES TO THE MAIN FERRY RAMP AND APRON HYDRAULIC SYSTEMS AT HONOLULU, NAWILIWILI, KAHULUI AND KAWAIHAE, AS SHOWN ON DRAWINGS M-13 AND M-13.1. THESE SYSTEMS ALL ACCOMPLISH THE FOLLOWING FUNCTIONS:  
 RAISE AND LOWER THE FERRY APRON LIFT FRAME.  
 CENTER THE APRON AND LIFT FRAME WITHIN THEIR RANGE OF MOTION.  
 LOCK THE APRON AND LIFT FRAME IN POSITION WHEN STOWED.  
 ALLOW THE APRON AND LIFT FRAME TO FLOAT WITH FERRY MOTIONS DURING LOADING CYCLES.

AT NAWILIWILI, THE FOLLOWING ADDITIONAL FUNCTIONS ARE ACCOMPLISHED:  
 JACKING AND RETRACTION OF THE RAMP WHEELS FOR TOWING.

THIS OPERATING DESCRIPTION DOES NOT APPLY TO THE BARGE RAMP AND APRON HYDRAULIC SYSTEM SCHEMATIC SHOWN ON DRAWING M-13.3

#### SYSTEM POWER

POWER TO THE HYDRAULIC OIL TEMPERATURE CONTROLLERS IS ALWAYS ON. POWER TO THE PUMPS AND CONTROLS IS ENERGIZED BY OPERATION OF A "SYSTEM OFF/ON" SWITCH AT THE OPERATOR CONTROL. ENERGIZING THE SYSTEM DOES NOT START THE PUMPS AND ALL CONTROL SOLENOIDS REMAIN DE-ENERGIZED. A "POWER" LIGHT ILLUMINATES WHEN SYSTEM POWER IS ON; PRESSING AN "EMERGENCY STOP" BUTTON AT ANY TIME DE-ENERGIZES THE SYSTEM. PULLING AND RELEASING A MOMENTARY CONTACT "PUMP START" PUSH BUTTON CAUSES THE PUMP MOTORS TO START IN SEQUENCE.

#### FERRY ARRIVAL AND PREPARATION TO UNLOAD

THE APRON IS STOWED IN THE "UP AND LOCKED" CONDITION PRIOR TO FERRY ARRIVAL. IN THIS CONDITION ALL APRON SYSTEM HYDRAULIC CYLINDERS ARE FULLY EXTENDED:

- APRON RAISE / LOWER (4)
- APRON / LIFT FRAME LOCK (1)
- SURGE CENTERING (2)
- YAW CENTERING (2)

IN THE "UP AND LOCKED" CONDITION, LIMIT SWITCHES ALS2, ALS4 (THE "LIFT FRAME UP" SWITCHES), LLS2, SLS4, SLS6, YLS8 AND YLS10 (THE "LOCKED CONDITION" SWITCHES) ARE CLOSED. IN THIS CONDITION THE ALS1, ALS3 (THE "LIFT FRAME DOWN" SWITCHES) AND LLS1, SLS3, SLS5, YLS7, YLS9 (THE "UNLOCKED CONDITION" SWITCHES) ARE OPEN.

AS THE FERRY APPROACHES, POWER TO THE SYSTEM IS ENERGIZED BY OPERATION OF A "SYSTEM OFF/ON" SWITCH, AND A "LOCKED" LIGHT ILLUMINATES ON THE CONTROL PANEL. PULLING AND RELEASING A MOMENTARY CONTACT "PUMP START" PUSH BUTTON STARTS THE PUMPS IN SEQUENCE.

PRESSING AND RELEASING AN "UNLOCK APRON" MOMENTARY CONTACT PUSH BUTTON ENERGIZES SOV4 AND SOV6. WHEN LLS1, YLS7 AND YLS9 CLOSE, SOV4 IS DE-ENERGIZED. WHEN SLS3 AND SLS5 CLOSE, SOV6 IS DE-ENERGIZED.

WHEN ALL OF THE "UNLOCKED CONDITION" SWITCHES HAVE CLOSED, AN "UNLOCKED" LIGHT ILLUMINATES ON THE CONTROL PANEL AND OPERATION OF SOV1 AND SOV2 IS ENABLED, I.E., CLOSURE OF ALL "UNLOCKED CONDITION" SWITCHES IS A REQUIRED PERMISSIVE FOR RAISING OR LOWERING THE APRON.

AFTER THE "UNLOCKED" LIGHT ILLUMINATES, PRESSING AND HOLDING THE "LOWER APRON" PUSH BUTTON ENERGIZES SOV2 AND LOWERS THE LIFT FRAME AND APRON. RELEASING THE "LOWER APRON" PUSH BUTTON DE-ENERGIZES SOV2.

WHEN THE APRON IS LOWERED ONTO THE FERRY TRANSOM, CONTINUED PRESSING OF THE "LOWER APRON" PUSH BUTTON LOWERS THE LIFT FRAME UNTIL ALS1 AND ALS3 CLOSE, AT WHICH TIME SOV2 IS DE-ENERGIZED AND AN "APRON FLOAT" LIGHT ILLUMINATES.

PRESSING A MOMENTARY CONTACT "PUMP STOP" PUSH BUTTON CAUSES THE PUMPS TO STOP, WHILE THE "UNLOCKED" AND "APRON FLOAT" LIGHTS REMAIN ILLUMINATED; THE APRON SYSTEM REMAINS IN THIS CONDITION DURING FERRY UNLOADING AND LOADING.

#### PREPARATION FOR FERRY DEPARTURE

PULLING A MOMENTARY CONTACT "PUMP START" PUSH BUTTON STARTS THE PUMPS IN SEQUENCE. PRESSING AND HOLDING A MOMENTARY CONTACT "RAISE APRON" PUSH BUTTON ENERGIZES SOV1 CAUSING THE LIFT FRAME TO RISE; CONTINUING TO PRESS THE RAISE APRON PUSH BUTTON LIFTS THE APRON OFF OF THE FERRY TRANSOM TO THE FULL UP POSITION AT WHICH POINT THE "LIFT FRAME UP" SWITCHES CLOSE, SOV1 IS DE-ENERGIZED, SOV3 AND SOV5 ARE ENABLED; I.E., CLOSURE OF THE "LIFT FRAME UP" LIMIT SWITCHES IS A REQUIRED PERMISSIVE FOR CENTERING AND LOCKING THE LIFT FRAME.

WITH THE LIFT FRAME FULLY UP, PRESSING AND RELEASING A MOMENTARY CONTACT "LOCK APRON" PUSH BUTTON ENERGIZES SOV5, CAUSING THE APRON TO CENTER IN ITS SURGE WISE RANGE OF MOTION, AT WHICH POINT SLS4 AND SLS6 CLOSE. CLOSURE OF SLS4 AND SLS6 DE-ENERGIZES SOV5 AND ENERGIZES SOV3, CAUSING THE APRON TO CENTER IN ITS YAW RANGE OF MOTION AND LOCK TO THE LIFT FRAME, AT WHICH POINT LLS2, YLS8 AND YLS10 CLOSE. CLOSURE OF YLS8 AND YLS10 DE-ENERGIZES SOV3 AND ILLUMINATES A "LOCKED" LIGHT.

PULLING AND RELEASING A MOMENTARY CONTACT "PUMP STOP" PUSH BUTTON STOPS THE PUMPS. OPERATION OF A "SYSTEM OFF/ON" CAUSES POWER TO THE PUMPS AND CONTROLS TO BE DE-ENERGIZED. THE APRON SYSTEM REMAINS IN THE UP AND LOCKED POSITION UNTIL THE NEXT FERRY LOADING CYCLE.

#### MOVEMENT OF THE NAWILIWILI RAMP

THE TOW ATTACHMENT IS INSTALLED AND CONNECTED TO THE TOW VEHICLE BEFORE POWER TO THE PUMPS AND CONTROLS IS ENERGIZED.

WHEN POWER TO THE SYSTEM IS ENERGIZED, A "LOCKED" LIGHT ILLUMINATES ON THE CONTROL PANEL. PULLING A MOMENTARY CONTACT "PUMP START" PUSH BUTTON STARTS THE PUMPS IN SEQUENCE.



OPERATION OF THE "WHEELS DOWN" MANUAL VALVES LOWERS THE WHEELS AND RAISES THE RAMP. CONTINUE UNTIL ALL WHEEL CYLINDERS ARE EQUALLY EXTENDED APPROXIMATELY 12" (2" OF STROKE REMAINING).

AT THIS POINT THE PUMPS ARE STOPPED AND POWER TO THE PUMPS AND CONTROLS IS DE-ENERGIZED. WHEN THE POWER SUPPLY CORD IS UNPLUGGED AND MOVED CLEAR OF THE RAMP, THE RAMP IS READY FOR MOVEMENT.

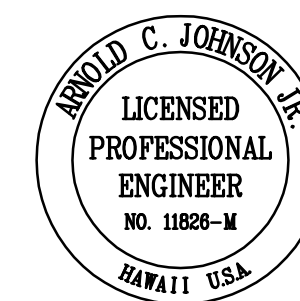
THE PROCESS IS REVERSED FOR LOWERING AND FIXING THE RAMP FOR THE NEXT FERRY LOADING CYCLE.

## HYDRAULIC SYSTEM COMPONENTS

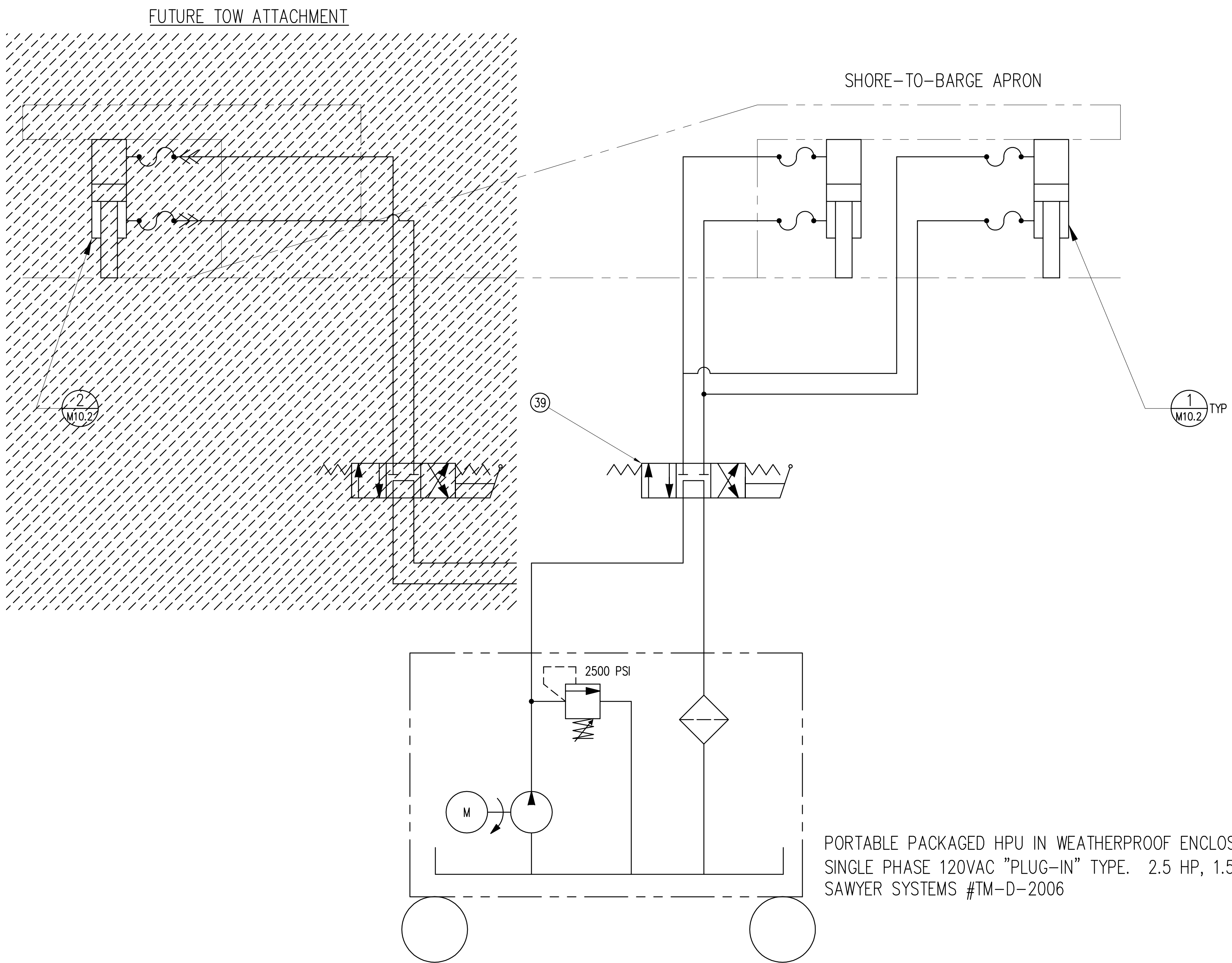
ITEM	MANUFACTURER	DESCRIPTION	PART NO.
<b>HYDRAULIC POWER UNITS</b>			
1	SSE	40 GALLON NOMINAL 316L STAINLESS STEEL RESERVOIR	TM-D-2501
2	SSE	STRUCTURAL STEEL SKID / DRIP PAN ASSEMBLY	TM-D-3201
3	MILWAUKEE	RESERVOIR SUCTION SHUT-OFF BALL VALVE	
4	MAGNALOY	14" ENDCOVER ASSEMBLY W/O DRAIN	REC514AP
5	HYDAC	5" SIGHT TEMP GAUGE	FSA127-1.1/T12
6	HYDAC	RESERVOIR FILLER-BREATHER ASSEMBLY	ELFP3F10W1.0
7	HYDAC	DESSICANT RESERVOIR BREATHER ASSEMBLY	BD200 X 2 W O.O
8	HYDAC	DESSICANT BREATHER MOUNTING ADAPTER	2074250
9	DENISON	5 GPM PRESSURE COMPENSATED PISTON PUMP	PV6-2R1(X)-COO-000
10	DENISON	8 GPM PRESSURE COMPENSATED PISTON PUMP	PV10-2R1(X)-COO-000
11	MAGNALOY	HORIZONTAL PUMP MOTOR C-FACE ADAPTER	
12	MAGNALOY	PUMP COUPLING	
13	MAGNALOY	MOTOR COUPLING	
14	MAGNALOY	COUPLING INSERT	
15	BALDOR	10 HP, 1760 RPM, 215TC, TEFC 460 VAC MOTOR	CEM3774T-M23A/NC-M26A
15A	BALDOR	15 HP, 1760 RPM, 254TC, TEFC 460 VAC MOTOR	CEM2333T-M23A/NCM26A
16	HYDAC	INLINE OUTLET CHECK VALVE	RV-XX-01.X/12
17	SUN	THROUGH PORT SYSTEM RELIEF VALVE	RPEC-LWN-FEL/S
17A	SUN	THROUGH PORT SYSTEM RELIEF VALVE	RPEC-LWN-FEL/S
18	REGO/VESCOR	GAUGE ISOLATOR / NEEDLE VALVE	NVA-250-B
19	WKA	PRESSURE GAUGE 5000 PSI	233.53/2.5"/0-5000/1/4NPT/CBM/FF
20	HYDAC	OUTLET SYSTEM PRESSURE FILTER	DFBN/HC240-G10C-1.X/12-B6
21	HYDAC	SYSTEM OUTLET SHUTOFF BALL VALVE	KHB205AE-1114-11X
22	AMERICAN INDUSTRIAL	REAR MOUNT AIR/OIL HEAT EXCHANGER	BM-202-S
22A	AMERICAN INDUSTRIAL	REAR MOUNT AIR/OIL HEAT EXCHANGER	BM-202-S
23	HYDAC	IN-TANK RETURN FILTER	RFBN/HC240D-E10H-1.X/12
24	GEMS	VERTICAL FLOAT SWITCH	LS-1800-35651
25	APCO	FLOAT SWITCH WIRING ENCLOSURE	7700H
26	BARKSDALE	DUAL CONTACT TEMPERATURE SWITCH	L2H-B203
27	KIM HOTSTART	1500 W TANK HEATER	E01543W-156A-00
28	WATTS	3/4" FILL PORT / DRAIN BALL VALVE	B6002-3/4"
29	PROTECH	WEATHER RESISTANT 316L STAINLESS STEEL ENCLOSURE	TM-D-2303
29A	PROTECH	WEATHER RESISTANT 316L STAINLESS STEEL ENCLOSURE	TM-D-2303
<b>APRON HYDRAULICS VALVE ENCLOSURE</b>			
30	DENISON	4P/3W SOLENOID DIRECTIONAL CONTROL VALVE	A4D02-3208-0302-B1G00-28
32	SUN	D05 SANDWICH MOUNT DUAL FLOW CONTROL	NCEB-LCN-DBY/S
33	DAMAN	THREE (3) STATION D05 PARALLEL MANIFOLD	DD05-HP03-3S
34	HOFFMAN	316L STAINLESS STEEL ENCLOSURE	C-SD02012SS6
35	HOFFMAN	STEEL BACK PANEL	C-P2020
<b>COUNTERBALANCE VALVE MANIFOLD</b>			
36	SSE	DIRECT MOUNT COUNTERBALANCE VALVE MANIFOLD	TM-D-4201
37	SUN	COUNTERBALANCE VALVE CARTRIDGE - 4 PORT VENTED	CWEA-LHN
<b>BARGE APRON LIFT HYDRAULICS</b>			
38	SSE	PORTABLE HPU; 2HP, 2500 PSI, 115VAC	TM-D-2304
39	WALVOIL	4P/3W MANUAL DIRECTIONAL CONTROL VALVE	SD11/1-PSV/18L/18L/SAE
40	ASP	3.2:1 INLINE PRESSURE BOOSTER	HC4-3.2-B-1

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
 <b>HEALY TIBBITTS BUILDERS, INC.</b>	
 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE	
SHEET TITLE HYDRAULIC COMPONENTS & LOGIC	
SUBMITTED BY:	RECOMMENDED BY:
SECTION HEAD	ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY:
DRAWN BY: SS	DRAWING NUMBER
CHECKED BY: ACJ	FOR HARBORS ADMINISTRATOR
DATE: 9/1/06	M-13.2
SCALE: NONE	JOB NUMBER
	REVISION
	H.C. 90018
	____ OF ____ SHTS

REDUCED SIZE  
PRINT  
(NOT TO SCALE)

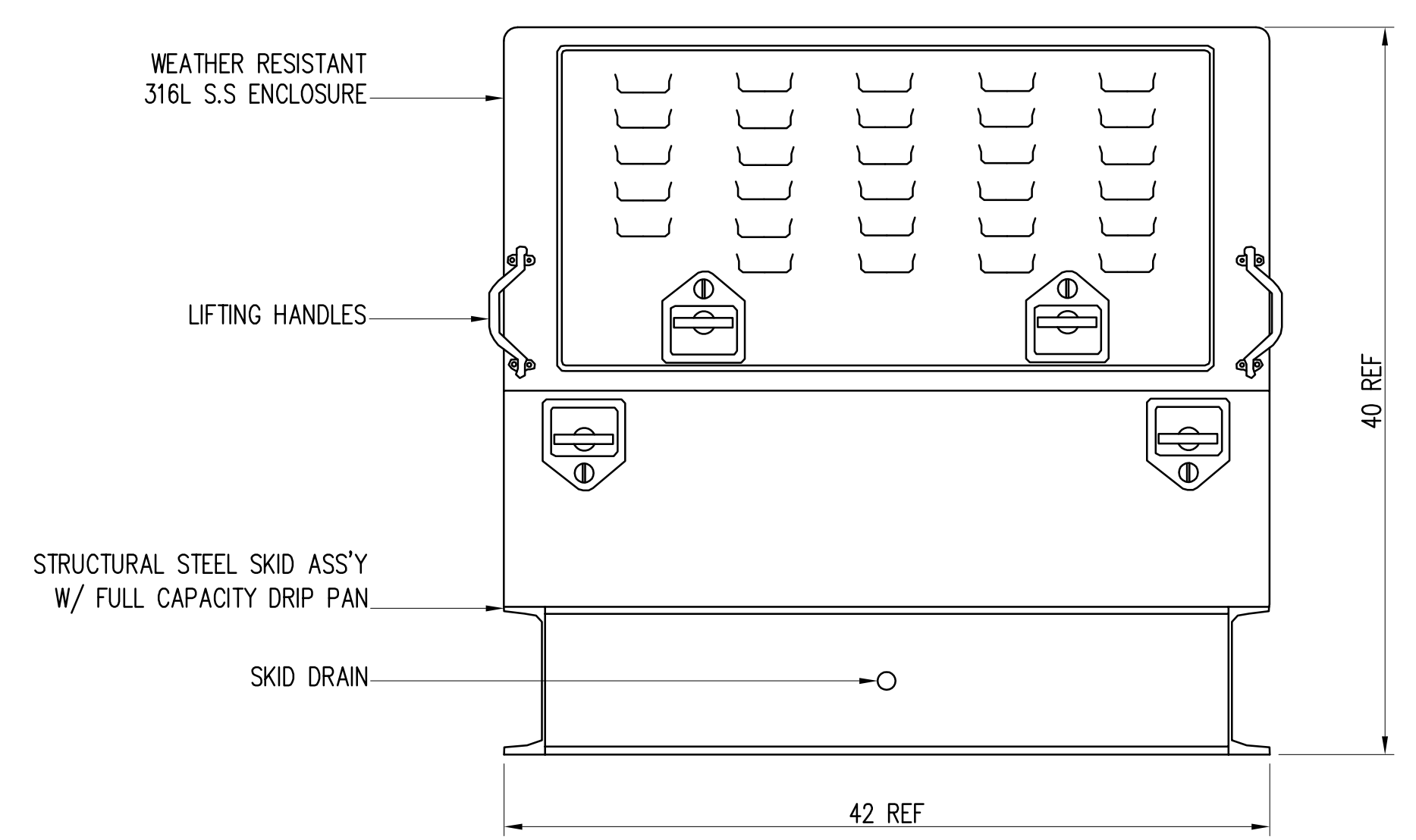
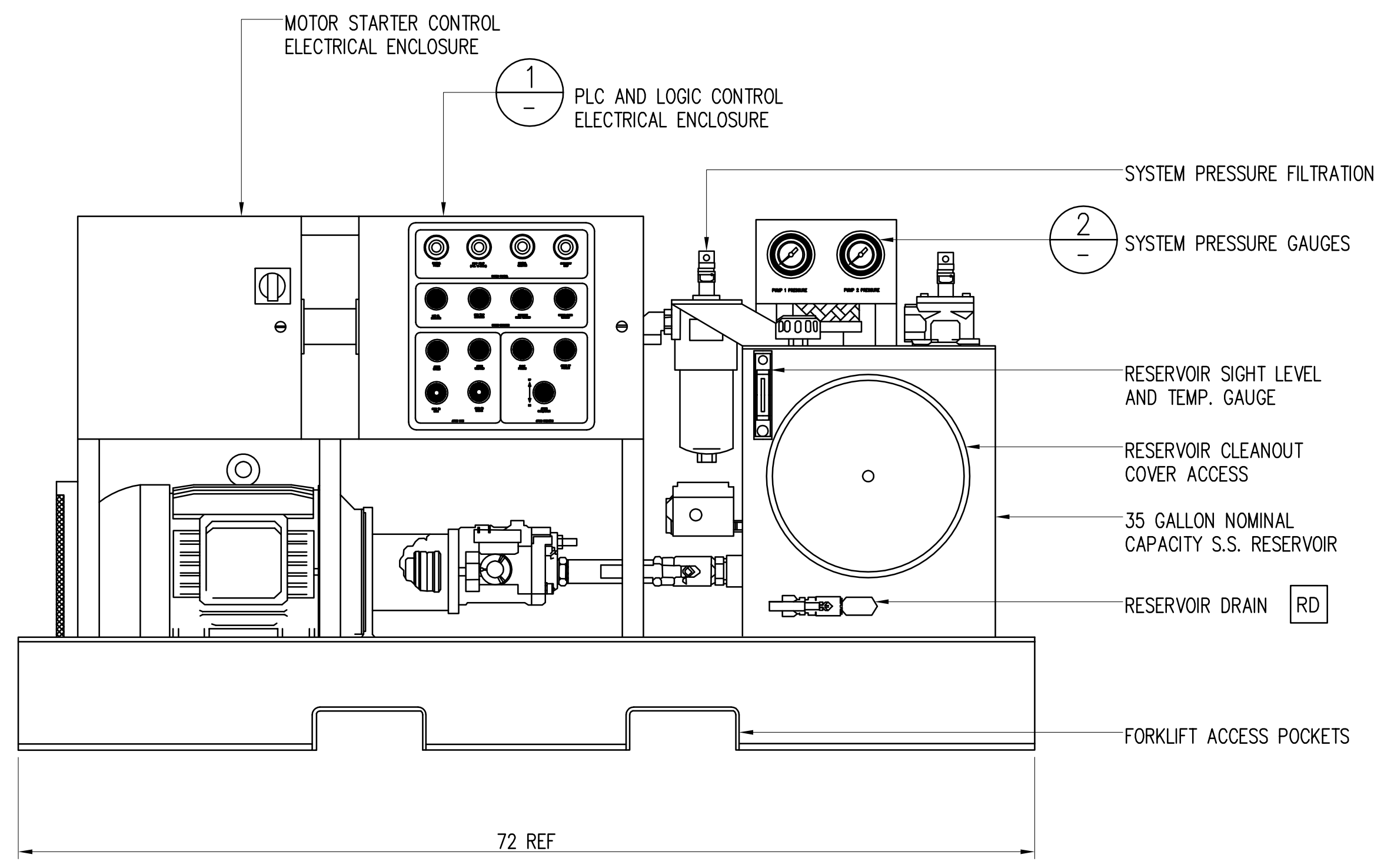
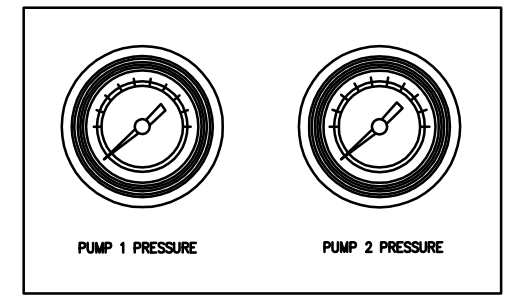
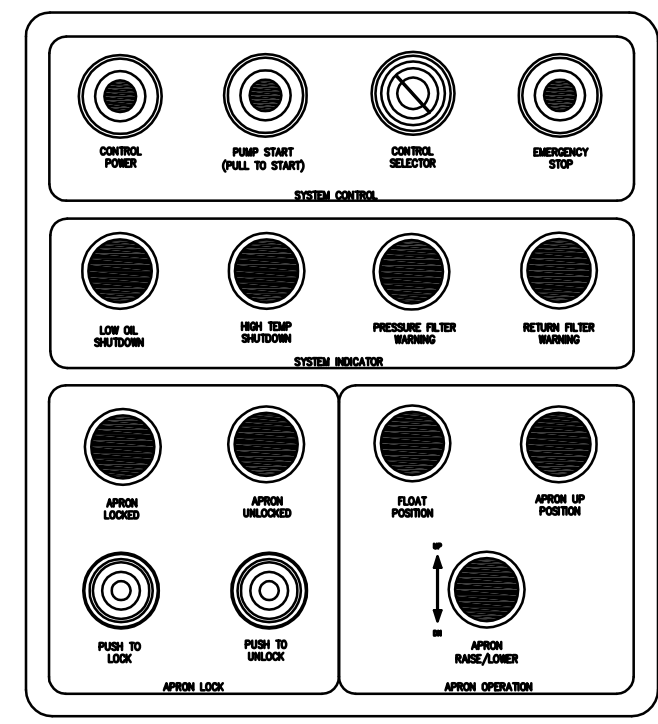
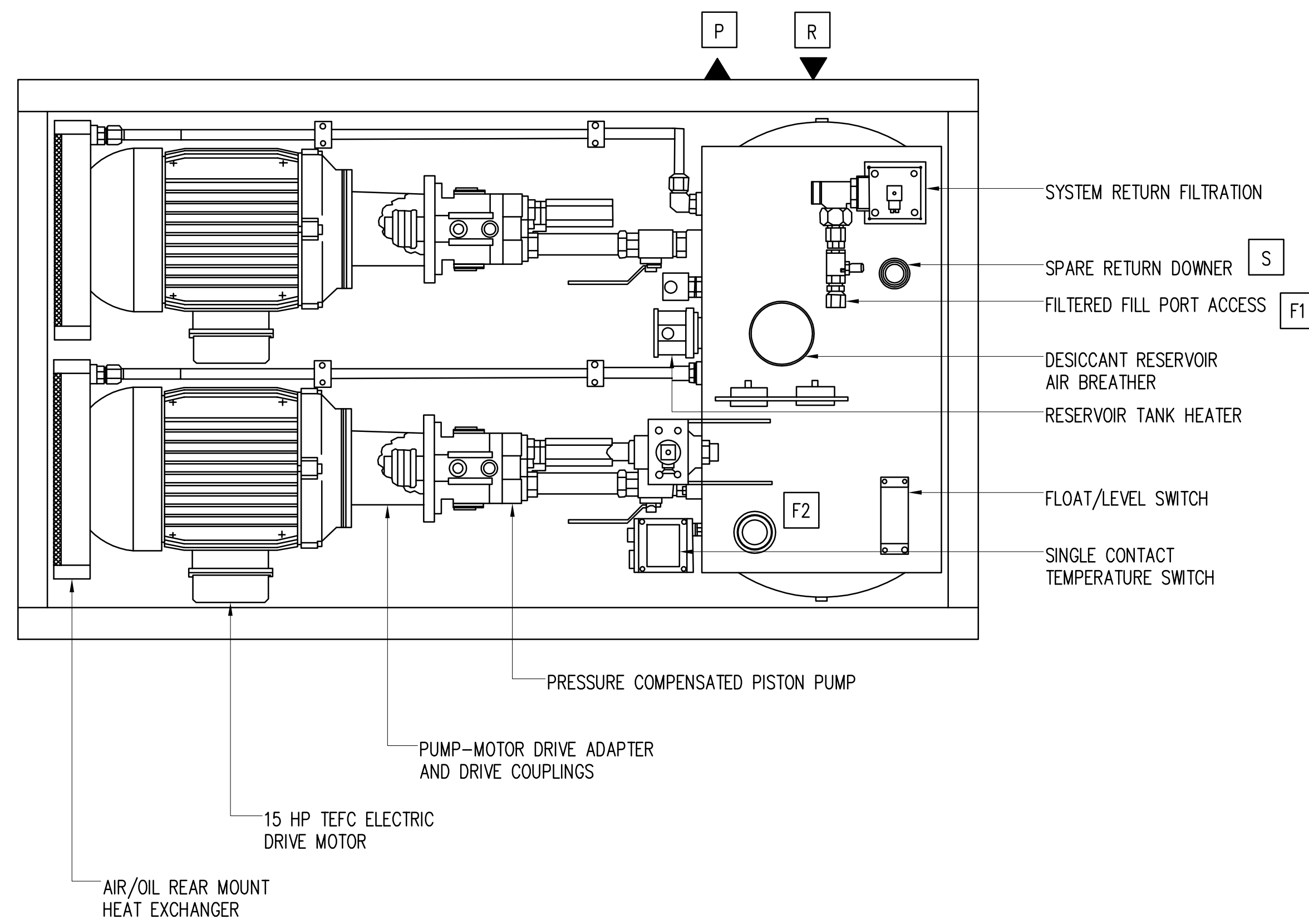


DESIGN RECORD DRAWING



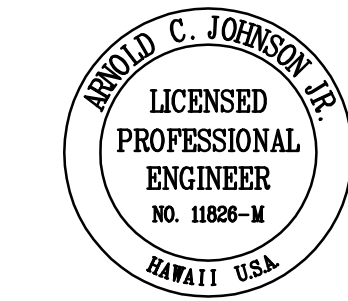
PORTABLE PACKAGED HPU IN WEATHERPROOF ENCLOSURE  
 SINGLE PHASE 120VAC "PLUG-IN" TYPE. 2.5 HP, 1.5 GPM  
 SAWYER SYSTEMS #TM-D-2006

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION		
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		
JOB TITLE BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE			SHEET TITLE SHORE TO BARGE RAMP HYDRAULICS HONOLULU, KAHULUI, KAWAIHAE
SUBMITTED BY: _____		RECOMMENDED BY: _____	
SECTION HEAD DESIGNED BY: ACJ DRAWN BY: SS CHECKED BY: ACJ DATE: 9/1/06 SCALE: NONE		ENGINEERING PROGRAM MANAGER APPROVED BY: _____ FOR HARBORS ADMINISTRATOR JOB NUMBER H.C. 90018	
REDUCED SIZE PRINT (NOT TO SCALE)		DRAWING NUMBER M-13.3 REVISION _____ OF _____ SHTS	

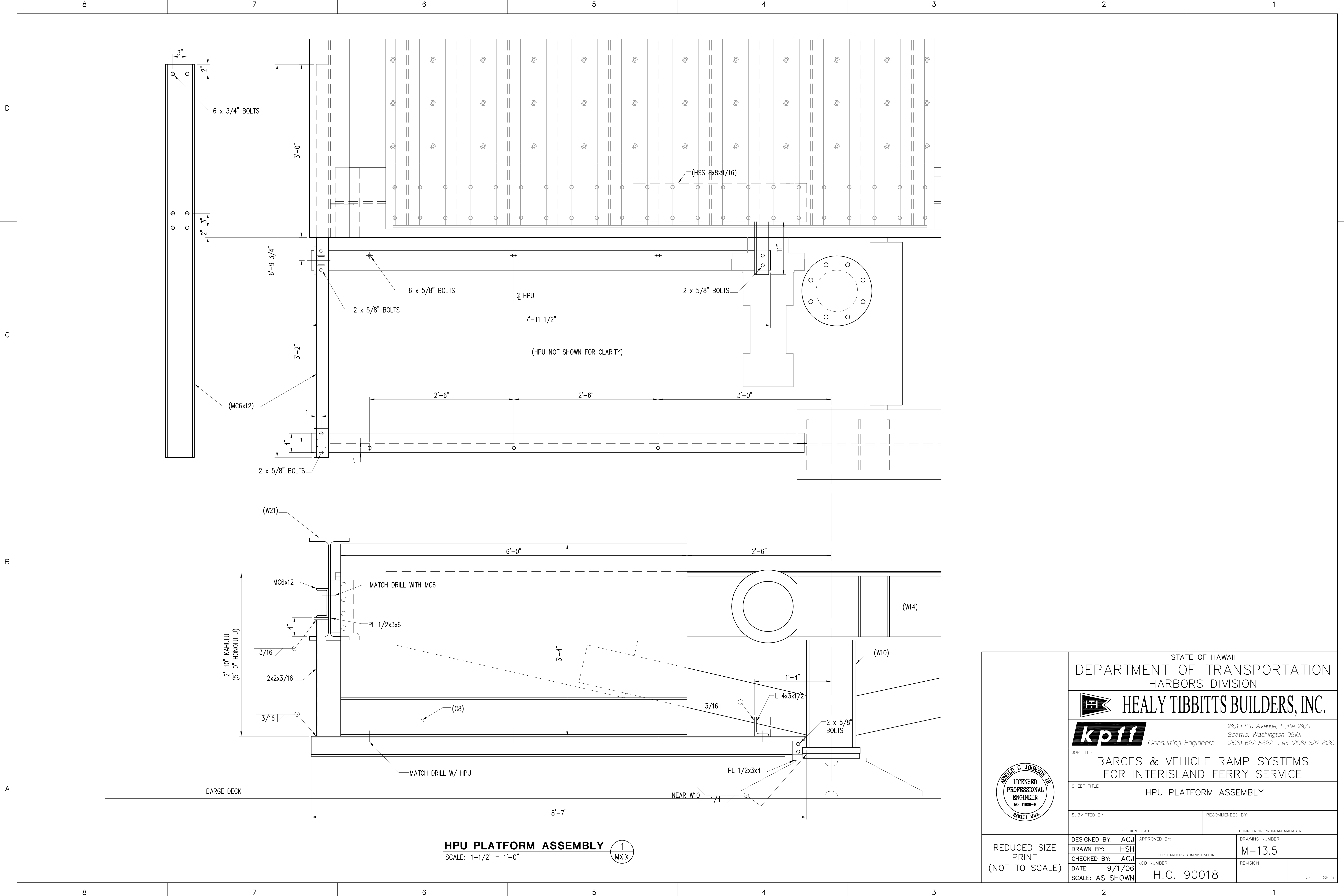


**HYDRAULIC POWER UNIT**  
SCALE: 1-1/2"=1'-0"

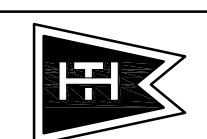

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1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>FERRY APRON HYDRAULIC POWER UNIT GENERAL ARRANGEMENT</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: ACJ	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: HH	FOR HARBORS ADMINISTRATOR	M-13.4	
CHECKED BY: ACJ	JOB NUMBER	REVISION	OF SHTS
DATE: 9/1/06	H.C. 90018		
SCALE: AS SHOWN			

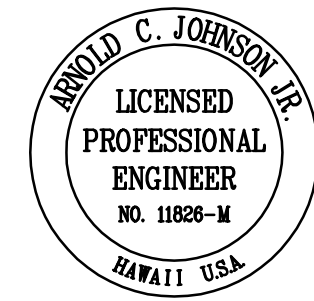


REDUCED SIZE PRINT  
(NOT TO SCALE)

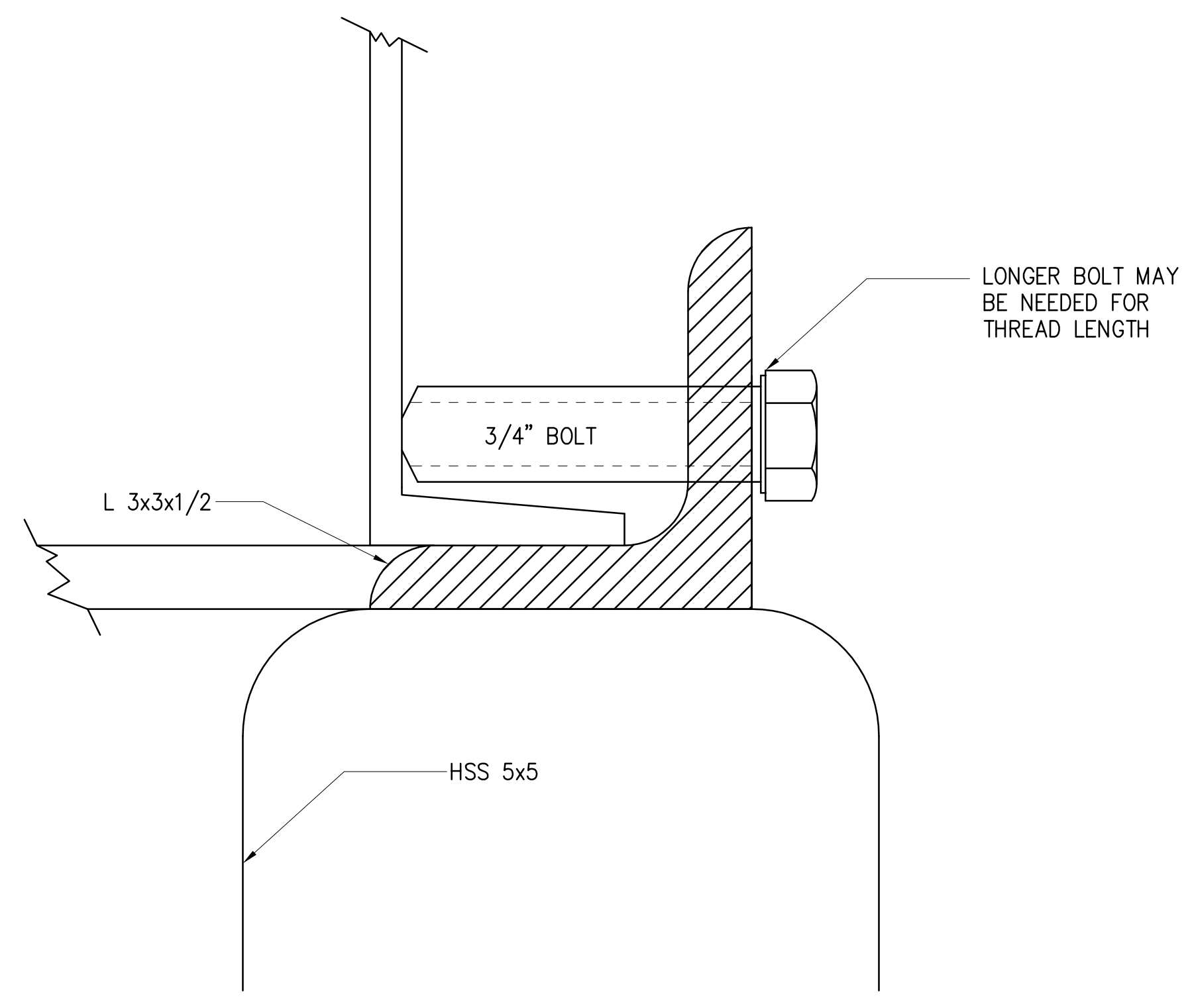
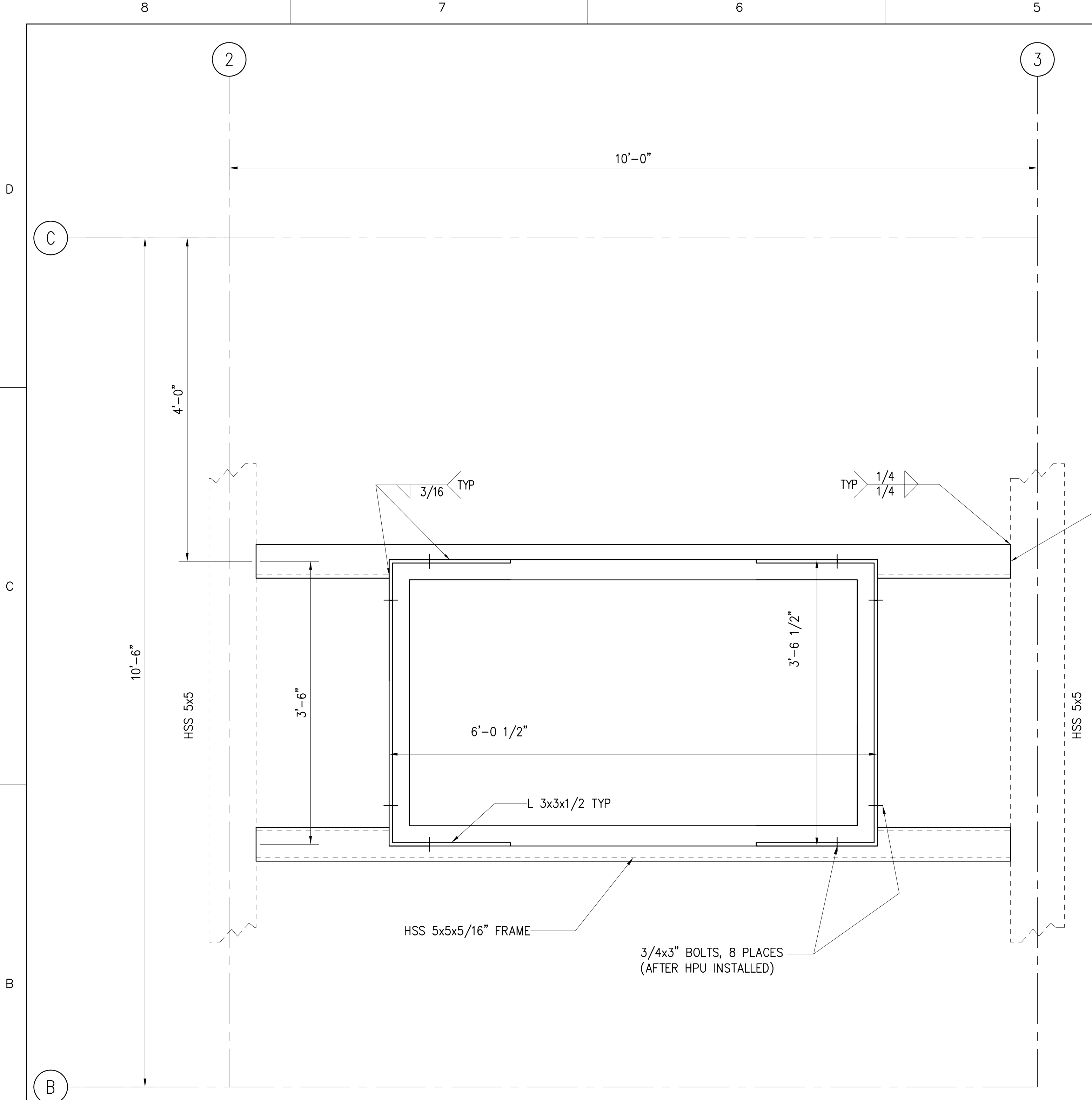


**HPU PLATFORM ASSEMBLY** 1  
 SCALE: 1-1/2" = 1'-0" MX.X

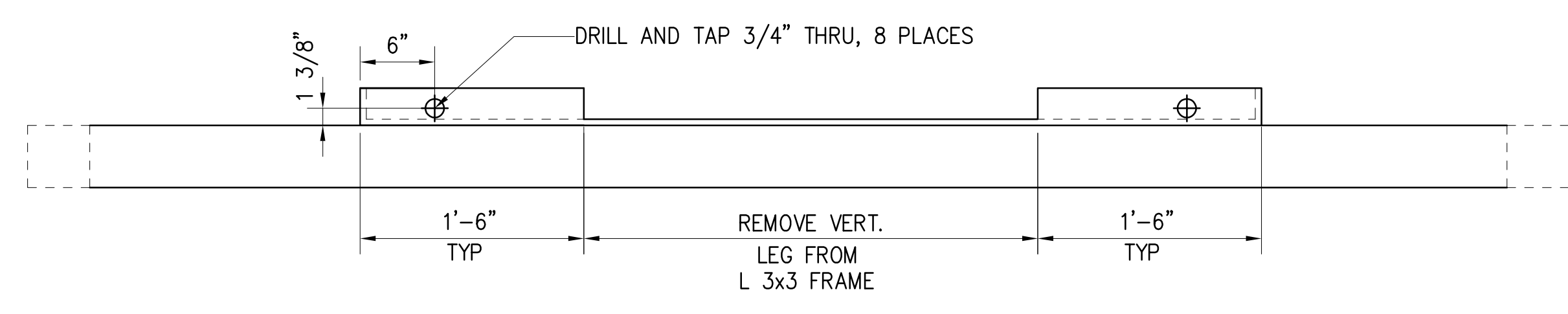
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
 <b>HEALY TIBBITTS BUILDERS, INC.</b> <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
 <b>kpff</b> Consulting Engineers			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>HPU PLATFORM ASSEMBLY</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: ACJ	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: HSH	FOR HARBORS ADMINISTRATOR	M-13.5	
CHECKED BY: ACJ	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: AS SHOWN			



DESIGN RECORD DRAWING



**NAWILIWILI HPU REINING BOLT**

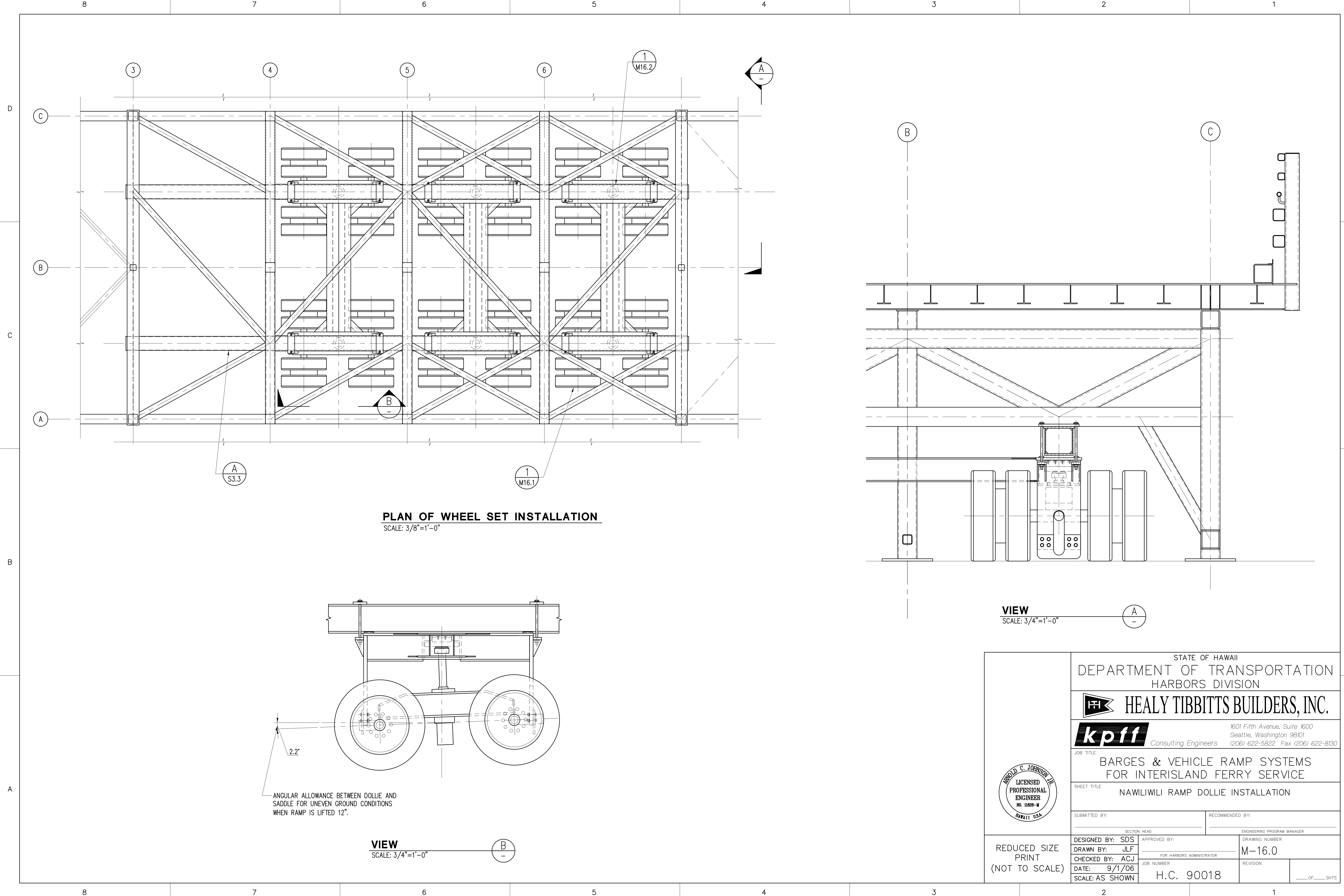


**HPU PLATFORM ASSEMBLY**  
SCALE: 1" = 10"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	<p>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</p>	
	<p><b>kpff</b> Consulting Engineers</p>	
<p>JOB TITLE: <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b></p>		
<p>SHEET TITLE: <b>NAWILIWILI HPU PLATFORM PLAN AND ELEVATION</b></p>		
<p>SUBMITTED BY: _____</p>		<p>RECOMMENDED BY: _____</p>
<p>DESIGNED BY: SDS</p>		<p>APPROVED BY: _____</p>
<p>DRAWN BY: SS</p>		<p>DRAWING NUMBER: <b>M-13.6</b></p>
<p>CHECKED BY: SDS</p>		<p>FOR HARBORS ADMINISTRATOR</p>
<p>DATE: _____</p>		<p>JOB NUMBER: <b>H.C. 90018</b></p>
<p>SCALE: AS SHOWN</p>		<p>REVISION: <b>0</b> OF _____ SHTS</p>

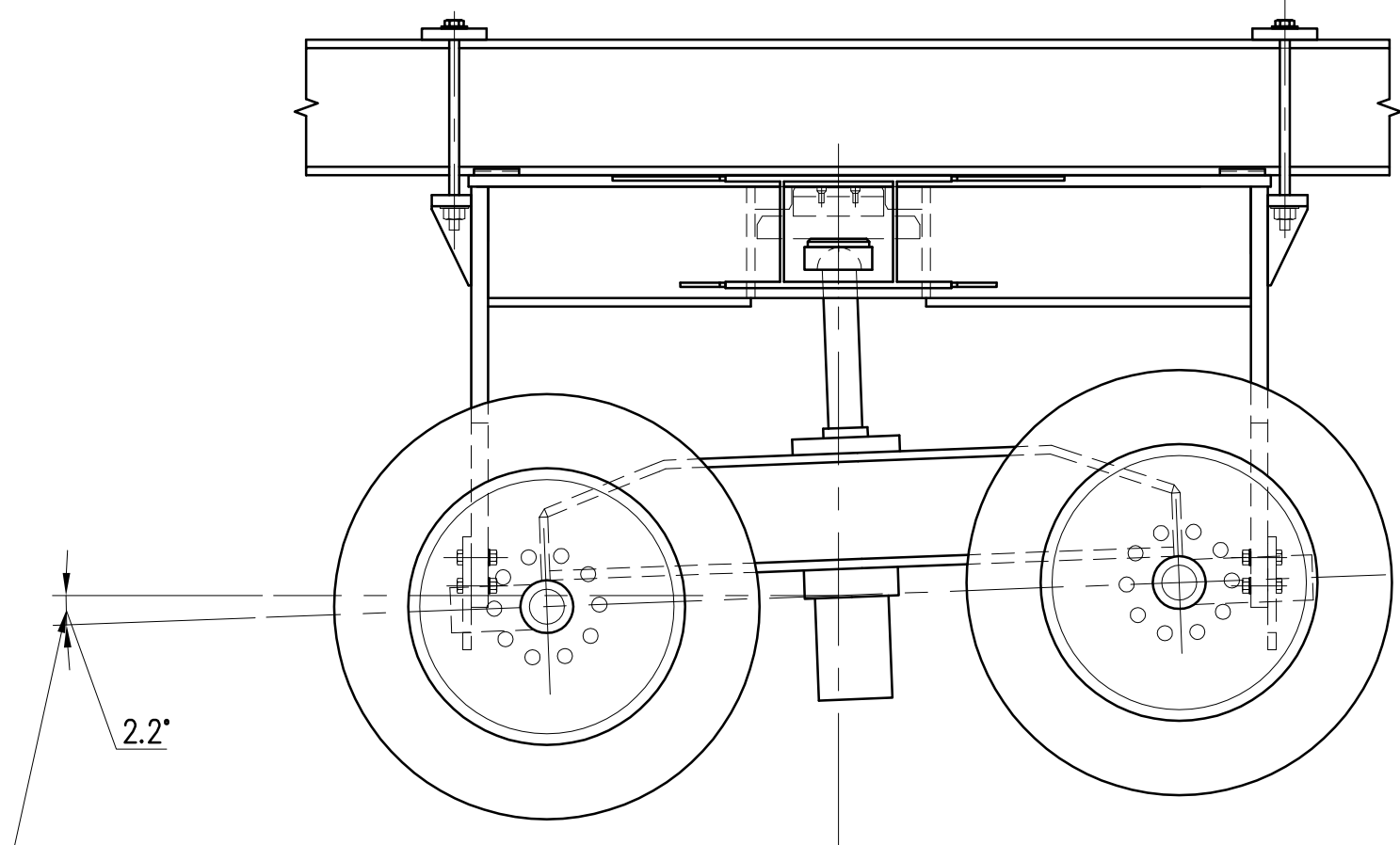
REDUCED SIZE PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING



**PLAN OF WHEEL SET INSTALLATION**  
SCALE: 3/8"=1'-0"

**VIEW**  
SCALE: 3/4"=1'-0"



ANGULAR ALLOWANCE BETWEEN DOLLIE AND SADDLE FOR UNEVEN GROUND CONDITIONS WHEN RAMP IS LIFTED 12".

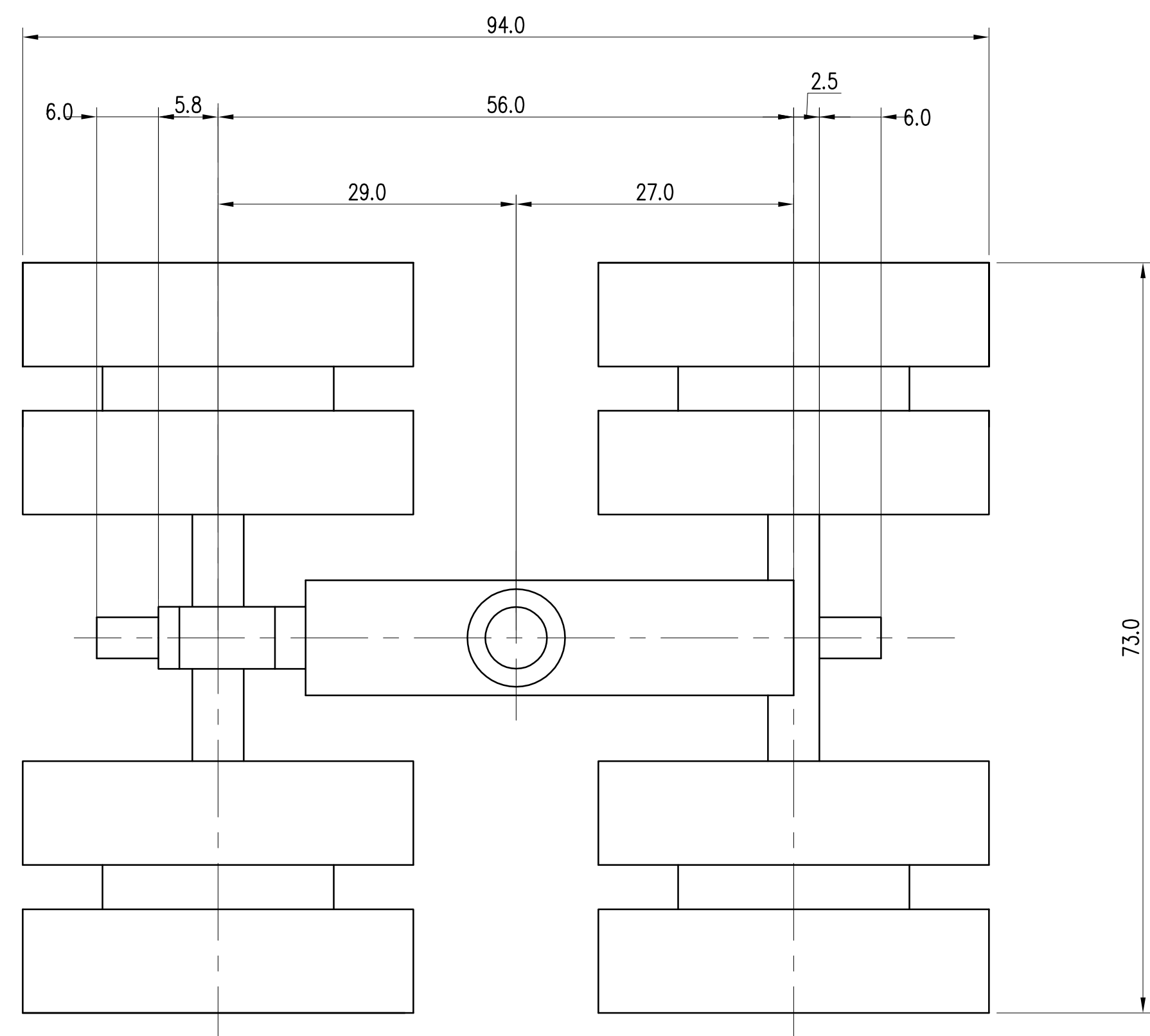
**VIEW**  
SCALE: 3/4"=1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE		
BARGES & VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE		
SHEET TITLE		
NAWLIWILI RAMP DOLLIE INSTALLATION		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER
DRAWN BY: JLF	FOR HARBORS ADMINISTRATOR	M-16.0
CHECKED BY: ACJ	JOB NUMBER	REVISION
DATE: 9/1/06	H.C. 90018	____ OF ____ SHTS
SCALE: AS SHOWN		

REDUCED SIZE  
PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING

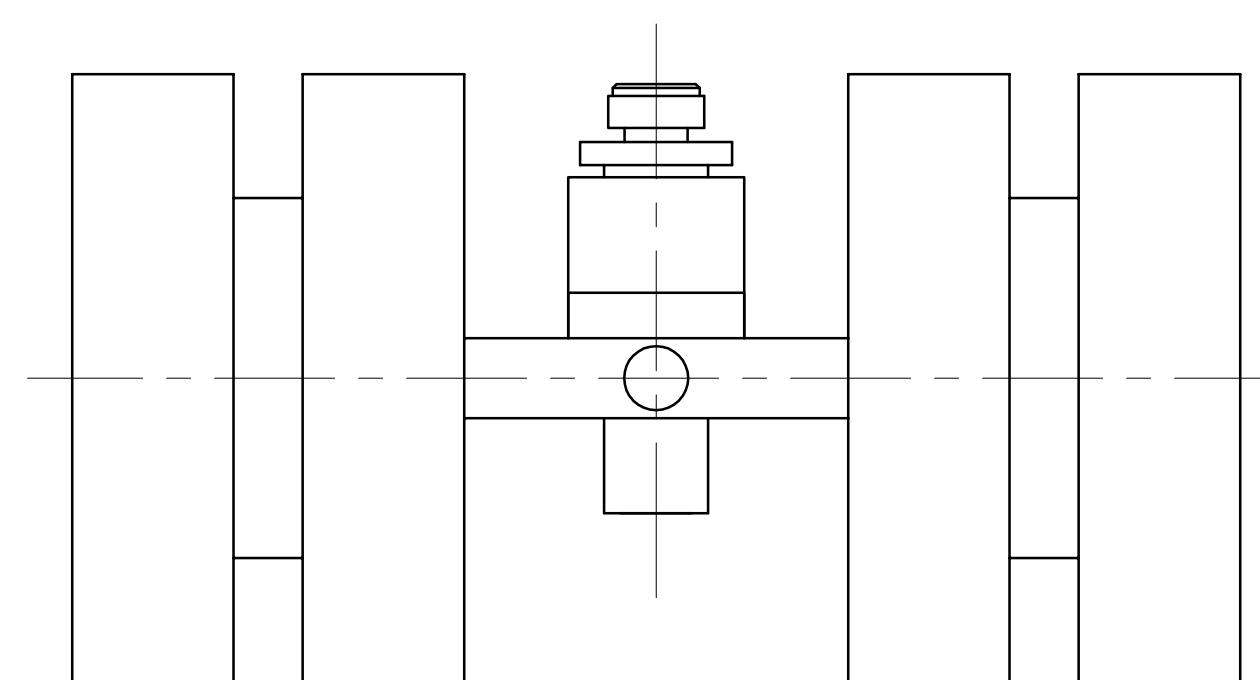
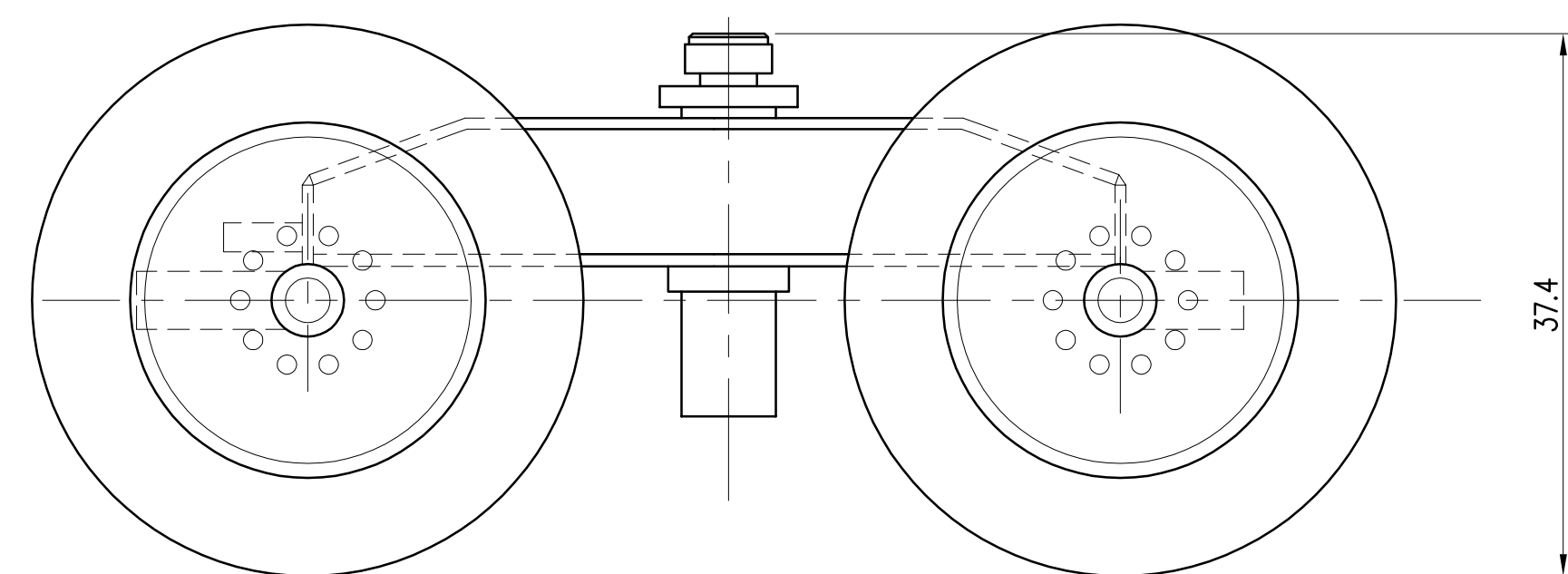




**DOLLIE SPECIFICATIONS**

- 1) 40-TON OFF-ROAD CAPACITY.
- 2) OSCILLATING, NON-STEERING FRONT AXLE.
- 3) INTEGRAL 16"-STROKE DOUBLE ACTING CYLINDER, 4,000 psi MAXIMUM PRESSURE, WITH OSCILLATING TOP CAP (NO TOP PLATE).
- 4) PNEUMATIC TIRES ON 22.5" RIMS.
- 5) OVERALL DIMENSIONS AS SHOWN, TO BE CONFIRMED PRIOR TO MANUFACTURE.
- 6) ALIGNMENT LUGS ON AXLES FRONT AND REAR AS SHOWN, APPROXIMATELY Ø4" x 6" EXTENSION BEYOND OUTSIDE DIMENSION SHOWN, CARBON STEEL. FINAL DIMENSIONS AND MATERIALS TO BE COORDINATED PRIOR TO MANUFACTURE.
- 7) ALL AS MANUFACTURED BY:  
 NAME: HOLLAND MOVING & RIGGING SUPPLIES  
 PHONE: 877-585-3630  
 ADDRESS: 35545 HWY 69  
 FOREST CITY, IA 50436

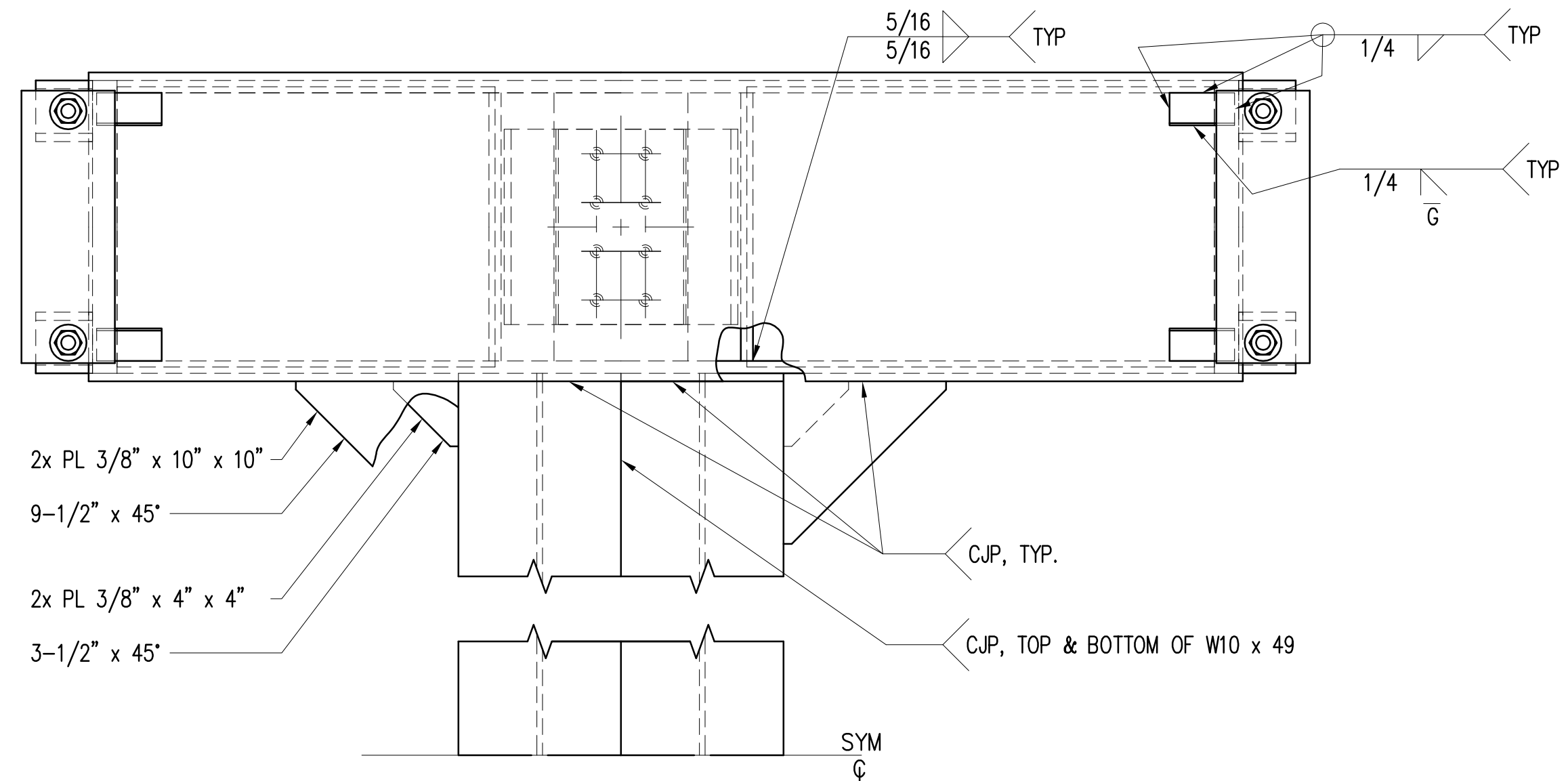
**DETAIL**  
SCALE: 1"=1'-0" 1  
M16.0



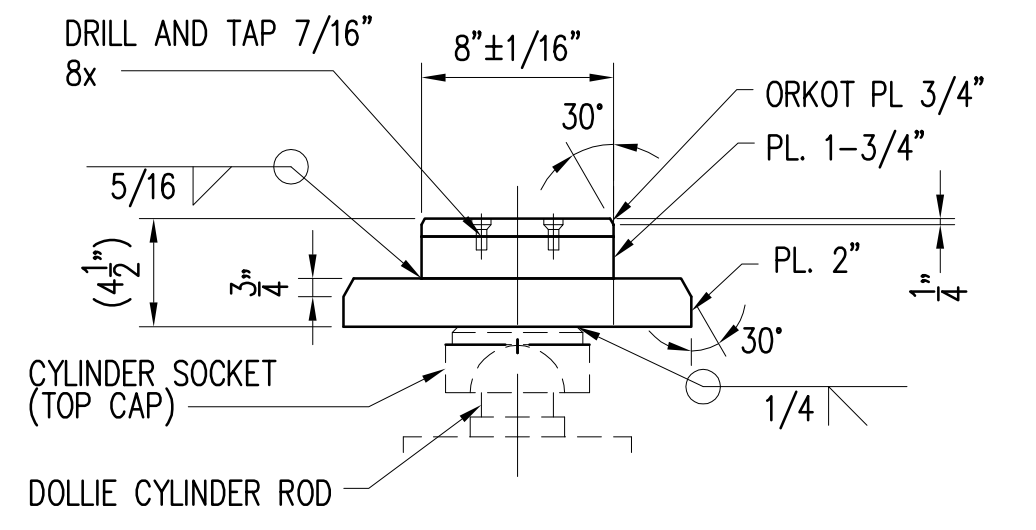
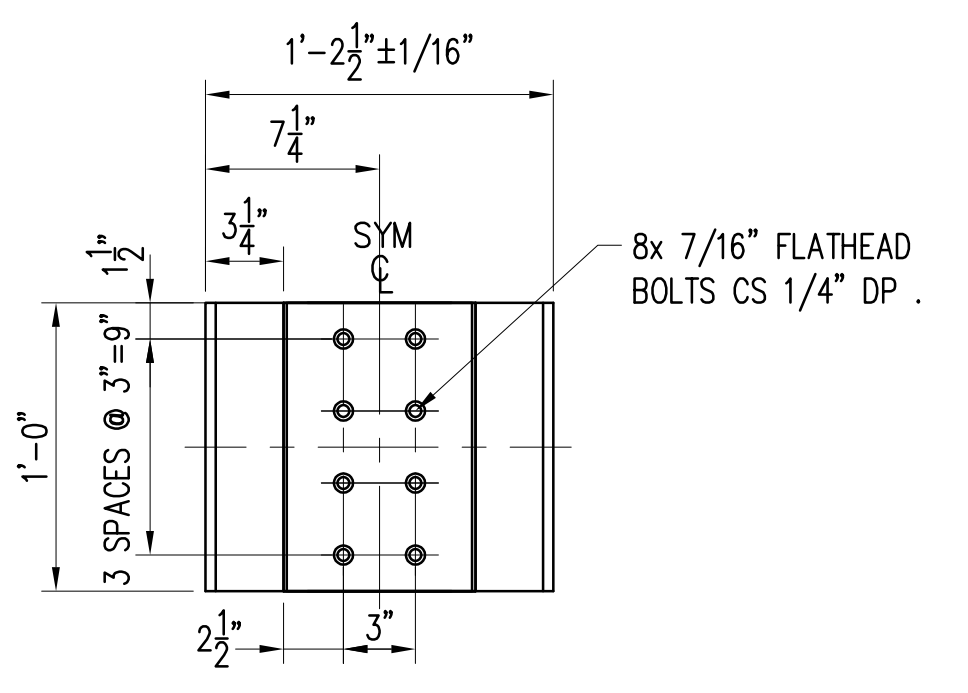
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>NAWILIWILI RAMP DOLLIE</b>		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS		APPROVED BY:
DRAWN BY: JLF		FOR HARBORS ADMINISTRATOR
CHECKED BY: AE		DRAWING NUMBER <b>M-16.1</b>
DATE: 9/1/06		REVISION
SCALE: AS SHOWN		H.C. 90018
		___ OF ___ SHTS

REDUCED SIZE  
PRINT  
(NOT TO SCALE)

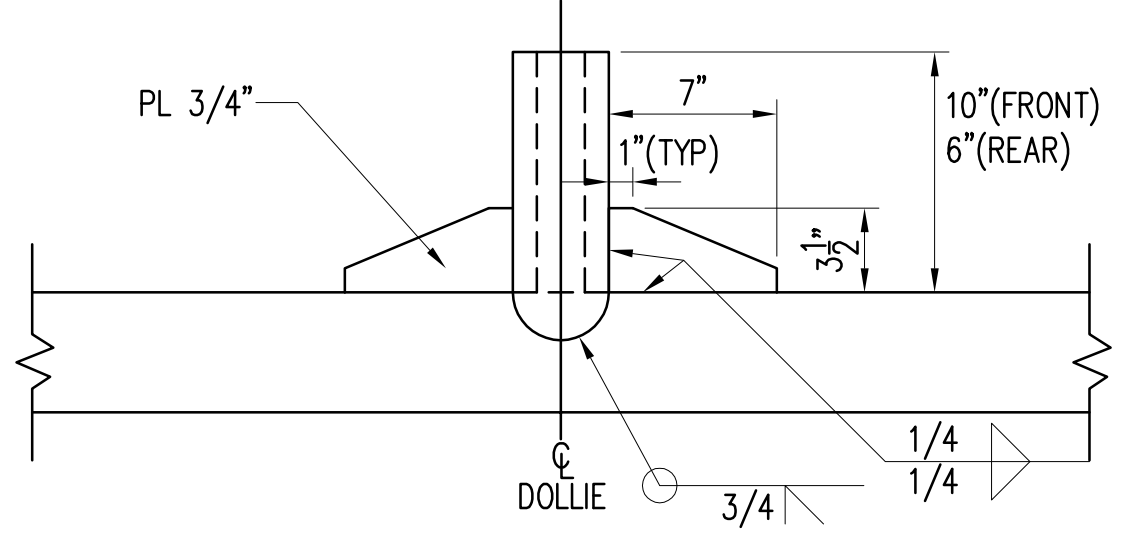
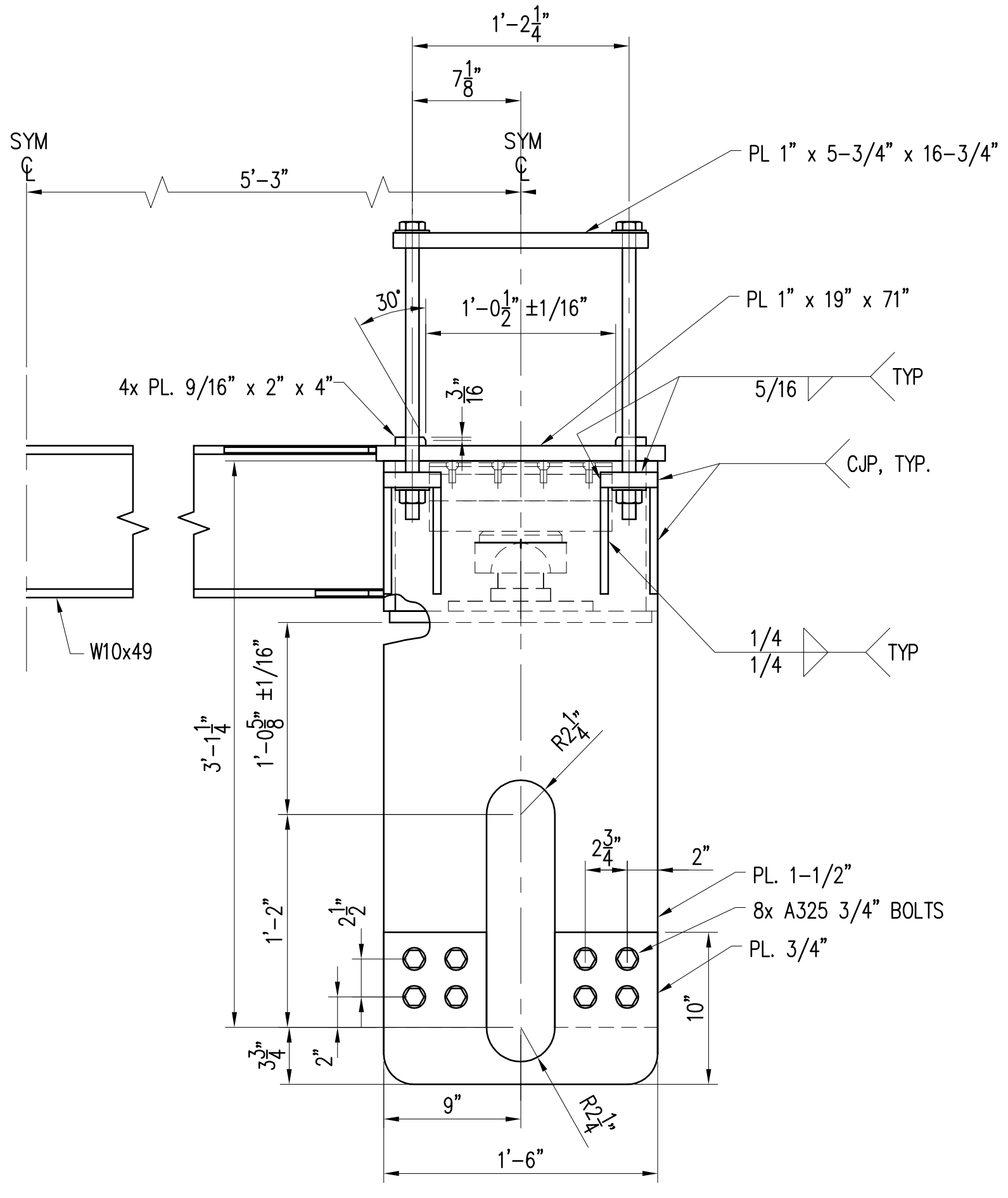
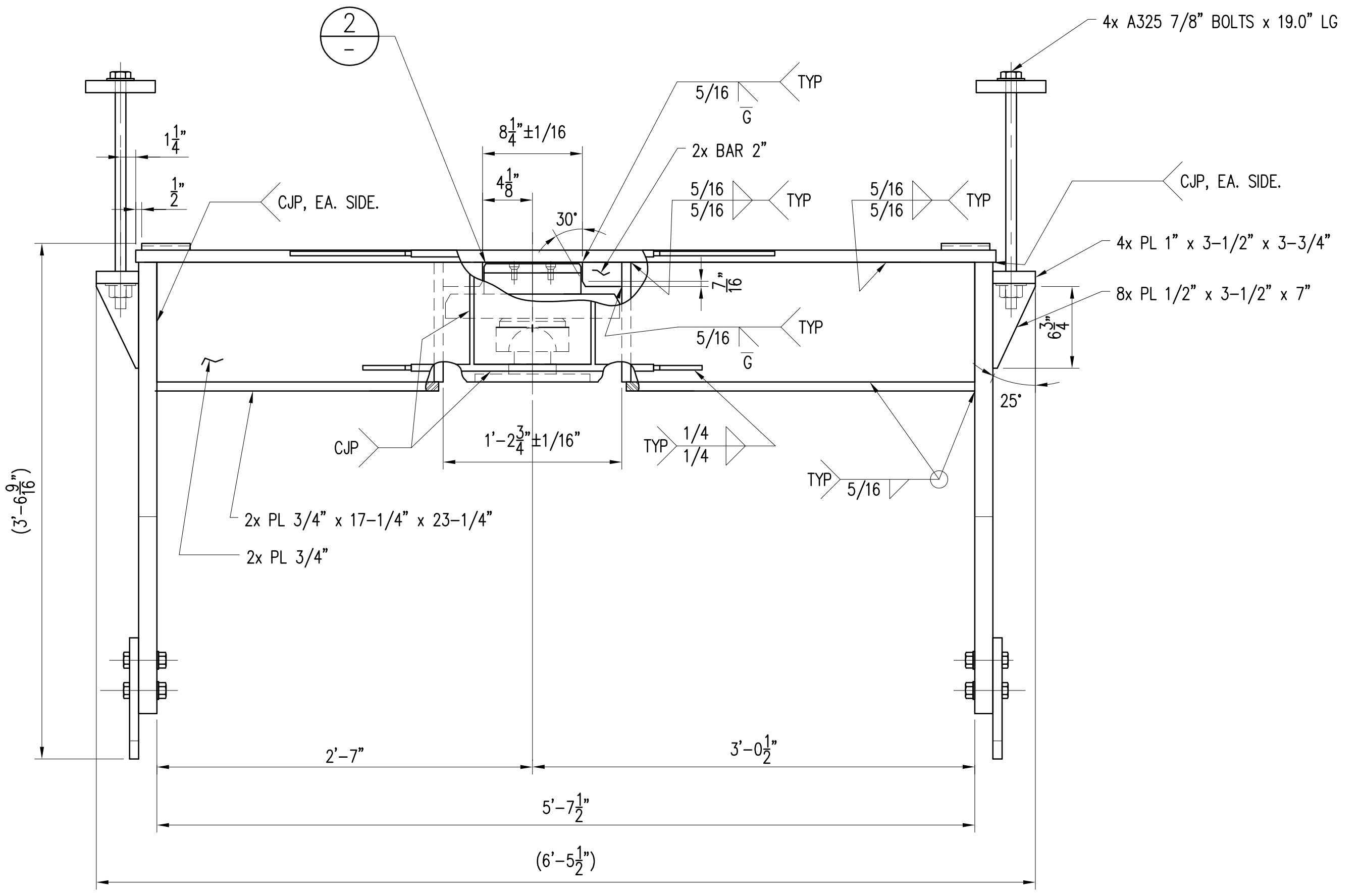
DESIGN RECORD DRAWING



**SADDLE DETAIL**  
SCALE: 1 1/2"=1'-0"  
1  
M16.0

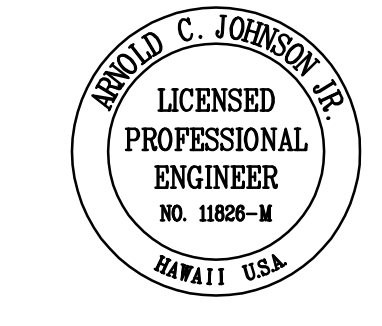


**SOCKET ASSY DETAIL**  
SCALE: 1 1/2"=1'-0"  
2  
-



**DOLLIE STUD**  
SCALE: 1 1/2"=1'-0"  
1  
M16.1

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>NAWLIWILI RAMP DOLLIE SADDLE ASSEMBLY</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: SDS	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: JLF	FOR HARBORS ADMINISTRATOR	M-16.2	
CHECKED BY: ACJ	JOB NUMBER	REVISION	OF SHOTS
DATE: 9/1/06	H.C. 90018		
SCALE: AS SHOWN			



REDUCED SIZE  
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(NOT TO SCALE)

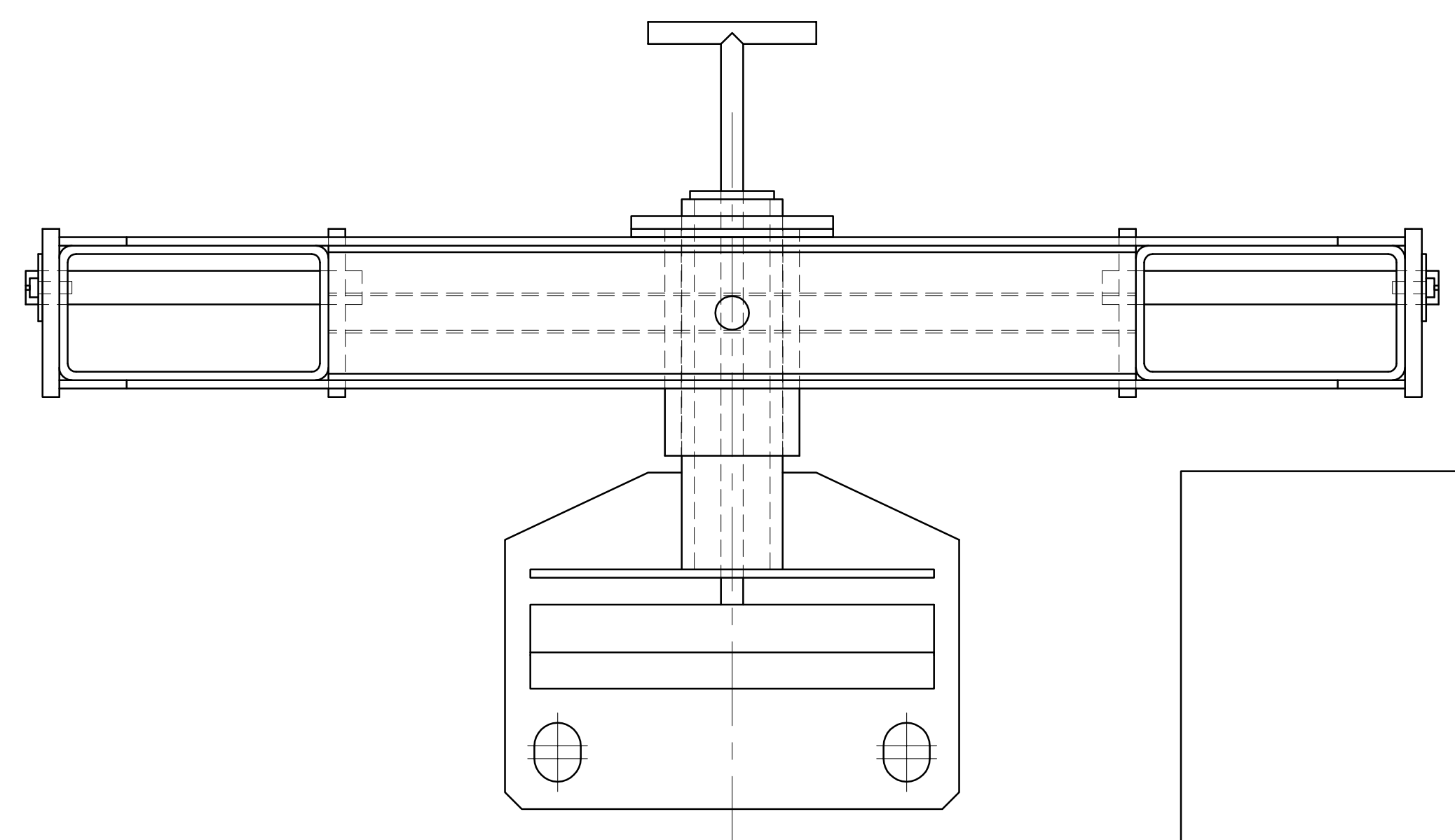
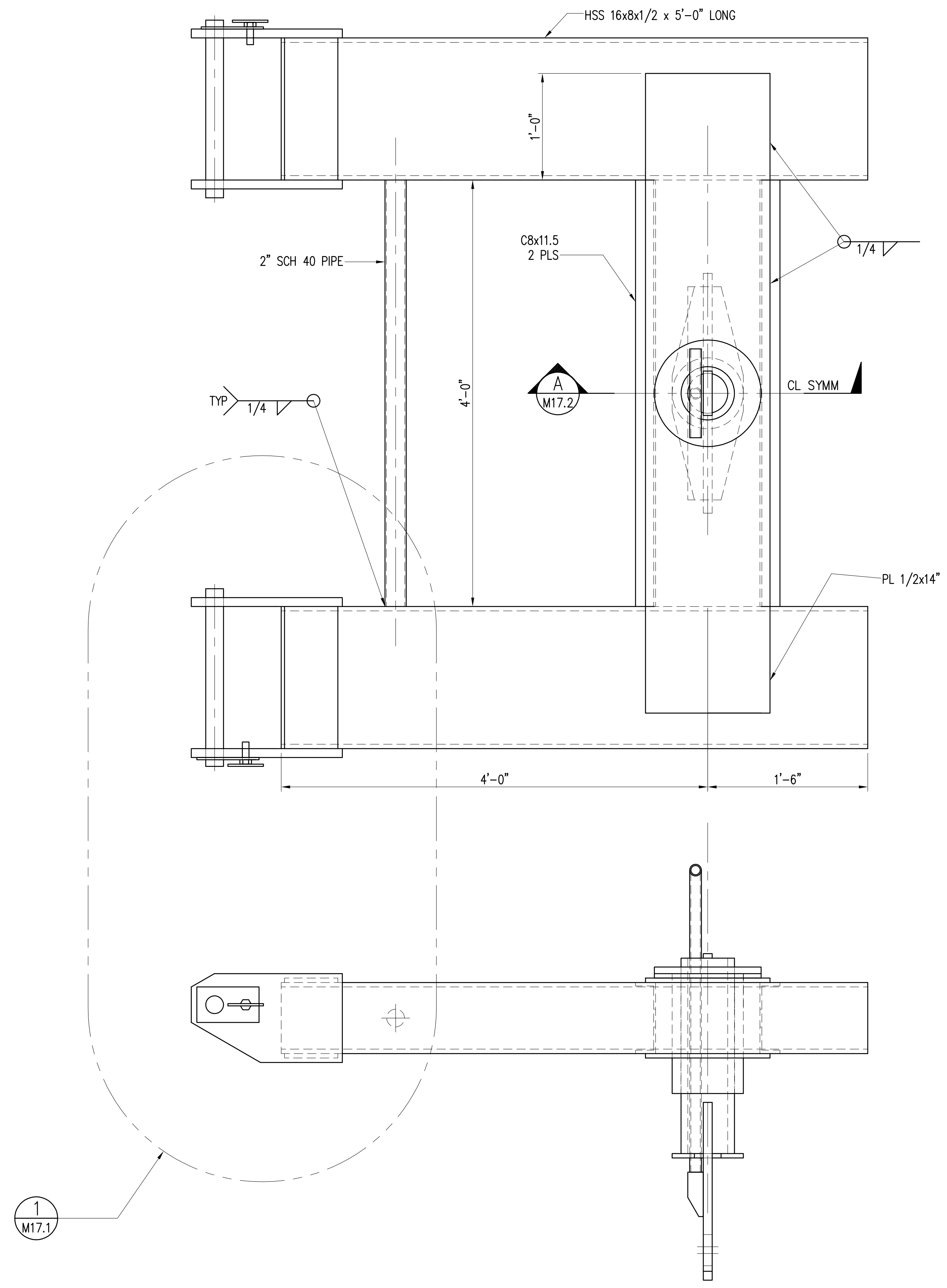
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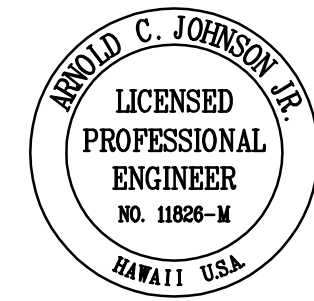
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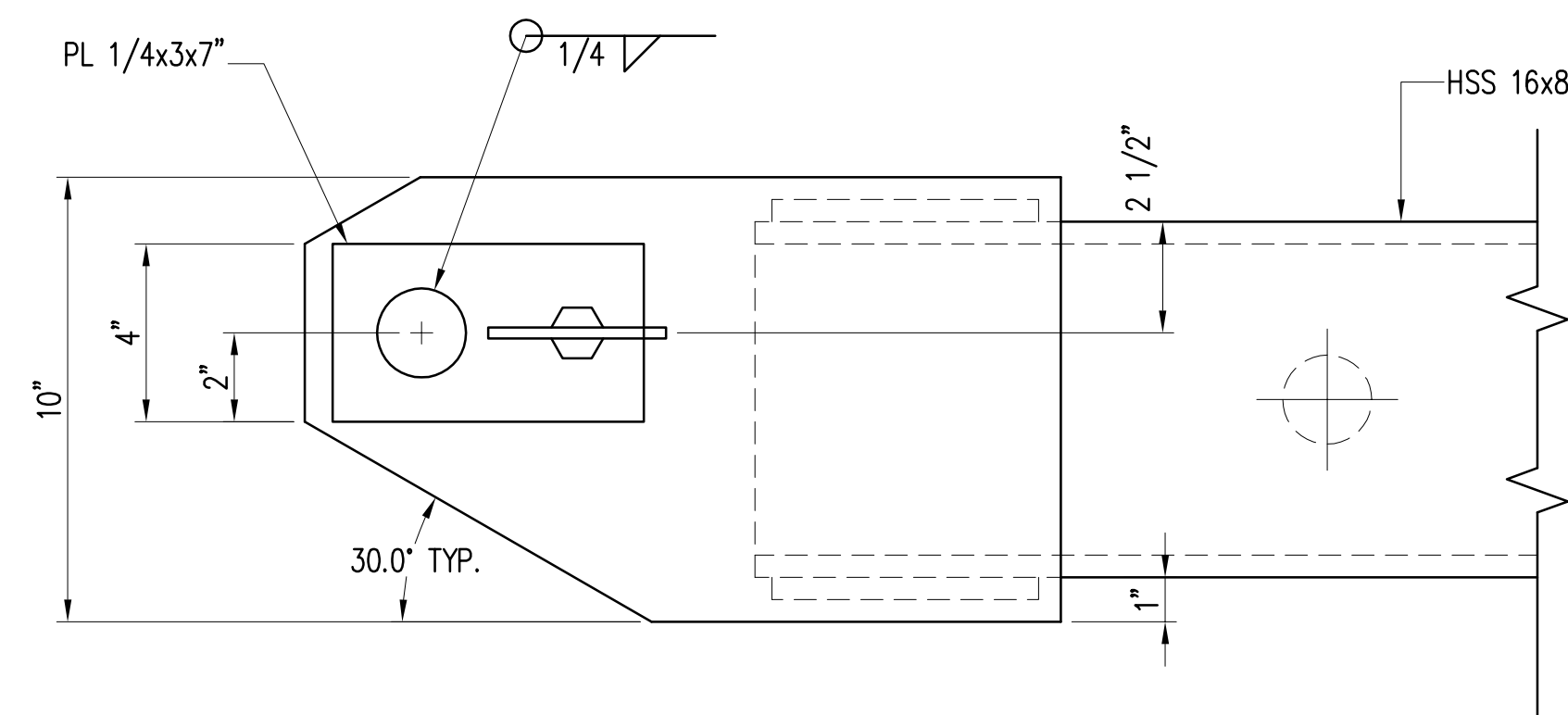
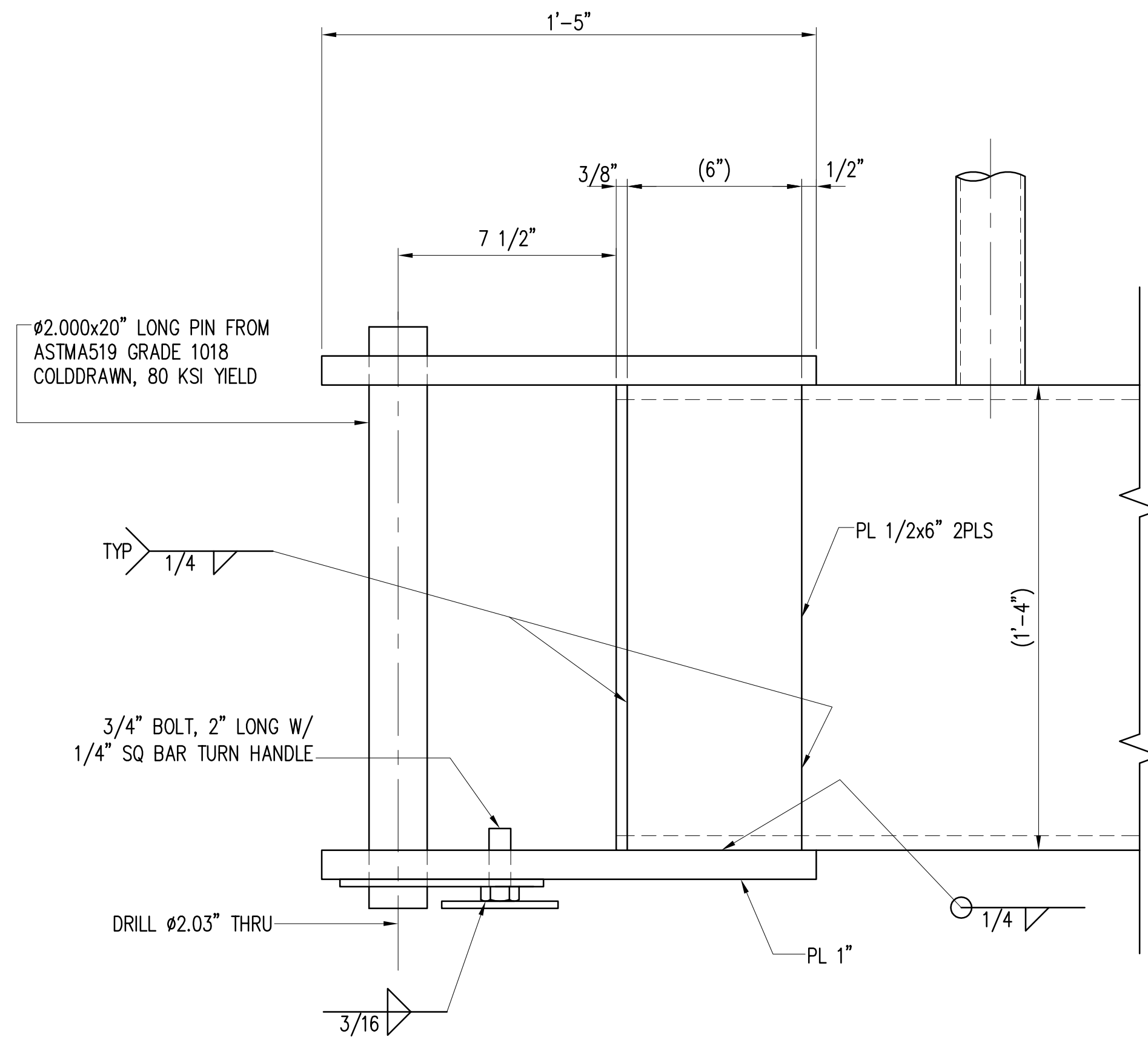
**TOW ATTACHMENT**  
 SCALE: 1-1/2"=1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
 <b>HEALY TIBBITTS BUILDERS, INC.</b>			
<b>kpff</b> Consulting Engineers <small>1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130</small>			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>TOW ATTACHMENT</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: HH	APPROVED BY:		DRAWING NUMBER
DRAWN BY: HH	FOR HARBORS ADMINISTRATOR		<b>M-17.0</b>
CHECKED BY: ACJ	JOB NUMBER		REVISION
DATE: 9/1/06	H.C. 90018		___ OF ___ SHTS
SCALE: AS SHOWN			



REDUCED SIZE  
PRINT  
(NOT TO SCALE)

DESIGN RECORD DRAWING

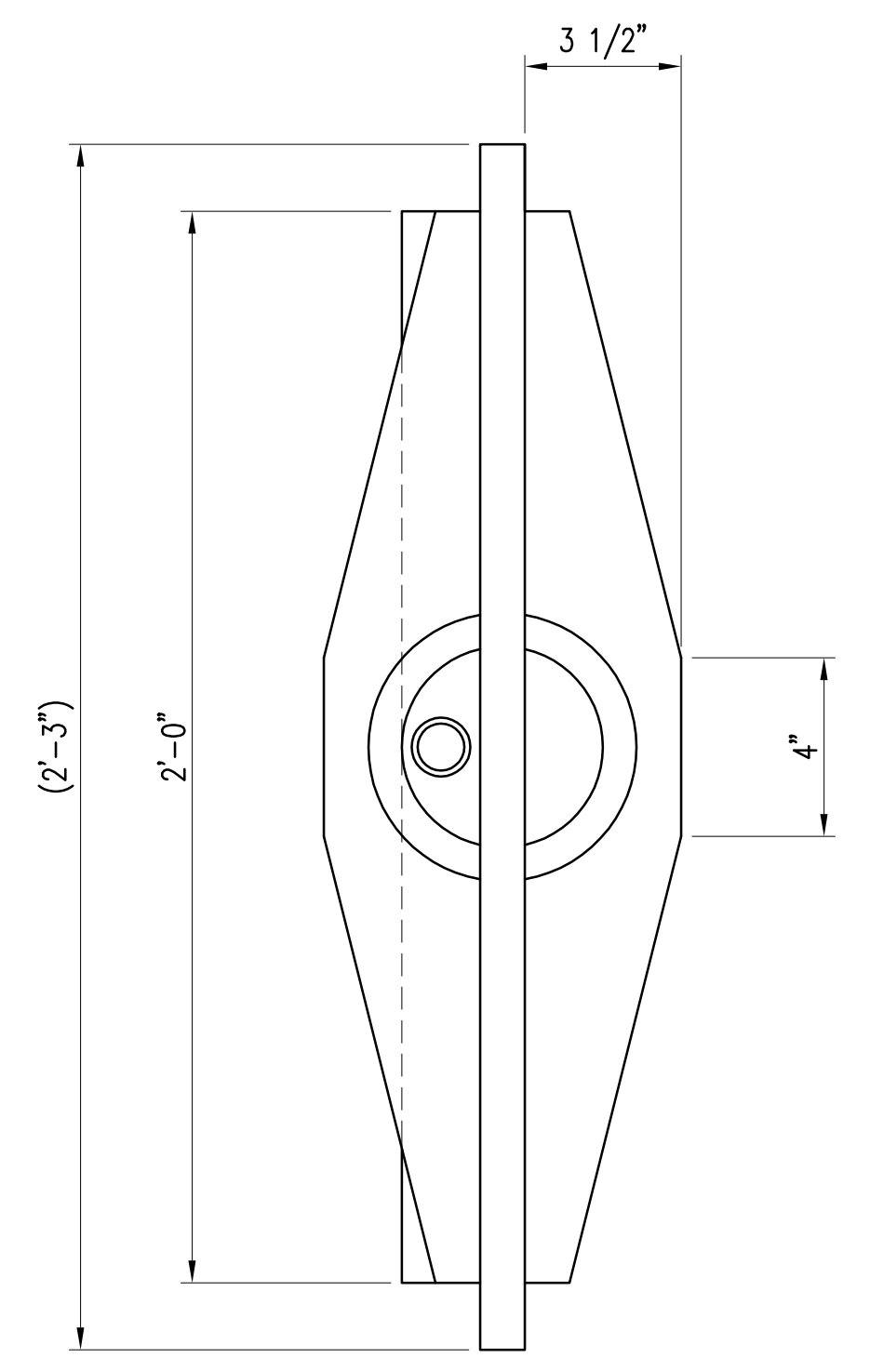
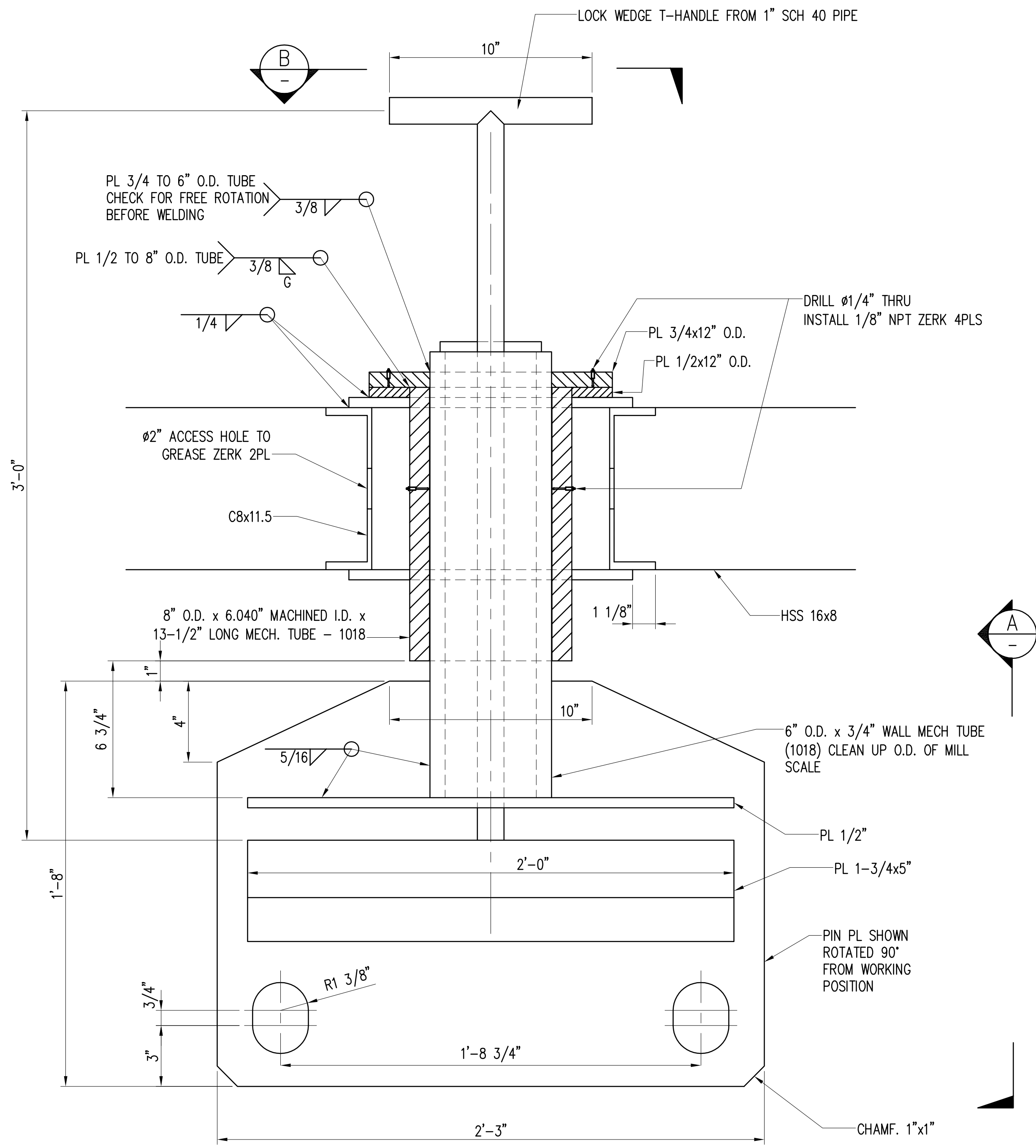


**FORK LOCK DETAIL** 1  
SCALE: 3"=1'-0" M17.0

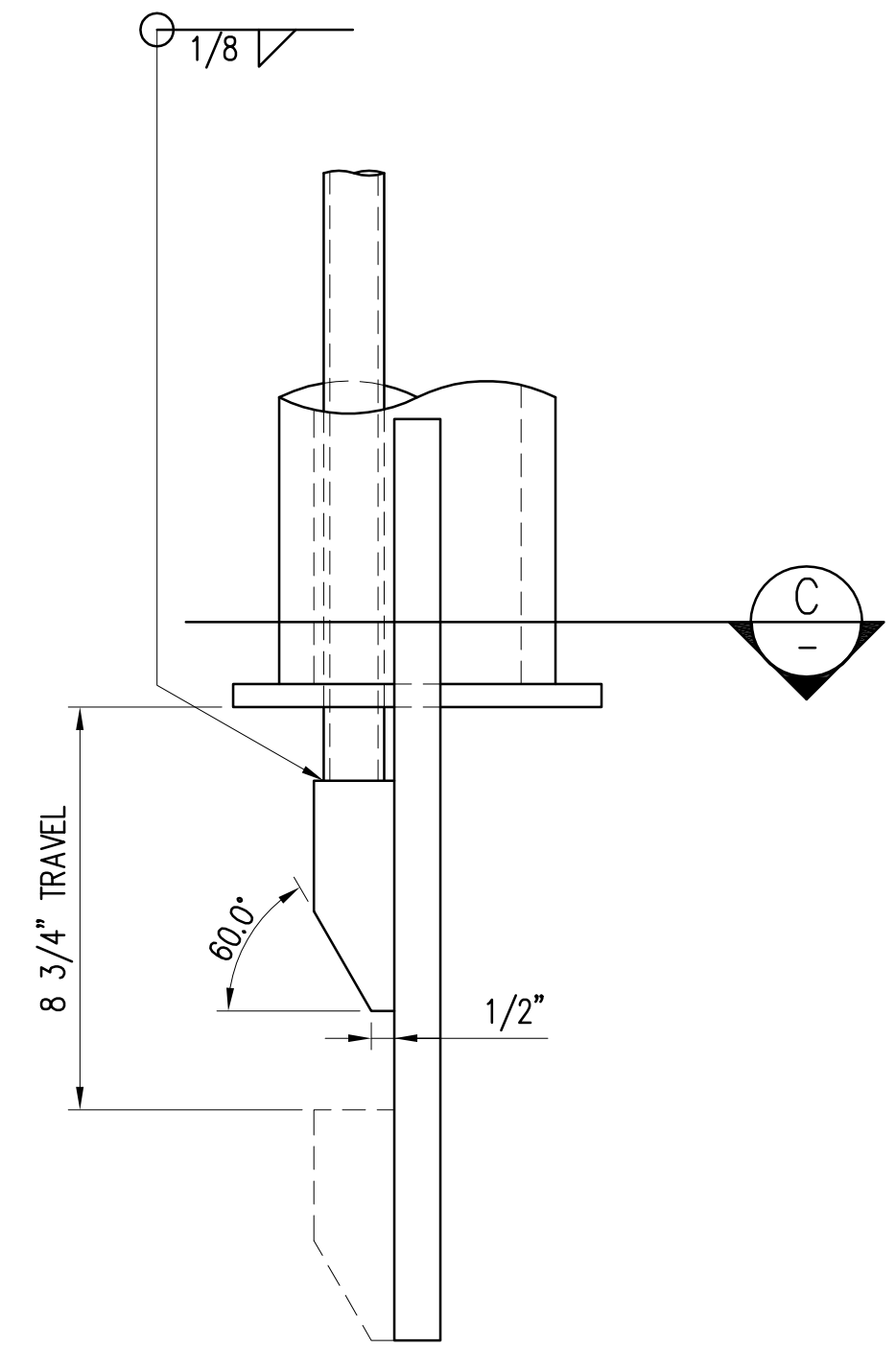
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION		
	1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130		
	JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>TOW ATTACHMENT FORK LOCK DETAIL</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: HH	APPROVED BY:		DRAWING NUMBER
DRAWN BY: HH	FOR HARBORS ADMINISTRATOR		M-17.1
CHECKED BY: ACJ	JOB NUMBER		REVISION
DATE: 9/1/06	H.C. 90018		___ OF ___ SHTS
SCALE: AS SHOWN			

REDUCED SIZE  
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(NOT TO SCALE)

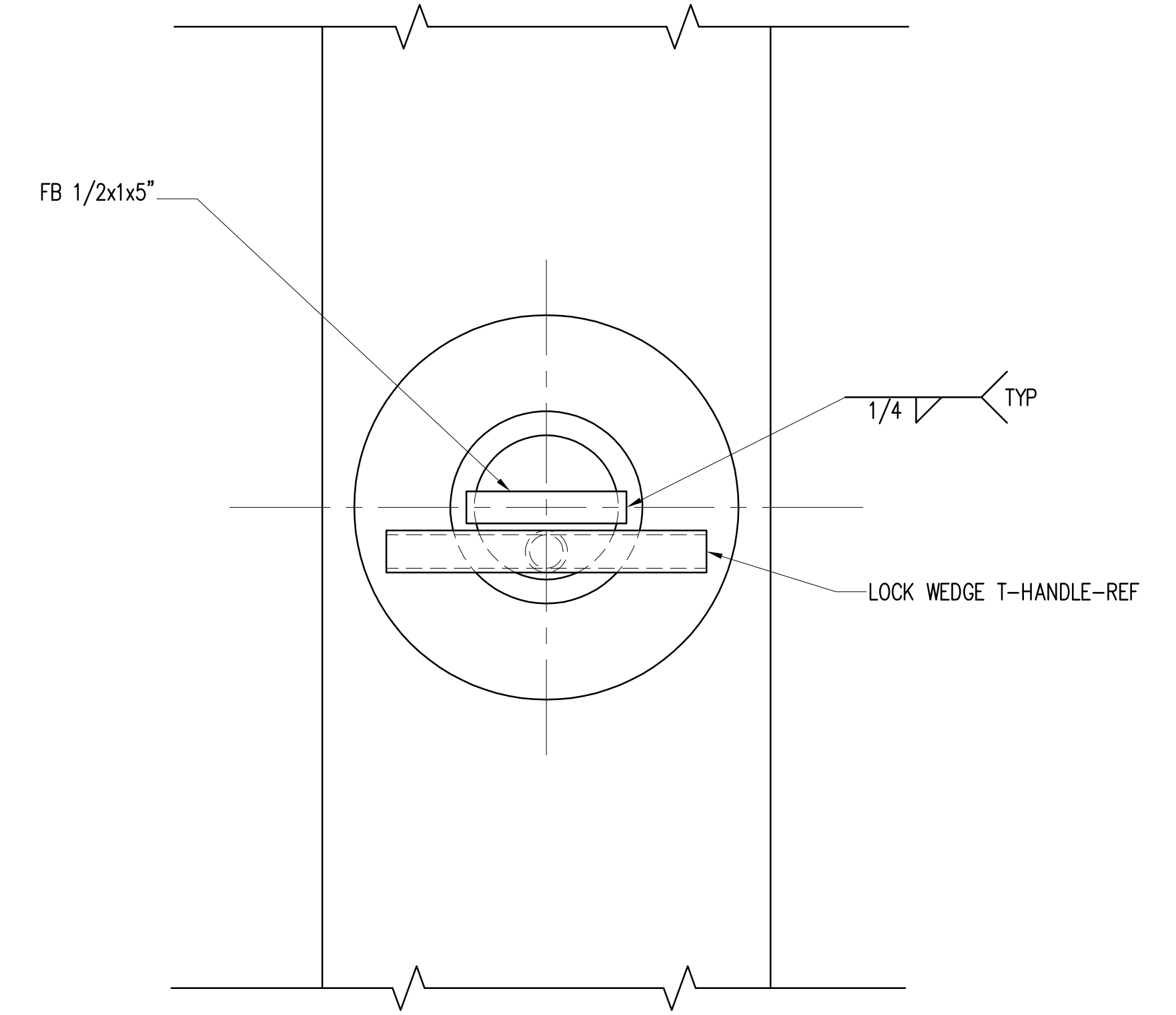
DESIGN RECORD DRAWING



**SECTION**  
SCALE: 3"=1'-0"

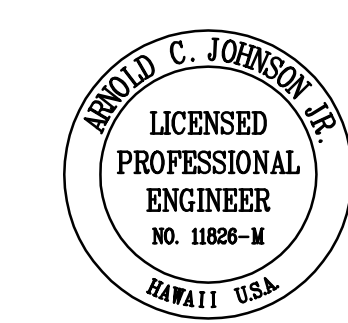


**VIEW**  
SCALE: 3"=1'-0"



**VIEW**  
SCALE: 3"=1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION			
<b>HEALY TIBBITTS BUILDERS, INC.</b>			
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130			
<b>kpff</b> Consulting Engineers			
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>			
SHEET TITLE <b>TOW ATTACHMENT PIN PLATE DETAIL</b>			
SUBMITTED BY:		RECOMMENDED BY:	
SECTION HEAD		ENGINEERING PROGRAM MANAGER	
DESIGNED BY: HH	APPROVED BY:	DRAWING NUMBER	
DRAWN BY: HH	FOR HARBORS ADMINISTRATOR	M-17.2	
CHECKED BY: ACJ	JOB NUMBER	REVISION	
DATE: 9/1/06	H.C. 90018	___ OF ___ SHTS	
SCALE: AS SHOWN			



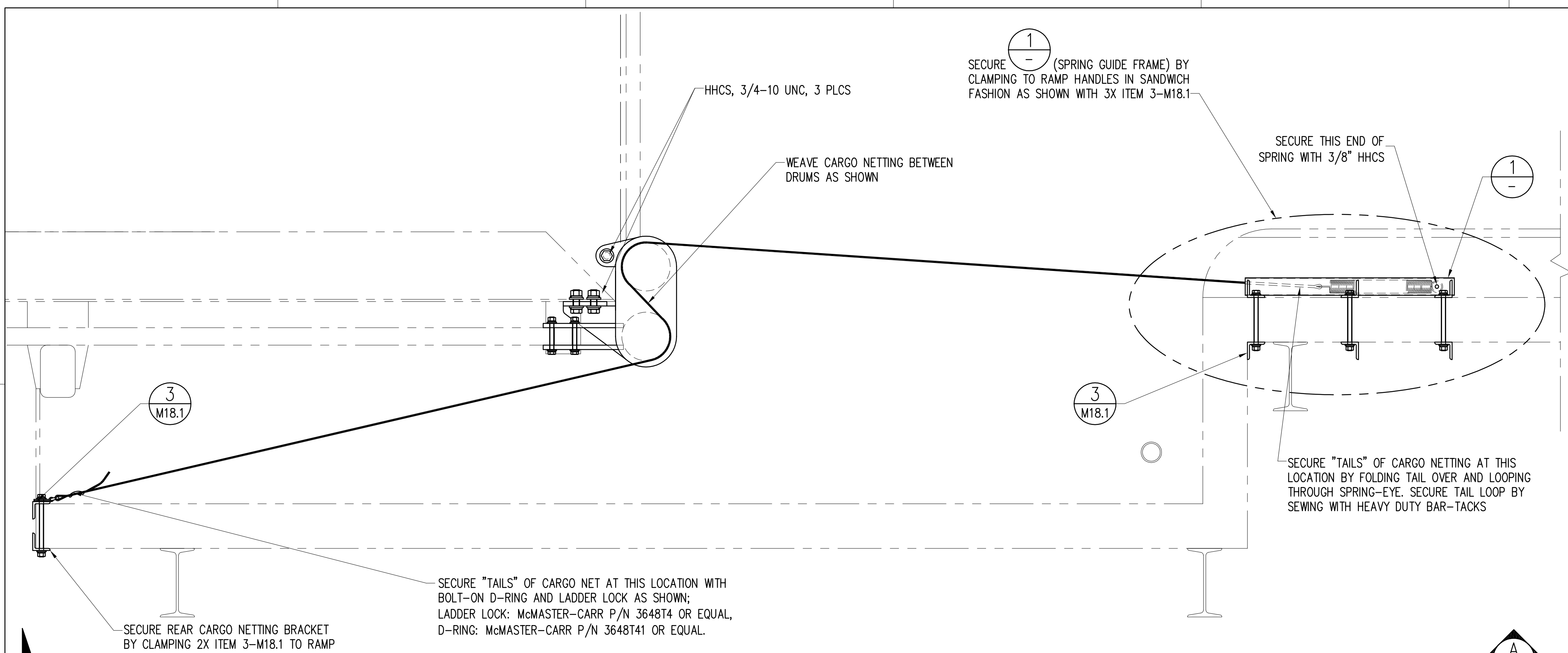
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(NOT TO SCALE)

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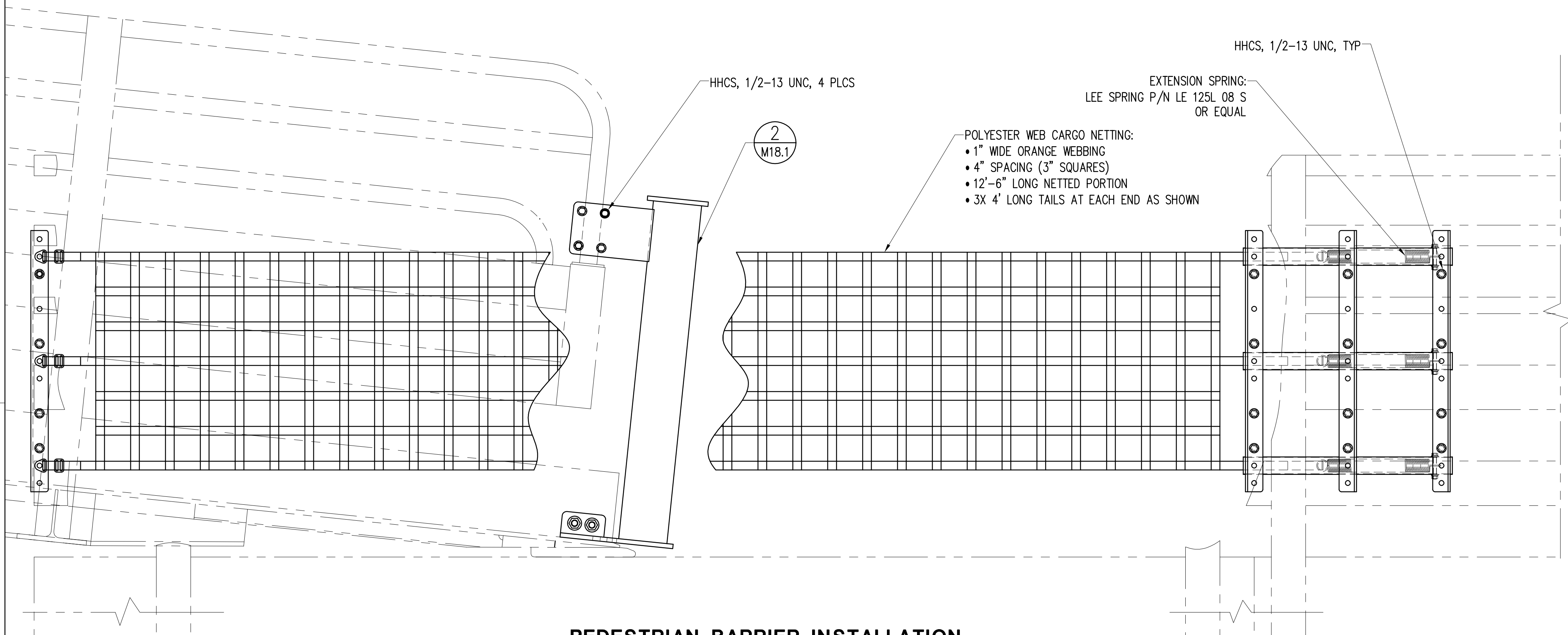
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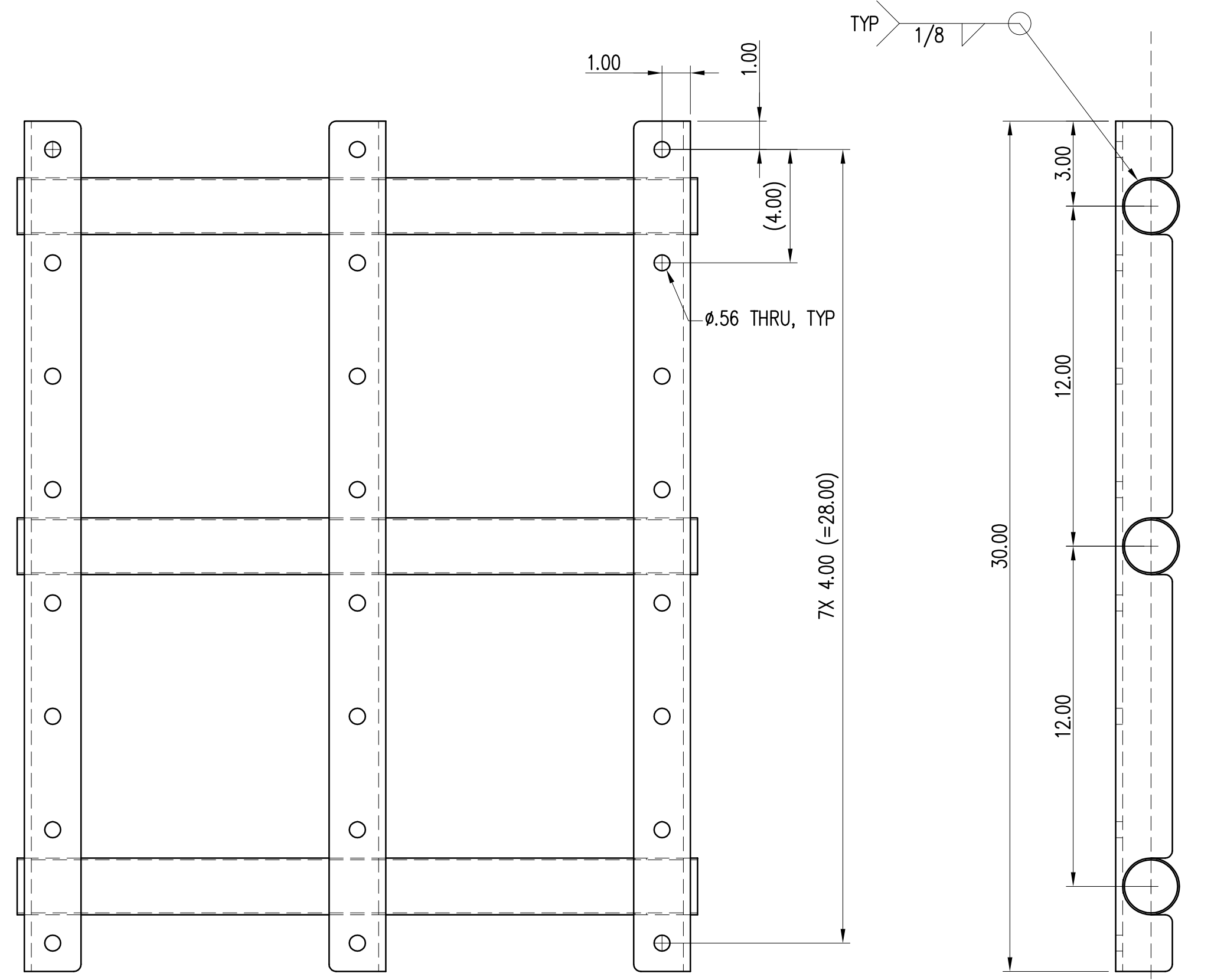
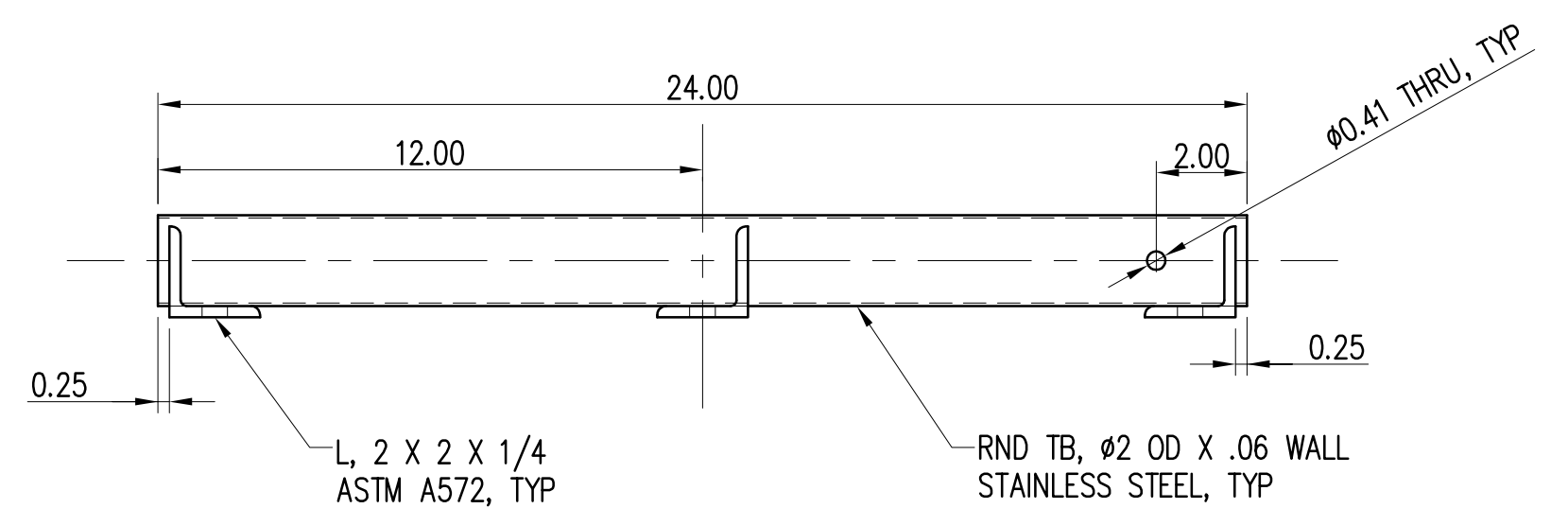
A



**PEDESTRIAN BARRIER INSTALLATION PLAN VIEW**  
SCALE: 1 1/2" = 1'-0"



**PEDESTRIAN BARRIER INSTALLATION VIEW**  
SCALE: 1 1/2" = 1'-0"

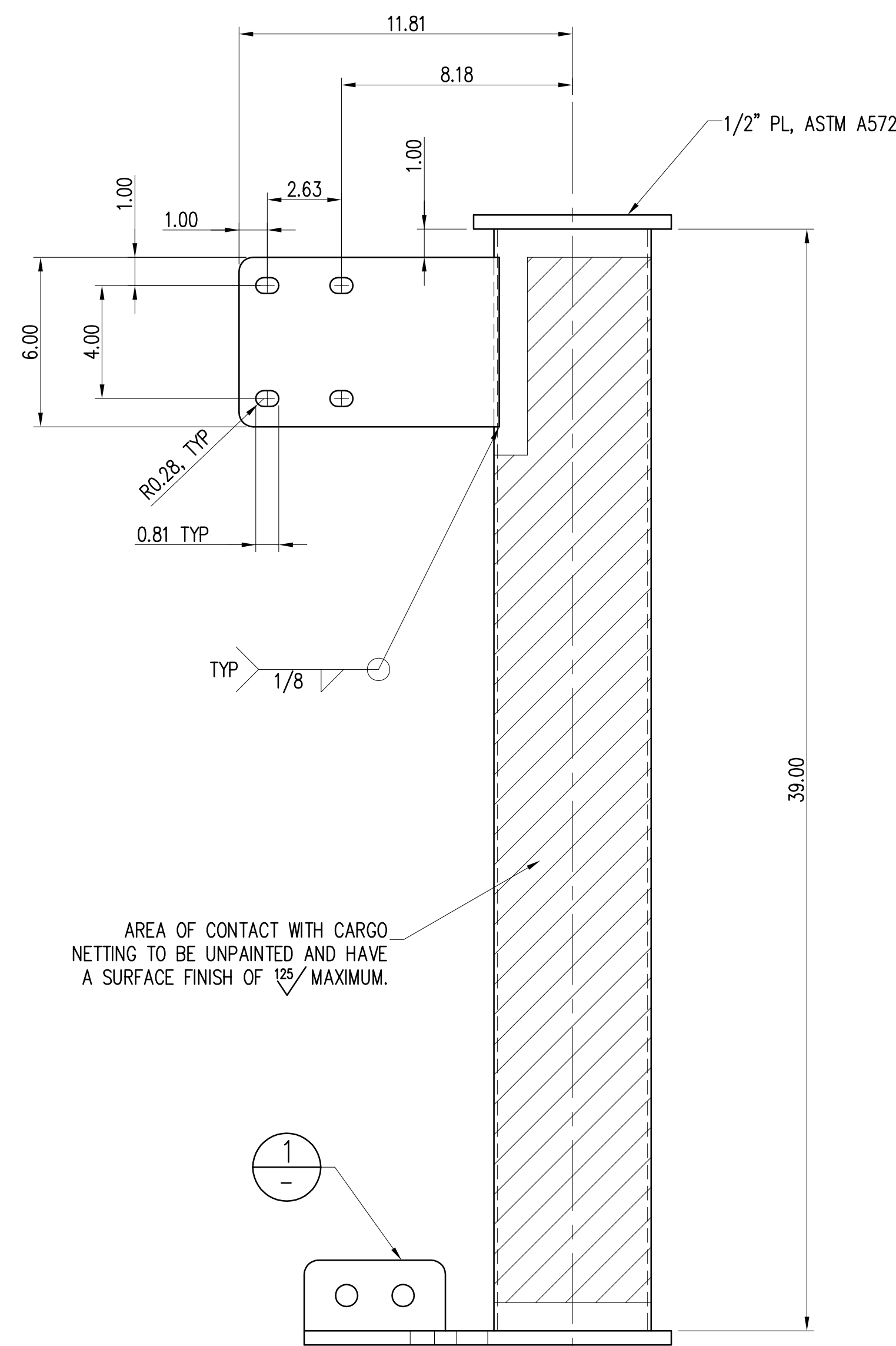
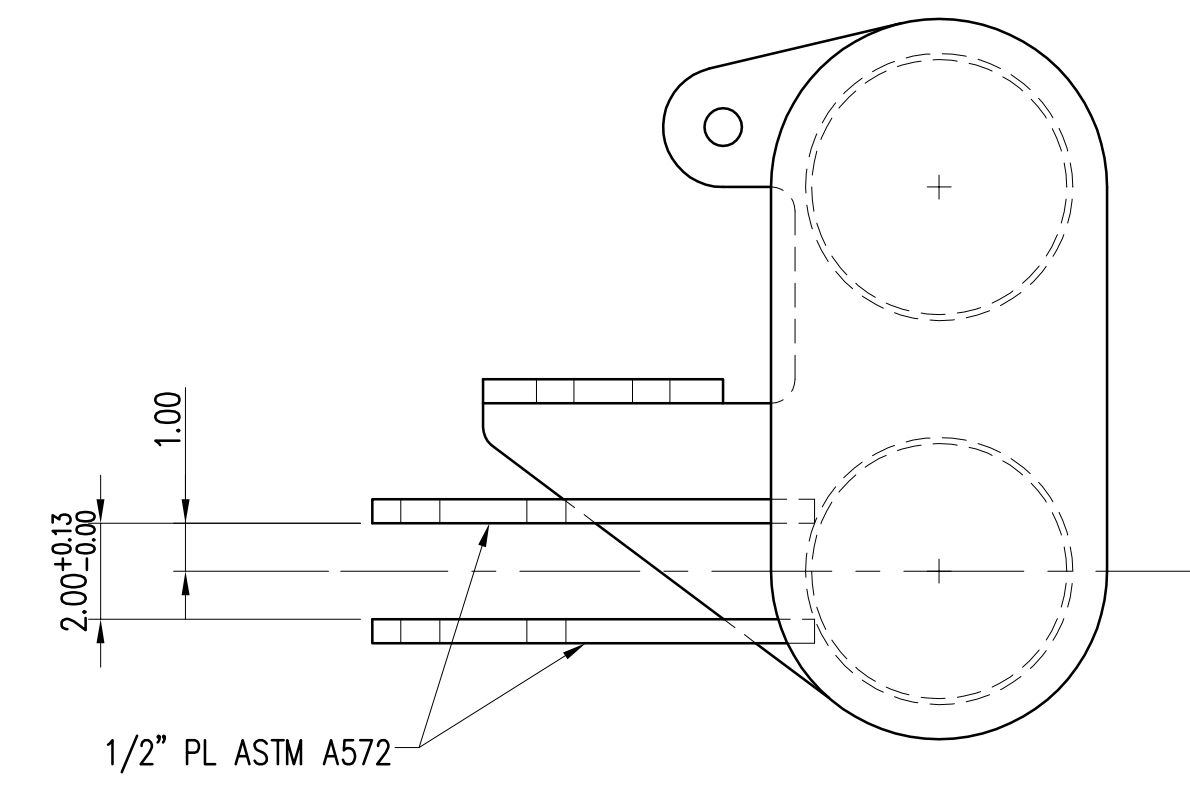


**SPRING-GUIDE FRAME WELDMENT DETAIL**  
SCALE: 3" = 1'-0"

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
	HEALY TIBBITTS BUILDERS, INC. 1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 (206) 622-5822 Fax (206) 622-8130	
Consulting Engineers		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>PEDESTRIAN BARRIER INSTALLATION DETAILS</b>		
SUBMITTED BY:		RECOMMENDED BY:
SECTION HEAD		ENGINEERING PROGRAM MANAGER
DESIGNED BY: SDS DRAWN BY: SS CHECKED BY: ACJ DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-18.0</b> REVISION
JOB NUMBER H.C. 90018		REVISION ___ OF ___ SHTS

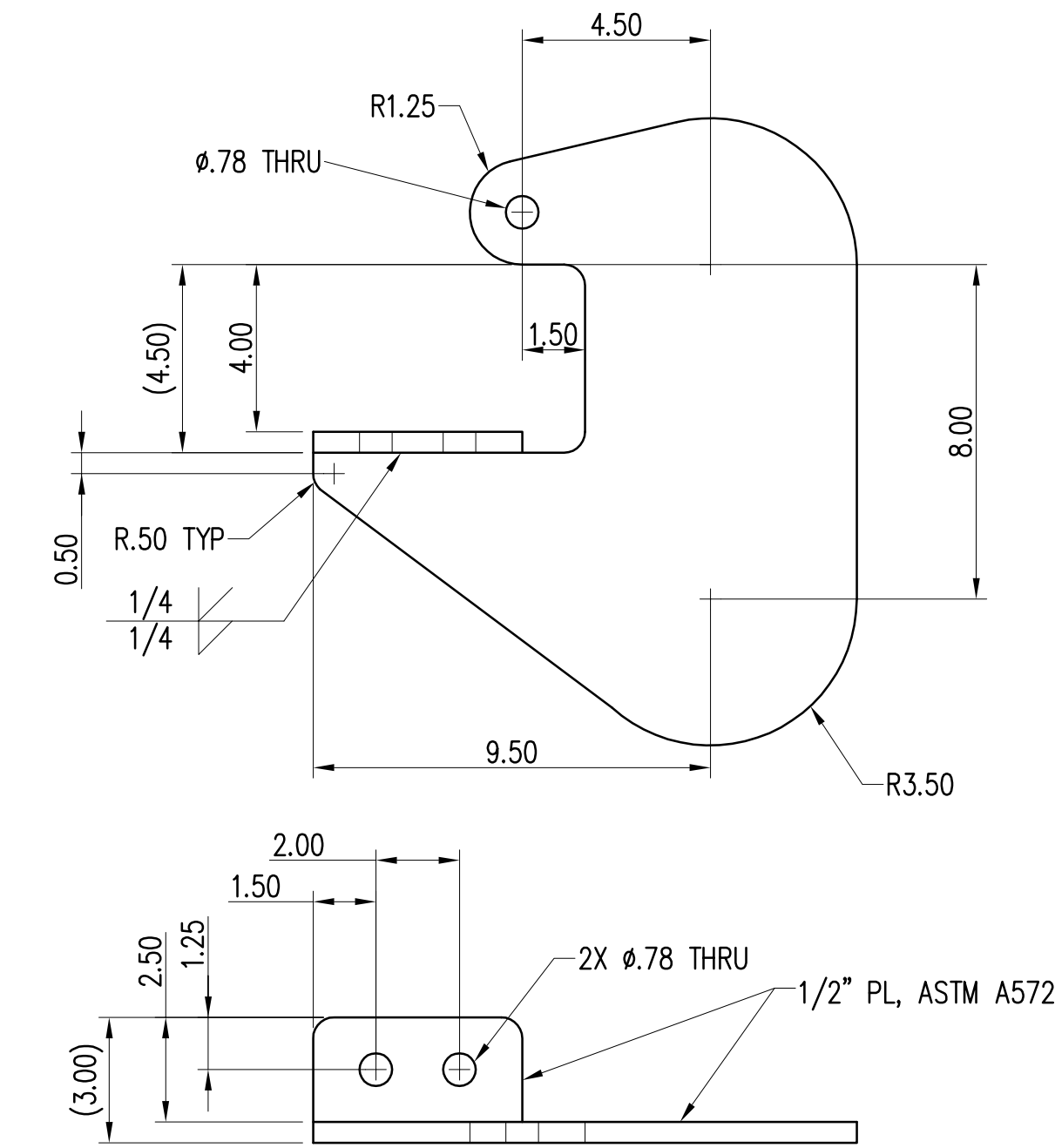
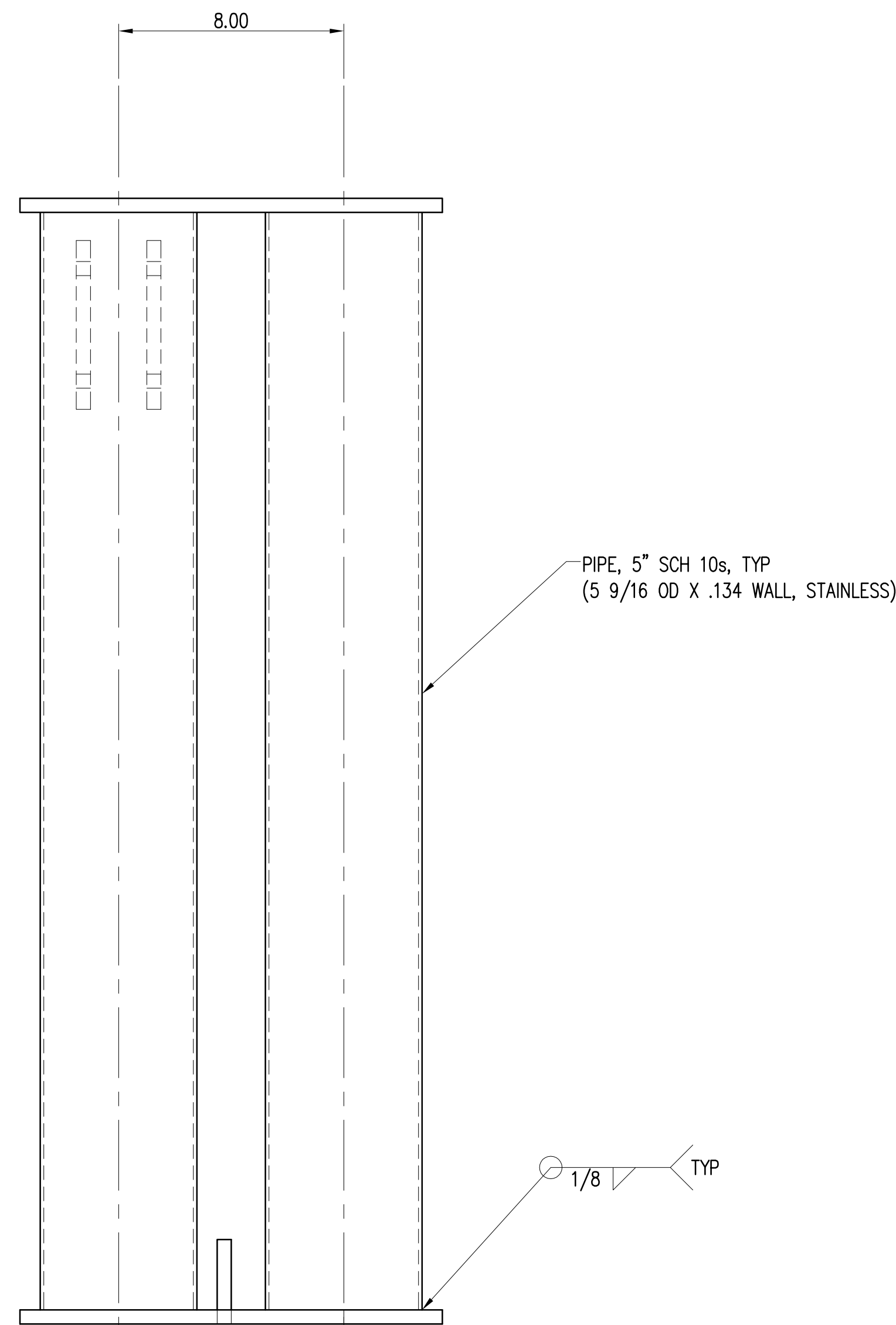
REDUCED SIZE PRINT  
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DESIGN RECORD DRAWING



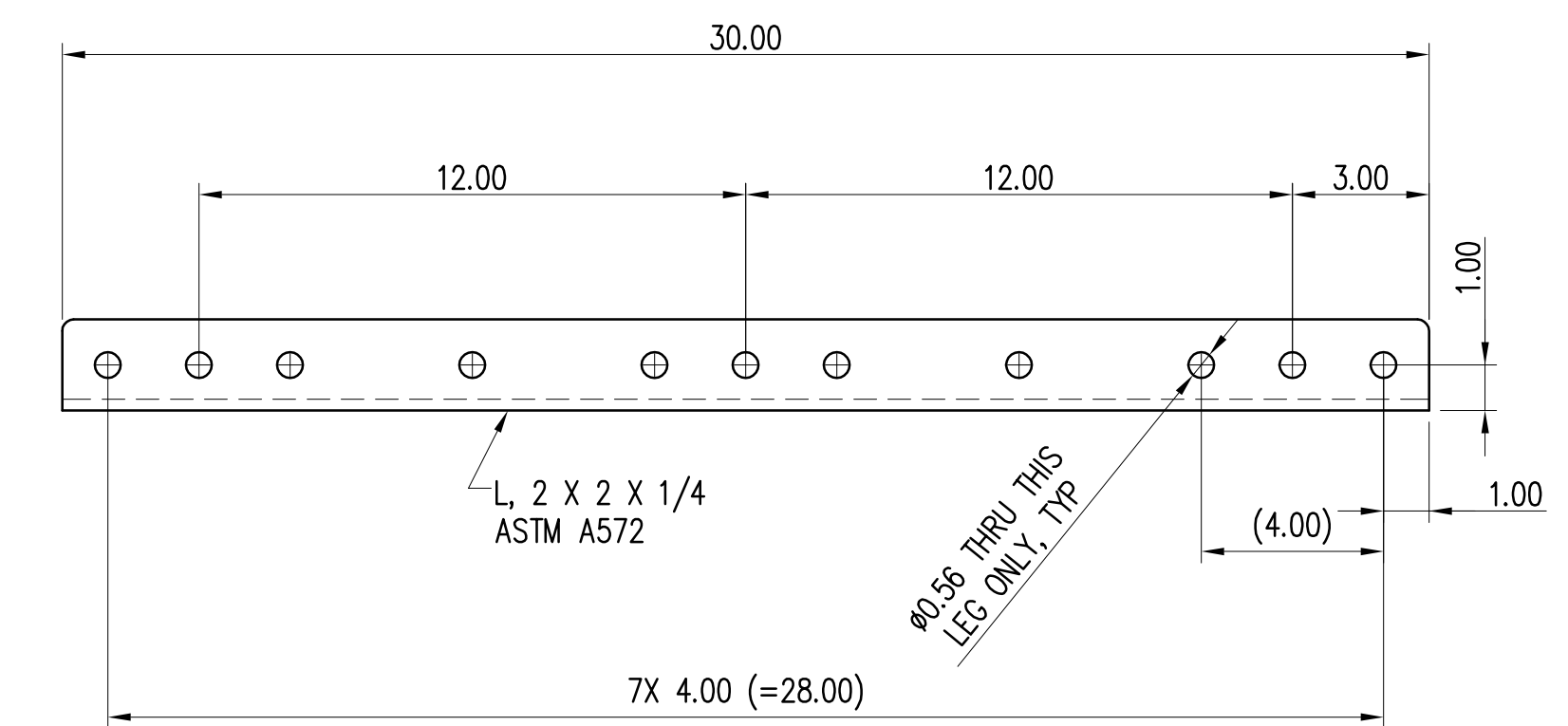
**DETAIL VIEW  
GUIDE DRUM WELDMENT**  
SCALE: 3"=1'-0"

2  
M18.0



**DETAIL VIEW  
GUIDE DRUM BASE WELDMENT**  
SCALE: 3"=1'-0"

1  
-



**DETAIL VIEW  
COMMON CLAMP ANGLE**  
SCALE: 3"=1'-0"

3  
M18.0

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION	
1601 Fifth Avenue, Suite 1600 Seattle, Washington 98101 Consulting Engineers (206) 622-5822 Fax (206) 622-8130		
JOB TITLE <b>BARGES &amp; VEHICLE RAMP SYSTEMS          FOR INTERISLAND FERRY SERVICE</b>		
SHEET TITLE <b>PEDESTRIAN BARRIER          FABRICATION AND DETAILS</b>		
SUBMITTED BY: _____		RECOMMENDED BY: _____
SECTION HEAD _____		ENGINEERING PROGRAM MANAGER _____
DESIGNED BY: SDS DRAWN BY: SS CHECKED BY: ACJ DATE: 9/1/06 SCALE: AS SHOWN	APPROVED BY: _____ FOR HARBORS ADMINISTRATOR	DRAWING NUMBER <b>M-18.1</b> REVISION _____ OF _____ SHTS
REDUCED SIZE PRINT (NOT TO SCALE)		H.C. 90018

DESIGN RECORD DRAWING

## **Requirements of Chapter 104, HRS Wages and Hours of Employees on Public Works Law**

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Chapter 104, HRS, applies to every public works construction project over \$2,000, regardless of the method of procurement or financing (purchase order, voucher, bid, contract, lease arrangement, warranty, SPRB).

### **Rate of Wages for Laborers and Mechanics**

- Minimum prevailing wages (basic hourly rate plus fringe benefits), as determined by the Director of Labor and Industrial Relations and published in wage rate schedules, shall be paid to the various classes of laborers and mechanics working on the job site. [§104-2(a), (b), Hawaii Revised Statutes (HRS)]
- If the Director of Labor determines that prevailing wages have increased during the performance of a public works contract, the rate of pay of laborers and mechanics shall be raised accordingly. [§104-2(a) and (b), HRS; §12-22-3(d) Hawaii Administrative Rules (HAR)]

### **Overtime**

- Laborers and mechanics working on a Saturday, Sunday, or a legal holiday of the State or more than eight hours a day on any other day shall be paid overtime compensation at not less than one and one-half times the basic hourly rate plus the cost of fringe benefits for all hours worked. If the Director of Labor determines that a prevailing wage is defined by a collective bargaining agreement, the overtime compensation shall be at the rates set by the applicable collective bargaining agreement [§§104-1, 104-2(c), HRS; §12-22-4.1, HAR]

### **Weekly Pay**

- Laborers and mechanics employed on the job site shall be paid their full wages at least once a week, without deduction or rebate, except for legal deductions, within five working days after the cutoff date. [§104-2(d), HRS]

### **Posting of Wage Rate Schedules**

- Wage rate schedules with the notes for prevailing wages and special overtime rates, shall be posted by the contractor in a prominent and easily accessible place at the job site. A copy of the entire wage rate schedule shall be given to each laborer and mechanic employed under the contract, except when the employee is covered by a collective bargaining agreement. [§104-2(d), HRS]

### **Withholding of Accrued Payments**

- If necessary, the contracting agency may withhold accrued payments to the contractor to pay to laborers and mechanics employed by the contractor or subcontractor on the job site any difference between the wages required by the public works contract or specifications and the wages received. [§104-2(e), HRS]

### **Certified Weekly Payrolls and Payroll Records**

- A certified copy of all payrolls shall be submitted weekly to the contracting agency. [§104-3(a), HRS; §12-22-10, HAR]
- The contractor is responsible for the submission of certified copies of the payrolls of all subcontractors. The certification shall affirm that the payrolls are correct and complete, that the wage rates listed are not less than the applicable rates contained in the applicable wage rate schedule, and that the classifications for each laborer or mechanic conform with the work the laborer or mechanic performed. [§104-3(a), HRS; §12-22-10, HAR]
- Payroll records shall be maintained by the contractor and subcontractors for three years after completion of construction. The records shall contain: [§104-3(b), HRS; §12-22-10, HAR]
  - the name and home address of each employee
  - the last four digits of social security number
  - a copy of the apprentice's registration with DLIR
  - the employee's correct classification
  - rate of pay (basic hourly rate + fringe benefits)
  - itemized list of fringe benefits paid
  - daily and weekly hours worked
  - weekly straight time and overtime earnings
  - amount and type of deductions
  - total net wages paid
  - date of payment
- Records shall be made available for examination by the contracting agency, the Department of Labor and Industrial Relations (DLIR), or any of its authorized representatives, who may also interview employees during working hours on the job. [§§104-3(c), 104-22(a), HRS; §12-22-10, HAR]



## Termination of Work on Failure to Pay Wages

- If the contracting agency finds that any laborer or mechanic employed on the job site by the contractor or any subcontractor has not been paid prevailing wages or overtime, the contracting agency may, by written notice to the contractor, terminate the contractor's or subcontractor's right to proceed with the work or with the part of the work in which the required wages or overtime compensation have not been paid. The contracting agency may complete this work by contract or otherwise, and the contractor or contractor's sureties shall be liable to the contracting agency for any excess costs incurred. [§104-4, HRS]

## Apprentices

- Apprentice wage rates apply to contractors who are a party to a bona fide apprenticeship program which has been registered with the DLIR. In order to be paid apprentice rates, apprentices must be parties to an agreement either registered with or recognized as a USDOL nationally approved apprenticeship program by the DLIR, Workforce Development Division, (808) 586-8877, and the apprentice must be individually registered by name with the DLIR. [§12-22-6(1) and (2), HAR]
- The number of apprentices on any public work in relation to the number of journeyworkers in the same craft classification as the apprentices employed by the same employer on the same public work may not exceed the ratio allowed under the apprenticeship standards registered with or recognized by the DLIR. A registered or recognized apprentice receiving the journeyworker rate will not be considered a journeyworker for the purpose of meeting the ratio requirement. [§12-22-6(3), HAR]

## Enforcement

- To ensure compliance with the law, DLIR and the contracting agency will conduct investigations of contractors and subcontractors. If a contractor or subcontractor violates the law, the penalties are: [§104-24, HRS]
  - First Violation Equal to 25% of back wages found due or \$250 per offense up to \$2,500, whichever is greater.
  - Second Violation Equal to amount of back wages found due or \$500 for each offense up to \$5,000, whichever is greater.
  - Third Violation Equal to two times the amount of back wages found due or \$1,000 for each offense up to \$10,000, whichever is greater; and  
**Suspension** from doing any new work on any public work of a governmental contracting agency for three years.
- A violation would be deemed a second violation if it occurs within two years of the **first notification of violation**, and a third violation if it occurs within three years of **the second notification of violation**. [§104-24, HRS; §12-22-25(b), HAR]
- **Suspension:** For a first or second violation, the department shall immediately suspend a contractor who fails to pay wages or penalties until all wages and penalties are paid in full. For a third violation, the department shall penalize and suspend the contractor as described above, **except that if the contractor continues to violate the law, then the department shall immediately suspend the contractor for a mandatory three years. The contractor shall remain suspended until all wages and penalties are paid in full.** [§§104-24, 104-25, HRS]
- **Suspension:** Any contractor who fails to make payroll records accessible or provide requested information within 10 days, or fails to keep or falsifies any required record, shall be assessed a penalty including suspension as provided in Section 104-22(b) and 104-25(a)(3), HRS. [§104-3(c), HRS; §12-22-26, HAR]
- If any contractor interferes with or delays any investigation, the contracting agency shall withhold further payments until the delay has ceased. Interference or delay includes failure to provide requested records or information within ten days, failure to allow employees to be interviewed during working hours on the job, and falsification of payroll records. The department shall assess a penalty of \$10,000 per project, and \$1,000 per day thereafter, for interference or delay. [§104-22(b), HRS; §12-22-26, HAR]
- Failure by the contracting agency to include in the provisions of the contract or specifications the requirements of Chapter 104, HRS, relating to coverage and the payment of prevailing wages and overtime, is not a defense of the contractor or subcontractor for noncompliance with the requirements of this chapter. [§104-2(f), HRS]

**For additional information, visit the department's website at <http://labor.hawaii.gov/wsd> or contact any of the following DLIR offices:**



Oahu (Wage Standards Division).....(808) 586-8777  
Hawaii Island .....(808) 974-6464  
Maui and Kauai .....(808) 243-5322

PROPOSAL TO THE STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HARBORS

PROJECT: REMOVAL OF SUPERFERRY RAMP,  
NAWILIWILI HARBOR, KAUAI, HAWAII

JOB NO: S70160

CONTRACT TIME: All work shall be completed within ONE  
HUNDRED TWENTY (120) CALENDAR DAYS  
from the date indicated in the Notice to Proceed  
from the Department.

LIQUIDATED DAMAGES: ONE HUNDRED AND FIFTY DOLLARS  
(\$150.00) for each and every calendar day which  
the Contractor has delayed the completion of this  
project.

DESIGN PROJECT MANAGER: MR. GREGG HIROKAWA  
DEPARTMENT OF TRANSPORTATION  
HARBORS  
HALE AWA MOKU  
79 S. NIMITZ HIGHWAY  
HONOLULU, HAWAII 96813  
PHONE: (808) 587-1985  
EMAIL: [gregg.hirokawa@hawaii.gov](mailto:gregg.hirokawa@hawaii.gov)

ELECTRONIC SUBMITTAL: **Bidders shall submit and upload the complete proposal to HiePRO prior to the bid opening date and time. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HiePRO. Bidders shall refer to SPECIAL PROVISIONS 2.8 PREPARATION AND DELIVERY OF BID for complete details. FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HiePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

Director of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813

Dear Sir:

The undersigned Bidder declares the following:

1. It has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal.
2. It has not been assisted or represented on this matter by any individual who has, in a State capacity, been involved in the subject matter of this contract within the past two years.
3. It has not and will not, either directly or indirectly offered or given a gratuity (i.e. an entertainment or gift) to any State or County employee to obtain a contract or favorable treatment under a contract.

The undersigned Bidder further agrees to the following:

1. If this proposal is accepted, it shall execute a contract with the Department to provide all necessary labor, machinery, tools, equipment, apparatus and any other means of construction, to do all the work and to furnish all the materials specified in the contract in the manner and within the time therein prescribed in the contract, and that it shall accept in full payment therefore the sum of the unit and/or lump sum prices as set forth in the attached proposal schedule for the actual quantities of work performed and materials furnished and furnish satisfactory security in accordance with Section 103D-324, Hawaii Revised Statutes, within 10 days after the award of the contract or within such time as the Director of Transportation may allow after the undersigned has received the contract documents for execution, and is fully aware that non-compliance with the aforementioned terms will result in the forfeiture of the full amount of the bid guarantee required under Section 103D-323, Hawaii Revised Statutes.
2. That the quantities given in the attached proposal schedule are approximate only and are intended principally to serve as a guide in determining and comparing the bids.
3. That the Department does not either expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Director of Transportation, and that all increased or decreased quantities of work shall be performed at the unit prices set forth in the attached proposal schedule except as provided for in the specifications.

4. In case of a discrepancy between unit prices and the totals in said Proposal Schedule, the unit prices shall prevail.
5. Agrees to begin work within 10 working days after the date of notification to commence with the work, which date is in the notice to proceed, and shall finish the entire project within the time prescribed.
6. The Director of Transportation reserves the right to reject any or all bids and to waive any defects when in the Director's opinion such rejections or waiver will be for the best interest of the public.

The Bidder acknowledges receipt of and certifies that it has completely examined the following listed items: the Hawaii Department of Transportation, Air and Water Transportation Facilities Division General Provisions for Construction Projects dated 2016, the Notice to Bidders, the Special Provisions, if any, the Technical Provisions, the Proposal, the Contract and Bond Forms, and the Project Plans.

In accordance with Section 103D-323, Hawaii Revised Statutes, this proposal is accompanied with a bid security in the amount of 5% of the total amount bid, in the form checked below. (Check applicable bid security submitted with bid.)

Surety Bid Bond (Use standard form),

Cash,

Cashier's Check,

Certified Check, or

\_\_\_\_\_  
(Fill in other acceptable security.)

The undersigned Bidder acknowledges receipt of any addendum issued by the Department by recording in the space below the date of receipt.

Addendum No. 1 \_\_\_\_\_

Addendum No. 3 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_

Addendum No. 4 \_\_\_\_\_

In accordance with Section 103D-302, Hawaii Revised Statutes, the undersigned as Bidder, has listed the name of each person or firm, who will be engaged by the Bidder on the project as a Subcontractor or Joint Contractor and the nature of work to be done by each. The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Subcontractor or Joint Contractor. For each listed firm, the Bidder declares the respective firm is a Subcontractor or Joint Contractor and is subject to evaluation as a Subcontractor or Joint Contractor. It is understood that failure to comply with the aforementioned requirements may be cause for rejection of the bid submitted.

<u>Name of Subcontractor</u>	<u>Nature and Scope of Work</u>
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____

<u>Name of Joint Contractor</u>	<u>Nature and Scope of Work</u>
1. _____	_____
2. _____	_____
3. _____	_____

("None" or if left blank indicates no Subcontractor or Joint Contractor; if more space is needed, attach additional sheets.)

The undersigned hereby certifies that the bid prices contained in the attached proposal schedule have been carefully checked and are submitted as correct and final.

This declaration is made with the understanding that the undersigned is subject to the penalty of perjury under the laws of the United States and is in violation of the Hawaii Penal Code, Section 710-1063, unsworn falsification to authorities, of the Hawaii Revised Statutes, for knowingly rendering a false declaration.

\_\_\_\_\_  
Bidder (Company Name)

By \_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Business Telephone                      Email

\_\_\_\_\_  
Date

\_\_\_\_\_  
Contact Person (If different from above)

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**NOTE:**

If Bidder is a CORPORATION, the legal name of the corporation shall be set forth above, the corporate seal affixed, together with the signature(s) of the officer(s) authorized to sign contracts for the corporation. Please attach to this page current (not more than six months old) evidence of the authority of the officer(s) to sign for the corporation.

If Bidder is a PARTNERSHIP, the true name of the partnership shall be set forth above, with the signature(s) of the general partner(s). Please attach to this page current (not more than six months old) evidence of the authority of the partner authorized to sign for the partnership.

If Bidder is an INDIVIDUAL, the bidder's signature shall be placed above.

If signature is by an agent, other than an officer of a corporation or a partner of a partnership, a POWER OF ATTORNEY must be on file with the Department before opening bids or submitted with the bid. Otherwise, the Department may reject the bid as irregular and unauthorized.

## **PREFERENCES**

Bidders agree that preferences shall be taken into consideration to determine the low bidder in accordance with said Sections and the rules promulgated, however, the award of contract will be in the amount of the bid offered exclusive of any preferences.

### **A. HAWAII PRODUCTS PREFERENCE**

In accordance with ACT 174, SLH 2022, effective June 27, 2022, Hawaii Products Preference shall not apply to solicitations for public works construction. Therefore, the Hawaii Products Preference shall not apply to this project.

### **B. APPRENTICESHIP PROGRAMS PREFERENCE**

Apprenticeship programs preference shall not apply to this proposal.

### **C. RECYCLED PRODUCT PREFERENCE**

Recycled product preference shall not apply to this proposal.

REMOVAL OF SUPPERFERRY RAMP,  
NAWILIWILI HARBOR, KAUAI, HAWAII

JOB S70160

PROPOSAL SCHEDULE

Item No.	Item Description	Approximate Quantity	Unit	Unit Price	Amount Bid
1	Ramp Removal	L.S.	L.S.	L.S.	\$ _____
		TOTAL AMOUNT FOR COMPARISON OF BIDS \$ _____			

NOTES:

**Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered.** Original (wet ink, hard copy) proposal documents are not required to be submitted. **Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Do not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection.**

**FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID..**

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified.

Bid shall include all Federal, State, County and other applicable taxes and fees.

The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.

Bidders must complete all unit prices and amounts. Failure to do so may be grounds for rejection of bid.

If a discrepancy occurs between unit bid price and the bid price, the unit bid price shall govern.



If the lowest TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available for this project, the State reserves the right to negotiate with the lowest responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes, as amended, to reduce the scope of work and award a contract.

Submission of Proposal is a warranty that the bidder has made an examination of the project site and is fully aware of all conditions to be encountered in performing the work and the requirements of the plans and specifications.

No additional compensation will be paid by the State for losses, including overhead and profit, resulting from reduced scope of work.

Contract time shall remain the same whether or not the overall scope of work is decreased.

# SURETY BID BOND

Bond No. \_\_\_\_\_

KNOW TO ALL BY THESE PRESENTS:

That we, \_\_\_\_\_  
(full name or legal title of offeror)

as Offeror, hereinafter called the Principal, and

\_\_\_\_\_  
(name of bonding company)

as Surety, hereinafter called Surety, a corporation authorized to transact business as a Surety in the State of Hawaii, are held and firmly bound unto

\_\_\_\_\_  
(State/county entity)

as Owner, hereinafter called Owner, in the penal sum of

\_\_\_\_\_  
(required amount of bid security)

Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS:**

The Principal has submitted an offer for

\_\_\_\_\_  
(project by number and brief description)

**NOW, THEREFORE:**

The condition of this obligation is such that if the Owner shall reject said offer, or in the alternate, accept the offer of the Principal and the Principal shall enter into a contract with the Owner in accordance with the terms of such offer, and give such bond or bonds as may be specified in the solicitation or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof as specified in the solicitation then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_  
Name of Principal (Offeror) (Seal)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Surety (Seal)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

**FORMS**

CONTRACT

THIS AGREEMENT, made this day of \_\_\_\_\_, by and between the STATE OF HAWAII, by its Director of Transportation, hereinafter referred to as "STATE", and «CONTRACTOR», «STATE\_OF\_INCORPORATION», whose business/post office address is «ADDRESS», hereinafter referred to as CONTRACTOR";

WITNESSETH: That for and in consideration of the payments hereinafter mentioned, the CONTRACTOR hereby covenants and agrees with the STATE to complete in place, furnish and pay for all labor and materials necessary for "«PROJECT\_NAME\_AND\_NO»", or such a part thereof as shall be required by the STATE, the total amount of which labor, material and construction shall be computed at the unit and/or lump sum prices set forth in the attached proposal schedule and shall be the sum of «BASIC»----DOLLARS (\$«BASIC\_NUMERIC») as follows:

TOTAL AMOUNT FOR COMPARISON OF BIDS.....\$«BASIC\_NUMERIC»

which sum shall be provided from State funds, all in accordance with the specifications, the special provisions, if any, the notice to bidders, the instructions to bidders, the proposal and plans for «PROJECT\_NO\_ONLY», and any supplements thereto, on file in the office of the Director of Transportation. These documents, together with all alterations, amendments, and additions thereto and deductions therefrom, are attached hereto or incorporated herein by reference and made a part of this contract.

The CONTRACTOR hereby covenants and agrees to complete such construction within «WORKING\_DAYS» from the date indicated in the Notice to Proceed from the State subject, however, to such extensions as may be provided for in writing under the specifications.

For and in consideration of the covenants, undertakings and agreements of the CONTRACTOR herein set forth and upon the full and faithful performance thereof by the CONTRACTOR, the STATE hereby agrees to pay the CONTRACTOR the sum of «BASIC»---DOLLARS (\$«BASIC\_NUMERIC») in lawful money, but not more than such part of the same as is actually earned according to the STATE's determination of the actual quantities of work performed and materials furnished by the CONTRACTOR at the unit or lump sum prices set forth in the attached proposal schedule. Such payment, including any extras, shall be made, subject to such additions or deductions hereto or hereafter made in the manner and at the time prescribed in the specifications and this contract.

An additional sum of «EXTRAS»-----DOLLARS (\$«EXTRA\_NUMERIC») is hereby provided for extra work.

All words used herein in the singular shall extend to and include the plural. All words used in the plural shall extend to and include the singular. The use of any gender shall extend to and include all genders.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed the day and year first above written.

STATE OF HAWAII

\_\_\_\_\_  
Director of Transportation

«CONTRACTOR»

(Seal)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print name

\_\_\_\_\_  
Print Title

\_\_\_\_\_  
Date

**PERFORMANCE BOND (SURETY)**  
(6/21/07)

**KNOW TO ALL BY THESE PRESENTS:**

That \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Principal, and \_\_\_\_\_  
\_\_\_\_\_  
*(Name and Street Address of Bonding Company)*

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a  
surety in the State of Hawaii, are held and firmly bound unto the \_\_\_\_\_,  
*(State/County Entity)*

its successors and assigns, hereinafter called Obligee, in the amount of \_\_\_\_\_

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_), to which payment Principal and Surety bind themselves,  
their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by  
these presents.

**WHEREAS**, the above-bound Principal has signed a Contract with Obligee on  
\_\_\_\_\_, for the following project: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part  
hereof.

**NOW THEREFORE**, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in  
strict accordance with the terms of the Contract as said Contract may be modified or amended  
from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Obligee to the Surety and the Principal and subject to the limitation of the penal sum of this bond, Surety shall remedy the Default, or take over the work to be performed under the Contract and complete such work, or pay moneys to the Obligee in satisfaction of the surety's performance obligation on this bond.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Contractor)

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**



# PERFORMANCE BOND

**KNOW TO ALL BY THESE PRESENTS:**

That we, \_\_\_\_\_  
*(full legal name and street address of Contractor)*

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

\_\_\_\_\_ *(State/County entity)*

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

\_\_\_\_\_ DOLLARS \$ \_\_\_\_\_),  
*(Dollar amount of Contract)*

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal Tender;**
- Share Certificate** unconditionally assigned to or made payable at sight to \_\_\_\_\_  
Description: \_\_\_\_\_;
- Certificate of Deposit**, No. \_\_\_\_\_, dated \_\_\_\_\_ issued by \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Cashier's Check** No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Teller's Check** No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Treasurer's Check** No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Official Check** No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Certified Check** No. \_\_\_\_\_, dated \_\_\_\_\_ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

**WHEREAS:**

The Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Obligee for the following Project: \_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW THEREFORE,**

The Condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Obligee, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

**AND IT IS HEREBY STIPULATED AND AGREED** that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal) \_\_\_\_\_

Name of Contractor

\_\_\_\_\_  
Signature\*

\_\_\_\_\_  
Title

\*ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

**LABOR AND MATERIAL PAYMENT BOND (SURETY)**  
(6/21/07)

**KNOW TO ALL BY THESE PRESENTS:**

That \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Principal, and \_\_\_\_\_  
\_\_\_\_\_  
*(Name and Street Address of Bonding Company)*

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the \_\_\_\_\_,  
*(State/County Entity)*

its successors and assigns, hereinafter called Oblige, in the amount of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the above-bound Principal has signed Contract with the Oblige on \_\_\_\_\_ for the following project: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW THEREFORE**, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Contractor)

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

# LABOR AND MATERIAL PAYMENT BOND

KNOW TO ALL BY THESE PRESENTS:

That we, \_\_\_\_\_  
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto \_\_\_\_\_  
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount  
\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_ )  
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal Tender;
- Share Certificate unconditionally assigned to or made payable at sight to \_\_\_\_\_  
Description: \_\_\_\_\_
- Certificate of Deposit, No. \_\_\_\_\_, dated \_\_\_\_\_ issued by \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Cashier's Check No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Teller's Check No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Treasurer's Check No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Official Check No. \_\_\_\_\_, dated \_\_\_\_\_ drawn on \_\_\_\_\_ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Certified Check No. \_\_\_\_\_, dated \_\_\_\_\_ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

**WHEREAS:**

The Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Obligee for the following Project: \_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW THEREFORE,**

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

**AND IT IS HEREBY STIPULATED AND AGREED** that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

**AND IT IS HEREBY STIPULATED AND AGREED** that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payments of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond..

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal) \_\_\_\_\_

Name of Contractor

\_\_\_\_\_  
Signature\*

\_\_\_\_\_  
Title

ALL SIGNATURES MUST BE ACKNOWLEDGED BY A NOTARY PUBLIC

CHAPTER 104, HRS COMPLIANCE CERTIFICATE

The undersigned bidder does hereby certify to the following:

1. Individuals engaged in the performance of the contract on the job site shall be paid:
  - A. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and
  - B. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day.
2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

DATED at Honolulu, Hawaii, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
«CONTRACTOR»  
Name of Corporation, Partnership, or Individual

\_\_\_\_\_  
Signature and Title of Signer

Notary Seal  
NOTARY ACKNOWLEDGEMENT

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_  
Notary signature \_\_\_\_\_  
Notary public, State of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

Notary Seal  
NOTARY CERTIFICATION

Doc. Date: \_\_\_\_\_ #Pages: \_\_\_\_\_  
Notary Name: \_\_\_\_\_ Circuit \_\_\_\_\_  
Doc. Description: \_\_\_\_\_  
\_\_\_\_\_  
Notary signature \_\_\_\_\_  
Date \_\_\_\_\_

**PROVISIONS TO BE INCLUDED IN  
CONSTRUCTION PROCUREMENT SOLICITATIONS**

1. Definitions for terms used in HRS Chapter 103B as amended by Act 192, SLH 2011:
  - a. "Contract" means contracts for construction under 103D, HRS.
  - b. "Contractor" has the same meaning as in Section 103D-104, HRS, provided that "contractor" includes a subcontractor where applicable.
  - c. "Construction" has the same meaning as in Section 103D-104, HRS.
  - d. "General Contractor" means any person having a construction contract with a governmental body.
  - e. "Procurement Officer" has the same meaning as in Section 103D-104, HRS.
  - f. "Resident" means a person who is physically present in the State of Hawai'i at the time the person claims to have established the person's domicile in the State of Hawai'i and shows the person's intent is to make Hawai'i the person's primary residence.
  - g. "Shortage trade" means a construction trade in which there is a shortage of Hawai'i residents qualified to work in the trade as determined by the Department of Labor and Industrial Relations.
  
2. HRS Chapter 103B as amended by Act 192, SLH 2011--Employment of State Residents Requirements:
  - a. A Contractor awarded a contract shall ensure that Hawai'i residents comprise not less than 80% of the workforce employed to perform the contract work on the project. The 80% requirement shall be determined by dividing the total number of hours worked on the contract by Hawai'i residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall count towards the calculation for this section. The hours worked by employees within shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.



- b. Prior to award of a contract, an Offeror/Bidder may withdraw an offer/bid without penalty if the Offeror/Bidder finds that it is unable to comply with HRS Chapter 103B as amended by Act 192, SLH 2011.
- c. Prior to starting any construction work, the Contractor shall submit the subcontract dollar amount for each of its Subcontractors.
- d. The requirements of this section shall apply to any subcontract of \$50,000 or more in connection with the Contractor; that is, such Subcontractors must also ensure that Hawai'i residents comprise not less than 80% of the Subcontractor's workforce used to perform the subcontract.
- e. The Contractor and any Subcontractor whose subcontract is \$50,000 or more shall comply with the requirements of HRS Chapter 103B as amended by Act 192, SLH 2011.
  - 1) Certification of compliance shall be made in writing under oath by an officer of the General Contractor and applicable Subcontractors and submitted with the final payment request.
  - 2) The certification of compliance shall be made under oath by an officer of the company by completing a "Certification of Compliance for Employment of State Residents" form and executing the Certificate before a licensed notary public.
  - 3) In addition to the certification of compliance as indicated above, the Contractor and Subcontractors shall maintain records such as certified payrolls for laborers and mechanics who performed work at the site and time sheets for all other employees who performed work on the project. These records shall include the names, addresses and number of hours worked on the project by all employees of the Contractor and Subcontractor who performed work on the project to validate compliance with HRS Chapter 103B as amended by Act 192, SLH 2011. The Contractor and Subcontractors shall retain these records and provide access to the State for a minimum period of four (4) years after the final payment, except that if any litigation, claim, negotiation, investigation, audit or other action involving the records has been started before the expiration of the four-year period, the Contractor and Subcontractors shall retain the records until completion of the action and resolution of all issues that arise from it, or until the end of the four-year period, whichever occurs later. Furthermore, it shall be the Contractor's responsibility to enforce compliance with this provision by any Subcontractor.

- f. A General Contractor or applicable Subcontractor who fails to comply with this section shall be subject to any of the following sanctions:
- 1) With respect to the General Contractor, withholding of payment on the contract until the Contractor or its Subcontractor complies with HRS Chapter 103B as amended by Act 192, SLH 2011.
  - 2) Proceedings for debarment or suspension of the Contractor or Subcontractor under Hawai'i Revised Statutes §103D-702.
3. Conflict with Federal Law: This section shall not apply if the application of this section is in conflict with any federal law, or if the application of this section will disqualify the State from receiving Federal funds or aid.

**CERTIFICATION OF COMPLIANCE  
FOR  
EMPLOYMENT OF STATE RESIDENTS  
HRS CHAPTER 103B, AS AMENDED BY ACT 192, SLH 2011**

Project Title: \_\_\_\_\_

Agency Project No: \_\_\_\_\_

Contract No.: \_\_\_\_\_

As required by Hawai'i Revised Statutes Chapter 103B, as amended by Act 192, Session Laws of Hawaii 2011—Employment of State Residents on Construction Procurement Contracts, I hereby certify under oath, that I am an officer of \_\_\_\_\_ and  
(Name of Contractor or Subcontractor Company)  
for the Project Contract indicated above, \_\_\_\_\_ was in  
(Name of Contractor or Subcontractor Company)  
compliance with HRS Chapter 103B, as amended by Act 192, SLH 2011, by employing a workforce of which not less than eighty percent are Hawai'i residents, as calculated according to the formula in the solicitation, to perform this Contract.

I am an officer of the **Contractor** for this contract.

I am an officer of a **Subcontractor** for this contract.

*CORPORATE SEAL*

\_\_\_\_\_  
(Name of Company)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Print Title)

Subscribed and sworn to me before this  
\_\_\_\_ day of \_\_\_\_\_, 2011.

Doc. Date: \_\_\_\_\_ # of Pages \_\_\_\_\_ 1<sup>st</sup> Circuit

Notary Name: \_\_\_\_\_

Doc. Description: \_\_\_\_\_

\_\_\_\_\_  
Notary Public, 1<sup>st</sup> Circuit, State of Hawai'i  
My commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Signature \_\_\_\_\_ Date

NOTARY CERTIFICATION