	IDENTIFICATION **C-PORTPAD-1** LIGO-E950031-04-B			
TITLE PUMP PORT REINFORCING PAD FABRICATION SPECIFICATION PRODUCT LIGO BEAM TUBE MODULES CALIFORNIA INSTITUTE OF TECHNOLOGY	REFERENCE NO. 930212		SHT 1 OF 5	
	OFFICE		REVISION 4	
	MADE BY WJC	CHKD BY SWP	MADE BY SWP	CHKD BY MLT
	DATE 03/08/94	DATE 03/08/94	DATE 05/08/95	DATE 5/12/95

0.1 SCOPE

This specification gives the technical requirements for the supply, fabrication, welding, inspection, cleaning, packaging and shipping of pump port reinforcing pads (hereafter referred to solely as "reinforcing pads"). The reinforcing pads shall be attached to a nominal 49 inch O.D. vacuum tube by Purchaser.

1.0 APPLICABLE DOCUMENTS

1.1 ASME SA-240, "Specification for Heat-Resisting and Chromium Nickel Stainless Steel Plate, Sheet, and Strip".

1.2 ASME Boiler and Pressure Vessel Code, Section II, "Materials", 1992 Edition with the 1993 Addenda.

1.3 ASME Unfired Pressure Vessel Code, Section VIII, Division 1, 1992 Edition with the 1993 Addenda as applicable (Code stamping is not required).

1.4 ASME Code, Section IX, "Welding and Brazing Qualifications", 1992 Edition with the 1993 Addenda.

1.5 ANSI/ASQC Standard Q91.

1.6 Sketch 1 -- "Pump Port Reinforcing Pad".

2.0 MATERIALS

2.1 Material for the reinforcing pads shall conform to ASME Specification SA-240 Type 304L. Reinforcing pad material shall be $^1/_4$" thick.

2.2 All material for the reinforcing pads shall be supplied by the vendor.

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3.0 SUBMITTALS -- INFORMATION REQUIRED WITH QUOTATION

3.1 The vendor shall state in his quotation that the quotation complies with this specification with any exceptions or alternates noted and explained. The Purchaser will assume complete conformance unless exceptions are noted.

3.2 A description of the vendor's manufacturing facility and the equipment required to perform the work covered by this specification.

3.3 A description of the procedures for making and documenting measurements of reinforcing pad dimensions with the tolerances specified.

3.4 Country of origin of the manufacturer. This project contains a "Buy American" clause.

3.5 Shop practices, including forming methods, lubricants used, cleaning procedures, etc. Refer to Section 7.0 of this Specification, "Cleanliness and Cleaning".

3.6 A description of the vendor's procurement approach, including sources of materials, traceability of materials and management of subcontracts.

3.7 A description of the vendor's quality assurance manual in accordance with ANSI/ASQC Standard Q91 (Certification not required).

3.8 A description of the vendor's management plan, including the process by which the work covered by this Specification will be monitored and controlled, and the identification and function of key personnel to be assigned.

4.0 INFORMATION REQUIRED AFTER RECEIPT OF ORDER AND 4 WEEKS PRIOR TO FABRICATION FOR REVIEW AND APPROVAL

4.1 Weld procedures and supporting procedure qualification records and welder personnel qualification records per ASME Section IX.

4.2 NDE procedures.

4.3 Qualifications for NDE personnel.

4.4 Cleaning procedures stating the solvents used.

4.5 Packaging and shipping procedures.

5.0 DOCUMENTATION REQUIRED AFTER COMPLETION OF FABRICATION

5.1 Certified Material Test Reports (CMTR) for all material including weld material.

5.2 Record drawings and/or checklists detailing welder identifications, NDE and material identifications for each reinforcing pad.

5.3 A record of dimensional control measurements for each reinforcing pad.

6.0 FABRICATION

6.1 Fabricate the reinforcing pad from $^1/_4$" thick ASME SA-240 Type 304L stainless steel as shown in Sketch 1 of this Specification. Sketch 1 shows the reinforcing pad dimensions in the flat prior to rolling.

6.2 Roll the reinforcing pad to an inside cylindrical radius of $24^1/_2$" ($+^1/_8$", $-^1/_8$") as shown in Sketch 1, Section A-A

7.0 WELDING

Welding procedures shall be submitted to the Purchaser prior to production welding. Welder and weld operator qualification records shall be submitted prior to any individual performing welding. Welders and weld operator qualifications shall comply with Section IX of the ASME Boiler and Pressure Vessel Code. The Purchaser shall have the option to require the re-qualification of any welder at any time if, in the Purchaser's opinion, the welder's qualifications are suspect or welds appear not to be of the proper quality.

8.0 CLEANLINESS AND CLEANING

8.1 All contact made with the stainless steel material during fabrication shall be such as to prevent carbon steel contamination.

8.2 After fabrication and prior to packaging, the reinforcing pads shall be cleaned with a solvent wipe to remove all visible traces of oil and grease. A detergent and water cleaning mix shall not be used. The vendor shall submit a cleaning procedure stating the solvents used to the Purchaser for review and approval.

9.0 PACKAGING FOR SHIPPING

9.1 After cleaning, the reinforcing pads shall be placed on pallets for shipping. The reinforcing pads shall be sealed from contamination by wrapping securely in plastic. The vendor shall submit a packaging and shipping procedure to the Purchaser for review and approval.

9.2 The reinforcing pads shall be shipped as specified in the Purchase Order.

10.0 NON-ESCORT PRIVILEGES AND INSPECTION RIGHT

The National Science Foundation (NSF) and Caltech, through their authorized representatives, have the right to inspect and evaluate the work performed or being performed under this specification, including the premises where the work is being performed at all reasonable times. The NSF and Caltech shall have non-escort privileges to all areas of the facilities where the work is being performed under this specification. This shall include access to fabrication, assembly, cleaning, and test areas for the purpose of monitoring activities. The vendor shall furnish all reasonable facilities and assistance for the safe and convenient inspection of the work if requested.

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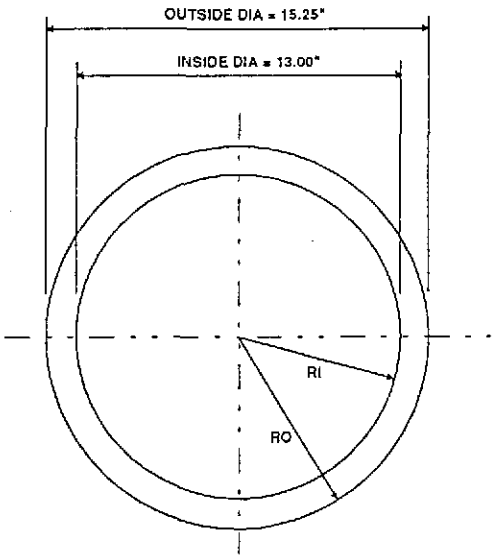
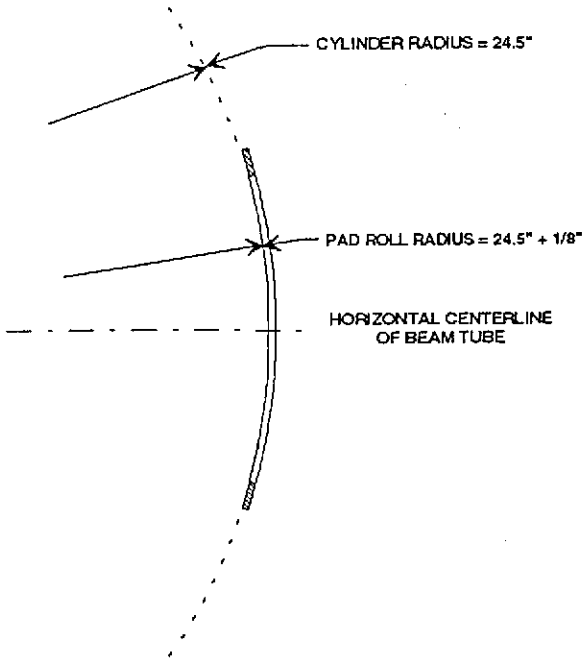


INSIDE RADIUS, RI = 0' - 6 1/2"
OUTSIDE RADIUS, RO = 0' - 7 5/8"

PAD MATERIAL: A240 TYPE 304L STAINLESS STEEL
PAD THICKNESS: 1/4"

SKETCH 1
PUMP PORT REINFORCING PAD



SECTION A-A

SKETCH 1
PUMP PORT REINFORCING PAD