NSRP #0349
May 1992

P-52 Balloting of Hull

and

Mechanical Standards

Panel SP-6

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
MAY 1992	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
P-52 Balloting of Hull and Mechanical Standards	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Surface Warfare Center CD Code 2230-Design Integration Tools Bldg 192, Room 128 9500 MacArthur Blvd, Bethesda, MD 20817-5700**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**SAR**	**242**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

Peterson Builders, Inc.

SHIP DESIGNERS
AND BUILDERS

STURGEON BAY. WISCONSIN 54235-0650
101 Pennsylvania Street, PO. Box 650

(414)743-5574
TELEX 26-3423
FAX (414) 743-6089

11 June 1992

Mr. Virgil W. Rinehart
Senior Advisor for Shipbuilding
Maritime Administration
400 Seventh Street SW
Washington, DC 20590

Dear Virgil:

Enclosed are the deliverables of Project P-52, "Balloting of Hull and Mechanical Standards", conducted by William O'Sullivan Associates under MARAD Contract MA-80-SAC-01106. I have also included a Status Summary which shows that, of the original eighteen standards submitted to ASTM Committee F-25 under this subcontract, SIX have been approved for publication, nine are in Main and Subcommittee balloting, and three have been dropped from the process due to similar standards already in existence.

As always, your comments are encouraged.

Sincerely,

Georg Thomas
Program Manager, SNAME Panel SP-6

GT/ss

cc: Frank Darvalics (NASSCO). w/o encls
Howard Bunch (UMTRI). w/encls

PROJECT P-52
STATUS SUMMARY
5/28/92

STANDARD	STATUS
Terminal, Air, Diffusing, Circular for Shipboard Use	Draft #4 submitted to F-25 Main Committee ballot
Metal Abrasive Blasting to Descale the Interior of Pipe (Standard Guide)	Draft #5 published as ASTM F-1330-91
Inclined Cargo Tank Ladders (Standard Practice)	Draft #6 submitted to F-25 Main Committee ballot
Platforms in Cargo Tanks (Standard Practice)	Draft #8 submitted to F-25 Main Committee ballot
Cleats, Marine Hardware	Draft #7 submitted to F-25 Main Committee ballot
Installation Procedures for Vinyl Deck Covering on Portable Plates *in* Electrical and Electronic Spaces (Standard Practice)	Draft #4 published as ASTM F-1331-91
Dispensing Tanks	Draft #8 submitted to F-25 Main Committee ballot
65 Gallon Dispensing Tank	Draft #6 incorporated into "Dispensing Tanks", Draft #8
Construction of Fire and *Foam* Cabinets	Draft #4 published as ASTM F-1333-91
Water Trap for Diesel Exhaust	Draft #7 submitted to F-25 Main Committee ballot
Large Diameter Fabricated Steel Flanges	Draft #4 published as ASTM F-1311-90

PROJECT P-52
STATUS SUMMARY
5/28/92

STANDARD	*STATUS .*
Terminal, *Air,* Diffusing, Circular for Shipboard Use	Draft #4 submitted to F-25 Main Committee ballot
Metal Abrasive Blasting to Descale the Interior of Pipe (Standard Guide)	Draft #5 published as ASTM F-1330-91
Inclined Cargo Tank Ladders (Standard Practice)	Draft #6 submitted to F-25 Main Committee ballot
Platforms in Cargo Tanks (Standard Practice)	Draft #8 submitted to F-25 Main Committee ballot
Cleats, Marine Hardware	Draft #7 submitted to F-25 Main Committee bailot
Installation Procedures for Vinyl Deck Covering on Portable Plates in Electrical and Electronic Spaces (Standard Practice)	Draft #4 published as ASTM F-1331-91
Dispensing Tanks	Draft #8 submitted to F-25 Main Committee ballot
65 Gallon Dispensing Tank	Draft #6 incorporated into "Dispensing Tanks", Draft #8
Construction of Fire and Foam Cabinets	Draft #4 published as ASTM F-1333-91
Water Trap for Diesel Exhaust	Draft #7 submitted to F-25 Main Committee ballot
Large Diameter Fabricated Steel Flanges	Draft X4 published as ASTM F-1311-90

Installation Procedures for Fitting Chocks to Marine Machinery Foundations (Standard Practice)	Draft #3 published as ASTM F-1309-90
Portable Davits	Draft #8 submitted to F-25 Main Committee ballot
Pyrotechnic Locker (Standard Practice)	Draft #9 submitted to F-25 Main Committee ballot
Rigid Reach-Rod and Flexible Shafting Operating Gear for Valves (Standard Guide)	Draft #8 submitted to F-25 Main Committee ballot
Construction of a Sounding Tube and Striker Plate for Tank Sounding (Standard Guide)	Draft #5 published as ASTM F-1386-92
Selection of Thermometers, Including Direct and Remote Reading, Gas-Actuated, Dial Type, and Direct Reading , Bi-metallic, Dial Type (sic) (Standard Practice)	Removed from balloting when it was revealed that the subject was already covered by an existing standard. Draft #3 completed.
Selection of Gages, Pressure and Compound Services (Standard Practice)	Removed from balloting when it was revealed that the subject was already covered by an existing standard. Draft #2 completed.

Draft No. 6
ASTM Designation XXXX
January, 1990

Standard Specification for

65 GALLON DISPENSING TANK[1]

1. Scope

1.1 This specification specifies the design and manufacture of 65 Gallon Dispensing Tank and Foundation.

1.2 This tank is suitable for local and remote filling and venting with the head not to exceed 65 ft.

1.3 This tank has been designed for the storage of petroleum base and other cleaning products of a non-corrosive composition, *but not approved for flammable combustible liquids.*

1.4 The values stated in inch pound units are to be regarded as *the* standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A36 Specification for Structural Steel

A181 Specification for Forgings, Carbon Steel for General Purpose Piping.

A182 Specification for Forged or Rolled Alloy Steel Pipe Flanges Forged Fittings and Valves and Parts for High Temperature Service.

A307 Specification for Carbon Steel, Externally Threaded Standard Fasteners.

B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate.[8]

B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.[8]

F593 Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.[7]

F594 Specification for Stainless Steel Nuts.[7]

F783 Specification for Staple, Handgrab, Handle and Stirrup Rung.[4]

2.2 American National Standards:

ANSI B18.21.1 - Lock Washer.[9]

ANSI B18.22.1 - Plain Washer.[9]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing of Steel Vessels.[10]

American Welding Society Publication, AWS D 1.1 Structural Welding Code.[11]

[1] *This Standard is under the jurisdiction of the ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee F25.13 on Piping.*

[2] *Copies of ASTM Standards may be obtained from American Society of Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.*

[3] *Annual book of ASTM Standard Vol. 01.01*

[4] *Annual book of ASTM Standard Vol. 01.02*

[5] *Annual book of ASTM Standard Vol. 01.03*

[6] *Annual book of ASTM Standard Vol. 01.04*

[7] *Annual book of ASTM Standard Vol. 01.08*

[8] *Annual book of ASTM Standard vol. 02.02*

[9] *Available from American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.*

[10] *Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, Paramus, N.J. 07653.*

[11] *Available from American Welding Society, 2501 N.W 7th Street, Miami, Florida 33125*

A563 Specification for Carbon and Alloy Steel Nuts.

A569 Specification for Steel, Carbon (0.15 maximum, %), Hot Rolled Sheet and Strip, Commercial Quality.

B16 Specification for Free Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.

B36 Specification for Brass Plate, Sheet, Strip and Rolled Bar.

B584 Specification for Copper Alloy sand Castings, for General Application.

2.2 ANSI Standards:

ANSI B 16.5 Pipe Flanges and Flanged Fittings.[3]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing Steel Vessels.[4]

American Welding Society Publication, AWS D1.1-Structural Welding Code.[5]

3. Ordering Information

3.1 Tanks ordered under this specification shall include the following:

3.1.1 ASTM Designation, Title and Date of this Specification.

3.1.2 Quantity (number of tanks).

3.1.3 Exterior coating of tank, foundation and tray.

[1] *This specification is under the jurisdiction of ASTM Committee F. 25 on Shipbuilding and is the direct. responsibility of Subcommittee F. 25.03 on Outfitting.*

2 Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

3 Available from American National Standards Institute. 1430 Broadway, New York, N.Y. 10018.

4 Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, paramus N.J. 07653.

5 Available from American Welding Society, 2501 N.W 7th St. Miami, F1. 33125

4. Materials and Manufacture

4.1 Materials:

4.1.1 Faucet. - Brass, ASTM 8584, C85400/C85700

4.1.2 Cap and plugs - Brass, ASTM B16.

4.1.3 Flash arrestor - Brass, ASTM B36,C23000,H01 (Optional)

4.1.4 Angle and channel - Steel, ASTM A36.

4.1.5 Vacuum breaker assembly and couplings - Stainless steel ASTM A182, Type 316 (Optional).

4.1.6 Tank body and Separators - Hot rolled steel ASTM A569.

4.1.7 Bolts - Carbon steel ASTM A307,Grade A

4.1.8 Nuts - Carbon steel, ASTM A563, Grade A

4.1.9 Flanges - Forged steel, ASTM A181 Grade II.

4.2 Manufacture:

4.2.1 Flanges shall be in accordance with ANSI B16.5.

4.2.2 Construction of the tank shall be as *shown in figures 1,2,& 3.*

4.2.3 Welding shall be in accordance with American Bureau of Shipping Rules for building and classing steel vessels or American Welding Society Publication AWS D1.1.

5. Dimensions and Weights

5.1 Dimensions are indicated in *Figures 1,2,& 3* of this specification.

5.2 Weights are indicated below:

5.2.1 Total weight: Dry - Not to exceed 330 pounds.

Wet - Not to exceed 870 pounds (water).

6. Workmanship, Finish and Appearance

6.1 All surface areas, drilled holes and weld areas shall be free of sharp edges , burrs, slag, and other defects which might. be hazardous to personnel and equipment.

6.2 Coat tank interior with light. oil.

6.3 Tank exterior shall be coated with one coat. inorganic zinc silicate at 1.0 Mil dry film thickness. following surface preparation in accordance with the manufacturer's instructions.

6.4 The tank shall contain a label with 1 in. high black lettering indicating the following:

(a) tank contents

(b) tank pressure rating

(c) tank capacity

(d) " NOT APPROVED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS"

7. Performance Requirements

7.1 Tanks furnished to this specification are intended for use in systems having a working pressure not exceeding 30 psig.

7 . 2 Each tank shall be tested hydrostatically to a pressure of at least 45 psig. for a period of at least ten minutes. There shall be no visible leakage during the test, nor any visible permanent. distortion after the pressure has been removed.

8. Packaging and Package Marking

8.1 The tank shall bear a weathertight tag showing the purchase order number , ASTM Designation number, tank size and name of manufacturer. The markings on the package or crate shall be at least l/2 in, high.

8.2 The tank shall be crated or packaged in a manner acceptable for shipment by commercial common carrier. The tank shall be packaged individually.

The American Society for **Testing and Materials** takes no position respecting the validity **of any patent rights** asset-ted in connection with any **item** mentioned in this standard. Users of this standard at-e expressly advised **that determination of the validity of any such patent rights, and the risk of** infringement **of** such tight, at-e entirely their own responsibility.

NOTE:
WITH THE EXCEPTION OF THE FOOTNOTE, THE REVISIONS HAVE BEEN INDICATED IN ITALICS.

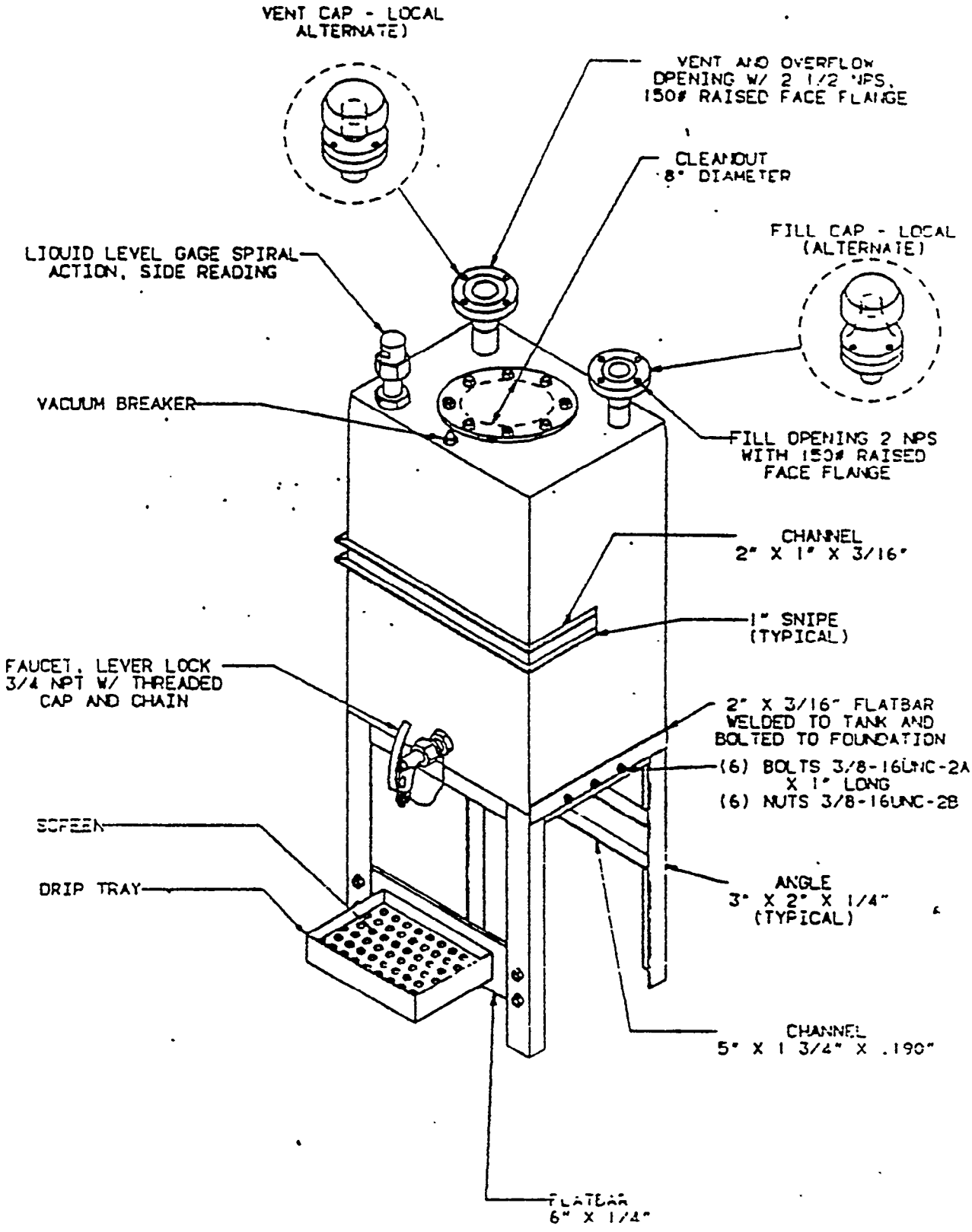


FIGURE 1.

1" = 25.4 mm.

AUDIT TRAIL

65 GALLON DISPENSING TANK

E. A. Morgenstern: 7/17/89

1. Para. 6. 3. Remove "pickling" and change requriement for surface preparation.	Revised
F Darvalics (NASSCO): 7/18/89 (Negative)	**Disagree**
2. General Comments - This standard is a commercially available product supplied by one vendor- and as such should not be an ASTM standard. If were to be. an ASTM standard with the permission of the vender then a much higher level of detail 1 and dimensioning would be required to build this item.	This standard was prepared by ASI while Darvalics was pat-%. of that. standard team: nevertheles the standard opens up the production to any manufacturer - who is capable of producing the product. more details and dimensioning have been added

N.Lemley (USCG): 7/12/89

3. Sets performance requirements, but there are no test procedures given.	Agree - Pat-as. 7. 1 and 7.2 have been revised.
4. Labeling the tank would resolve any conflict with 49 CFR 173.115 (a) or (b) as follows "NOT APPROVED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS"	Agree - Revised para. 6.4.

NAVSEA: 8/3/89

5. Para. 4. 1. 1 ASTM B584 cover 18 different cast. brasses. . . . Allays should be specified.	Agree: Specified B584, C85400/85700
6. para. 4. 1 . 2 ASTM b36 covers 7 different. Alloys in 7 different. conditions each ranging from 37 Ks. to 100 KSi . Acceptatble alloys and conditions should be specified.	Agree: Specified B36, C23000/H01.
7. Para. 4. 1. 7 should be specified "A" GRADE.	Agree
8. Para. 4. 1. 8 Grade "A" should be specified.	Agree

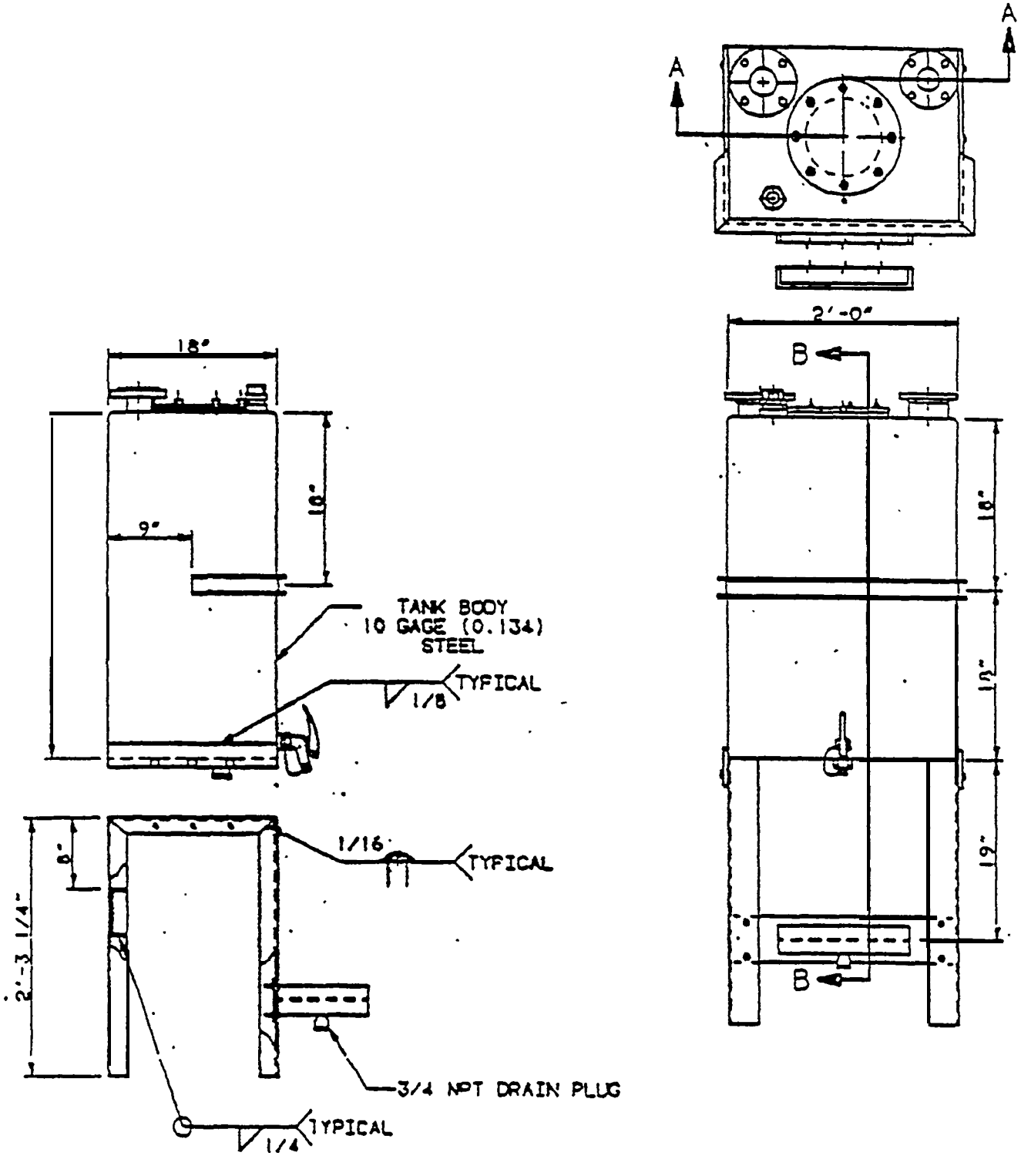
Sam Morrison: 8/3/89

9. section 7 on performance and requirement rements is ambiguous . reword this section.	Agree - Pat-as. 7. 1 and 7.2 have been revised.
NAVSEA: 8/4/89	
10. comments (2),(3),(4),& (5) above for paras. 4.1.1, 4.1.2, 4.1.7 & 4.1.8. have been noted.	Agree - Have been adhered to
K. O' Connor CD & P): 7/31/89	
11. Figures should be numbered on pages 5,6 & 7	Agree
12. Pat-a. 1.5 to reflect new figure numbers.	Complied with
Revisions to Draft. 5	November- 8 9
N.Lemley (USCG)	11/8/89
1. sec. 6.4 As noted from ballot 89-2 the tank Should be labeled as follows: "NOT APPROVED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS"	Agree - complied with
V, BURNETT (JJH Inc.)	11/8/89
2. para 4.2.3 spell out the referenced documents	Agree - complied with
3. Para 6. 4 Revise to read as follws: "The tank shall contain a lable with 1 in. high lettres indicating..	Complied with
4. Para 7.2 Before 45 psing delete "of"	Deleted
5. Para 8.1 Before "size" add "tank"	Complied with
4. para 8.1 Delete last. sentence or- add a requirement for marking.	Disagree
0. F. Hendel (D&P Inc.)	11/8/89
7. Pat-a 6. 4 Label reads incorrectly	Agree - see comment. (1) abave

J.D Hamilton (Ingalls Shipbuilding)	11/8/89
8. Tank configuration and material and selection does not appear adequate for 45 psig test pressure.....	Each unit has been tested at. 4 5 psig with certification in the past by protoseal who manufactured the units.
9. Drawings need to be enhanced....	Disagree
10. Alternate foundation for bulkhead mounting should be provided	These are not built for bhd. mounting. but the shipbuildier can modify the foundation to suit..
11. Flash arrestors and vacuum breakers should be made optional.	Agree - indicated in para 4.

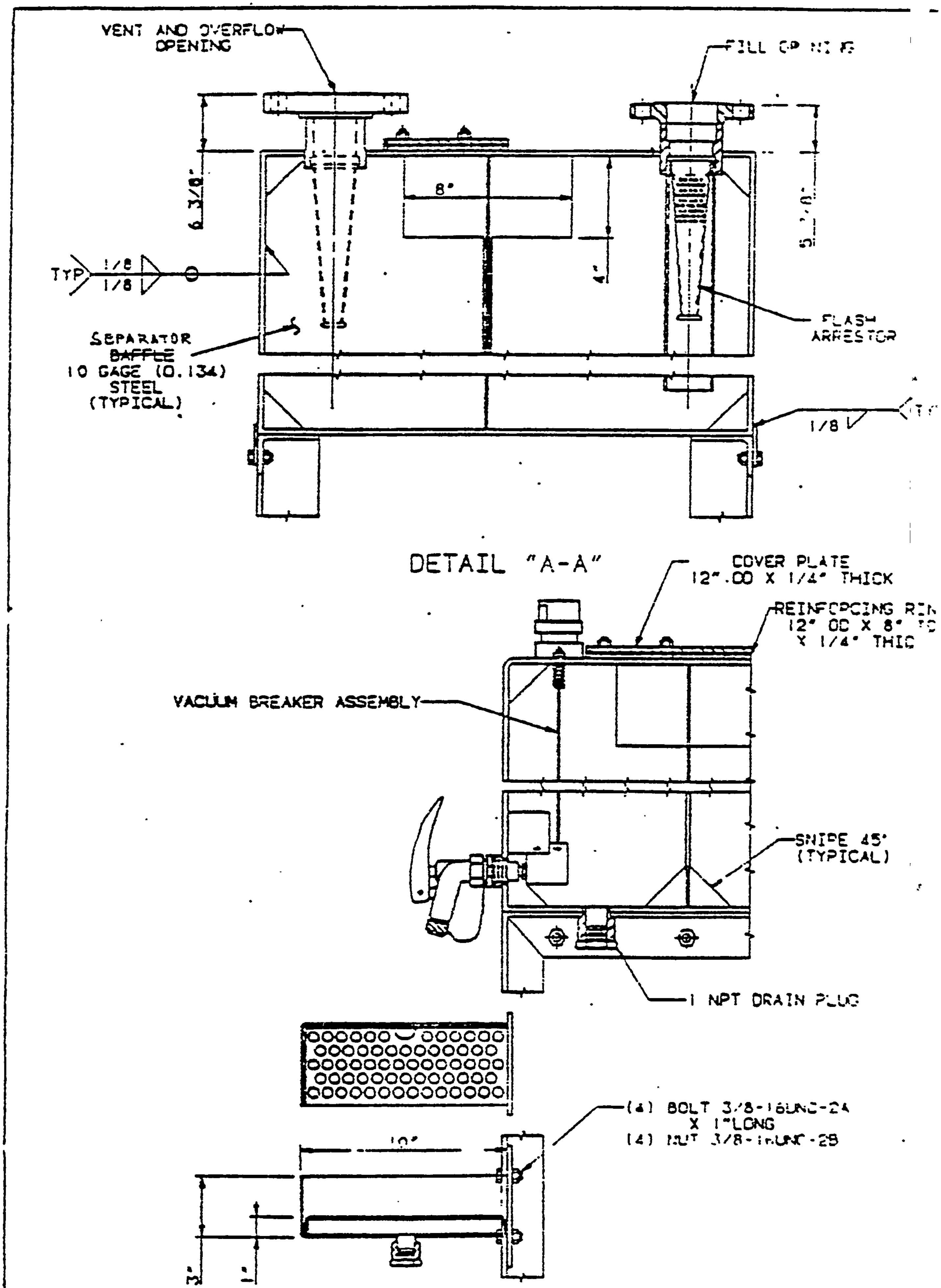
Revisions to Draft No.6

F25.03 Meeting at Orlando, Fl. on December 6, 1989.	January, 199(
1.Revise Paras. 1.3, 4.2.2, 4.2.3, 5.1	Complied with



1[I] = 25.4 mm.

FIGURE 2:



1" = 25.4 mm. DETAIL "B-B" FIGURE 3

Draft Number 2
ASTM Designation AAA
November, 1989

Standard Practice for SELECTION OF GAGES, PRESSURE AND COMPOUND SERVICES[1]

1. Scope

1.1 This standard practice specifies the criteria in selecting gages for pressure, and compound services.

1.2 The gages may utilize manufacturers standard design and components of construction.

1.3 The gages shall be suitable for the intended service and visible for proper system operation.

1.4 This standard practice does not supersede any document applicable to the construction of pressure, or compound gages.

1.5 This standard practice shall be used in the selection of gages intended for commercial application.

1.6 The values stated in inch-pound units are to be regarded as the standard.

2. *Referenced* Documents

2.1 ASTM Standards:[2]

A109 Specification for Steel, Cold Rolled Strip.[3]

A276 Specification for Stainless and Heat Resisting Steel Bars and Shapes.[4]

B36 Specification for Phosphor Bronze Plate, Sheet, Strip and Rolled Bar.[5]

B103 Specification for Phosphor Bronze Plate, Sheet, Strip and Rolled Bar.[5]

B209 Specification for Aluminum and Aluminum Alloy Sheet and Plate.[6]

3. *Performance* Requirements

3.1 Pressure, vacuum and compound gages.

3.1.1 Indicator case

3.1.1.1 Case shall be made of Corrosion Resistant Steel, ASTM A27[illegible], 300 series; Brass, ASTM B36; Aluminum, ASTM B209; or Hot Molded Phenolic material.

3.1.1.2 Depth of cases shall not exceed 4 in.

3.1.1.3 *The piping connections shall be NPS 1/2"(.840 O.D)*

3.1.1.3.1 Bottom connected

3.1.1.3.2 Lower back connected 3.1.1.4 Indicator cases shall be designed to resist vibration and shock damage. The construction shall be designed to exclude dust and moisture under usual variations of temperature.

3.1.2 Indicator dials

3.1.2.1 Dials shall be made of steel adequately protected against corrosion.

[1] This practice is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the Direct responsibility of Subcommittee F25.13 on Piping.
[2] Copies of ASTM Standards may be obtained from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103
[3] Annual Book of ASTM Standards, Volume 01.03.
[4] Annual Book of ASTM Standards, Volume 01.05.
[5] Annual Book of ASTM Standards, Volume 02.01.
[6] Annual Book of ASTM Standards, Volume 02.02

3.1.2.2 *Diameter of the* dials shall be 4-1/2 in.

3.1.2.3 Dials shall be of the standard commercial type, with black markings for pressure and red markings for vacuum on a white background.

3.1.2.4 Dial graduation shall cover an arc of not less than 270°.

3.1.2.5 Dial ranges shall be selected so that pointer will be in between a vertical and a two thirds position of the scale when at the system operating pressure.

3.1.2.6 Gages shall have dual scale dials reading in pounds per square in. *and kilograms per square centimeter.*

3.1.2.7 Graduation of the dials shall be in accordance with the following table:

TABLE 1

ITEMS	DIAL GRADUATIONS			
Gage Service	SCALE		SMALLEST SCALE DIVISION	
	Vacuum (Inches)	Pressure (PSI)	Vacuum (Inches)	Pressure (PSI)
Compound	30	-	1/2	-
	30	30	1	1
	30	100	5	1
	30	150	5	1
	30	300	5	5
Pressure	-	60	-	1
	-	100	-	1
	-	200	-	2
	-	300	-	5
	-	400	-	5
	-	600	-	10
	-	800	-	10
	-	1000	-	10
	-	1500	-	20
	-	2000	-	20

3.1.3 Pointers

3.1.3.1 Indicating pointer shall be non-reflective black of a plain and unembellished design. Red stationary pointers shall also be provided which can be secured in place to show the working pressure.

3.1.4 Windows

3.1.4.1 Standard windows shall be heavy duty glass with the option of plastic or shatter proof glass.

3.1.5 Bourdon Tube

3.1.5.1 Gages shall have a single seamless bourdon tube.

3.1.5.2 For steam service up to and including 100 PSIG working pressure and other services up to 100 PSIG., tubes shall be phosphor bronze, silver brazed to forged brass socket and tip.

3.1.5.3 For steam service above 100 PSIG working pressure and other services above 100 PSIG working pressure, tubes shal be stain less steel welded to a stainless steel socket and tip.

3.1.6 Operating mechanism

3.1.6.1 Parts of the operating mechanism shall be of corrosion resistant material. Surfaces shall be of suitable alloy steel heat treated or surface hardened to minimize wear.

3.1.7 External adjustment

3.1.7.1 Gages shall have external adjustment for field recalibration.

3.1.8 Accuracy

3.1.8.1 The gage shall indicate the correct pressure or vacuum within the lesser of one smallest scale division or ± 1-1/2% of the full scale range when tested for accuracy at a number of points equally distributed over the entire range of the dial.

SUPPLEMENTARY REQUIREMENTS

The following Supplementary requirements shall apply only when specified by the purchaser in the Contract or order.

S1 Siphons

S1.1 Steam gages shall be furnished with siphons of suitable material to prevent steam from entering the bourdon tube.

S2 Gages

S2.1 Gages subjected to pulsating pressures such as on a reciprocating pump or air compressors shall be fitted with a damper or pressure snubber.

S2.2 Pressure gages intended for the following applications shall be furnished with the glycerin filled diaphragm seals:

S2.2.1 When the process fluid being measured would normally clog the pressure element.

S2.2.2 When pressure element materials capable of withstanding corrosive fluids are not available.

S2.2.3 When the process fluid might freeze due to changes in ambient temperature and damage the element.

NOTE :

WITH THE EXCEPTION OF THE FOOTNOTE, ALL THE REVISIONS HAVE BEEN INDICATED IN ITALICS.

Draft Number 7
ASTM Designation ___
July, 1989

Standard Practice for

SELECTION OF THERMOMETERS INCLUDING

DIRECT AND REMOTE READING, GAS ACTUATED,

DIAL TYPE AND DIRECT READING, BIMETALLIC, DIAL TYPE[1]

1. Scope

1.1 This Standard Practice specifies the criteria in selecting direct and remote reading, gas actuated, dial type thermometers and direct reading, bimetallic, dial type thermometers.

1.2 Thermometers may utilize manufacturers standard design and components of construction.

1.3 The thermometers shall be suitable for the intended service and suitable for proper system operation.

1.4 This standard does not supersede any document applicable to the construction of thermometers.

1.5 This standard practice shall be used in the selection of thermometers intended for commercial application.

1.6 *The values stated in inch-pound units are to be regarded as the standard.*

2. Referenced Documents

2.1 ASTM Standards:[2]

A109 Specification for Steel, Cold Rolled Strip.[3]

A276 Specification for Stainless and Heat Resisting Steel Bars and Shapes.[4]

B36 Specification for Brass Plate, Sheet, Strip and Rolled Bar.[5]--

B209 Specification for Aluminum and Aluminum Alloy Sheet and Plate.[6]

3. Requirements

3.1 Thermometer - Direct and remote reading, gas actuated, dial type.

3.1.1 Indicator Case shall be made of hot molded phenolic materia except, thermometers exposed to weather shall be Brass, ASTM B36, Aluminum B209, or Molded Phenolic of a waterproof design.

3.1.1.1 *Depth of* Cases shall not exceed 4 in.

3.1.1.2 Connections shall be through the bottom of the case unless a back connection is specified for a particular location or type of instrument.

3.1.1.3 1/2 NPT fixed thread connection shall be standard with 1/2-14NPSM union connection as an option.

---

[1] *This practice is under the jurisdiction of ASTM Committee F25 and is the direct responsibility of Subcommittee F25.13 on Piping.*

[2] *Copies of ASTM Standards may be obtained from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.*

[3] *Annual Book of ASTM Standards, Volume 01.03*

[4] *Annual Book of ASTM Standards, Volume 01.05*

[5] *Annual Book of ASTM Standards, Volume 02.01*

[6] *Annual Book of ASTM Standards, Volume 02.02*

3.1.1.4 Indicator cases shall be designed to resist vibration and shock damage. The construction shall be designed to exclude dust and moisture under usual variations of temperature.

3.1.2 Indicator Dials.

3.1.2.1 Dials shall be made of steel adequately protected against corrosion.

3.1.2.2 Diameter of the dials shall be 4-1/2, 6 8-1/2 in.

3.1.2.3 Dials shall have a white background with bllack graduations and markings.

3.1.2.4 Dial graduation shall cover- an arc of not less than 270°.

3.1.2.5 Dial ranges shall be selected so that pointers will not indicate more than 75% of full scale deflections at. the operating temperature.

3.1.2.6 The graduation of dials shall be in accordance with the following requirements:

3.1.2.6.1 For temperature ranges of 250° F (120° C approx) or less, dials shall be graduated every 2° F and shall have figures at intervals not exceeding 20° F.

3.1.2.6.2 For temperature ranges of 251° F (120° C) through 500° F (260°0), dials shall be graduated every 5° F and shall have figures at intervals not exceeding 5° F.

3.1.2.6.3. For temperature ranges over 500° F (260° C) dials shall be graduated every 10° F and shall have figures at. intervals not. exceeding 50° F.

3.1.2.6.4 Thermometers shall have dual scale dial readings in degrees Centigrade and Fahrenheit.

3.1.3 Pointers.

3.1.3.1 Pointer shall be non-reflective black of a plain and unblemished design.

3.1.4 Windows.

3.1.4.1 Standard windows shall be of heavy duty glass with the option of plastic or shatter proof glass.

3.1.5 Bulbs.

3.1.5.1 The bulbs of all dial thermometers shall be made of steel except those used for refrigeration or flue gas which shall be steel uniformly copper plated on all surfaces.

3.1.5.2 The bulb of refrigerated room thermometers shall be steel protected against corrosion by plating or spraying cadmium or zinc on all surfaces. Bulb length shall not exceed 18 in.

3.1.5.3 Bulbs of boiler uptake and exhaust gas thermometers shall be made of corrosion resistant steel, ASTM A276, Type 316.

3.1.6 Capillary Tubing.

3.1.6.1 For weather locations the tubing shall be covered in its entire length with a spirally wound flexible zinc coated steel or stainless steel casing.

3.1.6.2 Accuracy.

3.1.7.1 The thermometer with socket shall indicate the correct temperature to within the lesser of the smallest scale division of + 1-1/2% of the full scale range when tested for accuracy at a number of points equally distributed over the entire range of the dial.

3.1.8 1.8 Operating Mechanism.

3.1.8.1 The operating mechanism shall be of corrosion resistant material. Surfaces shall be alloy steel heat treated or surface hardeneded to minimize wear. springs are to be tubular

3.1.9 External Adjustment

3.1.9.1 Thermometers shall have an external adjustment for field recalibration.

3.2 Theremometer -Direct reading bimetallic. type.

3.2.1 These thermometers shall not be used for continuous service exceeding 800° F (427° C approx.).

3.2.2 Direct reading, bimetallic, dial t.ype thermometers shall 1 have the same requirements as the remote reading thermometer except:

3.2.2.1 Indicator case shall be made of Corrosion Resistant Steel, ASTM A276, 300 series, Brass, ASTM B36, Aluminum, ASTM B209, or Hot Molded Phenolic. Thermometers exposed to the weather shall be of waterproof desingn.

3.2.2.2 Dial size shall be the 3 and 5 in.

3.2.2.3 Operating mechanism - The actuating elements shall be a bimetallic hell x, designed to have a minimum hysteresis effect and shall not stick. The mechanism shall be constructed to dampen the oscillations of the pointer due to normal vibration and shall not be .affected by out 0f range temperatures.

SUPPLEMENTARY REQUIREMENTS

The following Supplementary requirements shall apply only when specified by the Purchaser in the Contract or Order.

S1 Thermowells (Separable Sockets)

S1.1 Thermowells shall be used on any application where the stem of the thermometer is exposed to pressure, corrosive fluids or high velocity.

S1.2 Separable sockets shall be of one piece construction.

S1.3 Sockets shall be of corrosion resistant steel for main water feed and steam services above 450° F *(232° C approx)*, sockets shall be brass for temperatures below 450° F *(232° C approx)* except:

S1.3.1 Sockets submerged in lube oil or fuel oil which shall be of carbon steel; sockets submerged in salt water shall be monel and sockets for liquid cargo shall be corrosion resistant steel.

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE, ALL THE REVISIONS HAVE BEEN INDICATED IN ITALICS.

Draft Number 5
ASTM Designation XX
July, 1990

Standard Guide for

CONSTRUCTION OF A SOUNDING TUBE AND STRIKER PLATE FOR TANK SOUNDING;.

1. Scope

1. 1 This guide provides design and construction criteria for striker plates and sounding tubes, *excluding* deck penetrations and caps, for use with sounding rods or tapes in freshwater., saltwater and oil tanks.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

A36 Specification for Structural Steel[2]

A53 Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless[2]

A105 Specification for Forgings, Carbon Steel, for Piping Components[2]

F722 Joints, Welded, for shipboard piping systems[2]

F1155 Standard practice for selection & application of piping systems material[2]

2.2 ANSI 'Standards:

B16.5, Pipe Flanges and Flange Fittings"

Bl6.9 Factory made wrought steel butt welding fittings[3]

816.11 Forged steel, socket welding & threaded fittings

B16.28 Wrought steel, butt welding, short radius elbows & return

B31.1 Power Piping[3]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing Steel Vessels[4]

American Welding Society Publication, AWS D1.l Structural Welding Code[3]

3. Terminology

3.1 Sounding - Measurement by sounding; a place or part of a body of liquid where a hand sounding line will reach bottom.

3.2 Internal sounding tube - A sounding tube located inside the t,*) being sounded.

3.3 External sounding tube - A sounding tube located outside the boundaries of the tank being sounded.

4. Classification

4.1 Type I - Internal sounding tube, with separate striker plate.

4.2 Type II - Internal Sounding Tube, with attached striker plate.

4.3 Type 111 - Internal Sounding Tube, with angle striker plate..

4.4 Type IV - External sounding tube.

This Specification is under the jurisdiction of ASTM Committee F25 c ShipbuiLding and is the *direct responsibility of Subcommiftee F25.13 Outfitting.*

2 Available from American Society for Testing and Materials, 1916C Rare Street, Philadelphia, PA 19103.

3 Available from American Nat.ional *Standards Institute, 1430 Broadway, New York, N.Y. 10013.*

4 Available from American Bureau of shipping 65 Broadway, New York, l0006.

5 . Available from American Welding Society, 2501 N.W *7th Street, Miami Florida. 33125.*

5. Significance and Use

5.1 Sounding tubes may be fabricated from l-1/2 NPS or larger, or, when otherwise specified, schedule 40 components, manufactured from

list of material indicated in ASTM F1155 and ASTM A53, Grade S or Grade ERW. In addition, sounding tubes may be fabricated in stainless steel for Stainless Steel Tanks.

5.1.1 Sounding Tubes passing through or terminating in Fuel Tanks, Portable Water Tanks, or Clean Salt Water Ballast Tanks shall be constructed of 70-30 Copper Nickel.

5.2 Striker Plates shall be fabricated from ASTM A36.

5.3 The fittings shall be designed in accordance with-ANSI Bl6.5, B16.9, B16.28 or 616.11 as applicable (See Table 21 ASTM F1155), and the installation shall be in accordance with ANSI B31.1 as modified by ASTM F722. These standards cover the fitting tolerances.

5.4 .some cargo may preclude the use of materials specified in this standard. However, configuration examples are applicable for all applications.

5.5 When a sounding tube is combined with the air escape either three 1 1/4in. *(30mm approx)* dia. holes approximately 12in. *(305mm)* from the tank top equally spaced or six 1/2in. *(15mm approx)* dia. holes approximately 6in. *(150mm)* from the tank top equally spaced can be used for perforations. See Figure 2.

5.6 Figures l,2,3, and 4 are guidance details.

6. Installation of Sounding Tubes

6.1 Locate sounding tubes as close as possible to the lowest part of the tank.

6.2 Type I, 11 & III sounding tubes, excluding oil products, shall be perforated as shown in Figures 1,2,&3 respectively, for ventilation.

6.2.1 Type IV *Sounding Tubes are only alIowed where* the Tank *cannot t penetrated from the top due to an unavoidable situation, such* as *a prohibitive location.*

6.3 .Slope and curvature shall be kept to a minimum and under no circumstances shall the slope be permitted to exceed 45° from the vertical. Radius of curvatures up to a minimum of 10 *ft. (3m approx) ui* be permitted where unavoidable.

6.4 Tubes may be provided with flanged take down connections, *approximately IS in. (455mm) from the. tank bottom.*

6.4.2 Tubes shall terminate close enough to tank bottoms to preven, hangup of a sounding device or a thief sampler when they are being withdrawn from a tank.

6.4.2 The inside edges of sounding tube shall be smoothed to preve t hanging up of a sounding device or thief sampler when they are being withdrawn from the tank.

6.5 Tubes shall be adequately Supported to withstand both static a 9 dynamic loads.

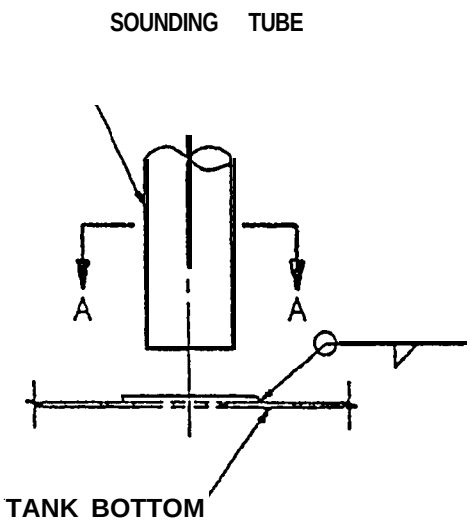
6.6 Welding shall be in accordance with American Bureau of Shipping Rules for Building and Classing Steel Vessels or the American Welding Society Publication AWS D1.1

SUPPLEMENTARY REQUIREMENTS

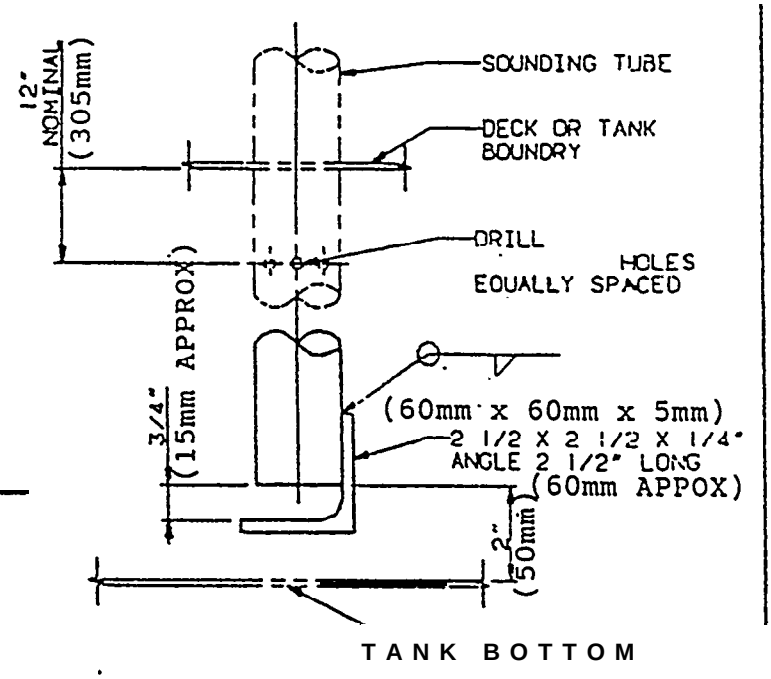
S. 1 - *To ensure the fluid in the Sounding Tube is representative of the fluid in the tank when taking fuel samples, l/2 in. (15mm approx) dia. holes, 6 in. (15Omm)* apart *are drilled in the Sounding Tubes throughour its length in the tank it serves.*

NOTE:

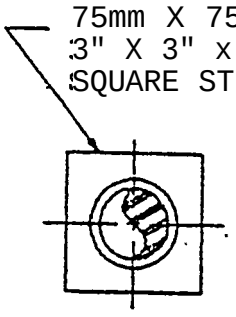
WITH THE EXCEPTION OF THE FOOTNOTE, ALL THE REVISIONS HAVE BEEN INDICATION IN ITALICS.



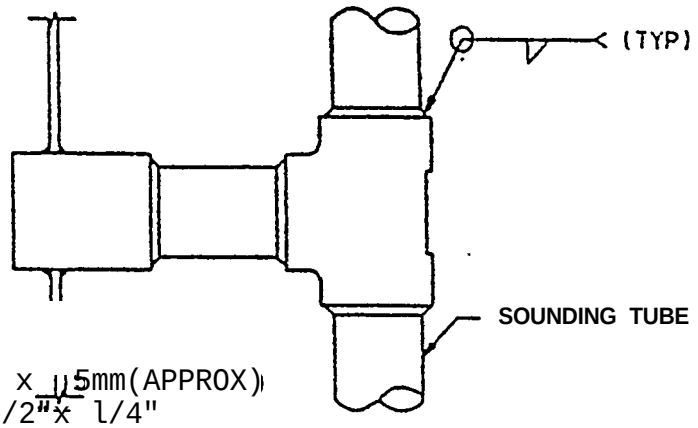
TYPE I
FIGURE 1



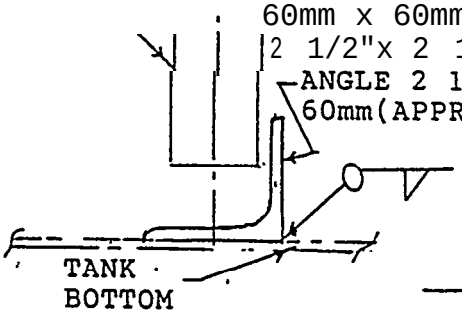
TYPE.11
FIGURE 2



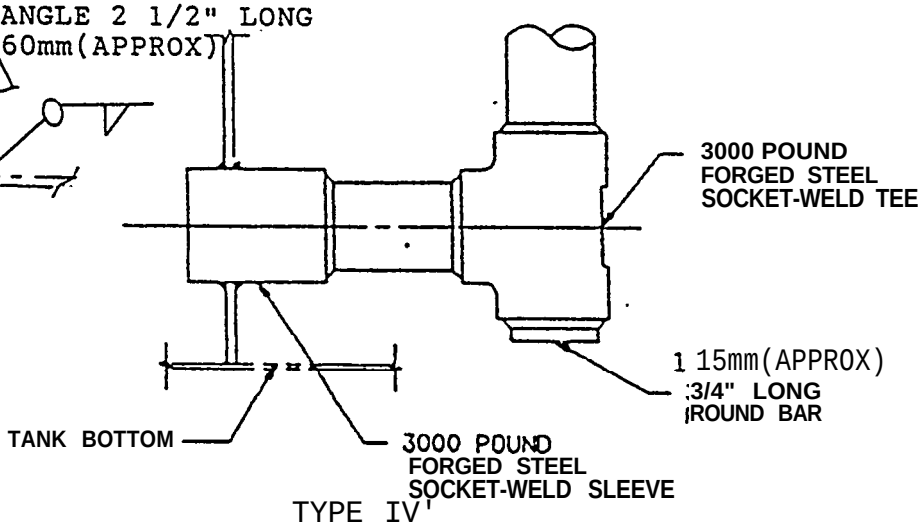
SECTION "A-A"



SOUNDING TUBE



TYPE. III
FIGURE 3



TYPE IV
FIGURE 4

1"= 25.4mm

AUDIT TRAIL
for
SOUNDING TUBE AND STRIKER PLATES

COMMENTS	RESOLUTIONS
	DRAFT 1
TACOMA:	
1. Miscellaneous editorial changes.	Agreed, revised as required
2. Provide guidance for tube support.	Agreed, added paragraph 7.5
3. Revise vent hole size and number.	Disagreed, no material advantage to two holes.
4. Sketch callout "Deck" should be tank top.	Agreed, revised wording.
5. Indicate length of striker angle.	Agreed, revised.
6. Show sloping bottom.	Disagree, not required.
7. Optional round striker.	Disagree, eye toward standard strikers, AS1 has succeeded in creating "Pad" standard.
8. Requested two inch sounding tube option.	Agreed, revised.
9. Suggested drop through standard.	Disagree, the suggested tube appears to be more expensive and would be an excellent "as required" design.
BATH:	
10. Title implies total tube construction information.	Agreed, revised.
11. Revise wording of 6.1, 6.2, and 6.3.	Agreed, revised.
12. Revise wording of 7.1.	Agreed, revised.
13. Correct 7.3 maximum to maximum.	Agreed, revised.
14. Correct sketch to agree with 5.3.	Agreed, revised page 37.
15. Dimension Incorrect sketch type 1 grade B.	Agreed, revised page 3.

NASSCO :

16. Delete A131 steel and callout as ABS.	Agreed, revised.
17. Use schedule 40 components.	Agreed, revised.
18. Added dangerous products to 7.2.	Agreed, revised.
19. Delted deck coupling from sketch.	Agreed, revised Type 1, Grade B.
20. Callout reference for vent hole illustration.	Agreed, added note reference para 7.2.
21. Reduce weld size.	Disagree, no significant savings.

NAVSEA:

22. Schedule 80, 1 l/2 NPS too small.	Agreed, revised to 1 l/2 and 2 NPS schedule 40.
23. Use schedule 40 pipe.	Agreed, see NABRICO 1.
24. Some products require other than black pipe.	Agreed, added para 1.2.
25. Para 5 and the sketches do not agree as to pipe size.	Agreed, corrected.
26. Body does not call out figures and if they are mandatory.	Agreed, revised figures and para 6, added para 7.6
27. Delete 2 NPS-tube.	Disagree, commercial builders like 2 NPS tubes.
28. In 7.3 second sentence, change word "curvature" to "radius of curvature".	Agreed, revised.
29. Change allowable radius of curvature to ten feet.	Agreed, revised para 7.3.
30. Reword para 7.	Agreed, see NAVSEA 5a and 5b.
31. Specify maximum slope in para 7.	Agreed, revised para 7.
32. Install Navy required flanged "T" connection on Type II tubes.	Disagree, commercial standards do not require this item.
33. Install flanged takedown joint n Type II tubes.	Disagree, commercial standards do not require this item.
34. Clarify para 7.2.	Agreed, revised.
35. Include in standard information on tank venting.	Disagree, retained scope.

36. Miscellaneous typos.	Agreed, revised.

DRAFT NO.2 & 3

N.Lemley (USCG) June 1989

1. The standard has elements addressing all three areas i.e., design, construction and Installation details, but falls short in each.....,	Agree - Changed standard from "specification" to a **standard** "guide" and have revised the rest of the draft to suit.
2. Para 1.2 - flake reference to F1155 Table 21 for material and limit the scope of this standard to sounding tubes for freshwater, saltwater & oil tanks (excluding other "dangerous products")	Agree - See revised paras 1.1, 2.1, 6.1 and 6.3.
3. Para 1.1 - "deck penetrations and caps" should be included in the scope.	Complied with
4. Para 5.1 - The length of the sounding and the material of the tube & the fitting should be Included in the ordering information	Agree - See Paras 5.4 & 5.5
5. Para 5.1.4- There is no required lnspection of the finished product and no apparent quality control	Agree - deleted old para 5.5
6. Para 6 - Which pieces are to be manufactured from ASTM A36? What grade 1s the ABS material referenced? Material of sounding tube is limited to A53 - many other material specs. would be acceptable.....	Concur - see revised sections of paras 6.1 and 6.2.
7. Para 6.2 - To what does the tolerance "l/4" apply? Fitting should be designed in accordance with ANSI B16.5, B16.9, B16.28, or B16.11 is accordance with ANSI B31...	Agree - Revised and rewrote the para to suit and changed it from 6.2 to 6.3
8. Para 7 - Is not necessary, this 1s a design standard, confusing.....,.	Agree - deleted this para (Para 8 of draft 3 is now para 7)
9. Para 8 - this deals more with installation requirements than performance, the heading should be modified.....	Agree - heading has been changed (para 8 is now para 7)
10. State that the slope and the curvature shall be kept to a minimum.....	Agree - see para 7.3
11. What is to be tagged,...Not mandatory to use any certain material, no required inspections, no quality control, etc., why the marking or certification.	Agree - having changed from a specification to a guide, the package marking para has been removed, the certification has

	also been deleted
12. Para 9.3 - This statement does not belong in a design statement	Agree - this is now a guide standard
13. Figures 1.2&3 - The size of the fillet welds should be dependent on the thickness of the striker plate, tube bottom, etc.....	Agree - removed weld markings
14. Para 4.1 - Change "grade" to "style" to avoid confusion with material grade.	Changed & rewrote this para in a new format See comment (33)
15. Recommend moving para 8.6 to para 6	Complied with - see para 6.5
16. Move para 1.2 to para 6	Complied with - see para 6.4
17. "un" should be "under" in para 5.1	Concur
18. Figure 3 - Full penetration may be required instead of fillets and material should be compatible with the tank	Agree - see resolution to comment (12) above
19. There is no reference to footnote #3 or #6	Revised footnote and numbers
20. Add "sounding tubes" after (Figures 1 and 2) in section 7.1.	This para has been deleted, see comment (8) above
D.R.Dole (Victanlic Co)	JuLy-6, 1989
21. For information purposes, define "Sounding".	Agree, defined 'sounding Tube" See para .'.l
22. Damaged items shall be returned ... Suggest rewording or deleting this para 9.3.	Reworded, see pa-a 8.1
F_&. Walicki (NAVSSES)	July 25, 1989
23. Para 6.1 - 1 l/2 NPS or 2 NPS sched, 40 IS too tight compared to Gen. Spec. Reqts on Navy.	Agree, Revised para 6.1
24. When sounding tube IS combined with air escape, the perforations are different to that in the Gen. Specs.	Agree, Rewrote this para See para 6.5.
25. Slopes should be allowed and a min. ben radius of 10 feet should be noted.	Agree, See comment (10) above
26. There should be a section in the ordering Info. of options for material selection.	Agree, See Comment (6) above & para 5.4

27. "Tubes may be provided with flanged takedown connections" should be indicated in the ordering info.	Agree, See para 5.6
28. Figs. 1,2, & 3 are not mandatory details, this implies that there are dimensional options.....	Agree, See para 5.6
29. There are no provisions that Sounding Tubes terminate close enough to tank bottoms to prevent hanging up of a sounding device or a thief sampler.....	Agree, Rewrote and revised this para. See para 6.1 & 6.1.1.
R.D.Paul (Deutsch)	July 13, 1989
30. Fig.3 Type II - below the description of the 3000 psi socket-weld tee, propose change to designate "or equal" after description	Complied with - see Figure 4 Type IV (Figures and Types have been re-designated see comment 33)
F. Darvalics (Nassco)	July, 20,1989
31. Standard should be classified as a "guide" not specification. The title should also reflect "Vent Sounding Tube end connections".	Agree, to first part re-classified. Disagree to 2nd part of comment - standard includes sounding pipe & end connections.
32. Change the word "geometric" to "configuration".	Complied with - See para 6.4.
33. Para 4. - Classification should be as follows: "Type I - Internal Sounding Tube with separate Striker Plate. Type 2 Internal....."	Agree, except type 1,2,3& 4 reads Type I, II, III, IV I.A.W. Bluebook & Comment (14) above.
34. Note 5 - Should be deleted. Not enough information contained in this standard to order sounding tubes for installation....	Disagree
35. Notes 9 & 10 - These notes should be deleted from the standard as being not applicable	Disagree to para 9, but have deleted para 10 on certification
H Mackey (General Dynamics/Electric Boat)	July 21,89
36. Para 8.2 "tanks" should be deleted. The sounding tube should be perforated rather than the tank.	Complied with - see para 7.2
37. Para 7.1.3 - Para 7.1 already indicates Type 1, Grade A or B may be used at the descretion of the designer.	Agree - deleted this para since this is not a design standard, but has been changed to a practice

V1C Burnett (N)	Draft No.4
1. Para 5 - Delete this section, ordering data only belongs to Specification.	Concur
2. Para 6.1 - The first section is incomplete. Fill in missing information.	It is now complete & renumbered Para to 5.1.
3. Para 6.l.l - Rewrite as follows: Sounding Tubes passing through or terminating in Fuel Tanks or Clean Salt Water Ballast Tanks shall be constructed....	Concur - Revised & Renumbered Para to 5.1.1.
4. Para 8 - Delete entire section, this is not a Specification.	Concur
5. Para 9 - Delete entire section, this is not a Specification.	Concur
Michael Marziano	April, 1990
6. Scope 1.1 - Remove the word "Tanks" from second line.	Concur
7. Para 5.6 - Rework for clarity.	Deleted - See Comment (l)
Norm Lemley (U.S.C.G.)	
8. We note that some comments were resolved. However, there are still unanswered questions.	Concur - Deleted Sect.5,8 See this Audit Trail for other revisions.
Rick Butler (Deutsch)	
9. General Comment - A guide is a generic sequence of steps which produce the same result using a variety of similar materials. In addition a Guide should be created without making specific reference to materials (i,e Prime may be generic; because you don't call out a specific brand>....	Disagree - The purpose of this type of Standard is to offer guidance based on a concensus of viewpoints but not to establish a Standard Practice to follow in all cases. See definition of Guide in Blue Book.
9.A - Document appears to be a Specification or a Standard up to Para 7. Then it appears to be a Guide up to Section 8.	A Guide is a Standard. Deleted Sect.5 and made some necessary revisions to ensure this Standard 1s a guide 100%
9.B - Sect. 8 & 9 have no place in a Guide while "Significance and Use" IS mandatory.	Concur - Deleted Sections 8 & 9. Revised Para 6 materials
Jim Dey (NAVSEA) (56Y32)	
10. Para 1.1 - Delete sentence that states that Guide includes Deck Connections and Caps since they are not addressed herein.	Concur

11. Pares 6.1 & 6.1.1 - Sounding Tubes in Navy Service for Aviation Fuel Tanks must be 70-30 Copper Nickel within the Tanks, include Potable Water Tanks.....	Concur
12. Para 7 - . . . when taking fuel thief samples, l/2 in. holes 6 in. apart are drilled in the Sounding Tubes throughout its length in the tank it serves-	Included in the supplement.
13. Para 7.1 - Type IV Sounding Tubes are only allowed where tank cannot be penetrated for the top.....	Concur - included In Para 6.2.1.
14. Para 7.4 - The purpose of the Flanged Take Down Joint is to permit removal of lost Sounding Tube Bobs.... require Tile Takedown Joint to be 18 in. from tank bottom.	Concur - See Para 6.4
15. Para 7.6.1 & 7.4 - Should be combined since the only place of discontinuity will occur is at the Flanged Takedown Joint.	Concur - Renumbered Paras. See 6.4, 6.4.1 & 6.4.2 to comply.
16. Para 9.2 - Is unclear.	Deleted entire Para. See Comment (5).
Howard Wildman (NAVSEA)	
17. Comments (10) to (16) inclusive as noted above.	Concur - See Resolutions to comments.

Draft Number 8
ASTM Designation xxx
April, 1992

Standard Guide for

RIGID REACH-ROD AND FLEXIBLE SHAFTING OPERATING GEAR FOR VALVES[1]

1. Scope

1.1 This Standard provides a guide for rigid and flexible operating gear for valves.

1.2 The values stated in metric (SI) units are to be regarded as the Standard. The values stated in parentheses are provided for information purposes only.

2. Referenced Documents

2.1 ASTM Standards:

F992 Standard Specification for Valve Label Plates.[2]

F1030 Standard Practice for Selection of Valve Operators.[2]

2.2 ANSI Standards:

B1.1 Screw threads (UN & UNR Thread Form) Unified Inch.[3]

B18.2.1 Square and hex bolts and screws inch series hex screws.[3]

B18.2.2 Square and hex nut.[3]

2.3 Military Standards:

MIL-S-16059 Shafting, Rotary Flexible (Core and Casing Complete) Remote Operation of Valves.[4]

MIL-U-20625 Universal Joints, Block Type, Mechanical Remote Control Systems.[4]

2.4 Other Documents:

American Bureau of Shipping & Classing of Steel Vessels.[5]

American Welding Society Publications, AWS D1.1-Structural We
Code.[6]

ASME B1.20.1 Pipe Threads (inch) General Purpose[7]

[1] *This specification is under the jurisdiction of ASTM Committee*
Shipbuilding and is the direct responsibility of Subcommittee F25.
Piping Systems.
[2] *Available from American Society of Testing and Materials, 1916*
Street, Philadelphia, PA 19103.
[3] *Available from American National Standards Institute, 1430 Broadw*
New York, N.Y. 10018
[4] *Available from Naval Publications and Form Center, 5801 Tabor A*
Philadelphia, PA 19121.
[5] *Available from American Bureau of Shipping, 45 Eisennower Drive*
Box 910, Paramus, N.J. 07653.
[6] *Available from American Welding Society, 2501 N.W 7th. Street, Mi*
Florida. 33125.
[7] *Available from American Society of Mechanical Engineers, 345 E*
St., New York, N.Y. 10017

3. Terminology

3.1 Rigid Reach Rod or Flexible Shafting - A remote mechanical va
operating device located between a valve and its handwheel or oper t

3.2 Rigid Reach Rod - A reach rod consisting of any component
combination of round bar or pipe, universal joints, slip joints, gea
boxes and bearings.

3.3 Flexible Shafting - A shafting consisting of a cable sheathed
flexible casing *for axial cable movement*, supported at regular inter
by clamping.

3.4 Rotary Flexible Shafting - *A shafting consisting of a cable*
sheathed by a flexible casing for rotary cable movement, supported a
regular intervals by clamping.

3.5 Valve Operating Torque - This is the maximum torque experienc
during operation and may be at opening, closing or at an intermedi t
position when the valve is asked to respond.

3.6 Valve Operator - An operator which normally and regularly carries out a function or operation on a valve.

4. Classification

4.1 Type I - Rigid Reach Rod System (Figure 1).

4.1.1 Rod

4.1.1.1 Class A, Round Bar.

4.1.1.2 Class B, Pipe.

4.1.2 Universal Joint - MIL-U-20625.

4.1.2.1 Class A, Pin.

4.1.2.2 Class B, Bolt (Tanker Joint).

4.1.3 Gear Box.

4.1.3.1 Class A, 300° Swivel Gear Box.

4.1.3.2 Class B, 90° Gear Box.

4.1.3.3 Class C, Three-Spindle Gear Box.

4.1.3.4 Class D, 90° Gear Box With Indicator.

4.1.3.5 Class E, Thru Spindle Gear Box.

4.1.4 Slip Joint.

4.1.5 Coupling.

4.1.6 Stuffing Box.

4.1.7 Intermediate Connection.

4.1.7.1 Class A, Bolted - ANSI B18.2.1 & B18.2.2

4.1.7.2 Class B, Welded

4.1.8 Remote Operating Station.

4.1.8.1 Class A, Bolted - ANSI B18.2.1 & B18.2.2

4.1.8.2 Class B, Welded.

4.1.9 Bearing.

4.2 Type II - Rotary Flexible Shafting System (Figure 2).

4.2.1 Flexible Torsional Rod.

4.2.2 Stuffing Box.

4.2.3 Clamp.

4.3 Type III - Dual Linear Flexible Shafting System (Figure 3).

4.3.1 Flexible Shafting.

4.3.2 Actuator Box.

4.3.2.1 Class A, Operator Station Actuator.

4.3.2.2 Class B, Valve Station Actuator.

4.3.5 Conduit Assembly.

4.3.4 Bulkhead Fitting.

4.3.5 Cable Tensioning Assembly.

4.3.6 Clamp

4.3.7 Internal Cable Connector.

4.4 Type IV - Single Linear Flexible Shafting System (Figure 4).

4.4.1 Flexible Shafting

4.4.2 Actuator Box

4.4.2.1 Class A, Operator Station Actuator.

4.4.2.2 Class B, Valve Station Actuator.

4.4.3 conduit Assemble.

4.4.4 Bulkhead Fitting.

4.4.5 Cable Tensioning Assembly.

4.4.6 Clamp.

4.4.7 Internal Cable Connecter

5. Manufacture and Installation

5.1 All welding should be in accordance with American Bureau of Shipping & Classing of Steel Vessels or American Welding Society AWS D1 Structural Welding Code.

5.2 All threads should be manufactured in accordance with ANSI Bl 1 1

5.3 Pinned connections should be double pinned at 90° and *pins sho* be fully inserted into components after drilling.

5.4 Rigid assemblies should be limited to those joints which need not be removed for maintenance of the reach rod assembly or nearby equipment or piping.

5.5 Pipe tapers should be 60 mm per m or see ASME B1.20.1? for pipe threads (except dryseal).

5.6 Supports should be spaced such that the unsupported span does not exceed the following:

5.6.1 Rigid systems - Bearing 2.7 m (9 ft).

5.6.2 Flexible systems - Horizontal clamps 760 mm (30 in.) vertical 3050 mm (120 in.) in accordance with MIL-S-16059 or as recommended by Government Standard or component manufacturer.

5.7 Assemblies should be free of weld spatter, burrs, slag, sharp corners and other defects which might be hazardous to personnel and equipment.

5.8 A valve label plate (see ASTM F992) should be located on or near the remote handwheel.

5.9 Bulkhead and deck integrity should be maintained.

5.10 Valves in accessible spaces with remote operators should be provided with local operators, such as gear valve operators. These valves should also include a manual override.

5.11 Universal joints in Reach Rod systems in accordance with MIL-U-20625, should be provided on each side of all gear boxes to facilitate both alignment and maintenance.

5.12 Forks on universal joints mounted on the same shaft should be parallel to one another.

5.13 Slip joints should be installed as required to allow for thermal or structural movement or both.

5.14 All remote valve operators should be supplied with indicators should always be marked to show if the valves are in the open or closed position. The indicators should be located at the remote location.

5.15 Reach rods constructed of pipe and nontight flexible rod *shoul* not to be used inside tanks but may be installed through bulkheads or decks or both with the approval of American Bureau of Shipping and Classing of Steel Vessels.

5.16 Torque increasing gear boxes should be installed if needed. between the valve and the rigid reach rod or flexible shafting.

5.17 Rigid reach rod and flexible shafting construction material should be compatible with any tank product or atmosphere which contacts the rod or shafting.

5.18 The rigid reach rod and flexible shafting material should confor to applicable fire protection requirements.

5.19 Operating gear which terminates on the open deck or in passageways should be fitted with composition flush deck boxes fitted with "open" and "closed" indicators. Those terminating in passageways should be capable of *removal of* the deck box plug as well as operating the gear. See ASTM F1030.

5.20 *Rigid and Flexible Operating Gear* Handwheels – Handwheels *for Rigid and Flexible Operating Gear* should be of commercial design and manufactured from Malleable Iron. *Ductile Iron* or Aluminum Alloy.

5.20.1 Material for handwheels should be taken into account the environment into which the handwheels will be installed and used. The selection of the material should be made by the user of the guide.

6. Uses and Significance

6.1 System type should be chosen keeping in mind the following type advantages. It is not uncommon to use a combination of two "types" of systems to allow operation of one difficult valve application.

6.1.1 Type I - Rigid reach rod system.

6.1.1.1 Straight or nearly straight transmission path.

6.1.1.2 Multiple shard bends.

6.1.1.3 High torque loads (over 4000 in.lb).

6.1.1.4 minimum torsional deflection.

6.1.1.5 Long transmission paths.

6.1.2 Types II, III and IV flexible shafting systems.

6.1.2.1 Large number of obstacles.

6.1.2.2 Complicated transmission path.

6.1.2.3 High vibration tolersnce.

6.1.2.4 Small space requirement.

6.1.2.5 Easy installation.

6.2 When sizing and matching for torque output, one should take into account the torque requirements of a valve that coulo change after it has been in service for a while.

6.3 Reach Rods for valves should have stop positions built in or have them built into the valves.

7. Performance Requirements

7.1 Component efficiency *should* be greater than or equal to those indicated below:

7.1.1 The maximum valve operating torque should be obtained from the valve manufacturer. System design *should include* the greatest operating torque (Stall Torque in systems with hydraulic or electric operators) and torque design limitations of valves and actuators.

7.1.1.1 The valve torque requirements should be checked against the actuator capabilities to ensure that the actuators function properly. *See 6.2.*

7.1.2 Rigid reach rod system component efficiencies.

7.1.2.1 Universal joints - see Figure 5. (*Should* be limited to the angles between 135° and 180°).

7.1.2.2 90° gear box - 95%

7.1.2.3 90° gear box with indicator - 93%

7.1.2.4 Three spindle gear box - 90%

7.1.2.5 300° swivel gear box - 90%

7.1.2.6 Shaft hanger - 90%

7.1.2.7 Stuffing box - 90%

7.1.3 Rotary flexible shafting system component efficiencies. Minimum bend radius 3 m (10 ft).

7.1.3.1 First 3 m (10 ft) or fraction thereof - 85%

7.1.3.2 Between 3 m and 6 m (10 and 20 ft) - 80%

7.1.3.3 Greater than 6 m and less than 18 m (20 to 60 ft) - 3% additional loss per m.

7.1.4 Linear (dual or single) flexible shafting system.

7.1.4.1 Operator station actuator should be provided with suitable gearing to insure proper valve operation.

7.2 The operating system should be capable of stroking the valve from full open to full close within the time specified *by the purchaser* when operated by one man.

7.2.1 All manually operated systems, except push-pull and slide operated types, should cause the valve to close with clockwise rotation of the operator handwheel. The maximum permissible operator handwheel force to close the valve *should* be in accordance with Table 1.

7.2.2 Handwheels having attached mechanical operating gear for damper control shauld be fabricated of steel ductile iron or malleable iron.

7.2.2.1 Operator handwheel should be selected by dividing the valve-operating torque by the product of all the individual components' efficiecies and then choosing an appropriate handwheel from Table 1.

7.3 System efficiency should be not be less that 50 % without torque increassing gearing.

7.4 Recommended minimum component. size at. the input. end.

7.4.1 Size of Round-bar rigid reach rod systems.

7.4. 1.1 12 mm (l/2 in. approx) for o through 155 Nm (o) through 35 1 bf. ft. approx).

7.4.1.2 19 mm (3/4 in.) for sbove 155 through 220 Nm (35 through 50 1 bf . ft. approx).

7.4.1.3 25 mm (1 in.) for above 220 through 555 Nm (50 through 125 1bf . ft. approx).

7.4. 1. 4 30) mm (l-1/4 in.) for above 555 through 1110 Nm (125 through 250 ft·1bf approx).

7.4:2 Pipe rigid teach rod systems.

7.4.2.1 12 mm (1/2 NPS approx) Sch.80 for 0 through 220 Nm (0 through 49 lbf . ft. approx).

7.4.2.2 l9mm (3/4 NPS) sch. 80 hr above 220 through 400 Nm (49 throgh 89 1bf. ft approx).

7.4.2.3 25 mm (1 NPS Sch.80 for above 400 through 745 Nm (89 through 167 1bf . ft. approx).

7.4.2.4 30mm (1-1/4 NPS) Sch.80 for above 745 through 1350 Nm (167 through 303 lbf.ft approx).

7.4.2.5 38mm (1-1/2 NPS) Sch.80 for above 1350 through 1920 Nm (303 t.hrough 429 lbf. ft. approx).

7.4.3 Flexible shafting systems.

7.4.3.1 9 mm (3/8 in. approx) for 0 through 45 Nm (O through 10 lbf. ft. approx).

7.4.3.2 12 mm (l/2 in. approx:) for above 45 through 90 Nm (10 through 20 lbf . ft, approx).

7.4.3.3 19 mm (3/4 in.) for above 90 through 180 Nm (20 through 40 lbf. ft. approx).

7.4.3.4 25 mm (1 in.) for above *180)* through 355 Nm (40 through 80 lbf. ft approx).

7.4.3.5 30 mm (l-1/4 in.) for above 355 through 710 Nm (80 through 160 lbf . ft. approx).

7.4.3.6 40 mm (l-5/8 in.) for above 710 through 1110 Nm (l60 through 250 lbf, ft. approx).

7.4.4 Linear (dual or single) flexible shafting. systems.

7.4.4.1 As required by design.

7.5 The installation shall not interfere with local valve control.

7.5.1 Each installaion requiring local control must have a means of easi1Y disconnecting the Rigid Reach-Rods and Flexible Shafting from the valve. This ensures valve operation in case the Rigid Reach-Rods and Flexible Shafting freeze up.

7.5.2 Where Rigid Reach-Rods and Flexible shafting penetrate watertight, oiltight., bulkheads, decks, tanktops, or where they are carried through fire control bulkheads and decks? the integrity of the structure shall be maintained.

SUPPLEMENTARY REQUIREMENTS -

The following Supplementary requirements *may* apply only when specified by the purchaser in the Contract. or order.

Sl Test Procedure *for* Valve Operating Gear: *Installed valves haves having Rigid or Flexible Operating Gear attached to the valve stem may be*

subject to tests and test pressures in MIL-S-7058 for the purpose of verifing the operating gear capabilities using the following proceaures:

S1.1 Seat Valves using the valves listed in Table 1 as the maximum allowable *rim force to be* applied to the handwheel *on the Rigid and Flexible Gear.*

S1.2 Conduct tests so that all seat leakage can be measured.

S1.3 If there is any leakage. continue the test for a sufficient length of time to accurately determine the rate of leakage.

KEY WORDS:

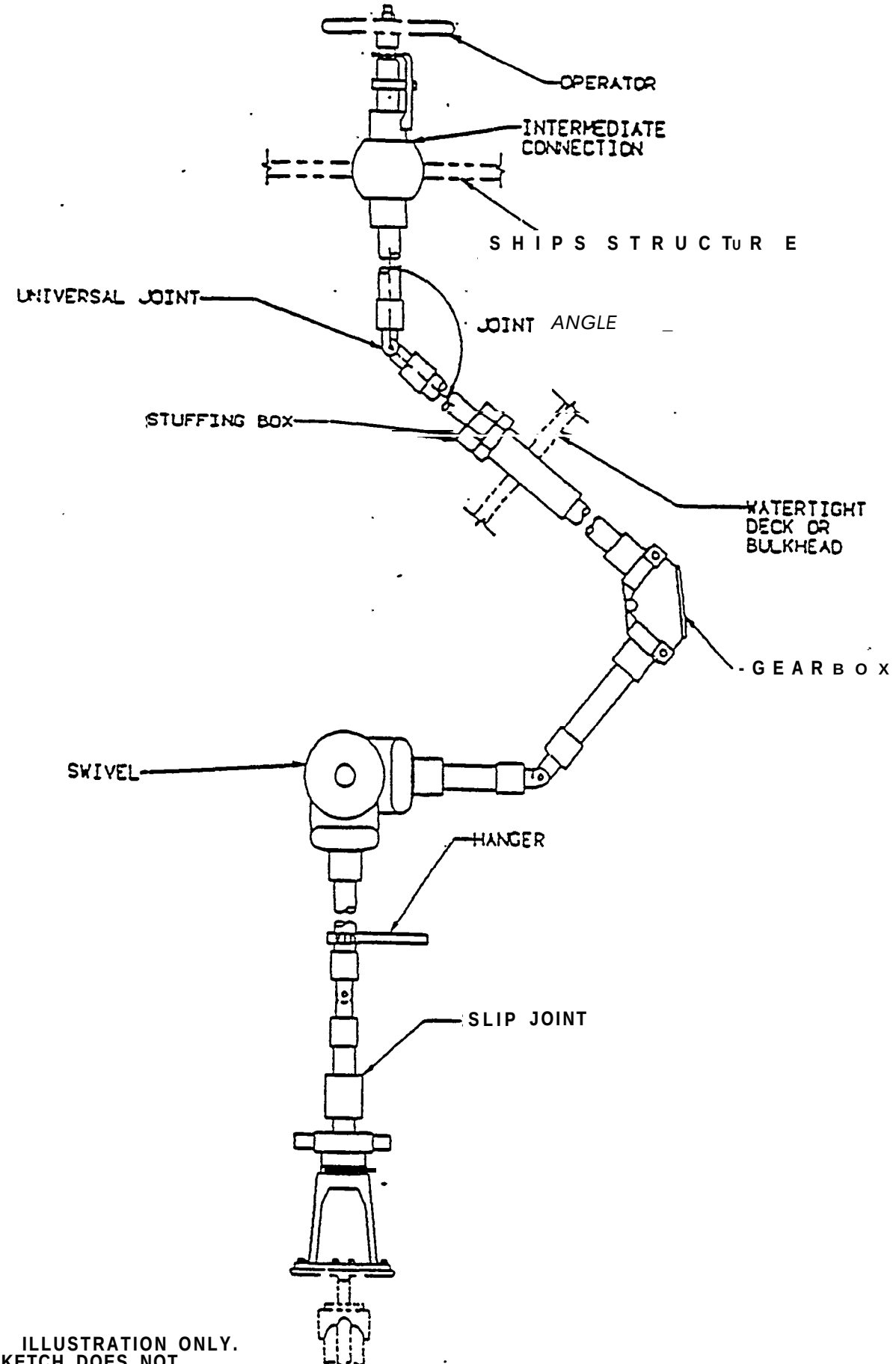
Actuator Box
Bulkhead Fitting
Cable Connector
Conduit Assembly
Coupling
Flexible Shafting
Gear Box
Handwheels
Indicators
Operating Gear
Rigid Reach Rods
Shaft Hanger
Slip Joint
Stuffing Box
Torque Output
Universal Joint
Valve Operator

NOTE :

WITH THE EXCEPT IDN OF THE FOOTNOTE. **ALL THE LATEST REVISIONS HAVE BEEN** INDICATED IN 1TALICS.

TABLE 1
MAXIMUM ALLOWABLE TANGENTIAL FORCE TO SEAT VALVES
BASED ON RIGID OR FLEXIBLE GEAR HANDWHEEL SIZE

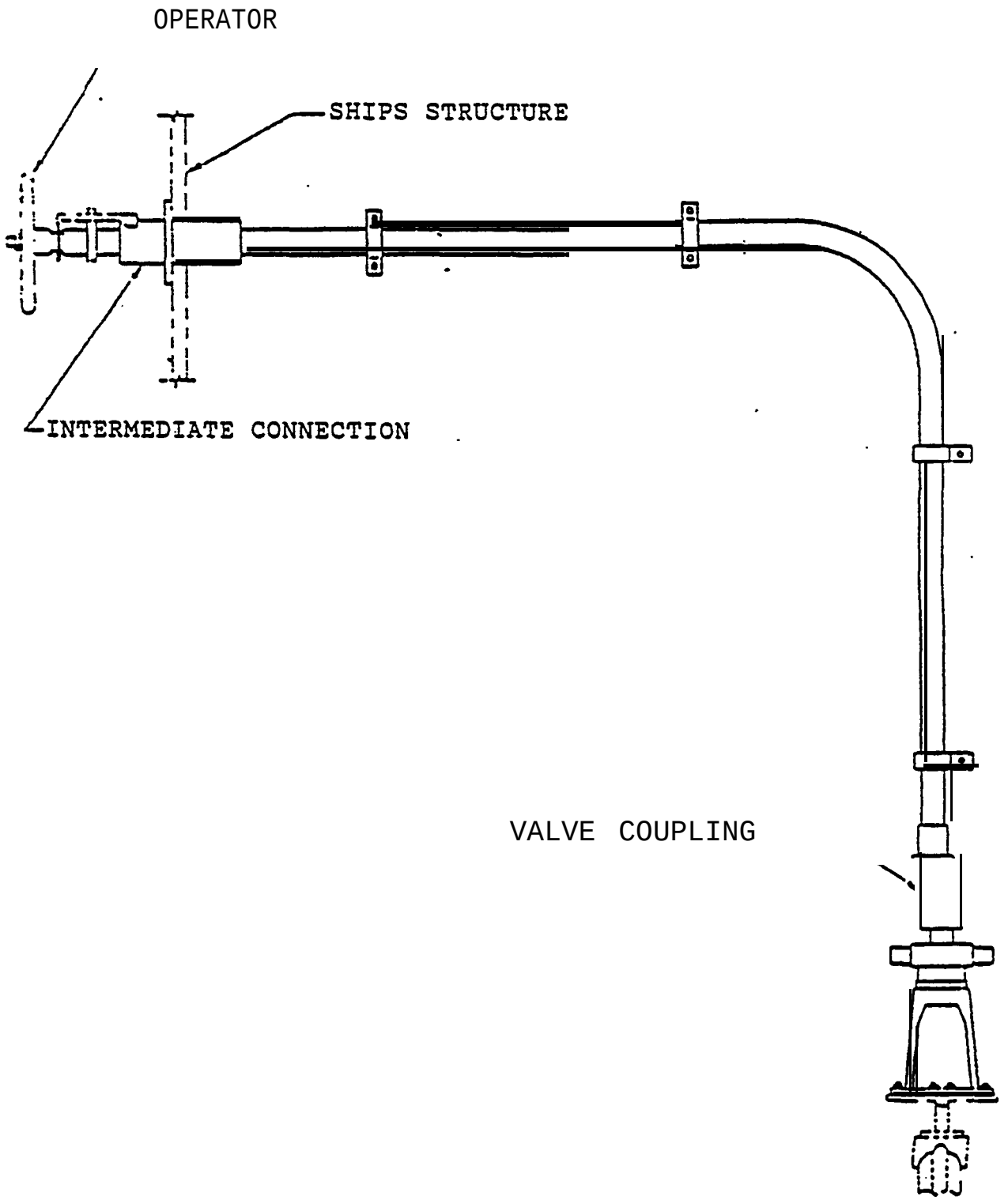
Handwheel Diameter		Lever Length		Total Tangential Force on Rims of Handwheel	
mm	in. (approx)	*mm*	in. (approx)	*N*	lbf *(approx)*
100 (&. Below)	4 (& Below)			220	so
100	4			265	60
125	5			310	70
150	6	100	4	355	80
175	7			400	90
200	8	125	5	455	102
230	9			505	114
255	10	150	6	535	120
280	11			575	129
305	12	175	7	600	135
355	14	200	8	615	138
405	16	230	9	625	140
455	18	255	10	630	142
535	21	280	ii	640	144
610	24	330	13	665	150
685	27	355	14	665'	150
760	30	405	16	665	150
915	36	480	19	665	150



NOTE ILLUSTRATION ONLY. THIS SKETCH DOES NOT REPRESENT AN ACTUAL SYSTEM.

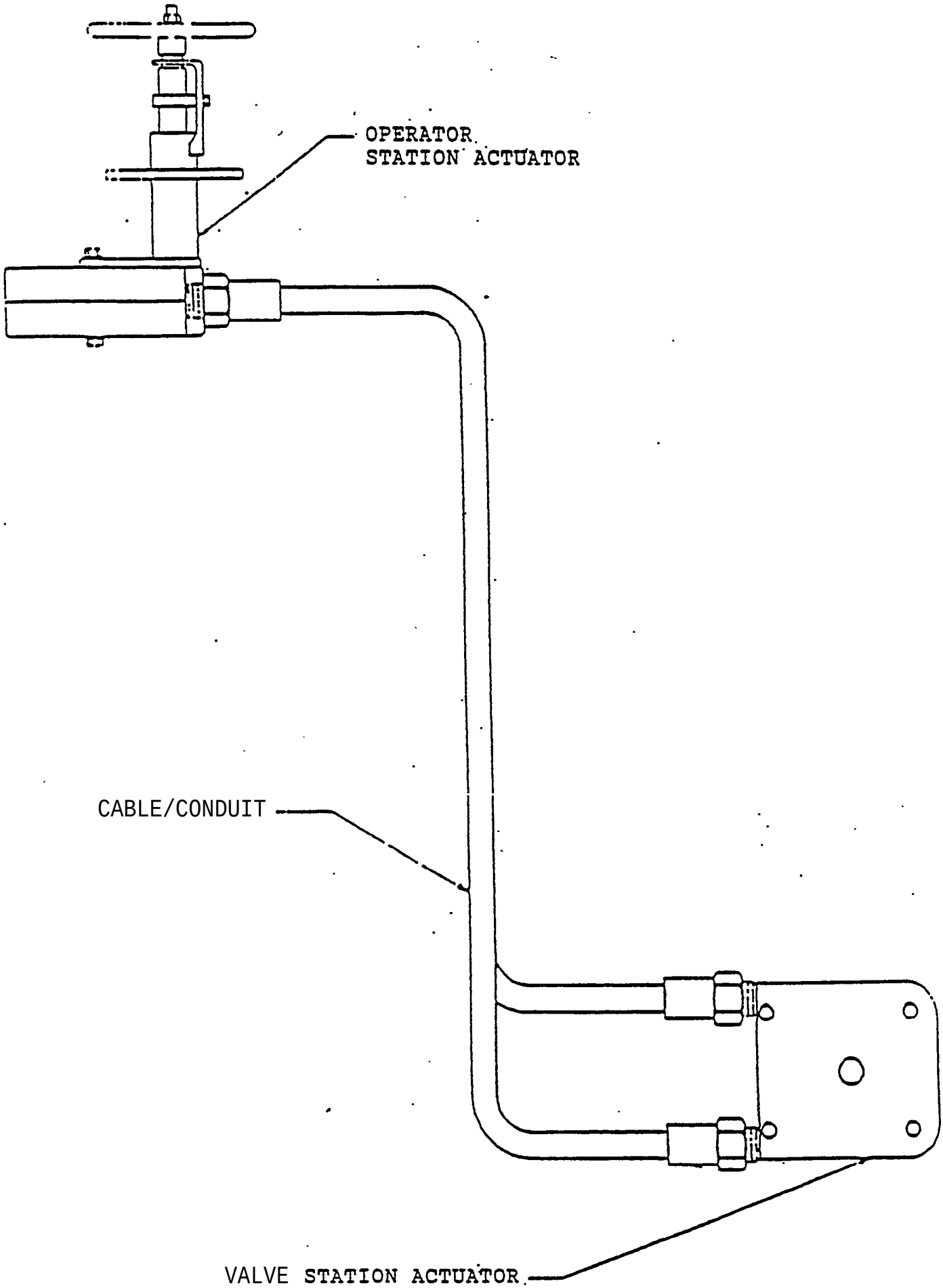
RIGID REACH ROD SYSTEM

FIGURE 1



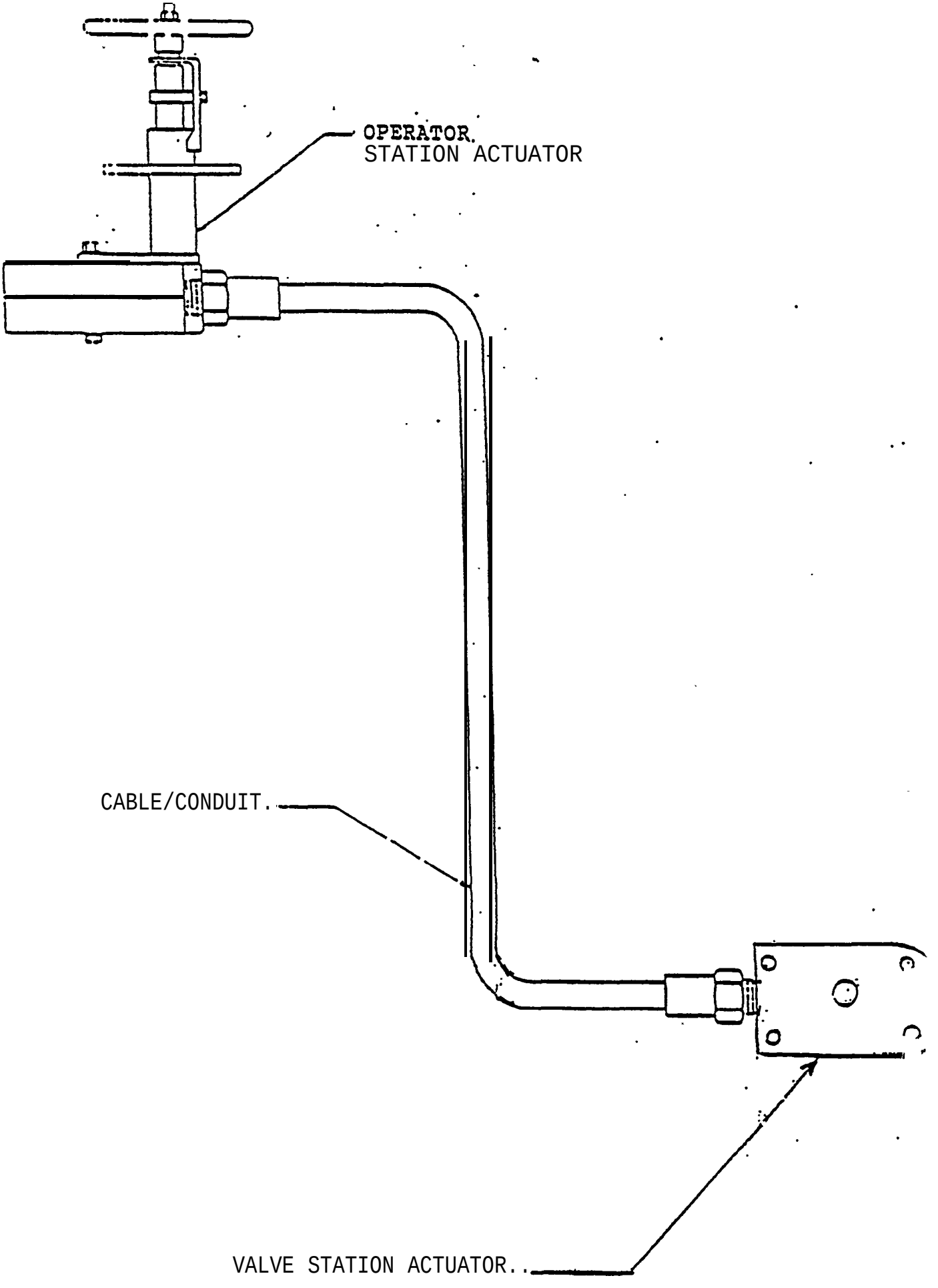
ROTARY FLEXIBLE SHAFTING SYSTEM

FIGURE 2



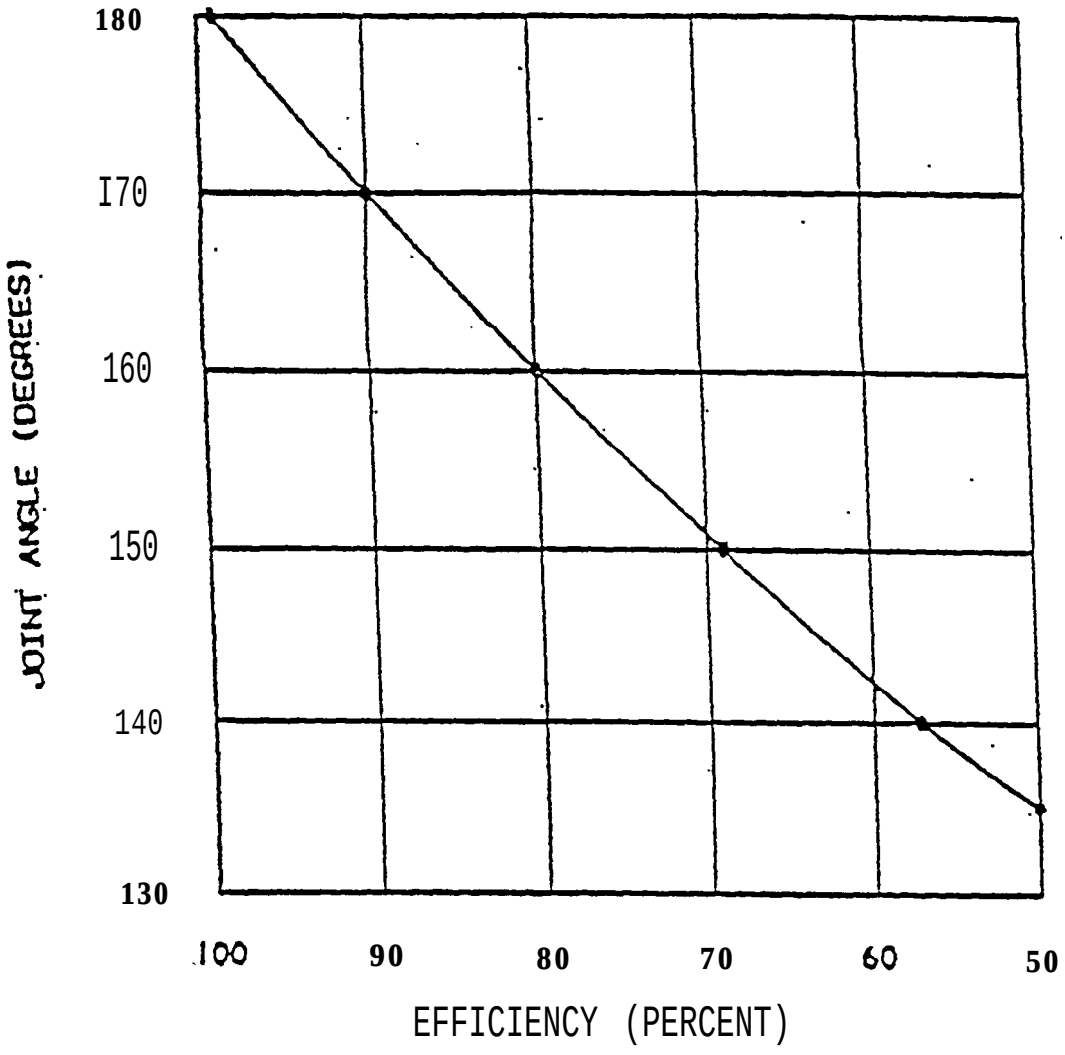
DUAL LINEAR FLEXIBLE. SHAFTING SYSTEM

FIGURE 3



SINGLE LINEAR FLEXIBLE SAHFTING SYSTEM

F I G U R E 4



UNIVERSAL JOINT EFFICIENCY

FIGURE 5

AUDIT TRAIL

for

RIGID REACH ROD AND FLEXIBLE SHAFTING

COMMENTS	RESOLUTIONS
D. Updike - (Norris/O'Bannon)	DRAFT NO.3 - 9/20/89
1. Para 5.10 - Need to specify type of operator...gear valve would be better in this case.	Complied With
P. Schrimmer - (Electric Boat)	9/28/89
2. Misspelled word in para 3.1.	Corrected
7. Para 5.4 - unclear as to meaning of this para.	Further- clarified
Victor Burnett (JJH)	DRAFT NO.4
1. Delete paras 2.2, 2.4, 2.5 & 2.6	Para 2.5 has been deleted - Remaining paras are required. I.A.W. NAVSEA Para 2.5 has been transferred to Supplemental Requirements.
2. Para 5.14 - Something seems to be missing.	Concur - Clarified para 5.14
Charles Sinche (JJH)	
3. Para 2.5 - Change "Bureau of Ships" to "Navships".	Deleted para 2.5
4. Para 2.6 - Change "NAVSEA Technical Manual" to "Naval Ships Technical Manual".	Concur
Jack Fedor (Westinghouse Elec.) (N)	
5. Para 1.1 - Use "specifications" in lieu of "selection data".	Concur
6. Para 1.1 - "Non-Rigid" should be "Flexible" as used in title.....	Concur
7. para 2.3 - Fed-std-H28 has been replaced with ANSI B1.1.	Concur
8. Para 2.4 - Neither Mil-Spec 16059 or 20625 are used.....	It has now been indicated.

9.Para 2.5 - Delete Bureau of Ships drawings since they're not referenced in text.	Concur - See Comment (1) abov
10. Para 2.6 - Delete NAVSEA technical manual since it's not referenced in text.	Concur - See Comment (1) ab v
11. Para 3. - Under terminology add definition of "valve operating torque" (see 7.1.1).	Concur
12. Para 3.2 - Replace "combination" to "component combination-,"	Concur
13. Para 3 - Define "Valve Operative Torque".	Concur
14. Para 5.2 - See above comment in Para 2.3.	Replaced Fed-Std-H28 with A S B1.1.
15. Para 5.6.1 - Use of "approximately" is meaningless.....	Deleted "approximately".
16. Para 5.6.2 - See Comment (14) above.	Concur
17. Para 5.14 - Better wording should be used.	Clarified Fat-a 5. 14.
18. Para 5.15 - Insert. "shall" after "rod" and delete "should only" and replace with "but may" - "Regulatory body approval" specify which body.	Concur
19. Para 5.16 - "Are normally" suggests that there are other methods.....	Raplaced "are normally" wit wit "should be".
20. para 7. 1 . 1 - suggest rewrite paragraph to clarify - "instal" snould be Corrected to read "stall".	concur - revised
21. Para 7.4.1 - Revise to read "size of Round Bar Rigid Reach Rod Systems".	Concur
marvin Rosenberg	
22. Para 1 - The scope doesn't agree with the title....	Concur - Revised
23. Para 2.7 - Neither the "compflation of ASTM definitions" or "title 46CFR" is called out, whay are they referenced?	Concur - Deleted
24. Pat-a 4.1.5.5 - is "spindle" a correct term?	Corrected - should read "spindle".
25. Para 5.5 - What tapers are referenced to?	"Pipe tapers" - so clarifie

26. Para 5.6.2 - Para 5.6 mandates maximum unsupported spans..... and 5.6.2 gives "approximate" spacings.....	Concur with 5.6 - Deleted "approximate".
27. Para 5.12 - Parallel to what?	Parallel to one another. so indicated.
28. Para 5.14 - Marked to indicate what? Marked to indicated valve is open or shut?	Clarified para 5.14
29. Para 7.1.1 - ??????	????
30. Para 7.1.2.1 - The parenthetical statement" ..... Limited to angles between 180° & 135°) is ambiguous.	Clarified this sentence
31. Figure 1 - What is Fig.1 intended to convey?.....	Universal Joint efficiency to be read in conjunction with Table 1.
32. Para 7.1.2.4 - Hyphenate three-spindle gear box - In addition; hyphenate "Reach-Rod" whereever noted in draft.	Concur
33. Para 7.1.3.3 - Change "from" to "above".	Concur
34. Para 7.2 - The sentence would be more mathematically correct if the following was included in the 2nd ??? "the product of all the individual components" efficiencies....."	Concur
35. Para 7.2 - Define "value operating torque, value operator & operator".	Defined in terminology.
36. Title - Suggest change title.....	See Comment (5) above!!!
<u>H.T. Haller (MARAD)</u>	
37. Add a new Para 5.19 to read "Operating gear which terminates on the open deck.....	Concur
<u>J.J. Nachtsheim</u>	
38. Para 2.2 - 2 ANSI STD S which are not invoiced in body of Std.	Concur - They are now indicated in Paras 4.1.7.1 & 4.1.8.1
39. Para 2.4 - 2 MIL SPECS which are not invoiced in body of Std.	Concur - The are now indicated in Paras 5.6.2 & 5.11
40. Para 2.5 - 5 Bureau of Ship Drawings which are not invoiced in body of Std. Doubt if these are available from Naval Publications & Form Center as noted.	Removed and Relocated in Supplementary Sections to satisfy NAVSEA.

41. Para 2.6 - Comment (40) above applies to the NAVSEA Tech.Manual. — I.A.*. SP-6 meeting this, manual remains.

42. Fig.2 is cited on Page 3 ahead of Fig. 1 which is cited on Pg.7. — concur - Revised Figures.

Rick Butler (Deutsh)

43. Pat-a 1 . 2 - Change "inch pounds" to " metric (si)" and add a new sentence "the values given in parenthesis is at-s provided fo nformation purposes on1y" — Concur

SNAME SP-6 Meeting (Dec.1990) — Draft No.5

1. Federal Spscification not indicated in draft to be deleted. — Concur

2 Mi1itary standards indicated in the draft to remain. — Concur

3 Bureau of Ships Drawings not indicated in draft to be deleted. — Concur

4. Revise "NAVSEA Technical Manuals" to read " Naval Ship Technical Manuals". — Concur

5. Other Documents - Delete "Compilation of ASTM Definitions" & "Title 46 C.F.R." — Concur

6 Para 4 - Indicated referenced document wherever applicable. — Concur

7. Para 5.2 - Substitute "ANSI B1.1" for FED-STD-H38". — Concur

8. Change draft from I Imperial to metric (si) Units throughout — Concur

9. Add para 5.19 "operating gear which terminaties on the open deck or in passageways shall be fitted with.. . . . ". — Concur - See new Para 5.19

10. para 7. 1.3.3 - to read' "greater- than 5 M and less than 18 M . . . . . [1] — Concur

H. I. Wi1dman (NAVSEA) — Draft NO.5

1. Revise title to read "standard Guide for Rigid Reach Rod and Flexible shafting". — Concur

2. Para 1.1 - Change "Non-Rigid" to read “Flexible.. — Concur - see comment (6).

3 Para 1.2 - Change "inch-pounds" to "foot-pounds".	Do not Concur. See Comment (43).
4. Para 2.3 - Include "Rotary" in MIL-S-16059 as indicated.	concur
5. Para 2.3 - Add "MIL-A-XX319" Single Linear Flexible Shafting.	Do: Not Concur - Spec not. in system and not referenced in text.
6 "Bureau of Ships [)rawings" to be changed to "NAVSEA Drawings".	Concur
7. Under "NAUSEA Technical Manuals" Add: S 6438-AA-DDT-010 S6435 -QJ-MMC-010 0948-LP-022-7010	concur - Added in the "Supplementaty Requriements".
8. Para 3.1 - Change "Reach Rod" to read "Rigid Reach Rod or- Flexible shafting".	Concur
9. Para 3.3 - "Flexible Reach Rod - a Reach Rod consisting. . . . . " to read "Flexible Shafting - a Shafting consisting . . .	Concur
10. Para 4.2 - "Flexible Torsional Reach Rod System" to read "Rotary Flexible shafting System".	Concur
11. Para 4.3 - "Flexible Tension Reach Rod to read "Flexible shafting".	Concur
12. Add "Para 4.3.7 - 1nternal Cable connector".	
15. Add "Paras 4.4 Type IV Single Linear Flexible Shafting System (Fig. 5)" similar information as noted in Para 4.3.	Concur
14. para 5.6.2 - On 2nd line indicate " Government standard or" between"by" and "component"	Concur
15. Para 5.11 - Revise "Universal Joints shall be. . . . . "to read "Universal Joint.s in Rigid Rod System shall be.. . . "	concur
16. Para 5.14 - Revise this Para to read as modified.	Concur
17. Para 5. 16 - End Para with "Rigid Reach Rod or Flexible Shafting".	concur
18. Para 5. 17 - Add "Rigid" & "Flexible Shafting" as indicated.	concur

19. Para 5.18 - Comment (l8) above shall apply here.	Concur
20. Para 6.1.2 - Revise to read "Types II I I I and IV, Flexible Shafting System".	Concur
21. Para 7.1.1 - Clarify the last. 2 lines.	Clarified
22. Para 7.1.2.1 - Revise 180° and 135° to read 135° and 180°.	Concur
23. Para 7.1.3 - Comment. (10) above shall apply here.	Concur
24. Pat-a 7.1.4 - Revise "Flexible Tension Reach Rod system" to read "Linear- (Dual or Single) Flexible Shafting 'System".	Concur
25. Pat-a 7. 2 - Table I - To convert. Gen. spec. Section 505 C 2 Table III Valves to FTC-LBS of Torque and change ASTM Documents TAble I to match NAVSEA Gen. Specs.	Concur
26. Paras 7.4.1.1 to 7.4.4 - Revise these one line Paras to read as modified.	Concur
27. Indicate material and design of Handwheels from Gen. Specs.	Concur - Added para 53.1 `& 5.21
33. Add more information on performance of valve requirements.	**concur** - Added Pat-as 7.2, 7.2. 7.2.2 & 7.3.
29. Add Controlex & Stow Design Actuators	See Para S2.1 - Generic form.
30. Indicate test procedures of valves as taken from Gen Specs Tech Manual.	Concur - See Para S3.
31. Different. units of measurements & numbers which at-e inconsistent with Gen. Specs, MIL-Specs & ASTM Doc. Use Gen. Spec 505 C2 Table III.	Concur - Changed Table 1 in its entirety to suit Table indicated in Table I I I of Gen Spec.
32, Add Table 3 - Valve Trim Materials. From MIL-V-22052	Concur - Added Table S2.1 shawing Valve Trim Materials.....
33. Add Table 505.23 from enclosed Gen. sper,.	Concur - Added Table S4.1
34. Add Figure for Single Linear Flexble Shafting System.	Concur - Added new Figure No.4 and renumbered Figures 1 to 5.

Gary North (MARAD) — DRAFT NO.6

. Para 5.5: Should be 60 mm per m.	Concur
Para 5.21: Why are handwheels 50 mm in dia. and larger only made of Aluminum Alloy?	Revised

3. Paras 7.4.1.1, 7.4.2.1 & 7.4.3.2 change 12.5 mm to 12 mm.	Concur
4. Para 7.4.3.1, Change 9.5 mm to 9 mm.	Concur
Peter Schrimmer	
5. Para 5.20 to 5.20.4 addresses valve seats & internal trim. Do not understand why this is in the draft.	Concur - Deleted from Draft.
6. Para S2.2 & S4 discusses the need for by-pass valves & valve test procedures. Do not understand why this is in the draft.	Concur - Deleted S2.2 & revised S4 - See S1.
W.N. McLean (Newco Valves)	
7. Para 5.5: Rather than reference pipe taper, ref. ASME B1.20.19	Concur
8. Para 5.8 - What is a valve label plate?	See Para 2.1
9. Para 5.10 - What is provided with a manual override? The valve, remote operator valve or local operator?	It is now indicated in Para 5.10.
10. Para 5.14 - Where are indicators to be located?	Location indicated in Para 5.14.
11. Para 5.17 - What does "compatible" mean? By Para 2.1 the supplier of the operating gear has only two materials to choose from.....	Capable of mixing together without alteration by chemical interaction. Para 2.1 has been revised.
12. Para 5.18 - "All" fire requirements?	Deleted "all" from Para
13. Para 5.20 - The entire subsection, including Table 2, are valve specification requirements, not operating gear reqt.....	Revised Para 5.20 & 5.21 for clarity.
14. Para 7.1.1.1 - Who does the required checking? If this can be identified....	Para has been rewritten for clarity.
15. Para 7.1.3.3 - Contains a reqt. in imperial units (ft).....	Concur - Revised to metric.
16. Para 7.2 - The identified reqt. is not a valve reqt., this can be rewritten as "the operating system shall be capable of stroking the valve".....	Concur
17. Para 7.2.1 - In order to identify that this is an operating gear reqt. and not a valve reqt. this should be rewritten	Concur

on the following lines: "All manually operated systems, except. push Dull. . . . Table 1 valves are too 1 low. . . .	
18. Para 2.2 - Ductile materials at-e specified for the handwheel. What. at-e the material reats. . for gear boxses?.	Deleted Ductile material from Para 2.2
19. Para 53. 1 - This clause addresses valve handwheels. This is outside the std. scope.....	Concur - Deleted Para 53 in its entirety.
20, para S3.2 - Spelling error: should be seat leakage. Do not. understand why this is here.....	Concur - See Comment (19).
21. Para 84 - Retitle as "Test Procedure for Valve Operating Gear".	Concur - See Para 81
22. Para 2.3 - If listing MIL-R-17131 is required for wear surface in operating gear systems, it is suggested that the commercial references AWS A5.13 and A5.9 be substituted.....	Deleted MIL-R-17131
ASTM F25.13 Meeting at San Diego - Dec. 1991	
23 In addition to the above comments discussed Table No. 1 Tangential Forces for the handwheels are too high..	Concur - Revised the lbf & N columns as noted in Table 1.
W.N.McLean (N)	**Draft No.7**
1. If this is a Guide, all the "shall" items need to be converted to "should" e.g. see 5.15, 7.1.2.1 or 7.2.1.	Concur
3 Pat-a 5 . 20 - Restate it. as "Rigid and Flexible Operating Gear Handwheels - Handwheels for Rigid & Flexible Operating Bear should be..... in lieu of "Valve Handwheel - Handwheels should be. . . . . "	Concur
3 Para 7.2 - Either associate the time specified with the purchaser- or de1ete para.	Concur - Time specified by purchaser.
4. para 7.2.2 - Start the sentence with- "Operator" so as not to cunfuse it. with a Valve Handwheel.	Do not Concur - Handwheel is fully described.
5. Pat-a 7.2. 2. 1 - First. two words should read "Operator handwheel" in lieu of "Handwheel operator".	Concur

6. Para 7.4 - For clarity, the title read "recommended minimum component size at input end".	Concur
7. Para 81 - Revise title by inserting "for" in lieu of "operated by" and reword as "Installed valves having Rigid or Flexible Operating Gear attached to the valve stem bay be subject to tests and test pressures in MIL-S-16059 for the purpose of verifying the operating gear capabilities using the following procedures:"	Concur - So revised.
8. Para 81.1 - Revise 2nd line to read "allowable rim force to be applied to the handwheel on the Rigid and Flexible Gear".	Concur
9. Table 1 - Replace "valves" in the title with "Rigid or Flexible Gear".	Concur
10. Under 81 - There is no reference to Table 2. Therefore it should be deleted...	Concur
Stanley Krohn	
11. Para 5.15, 7.1, 7.1.2.1 & 7.2.1 Change "shall to "should" in the paras noted.	Concur - See Comment (1)
12. Para 7.1.1 - On second line, revise "shall be based on...." to read "should include....."	Concur
13. Para 7.1.1.1 - Delete "Will" from 2nd line.	Concur
Rick Butler (Deutch)	
14. Para 7 - If it. serves its put-case, change "shall" to "should" whet-e applicable.	Concur - See Comment (1)
15. Supplementary - Recommend this information be incorporated into body of Guide.....	Do not Concur
16. Recommend the word "recommended" be added in title for clarity.	Do not Concur
J.J Nachtsheim	
17. Para 5.5, ASME B1.20. 19 is invoked, but not listed in Para 2.	Concur - Now listed

M. Coanevich

18. para 5. 20) - "Add "ductile iron" the last. line as noted.	Complied with

Leo Huott (USCG) (N)

19. Add the following:	
1. The installation shall not interfere with local control valve.	Concur
2. Each installation requiring local control must have a means of easily disconnecting the Rigid Reach-Rods and Flexible.....	Concur
3. Where Rigid Reach-Rods and Flexible Shafting penetrate oiltight, watertight, bulkheads, decks, tanktops, or where they are carried through fire.....	Concur

Chas Sinche

20. Para 5.5 - ASME B1.20.19 is listed but not referenced.	Concur - See Comment (17).
21. Table 2 is not referenced in Spec.	Table 2 deleted

Doug Dole (Victualic Co.)

22. Para 3.3 - Title should be expanded.	Nonconcur
23. Para 3.4 - Missing definition of Rotary Flexible Shafting.	Concur
24. Para 3.6 - Valve operating definition does not make sense.	Concur - Revised
25. Para 5.3 - Awkwardly wer-ded sentence.	Revised para.
26. Para 5.6 - Please cite government standard.	Nonconcur - Does not exist.
27. Para 5.14 - This para should contain a statement about supplying indicators on valves.....	Nonconcur - this is not a specification, just a guide.
28. para 5. 19 - Awkwardly worded.	Inserted "removal of" in lieu of "removing" in 4th line.
29. Para 5.1.1.5 - This para used twice..	Nonconcur - no such para exists.
30. Para 6.2 - Awkwardly worded.	Nonconcur

AUDIT TRAIL
FOR
INSTALLATION PROCEDURES FOR FITTING CHOCKS

DRAFT NO.2

John Nachtahein (G.G.Sharp)	2/2/90
1. Para 2 .l "A638" should read "D638". Title for 0638, D648 and D693 should add read "Test Method for.....*'	Concur
2. Para 2.2 The "MIL-STD (PRELIM)" is never referenced in the text suggest delete this.	Concur - Deleted
3. Para 5.2.1.4 - Should read “.... American Bureau of Shipping Rules or The American Welding Society Structural Welding Coda AWS D1.1."	Concur - Revised
4. Para 5.2.1.5 - Type "125 m8cro-inches" should read "125 alcro-lnches".	Concur - Corrected
Ton Hopkins (Consultant)	3/2/90
5. Military Standard referenced in not approved as yet. Should not be referenced til approved.	Concur - Removed
6. Para 5.1.3.'2 - Should be changed from ".... Chocks as thin as 3 mm (l/8 in.) . ..*' to . . .."12 mm (l/2 In.)...". Due to the fact air pockets can form in thin Chocks & the raterlal does not conpletely cure under these circumstances.	Concur - Revised as nc
7. Para 5.1.3.3 - Should be amended to include design, lnstallation & Inspection requiremets of Ref. (3) should be followed.	Concur

Draft Number 4
ASTM Designation XXXY
November, 1989

Standard Specification for

LARGE DIAMETER FABRICATED CARBON STEEL FLANGES[1]

1. Scope

1.1 This specification provides design and construction criteria for large diameter flanges sizes 14 to 144 NPS . for use in high temperature, (1000° F) low pressure service (25 psig), such as internal combustion engine exhaust and forced ventilation systems.

1.2 Values stated in inch-pound units are to be regarded as the Standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A36 Specifications for Structural Steel

F1155 Standard practice for selection & application of piping systems materials

2.2 American Water Works Association:

AWWA C207 Steel Pipe Flanges for Waterwork Service 4 in. Through 144 in.[3]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing of Steel Vessels, ABS Grade A.[4]

American Welding Society of Publication, AWS D 1.1 Structural Welding Code.[5]

Code of Federal Regulations Title 46, Subpart 56.30 - 10 (b) (5)[6]

[1] This Specification is under the jurisdiction [illegible] Shipbuilding and is the direct responsibility of Subcommittee F25.13 on Piping Systems.
[2] Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.
[3] Available from American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
[4] Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, Paramus, N.J. 07653.
[5] Available from American Welding Society, 2501 N.W 7th. Street, Miami, Florida 33125.
[6] Available from Naval Publications and Form Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

3. Classification

3.1 Type I - Plate flanges, for sizes 14 in. ID ut to and including 144in. ID.

3.2 Type II - Rolled angle flanges, for sizes 14 in. up to and including 108 in. ID.

4. Ordering Information

4.1 Flanges ordered under this specification shall include the following:

4.1.1 ASTM Designation, Title, Number and Date of this Specification.

4.1.2 Type and Material

4.1.3 Nominal Pipe Size

4.1.4 Quantity

4.1.5 Inspection of Items shall be agreed upon, between the Purchaser and the Supplier.

5. Dimensions and Tolerances

5.1 Dimensions

5.1.2 Dimensiens shall be in accrdance with Table 1 or- Table 2.

5.2 Tolerances:

5.2.1 Plus or minus l/4 in. on outsides and inside diameter shall apply on fianges of 22 in. nomina1 pipe size and abave. The tolerance for flang for 20 in. nominal sire and below shall be plus or minus 1/8 in.

5.2.2 Plus or minus l/16 in. an bolting circle

6. Drilling

6.1 Number of holes, hole diameter, and bolt circle shall be identical for both Type I and Type II Flanges.

6.2 Bolt holes shall be equally spaced on the bolt circle.

6.3 Bolt holes provide for 1/8 in. diameter clearance on bolts.

6.4 Drilling of Flanges shall be in accordance with Table I.

7. Workmanship, Finish and Appearance

7.1 Flanges manufactured under this specification shall be free of all sharp edges, burrs, projections, weld spatter, and other defects which might be hazardous to personnel or equipment or harm.

7.2 Welding shall be in accordance with the American Bureau of Shipping or American Welding Society *Publications D1.1, the ASME Code Section IX.*

7.3 Flange faces shall be smooth and free of any projections or indentations which would prevent effective gasket seals.

7.4 Flanges when completed shall have no distortion, roundness or flatness exceeding a tolerance of plus or minus 1/2 in.

7.5 The surface finish shall be a minimum of 250 micro-inches to ensure proper sealing surface for the gasket.

7.6 The material to be used for this specification shall be ASTM A36, unless prolonged high temperatures will be required, in that case ABS Grad A steel will be specified in Section 4 (Ordering Information) For further guidance for selection of materials see ASTM F1123 46 CFR 56.30-10(b)(5).

8. Rejection and Rehearing

8.1 Flanges that fail to conform to the requirements of this specification may be rejected. Rejection may be reported to the producer or the supplier promptly in writing. In case of dissatisfaction with the damaged items the producer or the supplier may make claim for a rehearing.

9. Packaging and Package Marking

9.1 Flanges shall be *marked on the edge of each flange* showing the purchase order number, ASTM Designation number, material and Type, Size and Name of Manufacturer.

9.2 The flanges shall be packaged [illegible] common carrier.

10. Certification

10.1 When specified in the purchase order or the contract, the purchaser shall be furnished Certification that samples representing the flanges have been inspected to meet the requirements of this specification. When specified in the purchase order or contract a report of the results shall be furnished.

NOTE:
WITH THE EXCEPTION OF THE FOOTNOTE. ALL THE REVISIONS HAVE BEEN INDICATED IN ITICS.

TABLE 1 : DIMENSIONS

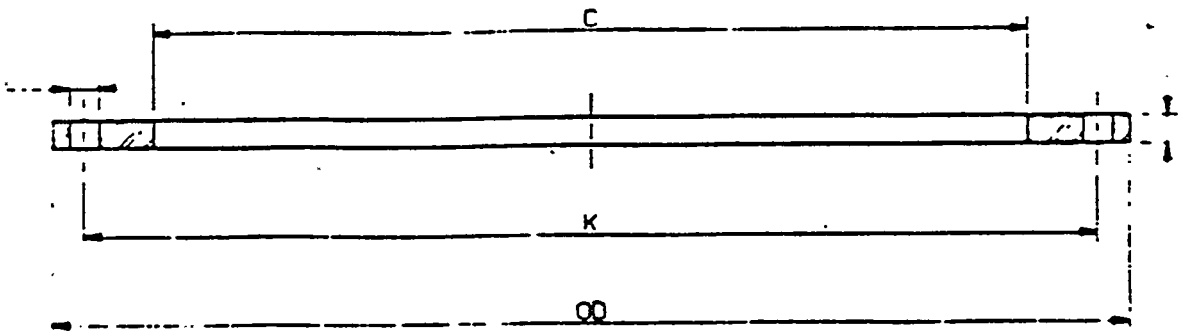
Nominal Pipe size	Inside dia. C	Type I			Type II				Drilling	
		Outside Dia OD	Thks T	Wt. in lb	Angle size	Thks T	Wt. in lb.	No. of holes	Dia of Holes J	Dia of Circle K
14	14 1/4	21	3/4	40	4x3	3/8	39	12	1 1/8	18 3/4
16	16 1/4	23 1/2	3/4	48	4x3	3/8	44	16	1 1/8	21 1/-
18	18 1/4	25	3/4	49	4x3	3/8	49	16	1 1/4	22 3/4
20	20 1/4	27 1/2	3/4	58	3x3	3/8	60	20	1 1/4	25
22	22 1/4	29 1/2	1.0	83	5x3	3/8	65	20	1 3/8	27 1/4
24	24 1/4	32	1.0	97	5x3	3/8	70	20	1 3/8	29 1/2
26	26 1/4	34 1/4	1.0	108	5X3	3/8	75	24	1 3/8	31 3/4
28	28 1/4	36 1/2	1.0	119	5x3	3/8	81	28	1 3/8	34
30	30 1/4	38 3/4	1.0	131	5x3	3/8	86	28	1 3/8	36
32	32 1/4	41 3/4	1 1/8	176	6X4	1/2	116	28	1 5/8	38 1/2
34	34 1/4	43 3/4	1 1/8	186	6x4	1/2	122	32	1 5/8	40 1/2
36	36 5/16	46	1 1/8	200	6X4	1/2	170	32	1 5/8	42 3/-
38	38 5/16	48 3/4	1 1/8	227	6X4	1/2	178	32	1 5/8	45 1/-
40	40 5/16	50 3/4	1 1/8	238	6X4	1/2	187	36	1 5/8	47 1/-
42	42 5/16	53	1 1/4	283	6X4	1/2	195	36	1 5/8	49 1/2
44	44 5/16	55 1/4	1 1/4	303	6x4	1/2	203	40	1 5/8	51 3/-
46	46 5/16	57 1/4	1 1/4	315	6X4	1/2	212	40	1 5/8	53 3/-
48	48 5/16	59 1/4	1 1/2	392	6X4	1/2	220	44	1 5/8	56
50	50 3/8	61 3/4	1 1/2	426	6X4	1/2	229	44	1 7/8	58 1/-
52	52 3/8	64	1 1/2	452	6X4	1/2	237	44	1 7/8	60 1/-
54	54 3/8	66 1/4	1 1/2	478	7x4	1/2	276	44	1 7/8	62 3/-

1 in. = 25.4 mm.
1 lb. = (0.45 kg.

TABLE 1 : DIMENSIONS (CONTINUED)

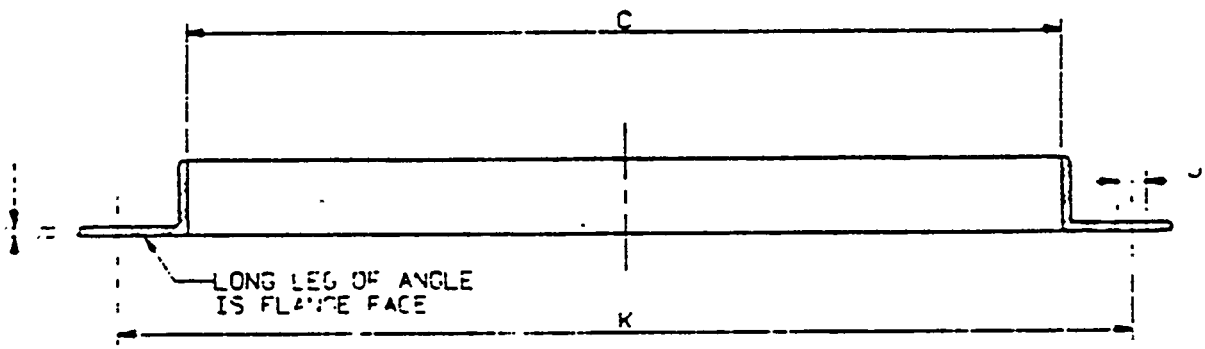
Nominal Pipe Size	Inside Dia. C	Type I				Type II			Drilling	
		Outside Dia. OD	Thks. T	Wt. in lb.	Angle Size	Thks. T	Wt. in lb.	No. of holes	Dia. of Holes J	Dia. of Circle K
56	56 3/8	68 1/2	1 1/2	[illegible]	7X-	1/2	285	48	1 7/8	64 3/4
58	58 3/8	70 3/4	1 1/2	[illegible]	7X-	1/2	295	48	1 7/8	67
60	60 3/8	73	1 1/2	[illegible]	7X-	1/2	305	52	1 7/8	69 1/4
66	66 3/8	80	1 1/2	[illegible]	7X-	1/2	330	52	1 7/8	76
72	72 3/8	86 1/2	1 1/2	[illegible]	8X-	1/2	400	60	1 7/8	82 1/2
78	78 1/2	93	1 3/4	[illegible]	8X-	1/2	430	64	2 1/8	89
84	84 1/2	99 3/4	1 3/4	[illegible]	8X-	1/2	460	64	2 1/8	95 1/2
90	90 1/2	106 1/2	1 3/4	[illegible]	8X-	1/2	490	68	2 3/8	102
96	96 1/2	113 1/4	1 3/4	[illegible]	9X-	1/2	570	68	2 3/8	108 1/2
102	102 1/2	120	1 3/4	[illegible]	9X-	1/2	605	72	2 5/8	114 1/2
108	108 1/2	126 3/4	1 3/4	[illegible]	9X-	1/2	64	72	2 5/8	120 3/4
114	114 1/2	133 1/2	1 3/4	[illegible]	-	-	-	76	2 7/8	126 3/4
120	120 1/2	140 1/4	1 3/4	[illegible]	-	-	-	76	2 7/8	132 3/4
126	126 1/2	147	2.0	[illegible]	-	-	-	80	3 /8	139 1/4
132	132 1/2	157 3/4	2.0	[illegible]	-	-	-	80	3 1/8	145 3/4
138	138 1/2	160 1/2	2.0	[illegible]	-	-	-	84	3 3/8	152
144	144 1/2	167 1/4	2.0	[illegible]	-	-	-	84	3 3/8	158 1/4

lin. = 25.4 mm
lib. = 0.45 kg.



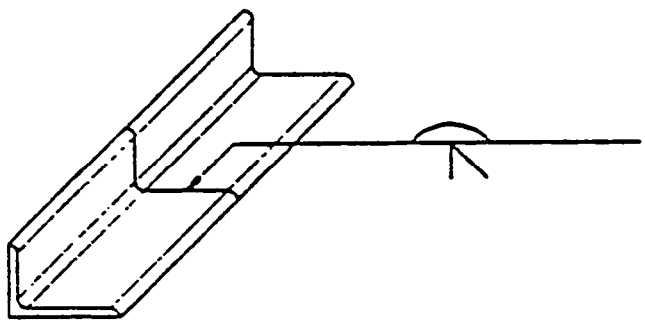
TYPE I

SECTIONAL VIEW



TYPE II

SECTIONAL VIEW



WELD DETAIL

TYPE II

1" = 25.4 m m

AUDIT TRAIL November 19[illegible]

LARGE DIAMETER FABRICATED CARBON STEEL FLANGES

N.Lemley (USCG)	June '99
1. Under "Scope" change 100°F to 1000°F	Complied
2. Can ABS accept using grade A steel for high temperature applications?	See new para 7.6
3. This specification should incorporate Coast Guard requirements and ASTM F1155...	Agree - incorporated.
4. A Material" section is needed.....	Disagree - new para 7.6 will cover the material.
5. In 7.2 recommend adding ASME Code, Sec. IX, also be more specific about AWS; recommend citing AWS D 1.1.	Agree - incorporated
6. More provisions for quality and inspections are needed.....	Agree - added para 7. 4
7. Consider re-writing 8.3 on damaged items to incorporate the standard para. on "Rejection and Rehearing".....	Agree - a new para has t incorporated See para E
8. What is the basis for the thickness in the tables?	
D.R.Dole (Victaulic Co.)	July 6. 19[illegible]
9. Scope - should'nt 100°F be 1000°F ?	Agree - see comment (1)
10.para 6.3 - Is the 1/8 in. a diameter or a radial clearance?	Its a diameter clearanc has been indicated.
11.para 6.4 - must holes be drilled, or is punching, burning, milling or other practice acceptable?	Drilling as indicated.
12.para 7.2 American Welding Society" this is not cited in Section 2....	Agree - has now been ci
13. para 7.3 "Flange faces shall be smooth and free....." This is a judgment issue with respect to what will seal and wont....	Disagree
14. para 8.3 "damaged..."	Agree - has been re-wri see comment (7) above.
R.D.Paul (Deutsch)	7/14/19

15. Table I: Dimensions - nominal pipe size is incorrectly identified as "normal"	Agree - corrected
F.X.Dervalics (NAVSEC	7/20/1989
16. para 1.1 high temperature and 100° F are in conflict....	Agree - see comment (1
17. para 3 - Classification should be as follows: Type I - Plate flanges, for sizes 14 in. ID up to and including 144 in. ID. Type II - Rolled angle flanges, for sizes 14 in. ID up to and including 108 in. ID.	Complied with, added as indicated in para 3
18. para 5.2.1 - The tolerance for flanges 20 in. ID and below should be + or - 1/8 in.	Agree, added to para 5.1.
19. para 6.3 - Is the bolt hole clearance diametrical or radial?	It is a diameter clearanc see comment (10) above
20. para 6.4 - Change reference to AWWA C207 to Table I.	Complied with; see para c
21. para 8.3 - Change title to read as follows: Damaged flanges will be repaired or returned as specified ....or delete.	Deleted note, rewrote na- para- see comment (7)
22. para 9.1 - delete "either tested or" there are no test requirements here.	Agree - deleted changed para 9.1 to read 10.1
23. General comments - should standard should contain surface finish requirements to insure proper sealing surface for gasket.	Agree - see new para 7.5.
Harold Mackey (General Dynamics/Electric Boat)	7/21/1989
24. para 1.1 - Is 100°F correct for high....	See comment (1) - correct

Draft Number 7
ASTM Designation xxx
February 1992

standard Specification far

WATER TRAP FOR DIESEL EXHAUST[1]

1. Scope

1.1 This specification covers the material. dimensions. and construction of diesel exhaust water traps. They shall be required whenever the exhaust is to be expelled through the hull of the vessel.

1.2 The traps are designed to prevent sea backwash from entering the diesel exhaust system.

1.3 The values stated in SI (metric) units shall be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

B443 Nickel-Chromium-Molybdenum-columbium Alloy (UNS NO6625) Plate, Sheet and Strip

F7-12100-A9B4E-22KSM6 Spiral Wound Stainless Steel & Non-Asbestos Basket

F1O4 Classification System for Non-Metallic Basket Materials

2.2 Military standards[3]

MIL-S-901 Nequirements for Shock Tests, High Impact, Shipboard Machinery, Equipment & Systems

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing Steel Vessels[4]

American Welding Society Publicatican, AWS Dl.1 Structural Welding Code[5]

1 This standard is under the jurisdiction of the ASTM Cummittee F25 on ShipbuiIding and is the direct. *responsibility of Subcommittee F25.13.*
3 Available from American society of Testing and Materials, 1916 Race Street, Philadelphia, *Pa. 19103.*
J Available from Naval *Publications and Forms Center, 5801 Tabor Ave. Philadelphia, Pa. 19120.*
4 Available from American Bureau of shipping, 43 Eisenhower Drive, P.O. Box 910, Faramus, N.J. 07653.
J Available from &nerican Welding Society, 2,501 N.W. 7th. Street, Miami, Florida. 33 125.

3. Ordering Information

3. 1 Water traps ordered under this -specification shall include the following:

3. 1.1 ASTM Designation. Title and date of this Specification

3.1.2 Quantity

3.1.3 Size

3. 1.4 Shock test and Brade, see Supplement. *Sl.*

3.1.5 Handhols shall be at 45° unless otherwise *specified.*

3.1.6 Flange dimensions shall be indicated for gaskets.

4. Materials and manufacture

4.1 Materials:

4.1.2 The tank and baffles shall be of Nickel-Chromium-Molytodenum-Columbium Alloy and tested in accordance with ASTM B443.

4.1.2 Baskets - Baskets shall be ASTM F7-12100-A9B4E-22KSM6.‘ They shall withstand temperatures of 65o°C (12OO°F).

4.2 Manufacture:

4.2.1 Construction of the water traps shall be in accordance with this specification and Figure 1.

4.2.2 Welding shall be in accordance with the American Bureau of Shipping Rules for Building and Classing Steel Vessels or the American Welding Society Publication AWS D1.1.

5. Requirements

5.1 Water traps for diesel exhaust systems shall be designed for maximum temperatures of 650°C (1200°F).

5.2 Baffles:

5.2.1 No less than three baffles shall be installed. The bottom baffle shall not extend below the top of the outlet pipe as shown in Figure 1.

5.2.2 The inlet may be rotated about the centerline of the trap to suit the installations. The top baffle shall also be rotated to retain the same relation with the inlet as shown in Figure 1.

5.3 Trap Size:

5.3.1 The trap size shall be a minimum of 1 metre (3'-0" approx) high.

5.3.2 The diameter shall equal twice the diameter of the inlet exhaust line.

5.3.3 The minimum free area through the trap shall equal twice the area of the outlet exhaust line.

5.4 Hand Hale - The hand hole shall be configured as indicated in Figure 1.

6. Dimensions

6.1 The dimensions in Figure 1 are recommended nominal dimensions.

7. Workmanship, Finish, and Appearance

7.1 Workmanship on traps and piping shall be of sufficient quality to prevent dirt accumulation. Welding shall have small, even beading,, free of slag and spatter.

7.2 The trap shall be free of paint.

8. Testing Method

8.1 Each trap shall be pheumatically proof tested 35 kPa (5 psi) with no visible seam leakage.

9 Quality Assurance Provisions

9.2 Source Inspection - Purchaser reserves the right to inspect the manufacturing process and end product in the supplier's plant.

10. Packaging

10.1 The water traps shall be crated or packaged individually for shipment by commercial common carrier.

10.1.1 Talc and talcum used in the packaging process of items shall be free of asbestos and asbestiform like materials.

11. Marking

11.1 Each water trap shall bear a weathertight tag showing the purchase order number, ASTM designation, size and name of manufacturer. The markings on the package shall be approximately 25.4 mm Cl in.) high.

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall apply only when specified by the purchaser in the contract order.

S1 Provisions to withstand high shock. the grade will be specified by the navy requirements.

S1.1 When specified the diesel exhaust water trap shall meet the requirements set forth in MIL-S-901.

NOTE:

With the exception of the footnote, all the revisions have been indicated in ITALICS

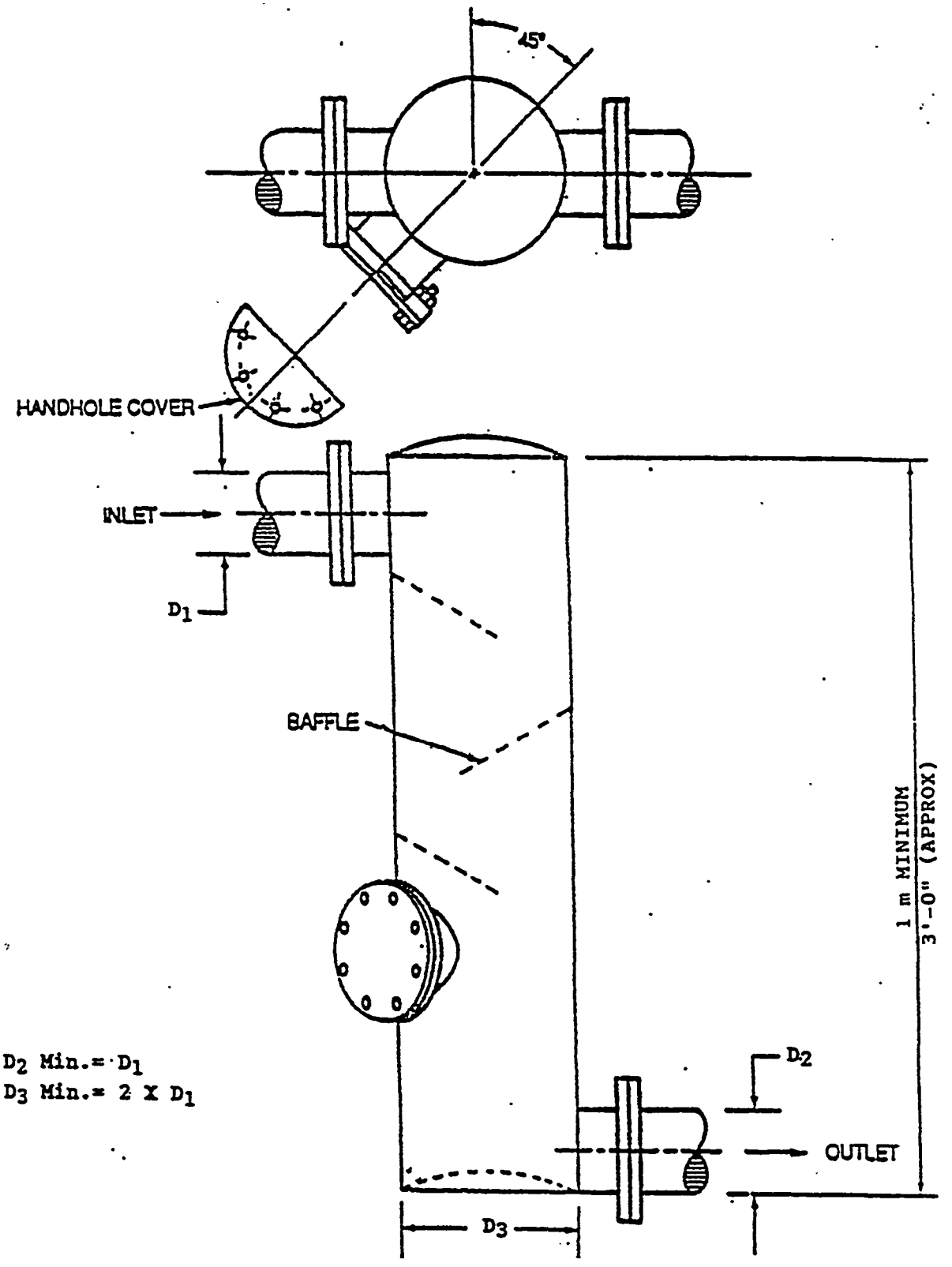


FIGURE 1. WATER TRAP FORD DIESEL EXHAUST

AUDIT TRAIL **October 1989**

WATER TRAP FOR DIESEL EXHAUST

NAVSEA

1. Change ASTM Designation to F-XXX	Agree.
2. Add to Scope "Required whenever the exhaust is to be expelled through the hull of the vessel".	Agree. See Para 1.1.
3. Add "The traps are designed to prevent sea backwash from entering the diesel exhaust system.	Agree. See Para. 1.2.
4. Under "Standards" include B 443. eliminate A308. Add MIL-S-901 (High Shock).	Complied.
5. Para. 4.1.3 - Increase temperature range to 1200° F so that all parts withstand equal heat.	Complied.
6. Para. 5.2. 1 "Baffles shall be of 316 stainless steel.	Disagree. Baffles of same material (B443) as tank.
7. Use of asbestos is proper; however, add shipping warning.	Complied. See Para. 10.2 and 10.2.1.
8. For combatant vessels include requirements (MIL-S-901) for withstanding high shock ,	Agree. See Supplementary.

NASSCO

9. No comment.

Peterson Builders

10. No comment..

Tacoma Boat.

11. No comment.

Riley Beaird

12. No comment.

ASTM meeting at Orlando, F1., on December 6, 1989 — December ' 89

1. Para 1.1 - On 2nd line delete "installation. . . . . ships."	Complied with
2. Para 3.1.4 - Revise to read "Shock test & Grade see Supplement S.1"	Complied with
3. Add para "3.1.5 Handhole shall be at 45° unless otherwise required"	Complied with
4. Add para "3.1.6 Flange dimensions shall be indicated for gaskets"	Complied with
5 Para 5.4 - Add *'configured'* in the sentence	Complied with
6. Para S1.1 - Revise this para to read "When specified the diesel exhaust water trap shall meet the requirement-s as set forth in MIL-S-901	Complied with

Charles Sinche — Draft No.4

1. Para 5.3.3 - Recommend adding "outlet" between "the" and "exhaust".	Concur
2. Para 7.2 - Reword to say "the trap shall be free of paint". . .	Concur

Vic Eurnett

3. Para 2.2 - Move this section to the supplement.. . . .	Concur

Marv. Rosenberg

4. Para S1.1.1 - What grade of shock in MIL-S-901.. . . this should be per Navy's requirements,	Concur

Gary North

5. Use of asbestos gasket not permitted - spiral wound Stainless Steel Gaskets can withstand the temperatures & should be used.	Concur

Linda Bashoor

6. Para 1.1 - Hyphenate "inchpound" and change "as a standard" to "as the standard.	Inchpound changed to metric - Concur with second comment.
7. Change "military standard" to "military specifications" since...	Disagree
8. Para 3.1.6 - Correct spelling of "indicatedd"	Concur
9. Para 2. - Initial Cap the words in title.	Concur
10. Para 3.3.1, 3.3.2 & 3.6.1 - Include the word "shall" as noted.	Disagree - "shall" is used in Regulations, Specs., etc., what is mandatory. "should" is used to soften direct statements such as in Guides. Practices, etc.
11. Para 3.6.2 - First line should read "....the exposed vertical lip... "	Concur

Steve Shepstone (MP Inc) (N) DRAFT NO. 5

1. Para 7.2 - Should read "....free of paint".	Concur - Typo!
2. Fig. 1 - Min. height should be 3'-0" not 3".....	Concur - Typo!
3. Para 5.3.1 - Either Para 5.3.1 or the dimension of 3' should be deleted to prevent redundancy.	Deleted Para 5.3.1; Old Para 5.3.2 is now Para 5.3.1 & so on...
4. If S1 units are standard, then all following Paras & Figs should use S1 and the conversions should be approximate.	Concur
5. Fig. 1 -.There is no need to show 4" & 8" dimensions, since Para 5.3.2 indicates trap diameter equals twice the inlet dia.	Concur
6. Regarding the 3' min. ht. of the trap it seems that this dimension should....	Disagree - Ht. should be a minimum of 3'-0".

P. Schrimmer (Elec.Boat) (N)

7. Para 7.2 - Change "the trap shall be free of no paint" to “the trap shall be free of paint"...	Concur - See Comment (1) above.
8. Para 5.3.1 - Para says height shall be 3'; no such dim. in Fig.1 - the 3" in Fig.1 should read 3'....	Concur - See Comment (2) above.

3. Nachtsheim — Draft No.6

1. Para 4.1.1 - States "materials & design for water trap..... Fig. 1 does not specify materials.	Concur - Deleted Para 4.1.1

H. Hime (USCG)

2. Para 4.1.1 - Delete 4.1.1, since materials are already listed in 4.1.2 and 4.1.3....	Concur - See Comment (1) above.
3. Para 8.1 - Revise to read "Each trap shall be pheumatically proof tested to 35 kPa (5 psi')...."	Concur - But, no soap bubble test. See Comment (29).

Tom Soik (*Consultant)

4. Fig.1 - (a) Delete handhole serves no purpose.	Disagree
(b) Allow inlet & outlet to be configured at different angles to fabricate installation...	Disagree - This is allowed in para 5.2.2.
5. Why not simply specify flange patterns IAW ANSI B16.1 or MIL-F-20042....	Disagree - Minimum free area stated in Para 5.3.3.

S. Shepstone (MAPECO)

6. (a) Para 7.2 - Should read "the trap shall be free of paint".	Concur - See Comment (l) of Draft No.5.
(b) Fig.1 - Min. ht should be 3'0".	Concur - See Comment (2) of Draft No.5.
7. If SI units are the standard then all following paras & Figs. should use SI units *as* std and conversion to ins. as approx.	Concur - See Comment (4) of Draft No.5.

8. There is no need to show 4" (100mm) a 8" (200mm) on Fig-1. per para 5.3.2 the trap dia equals to twice the inlet dia...	Concur - However, see para 6.1, the dimensions are nominal.
9. The 3'-0" minimum ht. of the trap should be related to the size of the vessel & the height of the exhaust above the waterline....	The height of the trap is related to the size of vessel etc., but a 3'-0" would be a min. ht.
C. Sinche	
10. Para 3.1.5 - Change "should" to "shall". After "shall" in 3rd line add "unless otherwise specified..	Concur
11. Baskets - Baskets shall be F7-12100-A9B4E-22KSM6. . . .	Concur
12. Pat-a 5-1 - Water traps for diesel exhaust systems.....	Concur
13. Para 8.1 - Test each trap and subject to an internal air...	Revised - See Comment (29)
14. Para 11.1 - Each water trap shall bear a weathertight tag....	Concur
M. Rosenberg	
15. Para 8.1 - Should read "test each trap by subjecting it to.... since the existing sentence seems gargled.	Noted - Revised, See comment (29).
16. Change 5 psi. (35 kPa) to 35 kPa (5 psi)..	Concur
17. Para 9.1 - What does this para accomplish....?	Concur - Deleted
18. Para 10.1.1 - Typo of "asbestiform"	Concur
P. Schrimmer (Elec. Boat)	
19. Para 7.2 - Change to "the trap shall be free of paint."	Concur - See Comment (7).
20. Para 5-3.1 - States the trap shall be 3'-0" and Fig.1 states 3".	Type - Fig.1 should read 3'-0".

R. Butler (Deutsch)

21. Para 2.0 - ASTM F104 does not appear in the body of the doc....	concur - Deleted F104.
22. All referenced docs. must be listed in the main body...	Concur
23. The following keywords are recommed for inclusion at end of the doc.	Disagree - Not necessary

Ed Barrett

24. Para 1.1 - Commence 2nd sentence with "Water traps...."	Concur
25. Para 1.3 "S1" should be "SI"...	Concur
26. Move S2.1 to Para 2.0..	concur
27. Para 4.1.1 - Delete "materials and design for the water trap..."	Concur
28. Throughout the standard, include metric units as primary and imperial units as approx.	Concur
29. Para 8.1 - Revise to read, "Each trap shall be pneumatically proof tested to 35 kPa (5psi) with no visible seam leakage.	Concur
30. Para 9.1 - Delete this para, and para 9.2 change to 9.1...	Concur
31. Para 10.1.- Delete "suitable for freight handling"	Concur
32. Para 10.1.1 - Correct spelling to read "asbestiform".	concur - See Comment (18)
33. Fig.1 - Correct. min. dimension to read "1 m minimum (3' approx).	Concur - See Comment (6)

Draft Number 4
ASTM Designation XXX
July, 1990

Standard Specification for

CONSTRUCTION OF FIRE AND FOAM STATION CABINETS[1]

1. Scope

1.1 This Standard Specification prvides design and construction criteria for double and single fire and foam station cabinets. Valves, hose and fittings are not included.

1.2 Optional back and legs *may be* provided.

1.3 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A36 Specification for Structural Steel.[6]

A53 Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.[3]

A167 Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet and Strip.[5]

A312 Specification for Seamless and Welded Austenitic Stainless Steel Pipe.[3]

A569 Specification for Steel, Carbon (0.15 maximum percent), Hot Rolled Sheet and Strip, Commercial Quality.[5]

3. Classification

3.1 Type *I*, Single Cabinet. *See Figure 1.*

3.1.1 Grade *1*. Right hand door active leaf.

3.1.1.1 Class *A*, Mild Steel. ASTM A36

3.1.1.2 Class *B*, Stainless Steel. ASTM A167

3.1.1.3 Class C, Aluminum. ASTM B209

3.1.2 Grade *2*, left hand door.

3.1.2.1 Class *A*, Mild Steel. ASTM A36

3.1.2.2 Class *B*, Stainless Steel. ASTM A167

3.1.2.3 Class *C*, Aluminum. ASTM B209

3.2 Type *II*, Double Cabinet. *See Figure 2.*

3.2.1 Grade *1*, Right hand doors active leaf.

3.2.1.1 Class *A*, Mild Steel. ASTM A36

3.2.1.2 Class *B*, Stainless Steel. ASTM A167

3.2.1.3 Class *C*, Aluminum. ASTM B209

4. Ordering Information

4.1 Fire and Foam cabinets ordered under this specification shall include the following:

4.1.1 ASTM Designation *and year of issue*, Title, Number.

4.1.2 Quantity (number of cabinets).

4.1.3 Type, *Grade and Class*.

4.1.4 Optional Features.

5. Materials and Manufacture

5.1 Materials:

5.1.1 See Parts List.

5.1.2 Class Materials.

5.1.2.1 All materials for Class ***A*** cabinets shall be ASTM A53 and ASTM A36 or ASTM A569 except as specified in parts list.

5.1.2.2 All materials for Class *B* cabinets shall be ASTM A167 and ASTM A312 except as specified in parts list.

5.1.2.3 All materials for for Class C cabinets shall be ASTM B209 and ASTM B221 except as specified in parts list.

5.2 Manufacture:

5.2.1 Welding shall be in accordance with the American Bureau of Shipping Rules *for Building and Classing of Vessels* or American Welding Society *Structural Welding Code AWS D1.1.*

5.2.2 Punchout shall have a 3 in. (76 mm approx) diameter *hole* with three evenly spaced 1/16 in. (1.5 mm (approx) tabs for both sides of cabinet. *See Figure 3*

6. Workmanship, Finish and Appearance

6.1 Fire and foam cabinets shall be free of weld spatter, burrs and sharp corners, rough edges and other defects which might be hazardous to personnel and equipment.

6.2 Surface Requirements.

6.2.1 Class *A* cabinets - Coat with 1.0 Mil dry film thickness. Inorganic zinc silicate, including options.

6.2.2 Class *B* cabinets - Uncoated, optional legs coated with 1.0 MIL dry film thickness inorganic zinc silicate.

6.2.3 Class *C* cabinets - Uncoated.

7. Packaging and Package Marking

7.1 Loose fasteners and hardware shall be packaged and securely attached *inside* each cabinet.

7.2 *Shipping - Each* cabinet shall bear a weathertight tag showing the purchase order number, ASTM Designation, *type* and name of manufacturer.

7.6 The cabinets shall be crated or enclosed in a cable [illegible]

manner acceptable for shipment by commercial carrier. The cabinets shall be crated individually.

NOTE :

WITH THE EXCEPTION OF THE FOOTNOTE, ALL THE REVISIONS HAVE BEEN INDICATED IN ITALICS.

Parts List

Item No.	Description		
1	Frame	–	Plate 12 Gauge.
2	Hinge Pad	–	Flatbar – 1 1/2 in. x 4 1/2 in. x 12 Gauge
3	Hinge	–	Unorilled Butt 4 in. long x 2 in. wide, Commercial Stainless Steel.
4	Brace	–	Angle, 3/4 in. x 3/4 in. x 1/8 in.
5	Door	–	Plate 12 gauge.
6	Staple	–	Round Bar 3/8 in. dimensions per ASTM F783.
7	Hook	–	Round Bar 1/4 in.
8	Latch	–	Flat Bar 3/16 in. x 1 in.
9	Keeper	–	Flat Bar 3/16 in. x 1 in.
10	Rivet	–	Button Monel or Aluminum 1/4 in.
11	Clip	–	Wrench/Nozzle, plate 12 gauge.
12	Snubber	–	Rubber, Commercial.
13	Retainer	–	Plate 12 Gauge.
14	Saddle	–	Pipe 6 NPS Schedule 40. *ASTM A53*
15	Strap	–	Hose Securing, Quick Disconnect, Commercial.
16	Clip	–	Hook Securing, Commercial, *ASTM A167.*
17	*Washer*	–	*Teflon*
			Options
18	Back		Plate 3/16 in.
19	Leg		Angle, 4 in. x 3 in. x 3/8 in. ASTM A36.
20	Brace		Angle, 4 in. x 3 in. x 3/8 in. ASTM A36
21	Bolt		Hex Head 3/8 – 16 UNC – 2A x 1-1/4 in. long Stainless Steel type 316 ASTM F593.
22	Washer		Flat, Stainless Steel Type 316 for 3/8 in. diameter bolt, ANSI B18.22.1 Type B.
23	Nut		Heavy Hex 3/8 – 16 UNC – 2B, Stainless Steel. Type 316 ASTM F594.
24	Washer		Lock, Stainless Steel Type 316 for 3/8 in. diameter bolt, B18.22.1 Regular.
			Type *II* Double Cabinet Only.
25	Back Bar	–	Flat Bar – 1-1/2 in. x 30 in. x 12 Gauge.

Item Nos. 18 to 24 (inclusive) are optional.

1" = 25.4 mm

31. Para 7.1.1.1 - This para should refer to 6.2....	Concur
32. Para 7.1.2.1 - "The" should be omitted.	Concur
33. Para 7.4 - All torque referred to here should be "Nm" not just "N"...	Concur
34. Para 81 - Awkwardly worded.	Concur - See comment 7
35. Body of text makes no reference to Table 2.	Deleted Table 2.

Jean Beeman

36. Para 3.3 - Why just "steel" if this is a guide.	Concur - Deleted "steel" from line 1.
37. Para 4 - To avoid possible confusion consider making classes sequential....	Nonconcur
38. Para 5.4 - Delete "that are to be welded", what about molded, glued, etc?	Concur
39. Para 5.5 - Include inches/inch in first line.	Nonconcur - Indicated in ASME B1.20.19.

Draft Number 9
ASTM Designation xxx
January, 1992

Standard Practice for Pyrotechnic Locker

1. Scope

1.1 This practice provides the design *and* construction criteria for a pyrotechnic locker.

1.2 Values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

Al67 Specification for Plate. Sheet and Strip, Stainless and Heat Resisting Chromium Nickel Steel.

A391 Specification for Alloy Steel Chain.

A501 Specification for Hot-Formed Welded & Seamless Carbon Structural Tubing.

A526 Specification for Commercial Quality Sheet Steel, Zinc Coated, (Galvanized) by the hot. dip Process.

B308 Specification for Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.

D816 Specification for Cement , Rubber.

F783 Specification for Staple, Handgrab, Handle and Stirrup Rung.

2.2 ANSI Standards:

B18.6.1 Specification for Slotted and Recessed Head Screws, Wood. (inch series)=

B18.6.4 Specification for Thread Forming & Thread Cutting, Tapping & Metallic Drive Screws.[3]

2.3 Other Documents:

American Bureau Of Shipping Rules for Building and Classing Steel Vessels.[4]

Code of Federal Regulations, Title 49. Subpart 176.150.[5]

American Welding Society Publications, AWS D1.1-Structural Welding Code.[2]

'This practice is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee F25.03 on Outfitting.

2 Available from American Society for Testing and Material, 1916 Race Street, Philadelphia, PA 19103.

3 Available from American National Standards Institute, 1430 Broadway, New York, N.Y. 10019.

4 Available from American Bureau of Shipping, 45 Eisenhower Drive, P.0. Box 910, Paramus, N. J. 07653.

5 Available from Naval Publications and Form Center, 5801 Tabor Ave., Philadelphia, PA 19120.

6 Available from American Welding Society, 2501 N.W 7th St. Miami, F1. 33125

3. Significance and Use

3.1 The Pyrotechnic Locker shall accommodate any of various similar devices (as for igniting a rocket or producing an explosion), a combustible substance used in fireworks and other distress signals. The Pyrotechnic Locker shall be constructed with material, broken down by components , as listed below and manufactured as shown herein.

3.2 Material:

3.2.1 Locker - 11 gauge (2 mm approx) galvanized steel ASTM A526, lined with 3/4 in, (20 mm approx) 3 ply, Grade A, marine plywood.

3.2.2 Hinges - 2 Butt Hinges Stainless Steel ASTM A167, Type 302.

3.2.3 Legs - Stainless Steel ASTM A167 - 3/ 16” (5 mm approx) or Galvanized steel ASTM A526.

3.2.4 Lashing staple - ASTM F783.

3.2.5 Gasket - Neoprene 1 3/8 in. (35 mm approx) x l/2 in. (10 mm approx) closed cell sponge #WS47

3.2.6 Wood screws - Stainless steel, ANSI B18.6.1.

3.2.7 Angles - Aluminum, ASTM B308.

3.2.8 Lid stay bar - Stainless steel, ASTM A167.

3.2.9 Chain - Length of chain should limit the cover to open no more than 100°, Stainless steel type 302 ASTM A391 . Bowtie 2/0 attached each end with 3/16 in. (5 mm approx) cold shut link with I bolt. on each end.

3.2. 10 Tubing - Steel 1/2 in . (10 mm approx) 0. D . ASTM A501.

3.2.11 Linklock - Catch wing turn, ASTM A167 Type 302 Stainless Steel no less than 2 in. (50 mm approx).

3.2.12 Hasp & Staple - 4 l/2 in. (115 mm approx.) stainless Steel ASTM A167 Type 302 Schnitzer head.

3.2.13 Basket retainer - Stainless Steel ASTM Al67 - Gauge 20 (1 mm approx) .

3.2. 14 Wood - 3/4” (20 mm approx) Plywood, Oak or a similar hard wood.

3. 2. 15 Bolts & Nuts - Galvanized steel.

3.2. 16 Self Tapping Screws - ANSI B18.6.4

3.3 Manufacture:

3.3. 1 Pyrotechnic locker shall be constructed as shown in Figure 1 and Details A, B, C, D & E and shall be portable and *watertight.*

3.3.2 Pyrotechnic locker shall satisfy DOT requirements 49 CFR 176.150 as applicable.

3.3.3 The plywood lining shall be cemented to casing with a waterproof cement, ASTM D816

3.3.4 All welding shall be in accordance with American Bureau of Shipping Rules for Building and Classing Steel Vessels or American Welding Society Publication AWS D1.1.

3.3.5 Welding shall provide *watertight* enclosure.. and shall be tested in accordance with Para. 6.

4. Dimensions and Weight

4.1 Dimensions shall be in accordance with Figure 1 and Details as indicated.

4.2 The estimated weight of the locker should be 419 lb (195kg) .

5. Workmanship, Finish and Appearance

5.1 All surface areas. drilled holes and corners shall be free of burrs. weld spatters, sharp edges and other defects which might. be hazardous to personnel or equipment or both.

5. 2 Damage to galvanized coating shall be repaired with cold galvanizing compound.

5.3 Interior finish - Wood lining, shelf and shelf supports shall have two (2) coats of spar varnish or polyurethane coating., and should be free from any protruding nails, screws or other projections.

5.4 Exterior finish - All metal surf aces shall be thoroughly cleaned and primed with a suitable corrosion inhibitive primer before the application of the final finish. The final finish shall comprise

of two (2) coats of white enamel paint.. in accordance with the owner's purchase specification.

5.5 On completion of the exterior finish. a caution notice should be painted or stencilled in 3 in.(75 mm approx) high red letters indicating the note that. has been shown in Figure 1, on all four sides and top of the locker.

6. Test Method:

6. 1 In order to ensure the locker is watertight, the locker when completed should be subjected to a hose test. Each locker shall withstand, without. visible leakage, a hose test. made with a stream of water normal to the locker. Nozzle size 1 1/2" (35 mm approx), pressure 50 psi (345 kPa) , distance of nozzle 10 feet (3 m approx) . duration of test. 1 minute.

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall..apply only when specified by the purchaser in the contract or order.

S1 Referenced Documents

S1.1 Federal Standard:

QQ-A-250/8F Aluminum Alloy 5052. Plate and Sheet. [5]

2 Material

S2. 1 Locker - l/8 in. (3 mm approx) Aluminum Alloy 5052-H32 shall be used, in accordance with QQ-A-250/8F, in lieu of the 10 Gauge (3 mm) Galvanized Steel.

S2.2 Lid Stay - 1/8 in. (3 mm approx) Aluminum Alloy 5052-H32, in accordance with QQ-A-250/8F, in lieu of Stainless Steel.

S2.3 Interior - The shelves and supports shall be of Aluminum AlIoy 5052-32. in lieu of the plywood shelves *and wooden supports.*

S3 Weight - Estimated weight of the Locker should be 140 lb (65 kg).

S4 Exterior Finish - When aluminum is used, the corrosion inhibitive primer as noted in Para 5.3 is not required.

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE, THE LATEST REVISIONS HAVE BEEN INDICATED IN ITALICS.

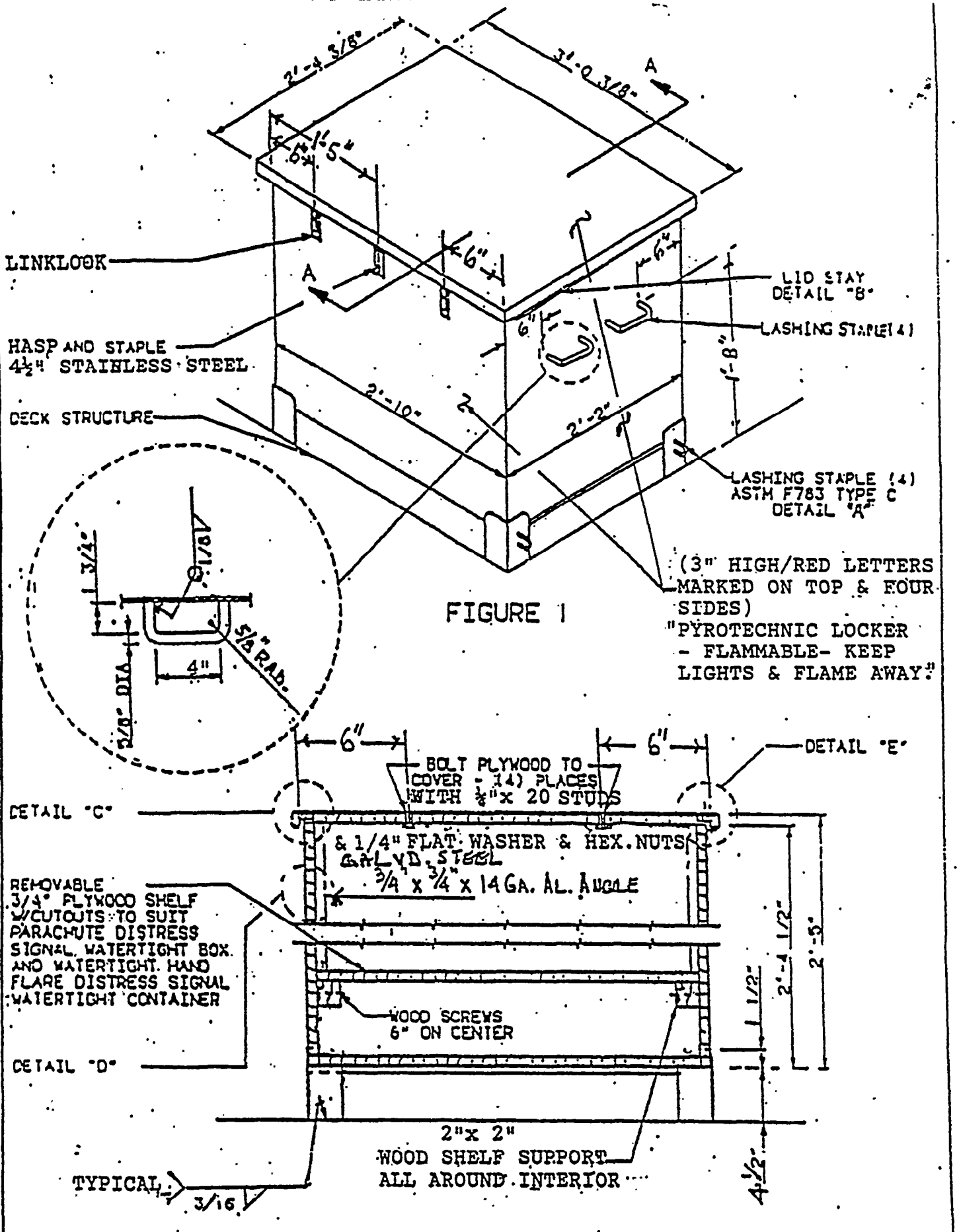
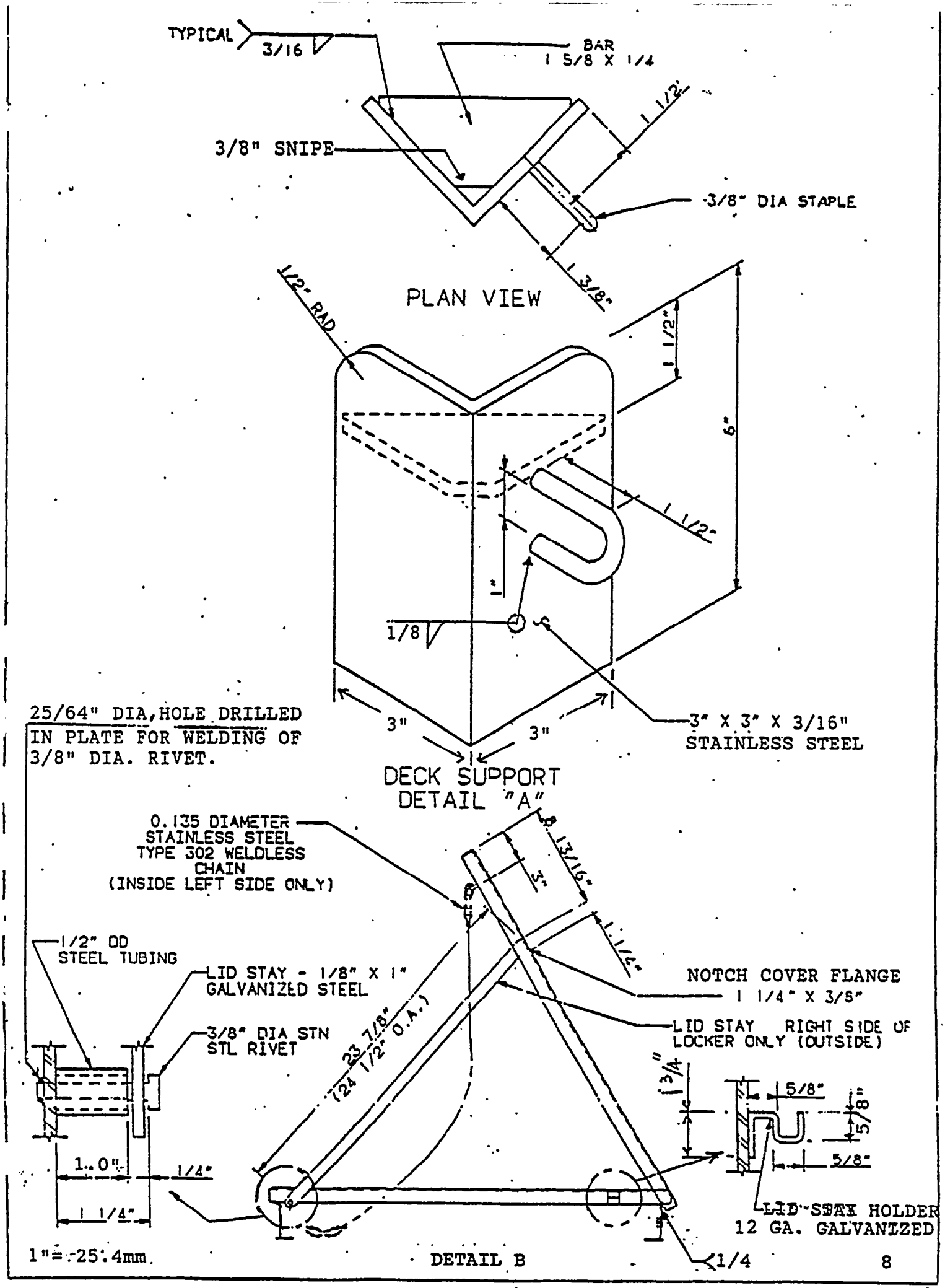


FIGURE 1

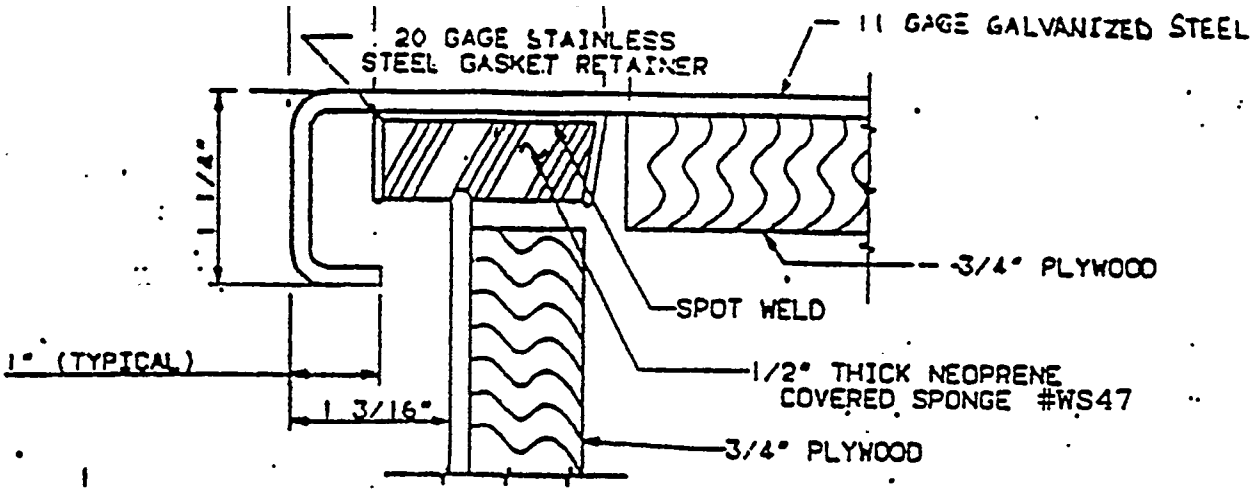
1" = 25.4 mm

SECTION "A-A"

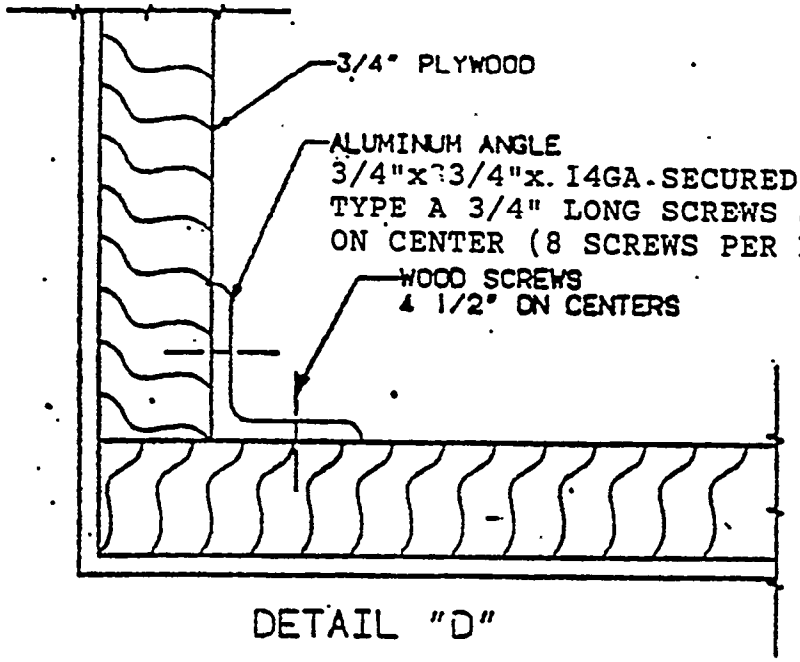


1" = 25.4mm.

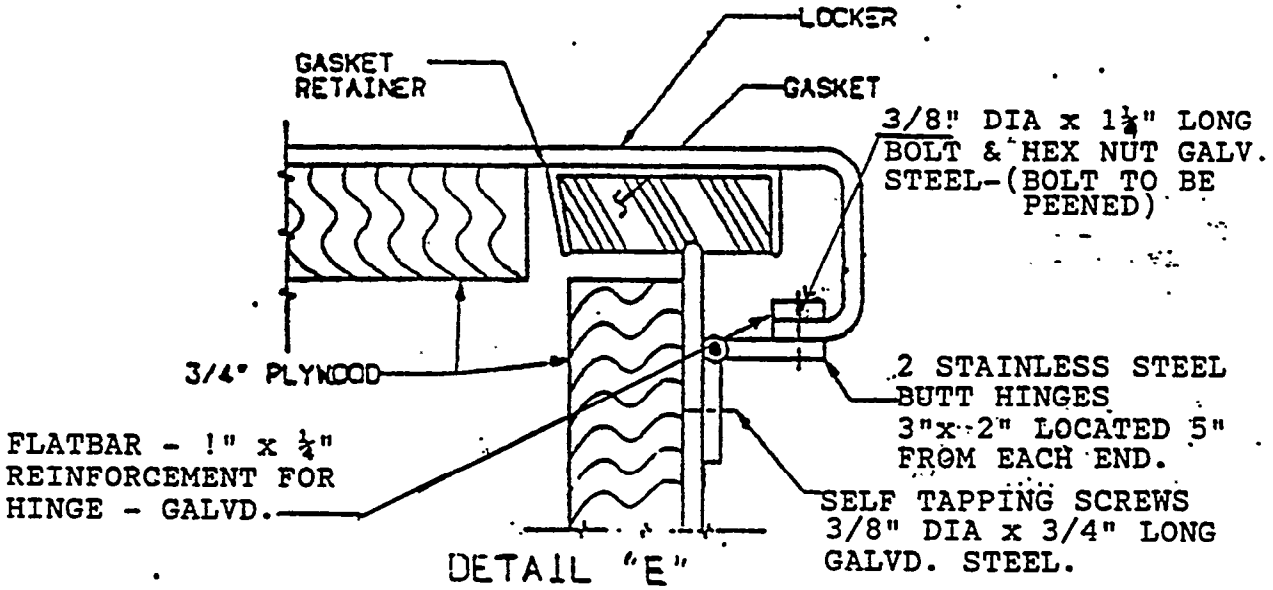
DETAIL B



DETAIL "C"



DETAIL "D"



DETAIL "E"

1" = 25.4 mm

AUDIT TRAIL
PYROTECHNIC LOCKER

October 1989

V. Bethge: (Walz & Krenzer)

1. Para 3.1.5 - gasket - believe sponge is not rated by durometer. .	Concur - corrected as shown In the draft.
2. Para 3.1.10 - steel should be 1/2" 0.D	Concur - corrected.
3. Para 3.2.1 - Indicate weather-tight in lieu of watertight, as shown in para 3.2.5.	Agreed- corrected.

N. Lemley: (U.S.C.G)

4. Para 2.3 - Delete "Commercial Shipbuilding only" from title.	Disagree - This was added in the last ballot.
5. Para 3.2.2 - Delete "Code of Federal Regulations, Title 46, Subpart 160.038" in anticipation of its deletlon from the CFR.	Agree - has been removed.
6. Para 5.4 - Add "and should be free or any protruding nails, **screws,** or other projections." to incorporate wording being deleted from the CFR.	Concur - has been incorporated.

S. Lindham: (NCBC Port Hueneme)

7. Para 2 - Add "A501 Specification for hot formed, welded & seamless structural tubing"	Concur
8. Para 2.2 - Add "Institute (ANSI)" after "Standards"	Disagree - have revised para 2.2 to agree with the Blue book
9. In para 2.3 - Include "(ABS)" after "Shipping rules"	Disagree - does meet ASTM format
10. In para 2.3 - Add "American Welding Society Publications AWS D1.1-Structural Welding Code"	Agree - Indicated as noted
11. In para 2.3 - Add "(CFR)" after "Regulations"	Disagree - See comment (9) above
12. Para 3.2.4 - Add "ASTM A501"	Concur

13. Para 3.2.4 - Add (AWS) & (ABS) in sentence	Disagree - See comment (9) above
F. Darvalics: (NASSCO)	Disagree *** At the F25.03 meeting at ASTM c 10/11/89 the comments made by Fran1 Darvalics on Nos. 14, 15 & 18 were considered as non-persuasive by the subcommittee with a vote of 7 to 0.
14. This standard should be a Guide rather than a Practice because it sole source item designed and built by a single vendor.....	*** Disagree - This is a practice because as a practice it defines a procedure for performing a function that does not produce a test resu.
15.Para 3.1.3 - legs should be plain carbon steel to be *comp-atable with base material (deck)...	*** Disagree - Revised material to include option of Stainless Steel
16.Para 3.1.10 - tubing - to what specification is manufa-ctured from, wall thickness and inside dia. and is it to be water tube or structural tubing.	ASTM *A501,*
17. Para 3.2 - toggle pin is not referenced in para 3 or called out in the dwg. Material should be stainless steel.	Not used - No Action
18. Para 5.3 - Calls for white enamel paint, should be left primed..	*** Disagree - because one must stencil over a finish coat.
19. Page 5 - Linklock & hasp should be detailed or sizes & locations g l v e n	Agree - located in Fig.1 and described in para 3.1.11
20. Page 5 - Detail calls for a bolt. This should either be a rivet or weld stud.	Agree - Studs are used.
21. Page 6 - Detail shows a rivet going into a 1/21in. dia. tube. How is the rivet held in place?	Concur - has now been clarified o the Detail with a note.
22. Page 6 - Detail of Lid stay holder, material is ? Also to be called out in para 3.	Material already shown as 12 Ga. galvd *Agree* - has been shown in para 3.
23. Page 6 - Leg stiffener conflicting views, one shows a snipe and one does not ?	Agree - poor dwg, have cleaned that area.

24. Page 7 - location of gasket retainer not called out, material type & size not shown In para 3.	Agree - Location Indicated In detail & material shown In para 3.1.13
25. Page 7 - Hinges, size & quantity are not called, location should be shown.	Concur - has now been indicated In para 3.1.2
26. Page 7 - The size of the chain and detail of how It Is affixed to the box should be Indicated.	Concur - see para 3.1.9

J.J.Nachtshelm: (Consultant)

27. Change "Practice" to Specification In title, paras 1.1 and 1.2.	Disagree - this is a practice
28. Para 3.2.1 - Insert "constructed as shown In Figure 1 and details A, B,C,D,&E and shall be" between "be" and "portable"	Agree - has been Inserted.

ASTM F25.03 Meeting at Orlando, F1. on December 6, 1989. January, 1990

1. Remove: "for COMMERCIAL SHIPBUILDING ONLY'	Concur
2. Para 1.1 - Delete "for commercial ships" from the 2nd line.	Concur
3. Para 5.2 - Delete "legs" and substitute "coating".	Concur
4. Change “ASTM A570" to read "ASTM A526" since the latter spec. is galvanized material	Complied with on pages 1 and

Linda Bashoor Draft 6

1. Para 2.1 - Delete "B36 Spec. for plate brass sheet".... or add to reqmt of body of specs.	Concur - Deleted
2. Add "D816 Test Methods for Rubber Cements" In Para 2.1 since It Is called out In Para 3.1.4.	Already Indicated
3. Para 2.1 - Add "ASTM 783 Spec. for Staple...“	Already Indicated

4. Para 3.1.3 - Change ref. from "ASTM 570" to ASTM A570" or change to "ASTM A526" as suggested at Dec.89 meeting.	Concur - changed to ASTM A526.
5. Para 2.1 - For consistency in the Titles initial cap, nouns, pronouns, verbs, adjectives & adverbs & all other words of 5 or more letters.	Concur
6. Para 1.2 - Since there is no super-session data, recommend deleting it...	Disagree - There may be som Spec. on this subject, some where in other systems.
7. Title 6. Para 1 - It seems more appro-riate as a Spec. but Inspections & test reqmts. would be needed. If It remains a "Practice" how about adding some words In the scope section to better describe....	Disagree - The information should be provided here as the purpose & application o the classification and any comments as to the limitati of the classificatlon shoul be made in the scope - Para 1.1 complies with Informati & Para 1.2 complles with li tatlons.
8. Para 3.1.9 - Change "should" to "shall".	Disagree - "shall" is used Regulations, Specs., etc. W Is mandatory - "should" is used to soften direct state ment such as In Guides, Pra tices, etc.
9. Para 3.2.4 - Initial cap "rules for buildlng & classing...."	Concur
10. Wherever inch.pound units are called out In Specs. Include metric values In parentheses afterward.	None have been called out t date.
Rick Butler (Deutsch)	
11. Para 2.1 - ASTM B36 is not refer-enced in main body.	Concur - See Comment (l) at

12. General Comment - Is this Doc. Intended to be a Practice or a Specification Sec.C.13 In Blue Book doesn't provide adequate clarification. Blue Book specifies that "significance & use Is mandatory & must be included In the format for "Practice" along with key words.	This Is a Practice which is a definite procedure for perf-orming one or more specific operations or functions that does not produce a test resul Whereas a Specification Is a precise statement of a set 0: requirements to be satisfied by a materlal, product, syste or service that Indicates the procedures for determining whether each of the reqmts. have been satisfied.
V. Bethse (W&W,Inc.)	
13. It would appear that there is no requirement for ASTM Al67 heat resisting. Cadmium nickel steel....	Disagree - ASTM A167 has & I: currently being used.
14. On Page 1, STD B308, correct to 6061-T6.	Agree
15. Page 6, indicate 3"x 3“x l/4" stainless steel angle In Detail "A".	Changed 7 *GA.* to 3/16".
16. Page 7, Detail "D" indicate 3/4"x *3/4”* x 1/8" aluminum angle.	Disagree - l/8" IS too heavy & thick, maintained 14
V Brunett	
17. Sec.5.4 - Change "should" to "shall".	Disagree - See Comment (8)
18. In label delete "Inflammable" and substitute "flammable"	Agree
19. Fig.1 - Label: Based on response to comment 18, I assume this IS a stencil. Requirement should be clarified by a Para in the text.	Concur - See new Para 5.5
Mary Rosenberg	
20. Fig.1 - Change "Inflammable" to "flammable".	Concur
21. Para 3.2.1 - "...and shall be portable and weathertight" - "weather-tight" should be defined.	Not a requirement

22. Page 5 - Calls out a " 2"x 2" wood shelf". Should be a wood-shelf support.	Concur
23. Page 3 - Para 3.1 - Insert a new Para 3.1.14 to specify the material of the 2"x 2" wood-shelf support in Sect.A-A... Suggest oak.	Concur - See Para 3.1.14.
Michael Marziano	4/16/90
24. Para 1.1 - Rewrite sentence to remove "Installation" since no guidance is provided concerning the proper location of the locker or compatibility with deck material.	Concur - Removed" installatio
Gary North	
25. Recommend a lighter gauge steel be used. Presently the locker seems heavier than necessary, will change vote If an adequate explanation can be provided.	Reduced thickness of steel fr 10 Ga (3 mm approx) to 11 Ga (2 mm approx); In addition loc er can be made of Aluminum in icated In supplementary secti further reducing the weight.
Norm Lemley (U.S.C.G.)	
26. Para 5.3 - Suggest wording "Exterior finish - all metal surfaces should be thoroughly cleaned and primed with a suitable corrosion inhibitive primer before application of the final finish. The final finish shall consist of two (2) coats of white enamel paint".	Concur - Revised
Chas Sinche	
27. Para 1.2 - The Spec. shouldn't state what it doesn't do.	Removed
28. Para 3.1.9 - Rewrite sentence to state that the chain shall limit the cover to opening no more than "x". Shouldn't "x" be greater than 90°?	Concur - Revised to open no more than 100°.
29. Para 5.4 - Change "should" to "shall" In last line.	Disagree - See Comment (8)

Edwin Morganstern

30. Para 5 - Workmanship, finish and appearance Para 5.3 exterior finish - white enamel.	Concur - See Comment (26)

Mary Rosenberg (N)

	DRAFT NO.7
1. Para 3.2.1 & 3.2.5 - Nowhere In the standard is "weathertight" defined. In addition, at least one of each manufacturers lot of lockers be tested.....	Concur - Para 3.2.5 revised and added new Para 6. Test Methods.

Sam Morrison (N)

2. The Standard IS improperly titled "Practice" when according to the definitions..... It should be a "Specification".	This standard has been furthe revised to meet the requirements of a "Practice".

Jim Wilkins (N)

3. We connot allow standards from ASTM to be an excuse for the Industry to go sole source. Unless the vendor whose design Is being used has relinquished...	Converted this Into a generic standard.

F. Darvalics *(NASSCO)*

	DRAFT NO.7
1. Para 4.2 - Indicate "empty" between "estimated" & "weight".	Concur
2. Para 5.4 - Finish the last line... to read "of two (2) coats of white paint In accordance with the ships specification".	Revised last sentence as indicated except substitute "owner's purchase specification in lieu of "ships specs".
3. Para 5.5 - Change "should“ to "shall" In 1st line.	Concur
4. Para S3 - Comment (l) above shall apply to this sentence.	Concur
5. Include a note re aluminum when used, the corrosion ihibitive primer Is not required.	Concur - See S4
6. Fig.1 - Relocate "4' high red letters" as shown.	Relocated

7. Indicate type, size & material of flat washers & nuts in Section "A-A".	Material will be Galvd. Steel; size & type at-e indicated.
8. Det. "E" - Indicate "type" & "size" of Self tapping screws.	Self tapping screws will be 3/8 dia X 3/4 long Galvd stee
9. Det, "E" - C indicates some kind of bolting - What. "type" and "size"?	Bolting will be 3/8 dia X 11, long Galvd Steel Bolts & Nuts End of bolts to be peened.
10. Det.D - If we do it for wood screws., we should do it for all.	It's only a Practice not a Spec.

Nicholas Jergovich (MARAD) N — DRAFT NO.8

1. Subscript/footnote 2 sentence begins with "this practice.... . . " conflicts with title which begins with "Standard Specification. . . . . "	Do not concur - Title is "Standard Practice. . . . "
2. Para 3.2.16 - Please provide material teqts. for screws.	Concur
3.7 Para 3.3.2 - This para requires locker satisfy DOT reqts. per 49 cfr 176.150, thus making it. watertight.	Concur - Revised to watertig
4. This document does not. contain a paragraph entitled "ordering informatiion"	Do not concur - Ordering inf rmation is not required in Standard Practices.
9. Fig.1 - Shows red lettering on the front. face of locker which conflicts with 44 CFR 176.150 (a) (7) which requires lettering on the top & four sides - recommend to revise Fig.1	Concur

Howard Wildman (NAVSEA) (N)

6. Replace wooden shelves/inserts with metal parts.	Concur - See S2.3

John Nachtsheim (N)

7. Para 2.1 - ASTM B36 is listed but not invoked in text.	Concur - Removed from Para 2
8. Para 3.2.16 - Material is 'not specified for self tapping screws.	Concur - B18.6.4 now indicat
9. para 3.2.9 - "ACCO" is cited, meaning?	Deleted "ACCO" - Means: "American Chain Co".

Draft Number 8
ASTM Designation XXX
May, 1992

Standard Specification for

PORTABLE DAVITS[1]

1. Scope

1.1 This specification provides the design, construction and installation for portable davits.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A36 Specification for Steel, Structural.

A53 Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.

B209 Specification for Aluminum a Aluminum Alloy Sheer and Plate.

EC241 Specification for Aluminum and Aluminum Alloy Seamless Pipe and Seamless Extruded Tube.

F783 Specification for Staple, Handgrab, Handle & Stirrup Rung.

2.2 Federal Specifications:

QQ-A-225 Aluminum Alloy 6061, Bar, Rod, Wire & Special Shapes, Rolled, Drawn or Cold Finished.[3]

QQ-B-728 Bronze, Manganese, Rod Shapes, Forgings and Flat. Products.[3]

2.3 Other Documents :

ANSI B18.6.3 Screw, Machine, & Screw Nuts, Machine, Slotted & Recessed Head[4]

American Bureau of Shipping Rules for Building and Classing Steel Vessels[3]

American Welding Society Publication, AWS D1.1 Structural Welding Code[6]

Specification for Aluminum Structures[7]

1 This Specification is under the .jurisdiction of ASTM Committee F. 25 on Shipbuilding and is the direct responsibility of Subcommittee F25.03 on 0utfitting.
2 Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.
3 Available from Naval Publications and Forms Center? 580$_1$ Tabor Ave., Philadelphia, PA 19120.
4 l Available from American National Standards Institute, 1430 Broadway , New York, N.Y. 10015.
5 Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, Paramus, N. J. 077&53.
6 Available from American Welding Society, 2501 N.W 7th Street. Miami, Florida. 33125
7 Available from The Aluminum Association, 900 19th St. N.W., Washington D. C. 20006.

3. Classification

3.1 Type I: Light-duty portable davit: safe working load 400 pounds. (180 Kilograms).

3.2 Type II: Heavy-duty portable davit; safe working load 1000 pounds , (450 Kilograms) .

4. Ordering Information

4.1 Orders for the devits shal1 include the following information:

4.1.1 ASTM Designation, Title, Number- and Date of this Specification.

4.1.2 Quantity

4.1.3 Type (See Sec.3)

4. 1.4 Winch mounting pad, if required. (See Sec.5)

4.2 Inspection of davits shall be agreed upon between the purchaser and the supplier.

5. Materials and Manufacture

5.1 Materials:

5.1.1 Type I:

5.1. 1. 1 Pipe and round bar shall be aluminum 6061-T6 to be *welded with 5183 or 55.56 fillets of Table 7.1.3.2 of the "Specifications for Aluminum Structures"* and in accordance with ASTM B241. (See Figure 1)

5.1.1.2 Davit. clip shall be of a 326 or *higher* series stainless steel.

5.1.1.3 Socket shall *be* of *a 316 or higher* series stainless steel

5.1.1.4 Lifting plates shall be aluminum in accordance with ASTM B2C

5.1.1.5 Winch mounting pad if specified (see Sec.4), shall be 3/8″ (10 *mm)* aluminum plate ASTM B209 and welded to davit .

5.1.1.6 Staple or pad eyes shall be in accordance with QQ-A-225.

5.1.1.7 The two par%. falls, with the hauling part at 30° to the vertical, shall be furnished by the purchaser.

5.1 .2 Type II:

5.1.2.1 Davit arm and base shall be steel in accordance with ASTM Af based upon the ultimate strength of 60 ksi (410 MPa) . (See Figure 2)

5. 1 .2.2 Lifting plates shall be steel in accordance with ASTM A36.

5.1 .2.3 Bushing shall be bronze in accordance with QQ-B-728.

5.1.2.4 Staples or pad eyes shall be in accordance with ASTM F783

5.1.2.5 Threads for cap screws shall be in accordance with ANSI B18.6.3.

5.1.2.6 Winch mounting pad if specified (see 4, ordering informat : shall be 3/8″ (10 *mm)* steel plate ASTM A36 and welded to davit. (see Figure 3).

5. 1 .2.7 Sleeve shall be in accordance with ASTM A53.

5.1.2.8 A six-part fiber rope with the hauling-part at. 30° to the vertical; shall be furnished by the purchaser.

5.1.2.9 ‘When a winch is being used, a two-part wire fall shall be furnished by the purchaser.

5.1.2. 10 Grease Fittings shall be A1emite 1961.

5.2 Manufacture:

5.2. 1 Davit top clip shall be welded to the hatch coaming yoke which is attached to the hatch coaming opposite the hatch hinge. See detail "C" of Figure 1. This shall be applicable to Type I only.

5.2.2 Davits shall be machined prior to bending.

5.2.3 Davits shall be installed normal to the horizontal baseline of the ship.

5.2.4. Welding shall be in accordance (with American Bureau of Shipping Rules for Building and Classing Steel Vessels or American Welding Society AWS D 1.1 Structural Welding Code. and the Aluminum *Association Manual “Specifications for Aluminum Structures” (Publication 30).*

6. Dimensions and Size:

6.1 The shape and size of the portable davits shall be in accordance with the figures and details of this specification.

6.2 The sizes, materials and locations of the fittings shall be as specified in Paras 5.1 & 5.2 including the figures of this specification.

7. Workmanship, Finish and Appearance

7. 1 Davits shall be free of all sharp edges , currs, Weld spatters and other similar defects;.

7.2 Pretreatment and priming of davits and fittings shall be as follows:

7.2.1 Steel davits, sockets and lifting plates shall be abrasive blasted to "near white" metal and coated with inorganic zinc si1icate to a thickness between 1.5 and 3.0 Mils.

7.2.2 Aluminum Davits and fittings shall be treated with wash prime coating followed with lead free, chromate free, anti-corrosion prime coating.

7.3 After the installation of the Davit, the paint in the areas that required to be welded, such as the deck, socket, coaming, etc., shall be repaired by the purchaser.

8. Test Methods

8.1. Static test - Each davit at-m shall-&e subjected to a Static T(5 Load equal to 200% of the safe working load. Load shall be held in and position for ten (10) minutes? this shall also apply to the cleats and the optional winch mounting pad. There shall be no deformation of day arm or components. This static test shall be performed by the manufacturer.

8.2 Dynamic Test - After installation, each davit. arm shall be subjected to a 150% of safe working load. Load shall be held in one position for ten (10) minutes, this shall also apply to the cleats an the optional winch mounting pad. In addition, the davit arm shall require manually raising the test load and swinging it through a full arc of travel. There shall be no permanent-deformation of davit arm o components. The purchaser will perform the dynamic test, but the manufacturer will still be responsible for the Davit test defects if any.

9. Certification

9.1 The purchaser shall be furnished certification that the davits and assembly have been tested and all the specifications have been adhered to. In addition a report of the test results shall be furnis... for all the davits.

10. Product Marking

10.1 Capacity marking and date of test shall be a minimum of 1/2 in. (12 mm) high stamped characters and painted with a contrasting color.

10.1.1 Type I: Davit shall be marked "Safe working load = 400 lbs (180 Kilograms)."

10.1.2 Type II: Davit shall be marked "Safe Working Load = 1000 lbs (450 Kilograms)."

11. Packaging and Package Marking

11.1 Davits shall be crated or attached to a pallet. in a manner acceptable for shipment by a common carrier. The davit *complete* with *loose fittings such as socket, clip & optional winch mounting pac* shall be shipped as one unit..

11.2 Davits shall bear a weather tight tag showing the put-chase order number, ASTM designation number & year of issue, type, capacity and name of manufacturer, using letters at. least. l/2 in. (l2 mm) high.

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE. ALL THE REVISIONS HAVE BEEN INDICATED IN ITALICS.

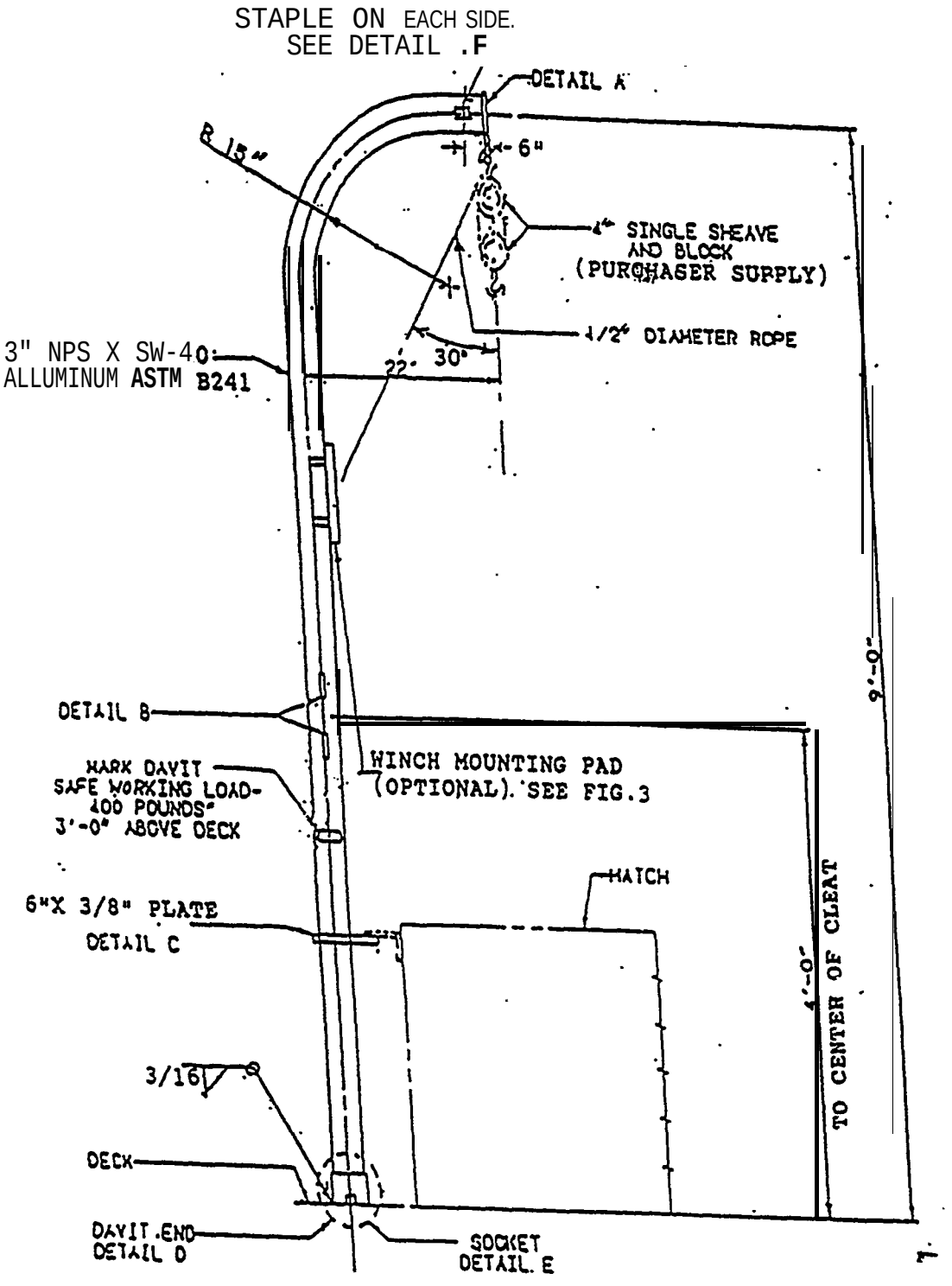
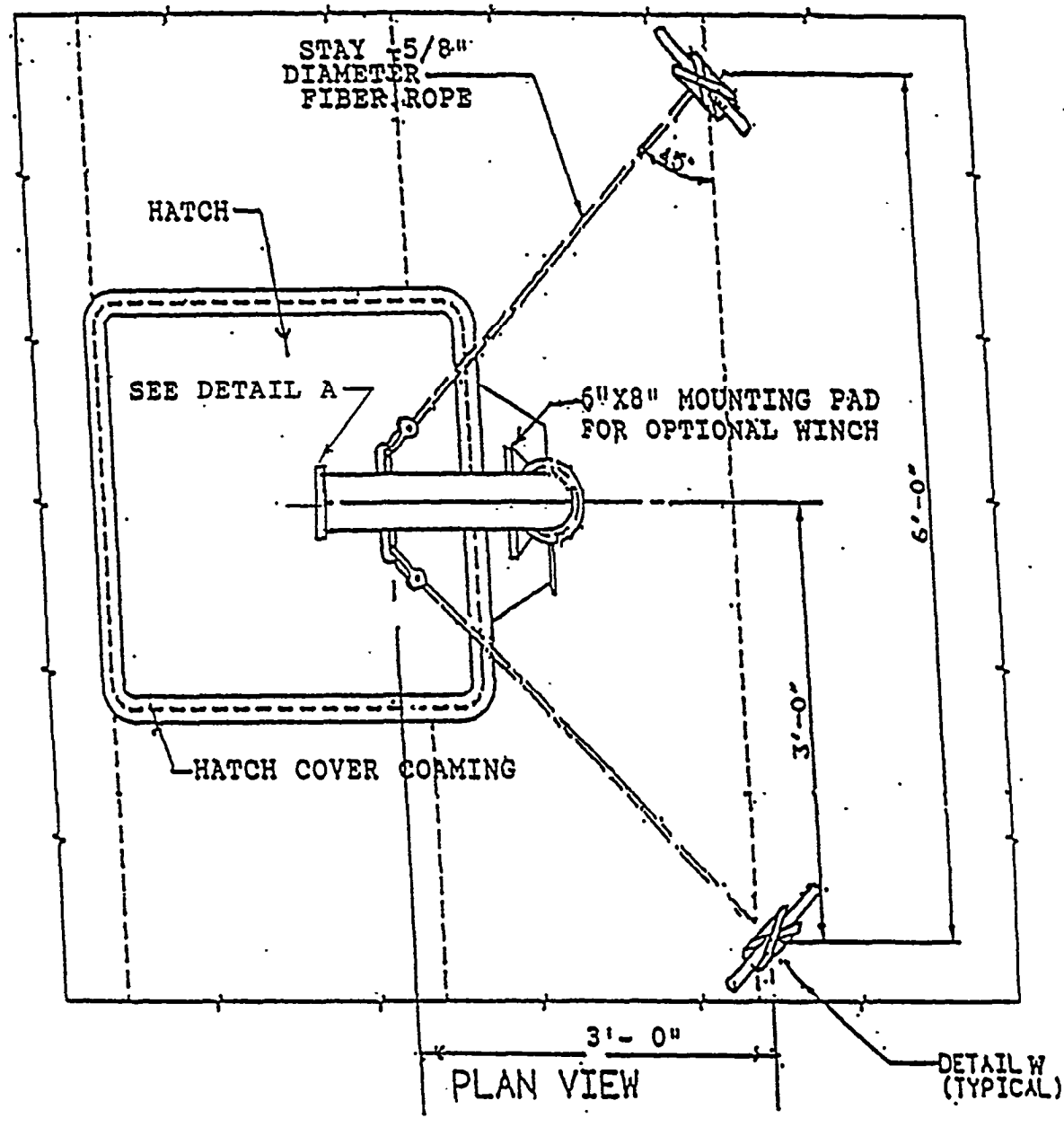


FIGURE 1
LIGHT DUTY DAVIT

TYPE I

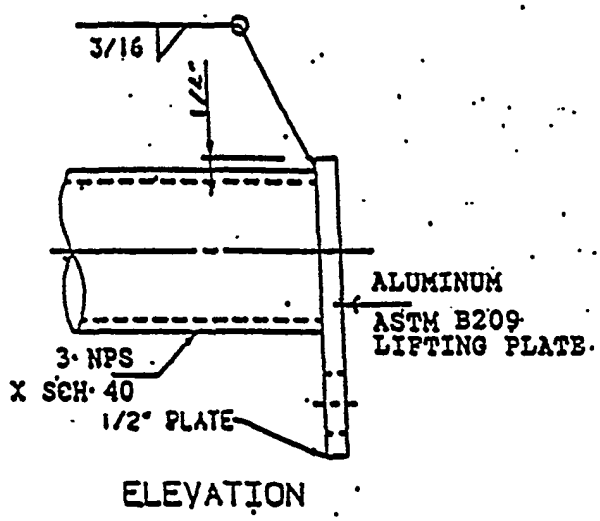
1" = 25.4 mm



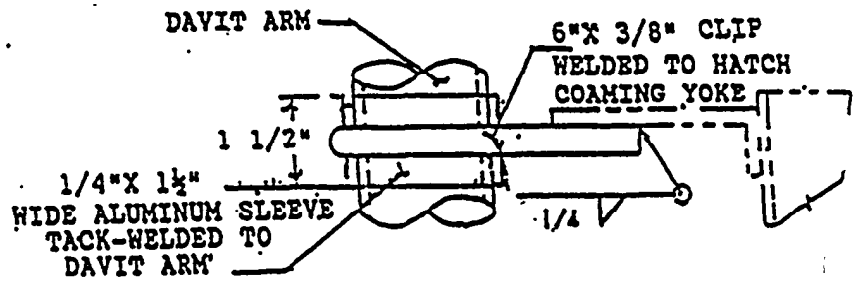
FOR LIGHT DUTY DAVIT

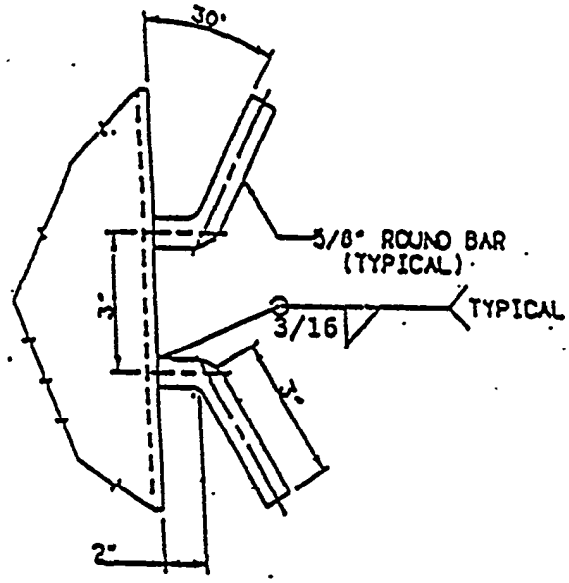
TYPE I

1" = 25.4 mm

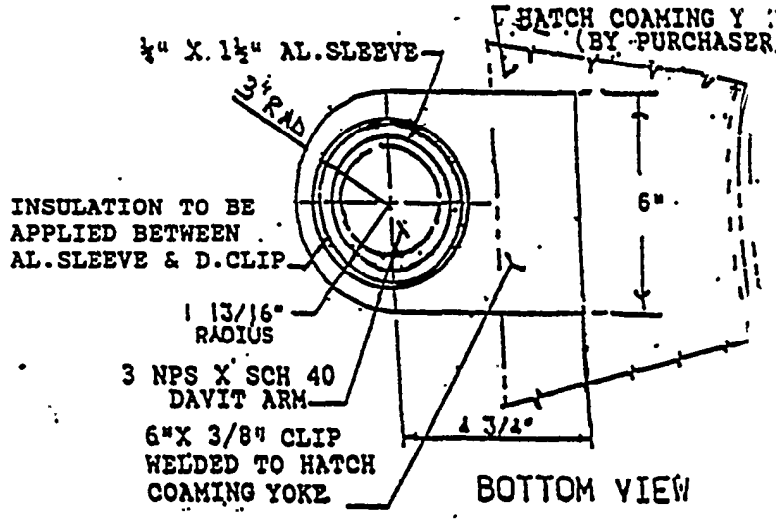


LIFTING PLATE
DETAIL A



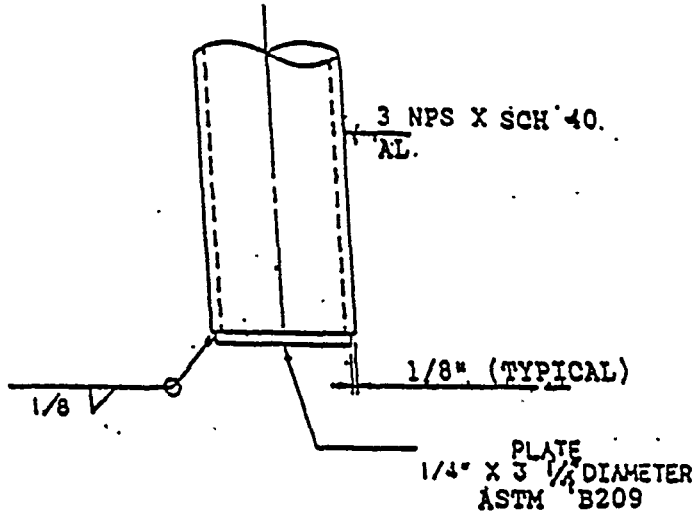


DAVIT CLEAT
DETAIL B

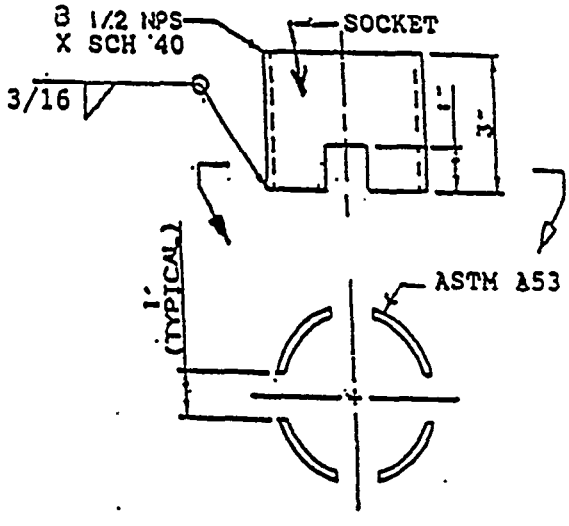


DAVIT CLIP
DETAIL C

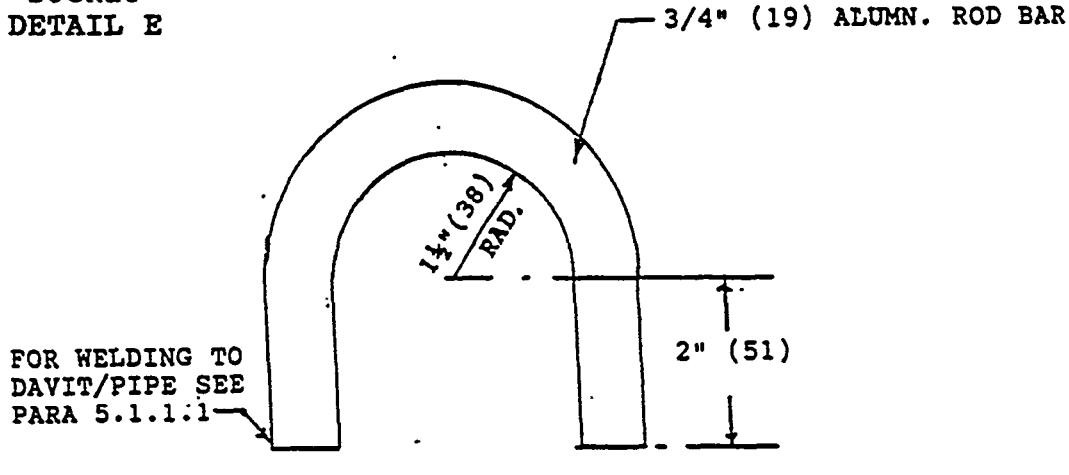
1" = 25.4 mm



DAVIT END
DETAIL D



SOCKET
DETAIL E



STAPLE/PAD EYE
DETAIL F

1" = 25.4 mm

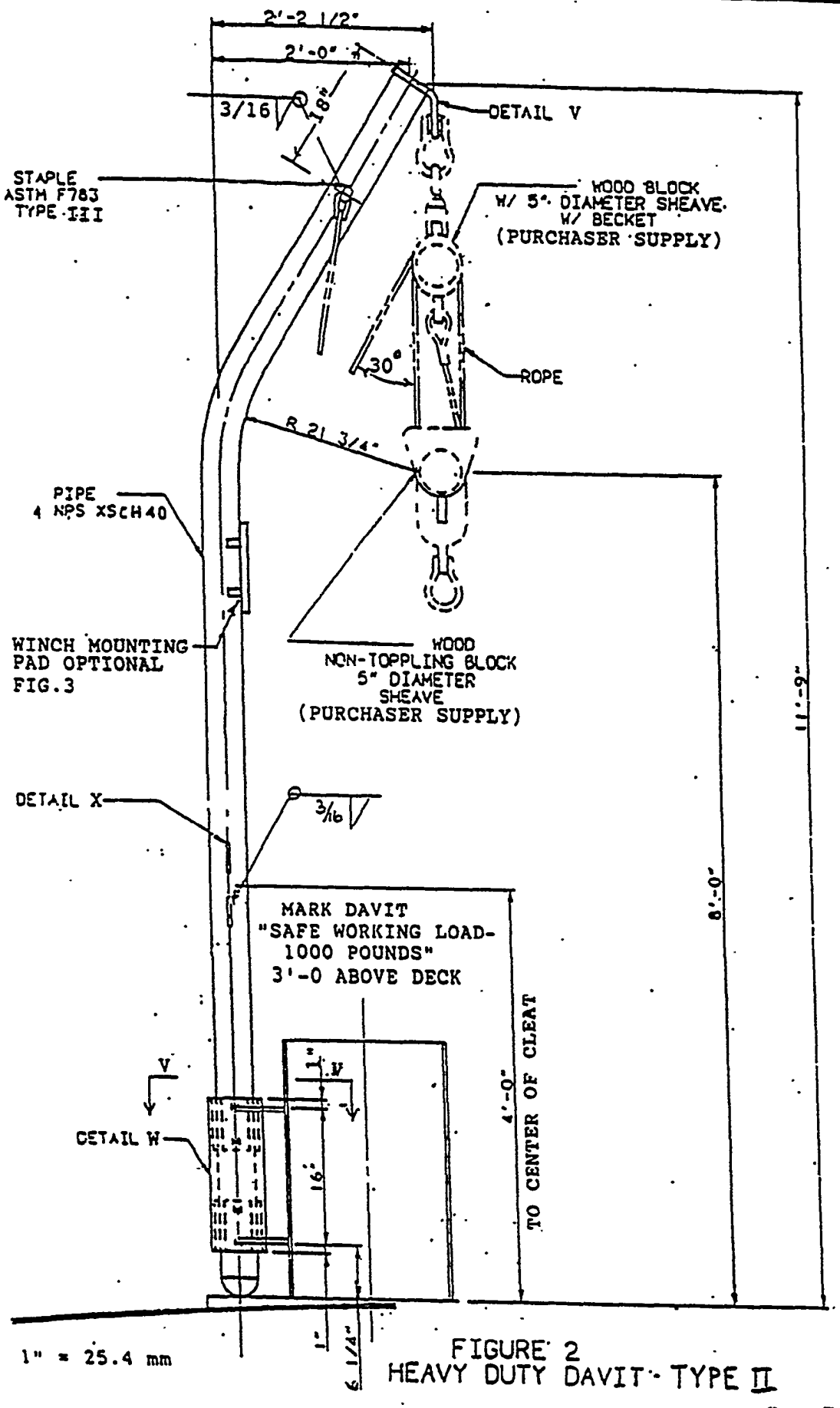
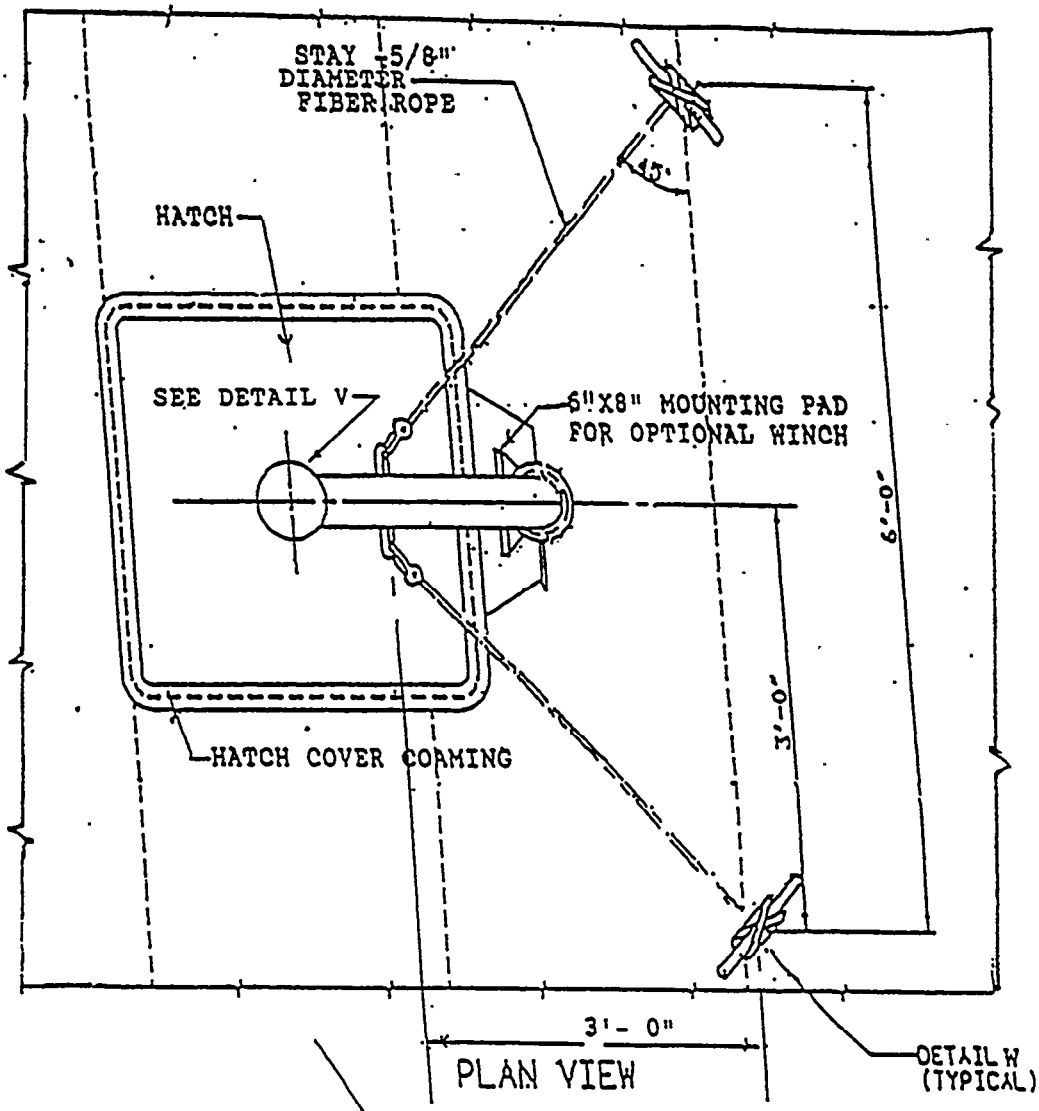
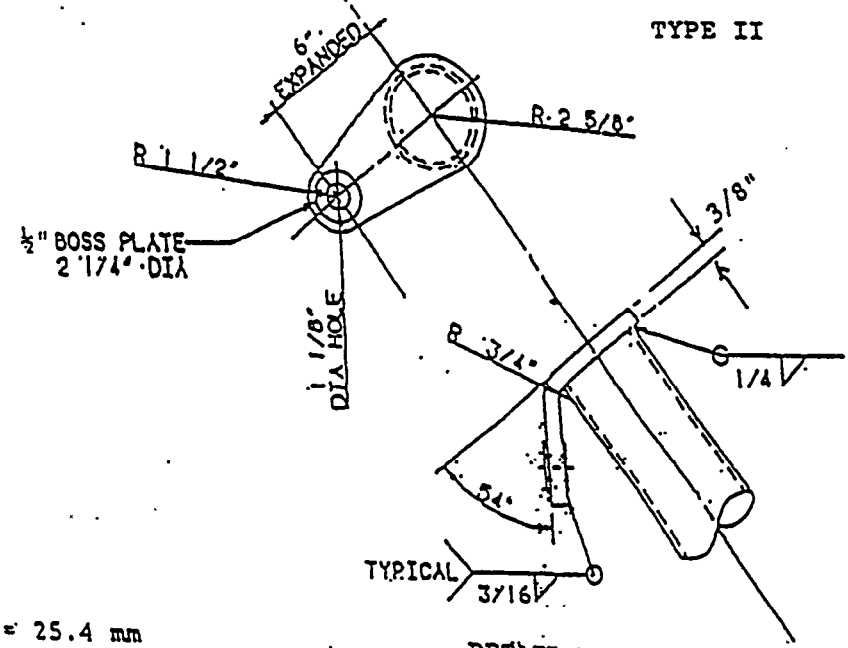


FIGURE 2
HEAVY DUTY DAVIT - TYPE II



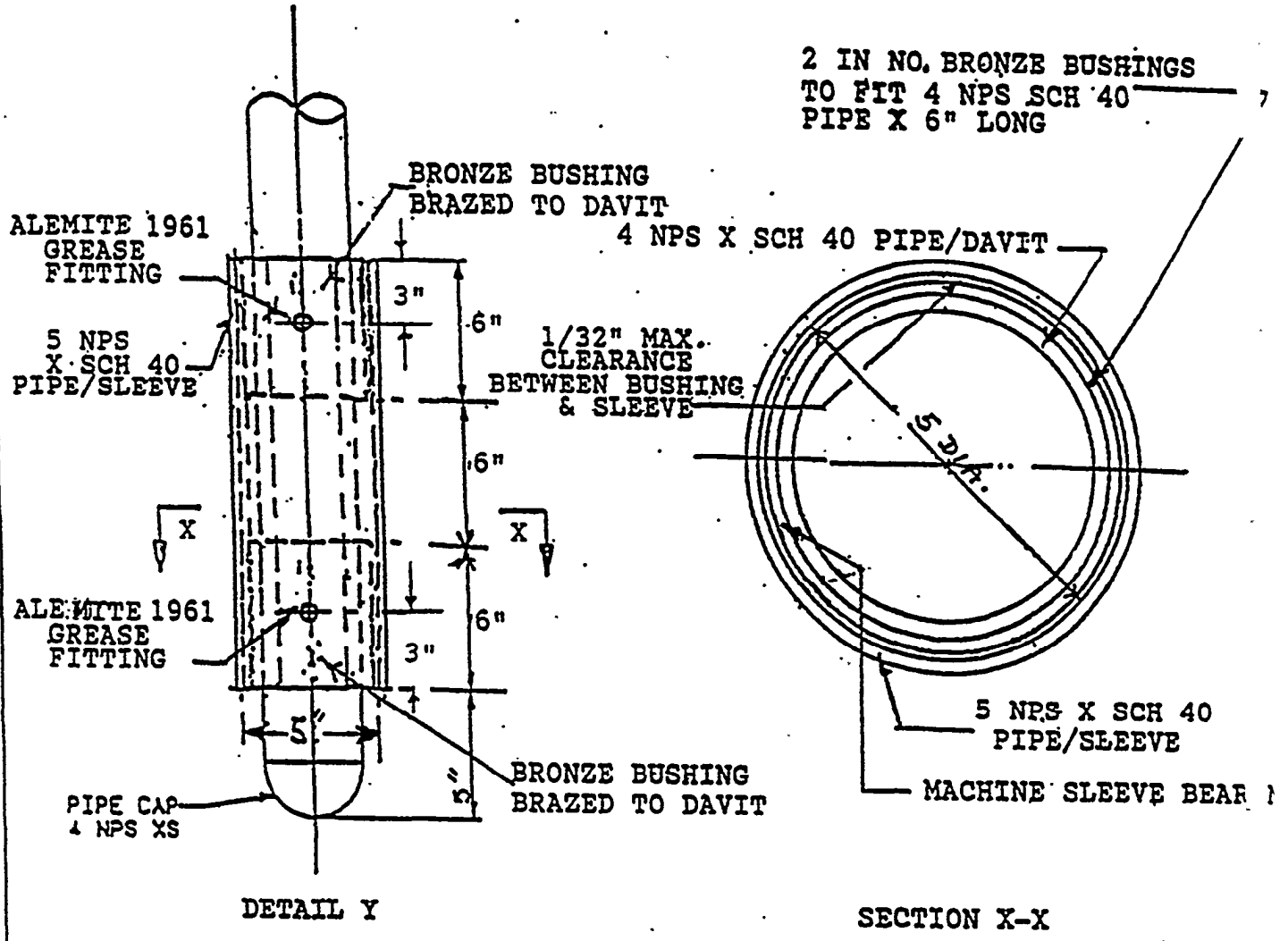
HEAVY DUTY DAVIT

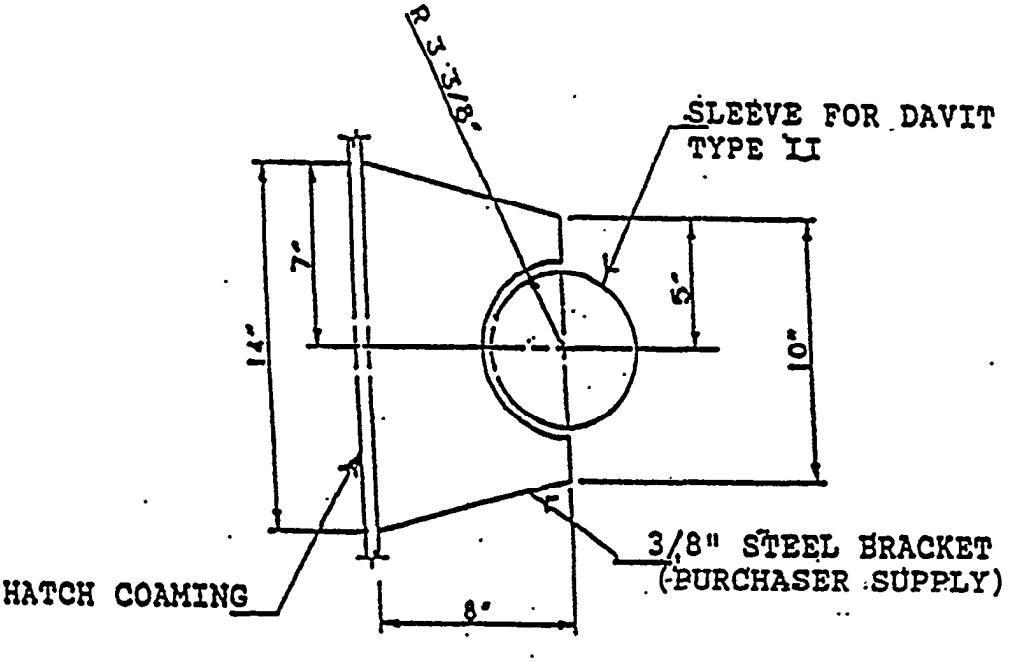
TYPE II



1" = 25.4 mm

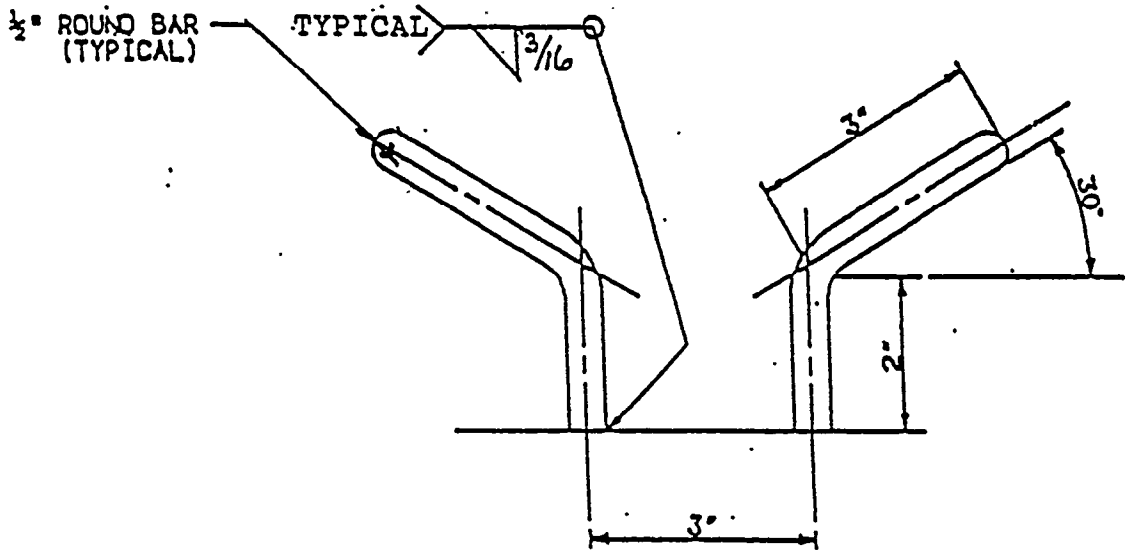
DETAIL V



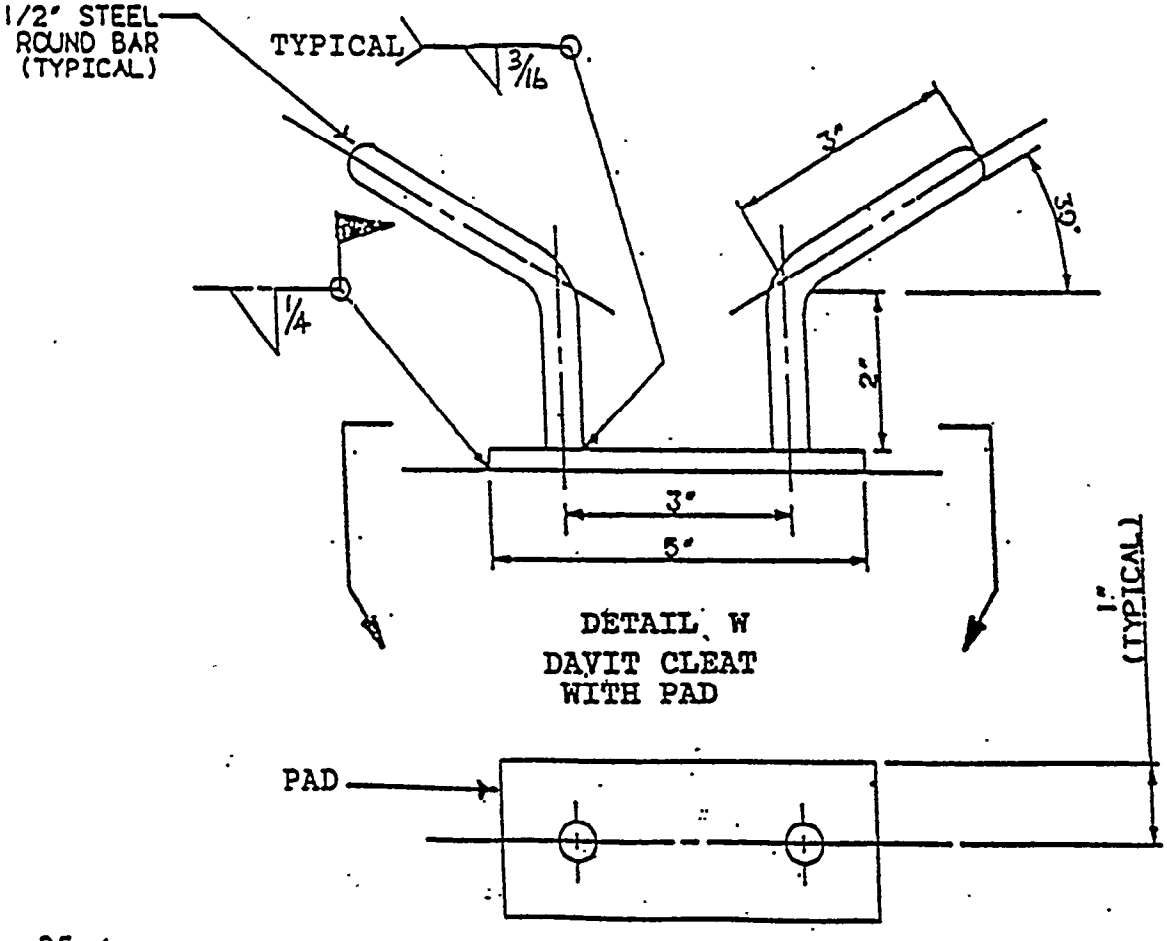


SECTION V-V

1" = 25.4 mm

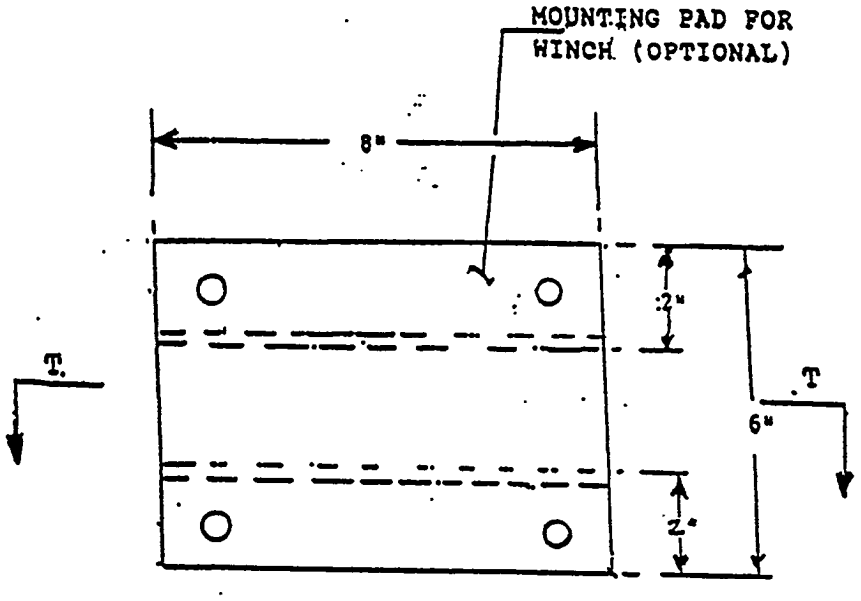


DETAIL X
DAVIT CLEAT
WITHOUT PAD

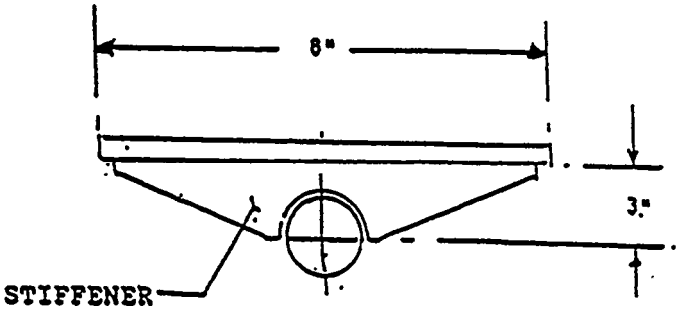


DETAIL W
DAVIT CLEAT
WITH PAD

1" = 25.4 mm



DETAIL Z



SECTION T-T

HOLES FOR MOUNTING WINCH WILL BE DRILLED BY PURCHASER.

MATERIAL FOR TYPE I. ASTM B209 PLATE & STIFFENER THICKNESS FOR MOUNTING PAD IS 3/8" ALUMINUM.

MATERIAL *FOR* TYPE II ASTM A36 PLATE & STIFFNER THICKNESS FOR MOUNTING PAD IS 1/4" STEEL.

WINCH MOUNTING PAD SHALL BE LOCATED-ON THE HATiCH SIDE AND THE HEIGHT POSITIONED TO CORRESPOND WITH 30° LEAD ANGLE OF ROPE.

FIGURE .3

WINCH MOUNTING PAD

DETAILS

1" = 25.4 mm

AUDIT TRAIL
for
PORTABLE DAVIT

DRAFT NO. 4

I.I. Nachtsheim September 19, 1989

1. Para 1.1 - Should read "the specification provides the design construction and install-ation... ". Also remove capital letters from paras 1.1 & 1.2 as noted;.	Complied with
2. Para 2.1 - Include ASTM F-783 in this para. This is noted on Fig. 2.	Agree
3. Delete para 3.1 and revise paras 3.1.1 a 3.1.2 to read 3.1 & 3.2 respectively.	Complied with
4. Para 4.2 - Remove capitalletters as indicated.	Complied with
5. Insert "para 5.1.1.4 lifting plate shall be aluminum in accordance with ASTM B209.	Agree
6. Para 5.2.1 - These terms are not. labelled in sketches so meaning is not clear.	Agree - Revised para . 5.2.1 to include term-inology used in sketches.
7. Para 5.2.2 - "Davit arms shall be tested.. . . " to be in a Test. Section.	Agree - See new Para 8 on testing-and revised para 5.2.3. 5.2.4 & 5.2.5 to read 5. 2. 2, 5. 2. 3 a 5 . 2. 4 . respectively.
8. Para 5.2.4 insert "normal to the deck on which installed" in lieu of existing terminology.	Agree - See revised para 5.2.3.
9. Para 6 -"Mass & permissible variations" not cited.	Agree - Removed.
10. Para 6.1 - Delete "details to" and editorial.	Complied with
11. Para 6.2 - Delete "the details will include " and insert "shall be I' in sentence.	Complied with
12. Para 7.1 - Insert "similar" on 2nd line and delete "which might be injurious. .." from 2nd line.	Complied with
13. Para 7.2.1 - Insert "to a thick-ness" on 2nd line after "zinc-"silicate".	Complied with

14. Para 7.2.2 - Don't see any bolts, only screws & welds.	Agree - Revised para 7.2.2 to suit.
15. Para 7.2.3 - Galvanic action between davit & socket for Type 1 only?	No - Between bushings & davit in Type 2, between davit a davit clip for Type 1. Davit & socket for Type 1, etc.
16. Para 9.1 - 9.1.1 & 9.1.2. call out for a lot of words for welding.	Agree - in 9.1 after color added " or metal plate affixed to davit".
17. Para 10.2 - On the last line remove "letter" after "high and insert between "using" & "at".	Complied with
18. Page 7 - Bottom view detail C, not clear.	Agree - Clarified detail.
19. Page 8 - Sleeve not shown in detail B.	Agree - Have indicated sleeve.
20. Page 10 - Don't see a "B-B" where.	Agree - Have indicated on Page 8 in way of bracket, sleeve & hatch coaming .

P. Bethge (Walz & Kramer) September 18. 1989

21. Para 4.2 - Add "test certifications shall be supplied with all davits".	Complied with, see para 9.
22. Para 8.1 - Modify to make certification mandatory.	Agree
23. Para 10.2 - Specify aluminum or brass tag.	Disagree - Tag is for packaging and shipping only.
24. Figure 1 - Indicate whether rope sheaves & block are supplied with davit.	Agree
25. Indicate detail "B" *as* cleat *in* Fig. 1.	Complied with.
26. Indicate height of hatch or pedestal support *in* Fig. 1.	Complied with.
27. Add alternative pedestal support in lieu of hatch in Fig. 1.	Agree
28. Indicate detail C in Fig. 1. "where applicable" if used in conjunction with a hatch and add separate pedestal details.	Agree
29. In Fig. 2 - Indicate whether block & tackle are supplied with davit.	Complied with.

30. In Fig. 2 - Indicate SWL approximately 3 ft. above deck rather than above cleat as shown.	Complied with.
31. Fig. 2 - Indicate detail 'C' as cleat,.	Agree
32. Fig. 2 - Indicate what support for detail B is.	Not Required;
33. Fig. 2 - Indicate or detail base plate which davit rests on.	Disagree
34. Page 9 - "Plan view" - Indicate if rectangular item is davit base or what it is.	Clarified- it's a hatch coaming.
35. Page 10 - Where is Section B - B located'?	Indicated in Fig. 2 on Page 8.
36. Page 11 - Indicate detail C as davit cleat & detail D as deck cleats.	Agree.
F X DARVALICS (NASSCO)	
37. How does one know this can handle the weight secified if there is no testing outlined.	Agree - A new section has been inserted on testing & certificat ion. See comment.(7) .
38. Para 1.1 - Remove "and criteria" and in lieu insert "methods".	Disagree - See Comment (1) . Added 'installation" after "construction".
39. Para 7.2.3 - Throughout this standard where is metal to metal contact.	See details C,D & E in Fig. 1 in addition see detail B in Fig. 2 for metal to metal contact.
40. Para 9.1 - add "or metal plate affixed to davit" at end of sentence.	Complied with.
41. Para 10.2 - Change l/2" letters to 1/4".	Disagree.
42. What is the schedule of the pipes used?	Sch.40
43. Fig. 1 - Block & tackle is not part of the standard it should be to suit.....	Agree - Have chain dotted the information to indicate it is not part of the standard.
44. Fig. 1 - Is the socket welded to the deck? If so, what is the weld? How is the socket protected when not in use?	Socket welded to deck. For details of weld, see detail E. Protection of socket left to the ship.
45. Fig. 1 - Det.C - If this is welded, how is it portable?	The hatch cover mounting plate is bolted to hatch cover - Also material has been identified in this detail.

46. Page 7 - Remove 1" typical (lower section) from det. "E". Change "all around" to read "typical" in det. “D”. Change welding signs and indicate schedule of pipe on details as noted.	Complied with.
47. Fig. 2 - Comment (43) above applies to this figure.	Resolution to comment (43) is applicable to this figure.
48. Fig. 2 - Change l/4" fillet weld to l/8" to suit det. C.	Agree.
49. Fig. 2 - Indicate schedule of pipe.	Complied with.
50. Page 9 - Rotate round bar cleats 90^{0} in plan view.	Concur
51. Page 10 - Sect. C-C method is too expensive. Why can't a piece of pipe be used?	It. is not that expensive & having a full piece of pipe chances are the davit & pipe will be seized & unusable a few months at sea.
52. Page 10 - Sleeve omitted in Detail B - Detail for sleeve is missing.	Agree - Indicated sleeve. E comment (19).
53. Page 10 - Where is Sect. B-B called out. What is this?	Agree - Its noted in Fig. c, on Page 8. See comment. C2)
54. Page 11 - Revise welding symbols as noted.	Complied with.
V.A. OLSON (Consultant>	
55. Add an optional 8"x8" pad with 4 mounting boltholes to each davit for a winch if required.	Agree - See Figs. 1 & 2 & detail F also noted in Para
Nick Stiglich (Eness R&D) (N)	DRAFT NO l 5
1. For Type 1 - Alloy should be specified 606l.-T6 with a yield of 37 ksi. The FS should be at least 3 on the yield or allowable stress.....	Indicated in Para 5.1.1.1.
2. Using a two part fall with the haul-ing part at 30° to the vertical, in-dicate so and also the 2=part fall is supplied by others.	Indicated in Fig.1 and Par 5.1.1.8.
3. The standard duplicates the detail letter designation for each type....	Revised the detail letterin of Type II Davit.
4. The upper bearing support for davit is inadequate, due to lack of support on the hatch.....	Concur - Replaced round bar with plate as indicated in Detail "C".
5. Davit should be fitted with padeyes.	Concur

6. For Type II - The SF should be 5 and based upon UTS of 60 ksi.	Concur
7. Should indicate a minimum 6-part fall using a fiber rope to be furnished by others.	Indicated in Para 5.2.5.
8. The bearings should be rings brazed in place....	Concur
9. Where a winch is supplied the fall. should be a 2-part wire, the stress being 12ksi, to be supplied by others.	Concur
10. In Detail B - The sleeve and thick-ness of bearings are too large. Suggest 5″ Sched #40 Pipe.....	Redesigned to suit. See Detail B.
11. In Plan view of 1000# davit, in-dicatc 5/8" fiber rope for guys.	Concur
12. Eliminate 2'-0 dimension..	concur
13.Optional winch mounting plate should be on the hatch side... . .	Concur - see Figs. 2 & 3.
14.Indicate fore & aft dimension 3'-0 for guy cleats,....	Concur
15. Figure 2 - Clarify 4′-0 dimensions.	Concur
16. Para 4 - Indicate optional winch mtg. plate.	concur
17. Para 7.0 - Indicate pre-treatment of aluminum davits.	Concur
18. Para 7.2.2 - Give material of screws.....	Not required.
19. Para 7.2.3 - Add "are bolted together" after.....	Not required.
20. Para 8 - These tests should be performed after installation.....	Concur
21. Para 8.2 - The dynamic test should also require manually raising the test load & swinging it through a full arc of travel.	Concur
‘22. Para 10 - Welding bead not required and 1 l/2" marking is too large - suggest l/2" high marking & stamped characters.	Concur

Marv Rosenberg

23. Scope - "Criteria" in the scope is incorrect; this is not a guide or practice, but a spec.....	Concur
24. Para 3.1 & 3.1.1 - Hyphenate light-duty and heavy-duty.	Concur
25.Para 4 Ordering Information - Insert 4.1.4 winch mounting pad if required".	Concur
26. Para 5.1.1.3 - Socket ASTM A53 is galvd. black iron pipe, a 300 series 5.5. is preferable.....	Concur
27. Para 5.1.1.2 Davit Clip - Comment (26) above applies to this.	Concur
28. Para 5.1.1.6 Mounting Pad - 8"x 6" is not necessary since dimensions are indicated in detail. Suggest reword as follows: “Mounting Pad if specified (See 4 Ordering Information) shall be.....	Revised Para which is now 5.1.1.5.
29. Para 5.1.2.6 Mounting Pad - Comment similar to (28) above.	Concur
30. Detail F - Mounting Pad - Detail F refers to Types I & II Davits, but Detail A thru C for Type I.....Suggest insertion of a note to the effect “for Detail F refer to Detail F for Type II Davit".	Revised detail charactors
31. Detail F also refers to Mtg Pad as Mtg Bkt. whereas throughout draft it's referred as Mtg Pad - Suggest change "Bkt" to "Pad".	Concur
32. Para 5.2.3 - The Davit should be perpindicular to the horizontal baseline of ship, not necessarily to the deck.	Revised Para
33. Para 6.2 - Change ". . . . .size, material, & location" to read.."....sizes, materials, & locations.	Concur
34. Para 7.2.3 - Change “Where different metal are to be used, insulation shall..." to "where dissimilar metals will be in contact withone another, the materials are to electrolytically compatible or electolytic insulating material of a ASTM	Concur
35. Para 8.1 - Revise ". . . . to a 200% safe working load to read " to a static test load equal to 200% of the safe working load.	Concur
36. Para 8.1, 2nd sentence - Change 5 minutes to 10 minutes.	Concur

37. Para 8.1 - Change 3rd sentence from "there shall be no deformation of Davit Arm or components" to "there shall be no permanent beformation of Davit Arm or component upon removal of test load".	Nonconcur - The existing sentence covers the change.
38. The 150% proof test by the installing activity.....	Concur
39. Product marking Para 10. for greater clarity.....	Revised - See Comment. (22) above.
40. Para 10.1 .l & 10.1.2 - Delete 3'-0“ above deck & insert 180 kg after pounds.	Concur

Chas Sinche (JJH)

41. Para 8.2 - Dynamic test appears to be a redo of the static test at a lower load. Shouldn't the arm be moved or the load.....	Concur - revised to suit.

Rick Butler (Deutsch)

42. Para 1.2 - Values must be in metric with U.S.....	Since this Std. is in the Main Com.Bal. and so far gone, it's being left as is.
43. Para 2.1 - F783 not referenced in text.	It's now referenced in 5. 1. 1.6
44. Para 3.0 - Types of Davits need only be listed. The limitations must be noted in Sec.6.	Do not agree; SWL is part of the type listed.
45. Para 6 - Reference all drawings here as they to each Davit type.	Nonconcur
46. Para 7.2.2 - Should be 7.3.	Screws have been deleted from 7.2.2.
47. Para 7.2.3 - Should be 7.4	Para 7.2.3 is now 7.3.
48. Para 8 - Are these tests conducted after assembly in place on board ship? If not, specify prior to delivery.	They have now been clarified.
49. Para 8.2 - How long?	Ten minutes, so indicated.

John W Forney (NAVSEA) (N)

	DRAFT NO.6
1. Alumn. 6061-T6 is an age hardened alloy & when welded the strength reverts to the 0 in the heat affected zone. . . . . In these welds the heat affected zones will have a yield strength of 8-10 ksi.....	Concur - Revised the yield strength. Type I Davits lifting safe working load is 400 lbs.

Nicholas Jergovich (MARAD)

2. Para 4.1.3. - Recommend that "or capacity" be deleted.	Concur
3. Para 5.1.1.6 - Delete "stapler" and use "stapes" in its place.	Concur
4. Para 4.1 - Recommend in the usual ASTM Practice to insert appropriate identity of the Para where the ordering information is defined.....	Concur - See 4.1.3 & 4.1.4
5. Paras 5.1.2.8 & 5.1.2.9 - Recommend to be consistent, use either "shall" or "will" in these paras & in 5.1.1.7.	Concur
6. Para 8.2 - Recommend to use "will" in lieu of "shall"; also delete "installation activity" & use either "supplier" or "manufacturer"...	Concur
7. Recommend reference to only two parties "supplier" & "purchaser" throughout the Spec., then no other parties can be effectively held responsible....	Concur
8. Fig. 1 - Elevation in upper left corner reference made to ASTM B203 conflicts with Para 2.1....	Concur - Corrected

Howard Wildman (NAVSEA)

9. Para 2.1 - Why is B36 Spec. referred?	Deleted
10. Para 5.1.1.4 & 5.1.2.2 - Recommend only one term be use; either "lifting plates" or "end plates".	Concur
11. Para 5.1.2.5 - Brass hardware has been disallowed by NAVSEA. ANSI B18.6.3 is not mentioned in references. No where are cap screws mentioned in the figures.	Concur
12. Para 8 - There is no testing provision for Winch Mtg. Pad or Cleat	concur - Have now included.
13. Para 10.1 - Recommend 3165.5 & change "affix" to “tack weld”..	Concur
14. Fig. 1 - Weld size (3/16) on wrong side.....	Concur
15. (a) Fig. 1 - Clarify 4'-0 dimension.	Concur
(b) Recommend showing plan view of Type I similar to Type II for tie downs & guy *size...*	Concur - See new Figure; Page have now been renumbered.
(c) Winch Mtg. Plate should be on opposite side.	Concur

11. Para 8.2 - It would appear different. manufacturers will take differnet times to perform tests.	Concur - See Comment. (4) ship-yard will perform tests by the book.
12. Para 7.3 - This is a genera 1 reqt. that insulation be inserted between different.. metals. Recommend this pat-a be deleted.. . . .	Non-concur - Sect. 7.0 is a general reqt. pertaining to workmanship & finish.
13. Pat-a 10. 1 - Requires optional 316 S.S plate be proper marked. Recommend reviews & make revision.	Concur - Rev i s ed, in addition, paras 5.1. 1.2 & 5.1.1.3.
14. Para 11. 1 - Identify "fitting assembly."	Concur
15. Figs.1 & 2 - Recommend welding instructions & correct, type for staples be provided.	Concur
16. Pages 8 & 11 - Quadrant, shown attached to left of head of davit is not identified. similar to left half of Sect.. V-V on Page 12. Identify or delete as appropriate.	Concur
17. Page 9 - "Detail A" are in smaller type than other "details" - Correct.	Concur
18. This Page 9, is tea crowded with information - Recommend make everything small or make 2 pages.	Concur
19. Detail E - Socket is ASTM A53 con-flicts with Para 5.1.1.3 - Correct.	Concur
20. Socet in Det.E must be welded to the deck, which will require paint on sockets & deck to be repaired.....	Concur - See para 7.3
21. Detail Y - No instructions are given concerning size of holes.....	Grease fittings come assembled with sleeve. Have indicated location.
H.T. Haller (MARAD) (M)	
22. Al 1 comments listed, identical to comments (8) to (21) above.	For responses see Comments (8) to (21) above.
Chas Sinche	
23. ASTM B36 is still referenced in 2.1. Should be deleted.	Concur - Deleted
24. Pat-a 4. 1.4 - Be mate specific when stating where in the spec. the winch mtg. pad is located. . Sec. 5 is a large Section (suggest. 5.1.1.5 & 5. 1 .2.6)	Non-concur - For location see Figs 1 & 2. These plates are optional.

Tom Soik

27. Fig.1 - How does upper bearing get attached if the H/C is lower than shown - Coamings are commonly 12″ or less....	Coamings should be or higher on weath decks.
28. Fig.2 - Same comment as (27).	Same response as (27) .

Sam Morrison (N)

DRAFT NO. 7

1. Para 5.1.1.1 - States "Aluminum 6061-T6 with a yield.....with a safety factor of 3". Since working stresses & safety factors are set by the design & beyond the control of the manufacturer., safety factor should not be a spec. requir-ment when all design features are fixed.	Concur
2. How does one reeve a six part fall with the two double blocks called for in Fig.2?	Concur - Revised "double blocks" to read "blocks " .
3. What is the purpose of mentioning a stress, which is beyond the control of the davit manufacturer?	Concur - Deleted from Paras 5.1.1.7 & 5.1.2.8.
4. Para 8.2 - Calls for performing a dynamic test after installation by the supplier..... I believe the purchaser should perform this test.	Concur
5. Fig.3 - The make & model of winch is not mentioned in this spec. and yet pad is shown drilled for mounting holes. Suggest drilling be left to the shipyard.	Concur
4. Detail Y - Alemite is spelled in-correctly in 2 places.	Concur
7. Sect. X-X What is no bronze bushing..	It should read 2 in No. Bror

Nicholas Jersovich (N)

8. Para 5.1 - Requires pipe be of Alumn. clip be of S.S & staple/pad eyes be of steel. Recommend using one metal for all 3 parts.	Have changed the staple to Alumn. which is welded to pipe, clip is S.8 which is welded to steel hatch coamin
9. Para 5.1.1.1 & 5.1.2.l - requires factor of safety of 3 & 5 respectively....	Deleted factor of safety - S Comment (1) above.
10. Para 8.1 & 8.2 - The last sentence of these paras require that the supplier perform tests, ...revise as appropriate.	Concur

(d) What is location of Winch Pad.7 Recommend it be at. position & height to correspond with 30° lead angle of rope. Also applies to Fig 2.	Concur - Revised location
16. Fig. 1 - (a) Det. C refer to Davit "clip" not "plate". .	Concur
(b) Det. C does not give Davit Clip outer curve radius.	Half 6" width is Radius'
(c) Det. D - What. material is used for plate?	ASTM B209
(d) Det.E - is incorrectly drawn. . . .	Concur - Corrected
17. Figs 1 & 2 -	
(a) Det. "X" & "B" are reversed. . .	Concur - Corrected
(b) See Fig.A..... if stapler & pad eyes are kept, locations must. be identified.	Concur
18. Fig.2 - Is there some kind of plate for Davit Pipe Cap to rest on? Recommend this be incorporated.	No pipe cap for Davit. An unnecessary expense.
19. Fig.2 - What is the thickness of the Boss P1ate.	1/2" - so indicated.
20. Fig.2 - Det. Y Should be label led Det. w.	Concur
21.. Fig.2 - Remove Det.. Y C1eats and use std. dk. cleats for securing .	These Cleats are part of manufacturers supply; hence the sketch.
22. Fig.2 - Dets X & Y are missing "typical" cm weld.	Concur - Revised
23. Fig.2 - Was winch pad sized far a specific winch or random choice? Specific is recommended along with identifying winch.	This is owner's choice of make & manufacture of winch. This is an optional item.
E.T. Kinney (NAVSEA) (N)	
24. Comments indicated are identical to comments 9 to 23 (inclusive) above..	See responses above for comments 9 to 23 (incl).
John Nachtsheim	
25. Para 2.1 - ASTM B36 is not cited in Spec.	Concur - Deleted
26. Para 5. 1 .2.5 ANSI B18.6.3 is invoked but not. listed.	Concur - See Comment (9).

25. Shouldn't the plan views & other details be labelled as Figures?	Plan views, etc. indicated break downs & details of the Figures noted.
Charles Cherrix (MARAD) (N)	
26. Paras 5.1.1.2 & 5.1.1.3 - When S.S is reqd, 300 series is called for..... 316 and higher is suitable for exterior use on ships.	Concur
S.D. Pitts (Aluminum Assoc.) (N)	
27. Para 5.1.1.1 is incorrect and inappropriate. A material specified has basic mech. properties. There is no need to go beyond Alumn. 6061-T6 i.a.w. ASTM E241.	Concur - Revised para 9.1.1.1 t0 suit.

Draft Number 3
ASTM Designation (?)
April 1990

Standard Practice for INSTALLATION PROCEDURES FOR FITTING CHOCKS TO MARINE MACHINERY FOUNDATIONS.[1]

1. Scope

1.1 This practice covers the acceptable methods of fitting chocks to marine machinery foundations.

1.2 The values stated in inchpound units shall be regarded as a standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A370 Methods and Definitions for Mechanical Testing of Steel Products

D638 Test Method. for Tensile Properties of Plastics

D648 Test *Method* for Deflection Temperature of Plastics under A Flexural Load

D695 Test *Method* for Compressive Properties of Rigid Plastics

2.2 Other Documents:

American Bureau of Shipping Rules for Building and Classing Stee Vessels.[3]

American Welding Society Publication. AWS D1.1 Structural Weldi Code.[4]

[1] This practice is under the jurisdiction of ASTM Committee on Shipbuilding and is the direct responsibility of Subcommittee F25.0 on Outfitting.

[2] Copies of ASTM Standards may be obtained from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

[3] Available from the American Bureau of Shipping, 45 Eisenhower Dr., P.O.Box 910, Paramus, N.J. 07653.

[4] Available from American Welding Society, 2501 N.W. 7th. Street, Miami, Florida, 33125.

3. Classification

3.1 The two principal methods of installing chocks described herein are as follows:

3.1.1 The "Philadelphia" resins (or "Chockfast") or equal, epoxy based (Type "A")

3.1.2 The two-piece wedge steel chocks (Type "B")

4. Significance and Use

4.1 This practice provides the two principal methods of fitting chocks to marine machinery foundations to insure that the machinery is free of vibration and perfectly level after installation.

5. Installation Procedures

5.1 Type "A", "Philadelphia" Chock - "Philadelphia" type resins are epoxy based, pourable compounds (poured into dams) that cure at normal temperatures to become a durable solid.

5.1.1 Surface Preparation - No finish machining of foundations or baseplate surfaces is required unless chocks are designed to be removable.

5.1.2 Alignment - Machinery is aligned using jacking bolts, wedges or shims in accordance with recommended instructions.

5.1.3 Applicable Techniques.

5.1.3.1 Dams are positioned to retain the compound during pouring and curing. Damming materials may be expended plastic, foam rubber stripping and sheet metal, or light gauge flat bar. See Figure No. 1.

5.1.3.2 There is no maximum limit on chock thickness, and chocks as thin as *12 mm (1/2 in.)* can be poured. A thickness of 24 mm to 37 mm (1 in. to 1-1/2 in.) is a recommended dimension for design purposes.

5.1.3.3 Resin manufacturer's instructions should be followed; this includes the relative design parameters on loading, temperature, *additional design, installation, bolt tension, and inspection.*

5.1.4 Provision for Future Machinery Removal - To prevent adhesion of chocks to adjoining surfaces and to facilitate future removal of machinery, an aerosol release agent should be sprayed on all contact surfaces. This precaution allows these chocks to be removed in a similar manner to steel chocks.

5.1.5 Foundation Bolts - Hold-down bolts may be installed prior to pouring of resin. Bolts should be tensioned (torqued) only after resin manufacturer's recommended cure time.

5.2 Type "B", two-Piece Wedge Chock - The two-piece wedges are drop forged, medium steel or machined from steel plate of equal strength.

5.2.1 Preparation of Surface Area.

5.2.1.1 Surface of Foundation Plate - The lower surface of the machinery bedplate and the upper surface of the foundation plate shall be finished with true surfaces prior to alignment and the fitting of chocks.

5.2.1.2 For large machinery, it is acceptable to machine upper surface of foundation plate and install and taper machine lower chock pieces before landing machinery.

5.2.1.3 The upper surface of the machinery bedplate shall be spotfaced where the finish has not been indicated.

5.2.1.4 The welding shall be performed in accordance with American Bureau of Shipping *Rules* or the American Welding Society *Structural Welding Code, AWS D1.1.*

5.2.1.5 Surface Roughness.

All flat surfaces of chocks, foundations, and bedplates shall have a maximum surface roughness of 125 micro-inches roughness height average (R.H.A.), or as specified.

5.2.1.6 Machining may be done before the ship is waterborne, but final alignment must be verified while the ship is waterborne.

5.2.2 Alignment - Machinery units shall be aligned in place with temporary chocks or jack screws (see Fig. 2) and the bottom piece of the permanent chock assembly tackwelded in place. The upper and lower surface shall then be checked for possible resulting distortion.

5.2.2.1 Welding when performed shall be as indicated4ed in Para. 5.2.1.4.

5.2.3 Fitting of Chocks and Bolts - Figure 2 indicates the fitting of Type "B" chocks in way of the bedplates and foundation pieces.

5.2.3.1 Bearing Area - An 85% bearing area shall be obtained on all bearing surfaces. To secure this degree of bearing area when using the solid type "B" chock, the clearance between the bedplate and foundation plate must uniformly diverge to a maximum at the face-edge from which the chock is fitted into place. Bearing area shall be verified by the use of Prussian Blue.

5.2.3.2 Holes shall then be drilled in the bottom chock piece and foundation plate, either with machinery unit in place, or by the marking of holes and lifting the unit clear. The bottom side of the foundation plate shall be spotfaced in way of bolt heads.

5.2.3.3 Foundation Bolts - Foundation bolts shall be installed with nuts located on the top. Spotwelding of bolts and nuts shall not be acceptable.

5.2.3.4 Foundation Bolts (Fitted) - Reaming of holes shall be accomplished after final verification of alignment. A sufficient numbe

of fitted bolts shall be installed to insure against. shifting. and to restrain movement from thrust load. In all cases. holes shall be reamed after unit. has been aliqned, permanent chock assemblies have been fitted and positioned. and the unit. has been secured with holding down bolts.

5.2.4 Excess Length of Chock - The length (with an extra allowance for fittlng) and the thickness of the toomost piece of the permanent chock assembly (wedge) shall be determined at installation. The wedge shall be drilled only after it. has been finally fitted in place. The excess length shall then be faced off flush with plate edges. and the relative positions of chock parts preserved by tackwelding. For the restrictions and size of the *taper see* Figure. 2.

SUPPLEMENTARY REQUIREMENTS

S1. Installation

Sl. 1 Bolts may be installed from above ln areas where it is not possible to install bolts from below.

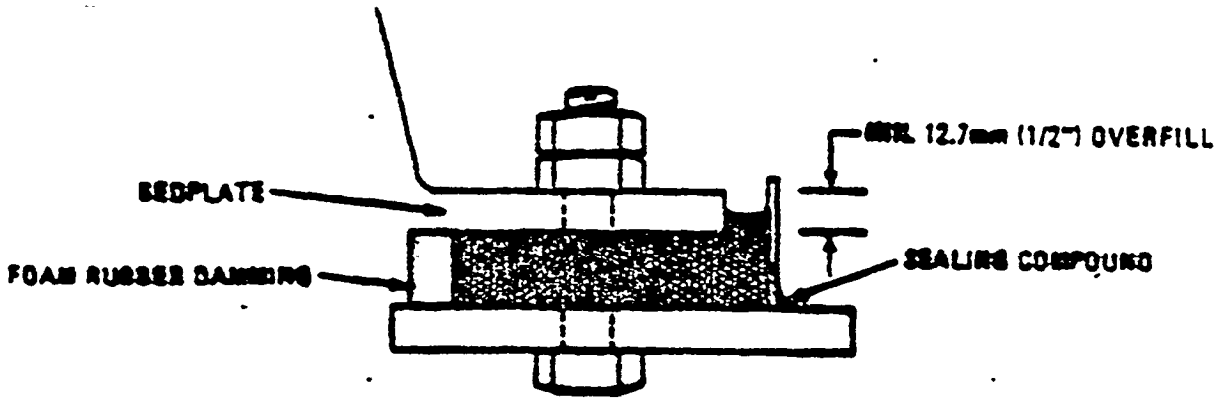
S2. Test Methods.

S2.1 Steel tension tests shall be made in accordance with ASTM A370.

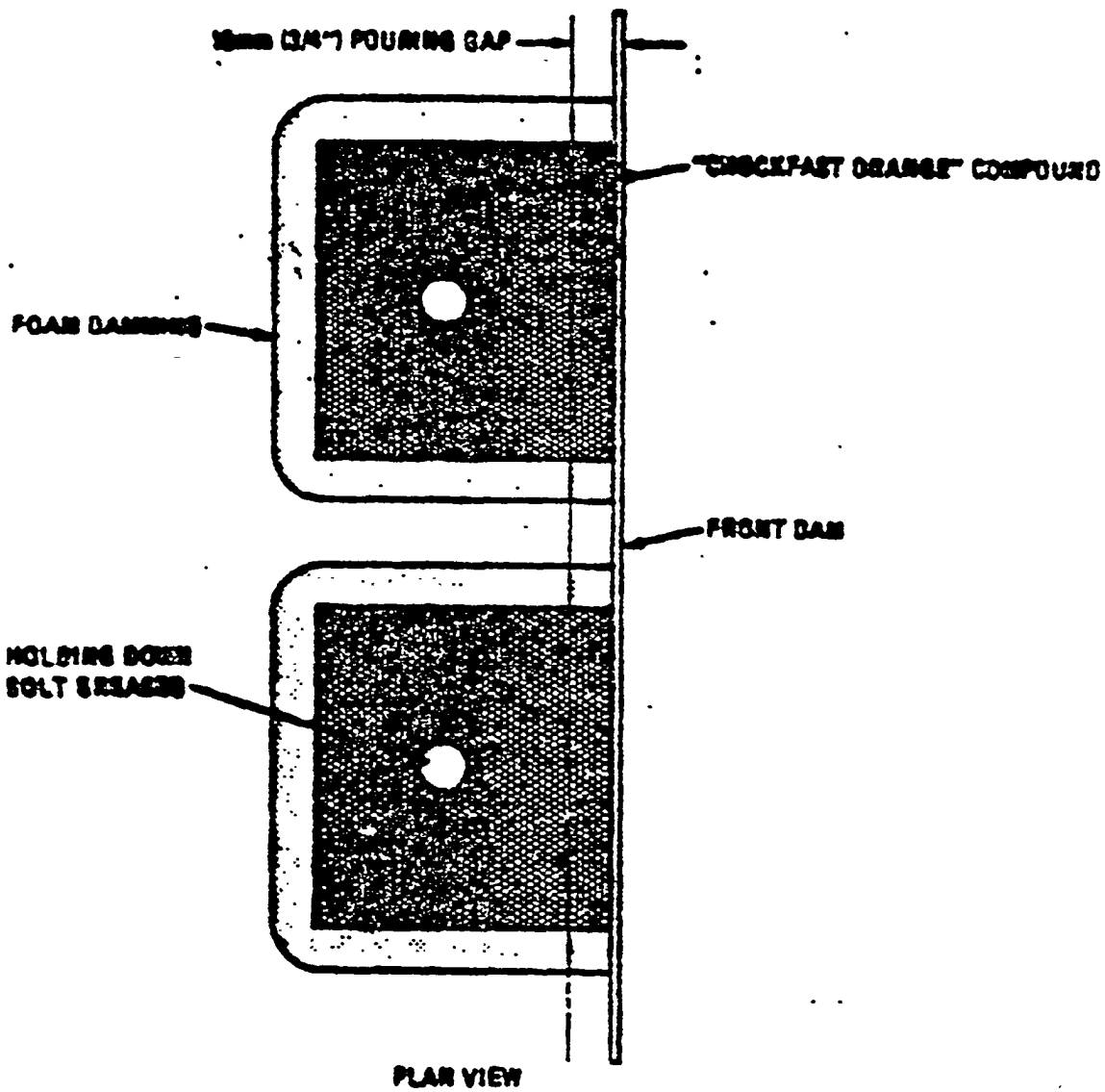
S2.2 (:ompression yield and modulus of elasticity tests shall be made ln accordance with ASTM D695.

S2.3 The tensile ultimate test shall be made in accordance with ASTM D638.

S2.4 The shear ultimate test. the heat distorting temperature test. and the shock resistance test shall be made in accordance wit-h ASTM D648.

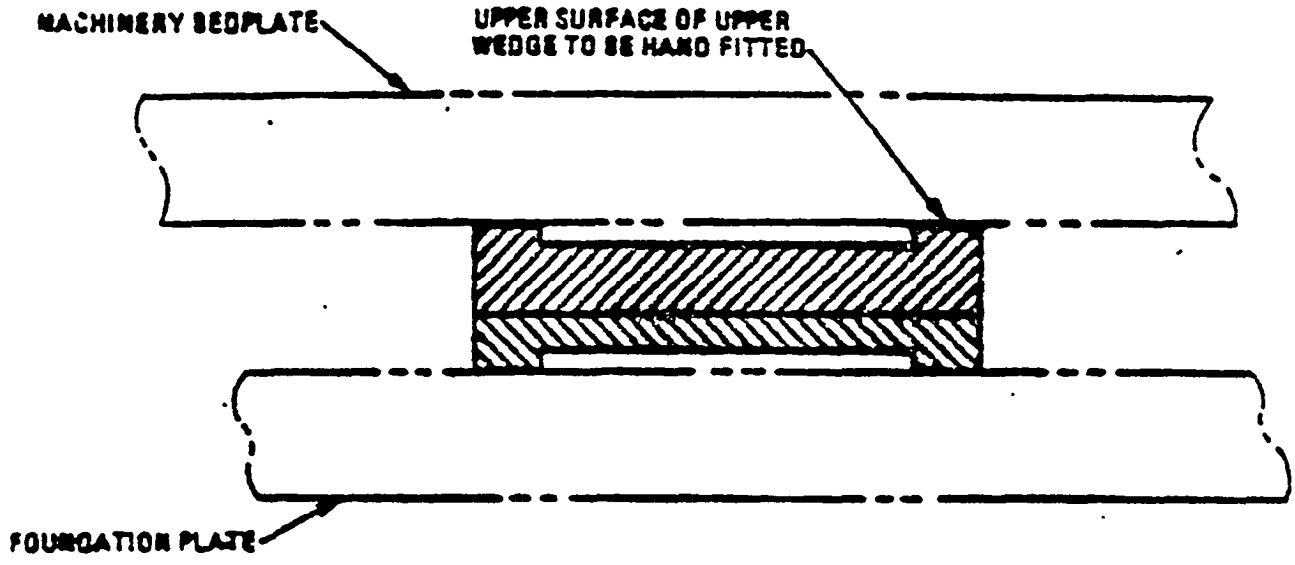


ELEVATION SECTION

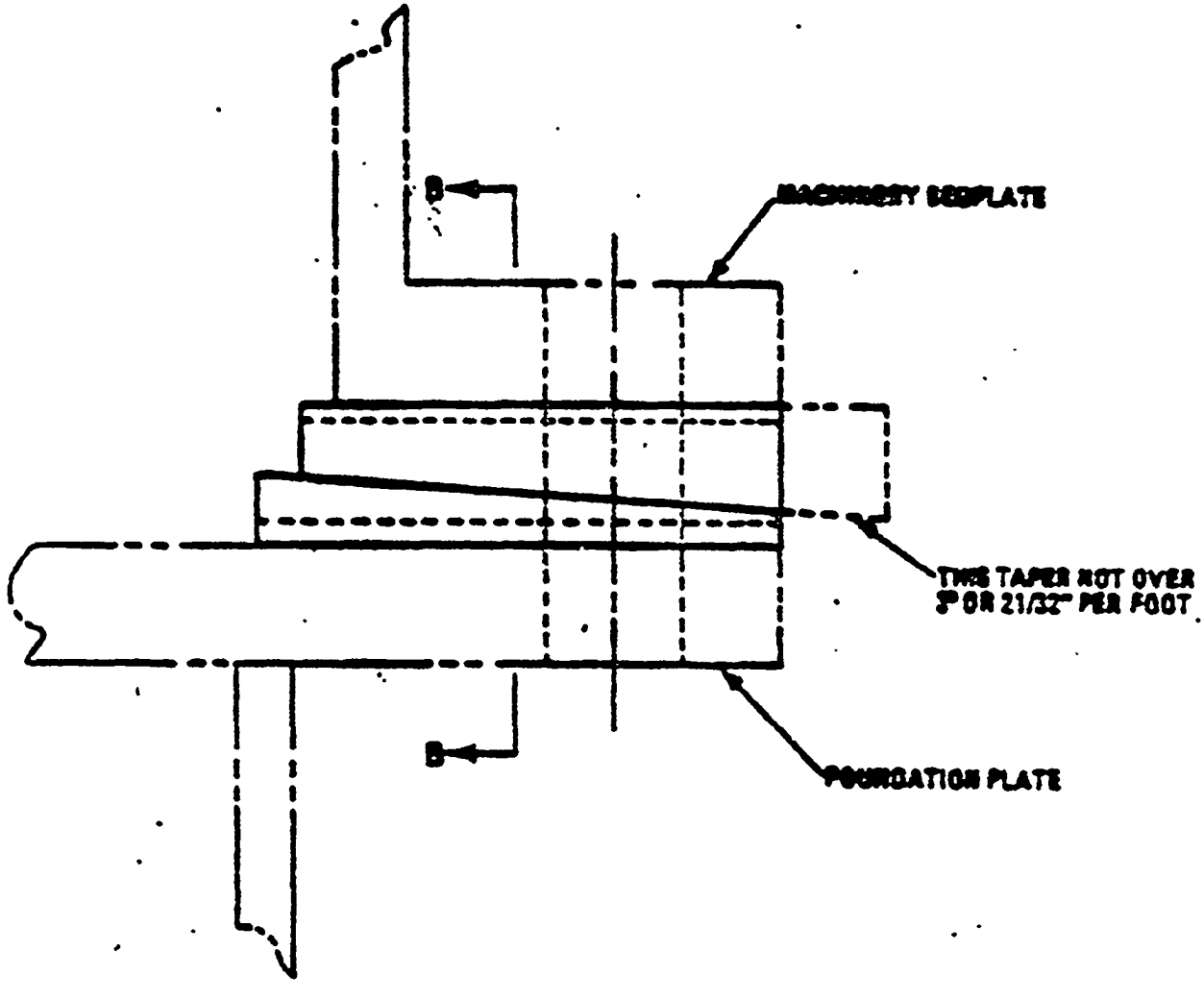


PLAN VIEW

FIGURE 1. SHOWING METHOD OF DAMMING AND POURING "PHILADELPHIA" CHOCK (TYPE "A")

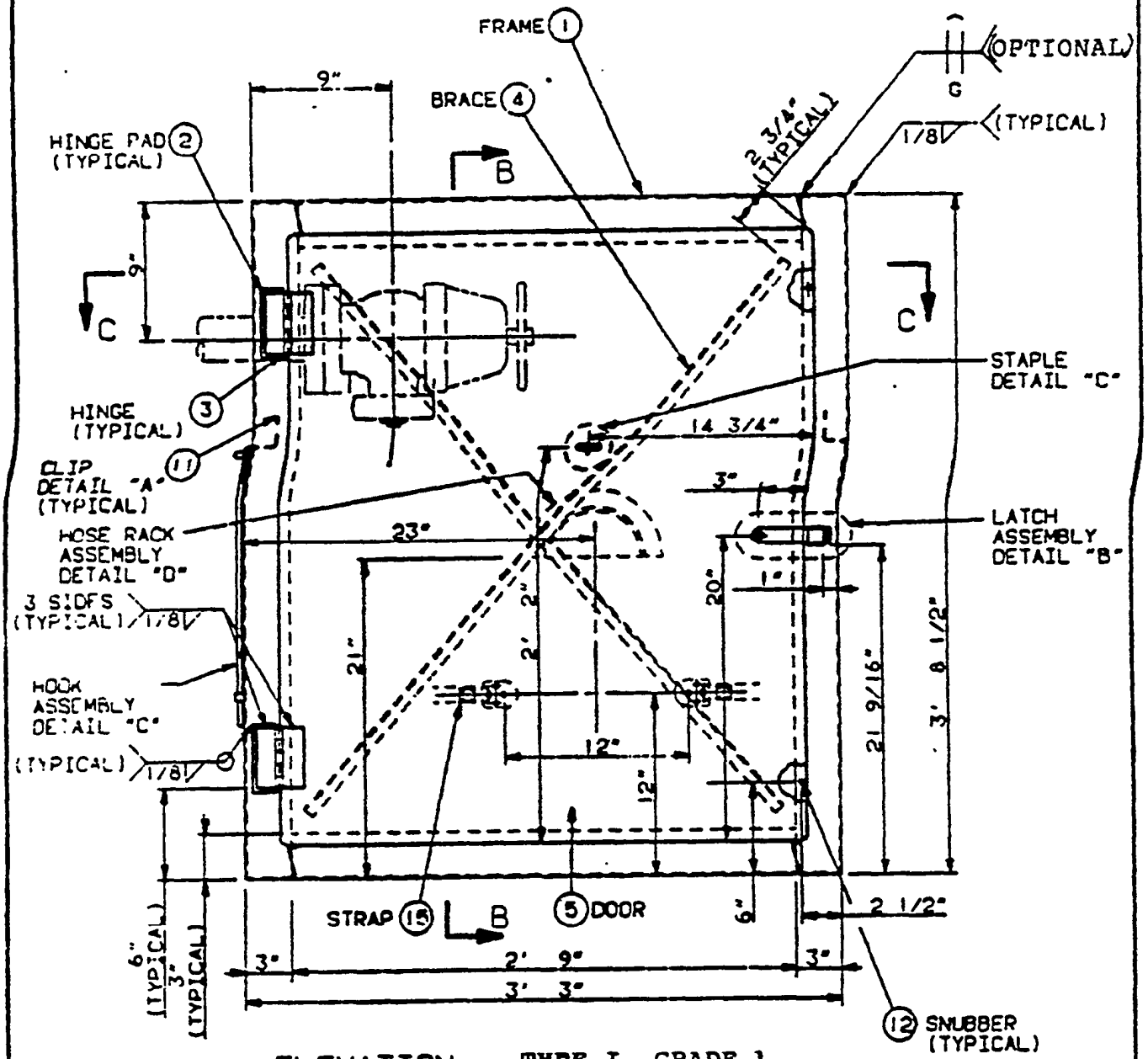


SECTION B-B



1" = 25.4 mm.

FIGURE 2. SHOWING METHOD OF FITTING TWO-PIECE WEDGE CHOCKS (TYPE "B" CHOCKS)

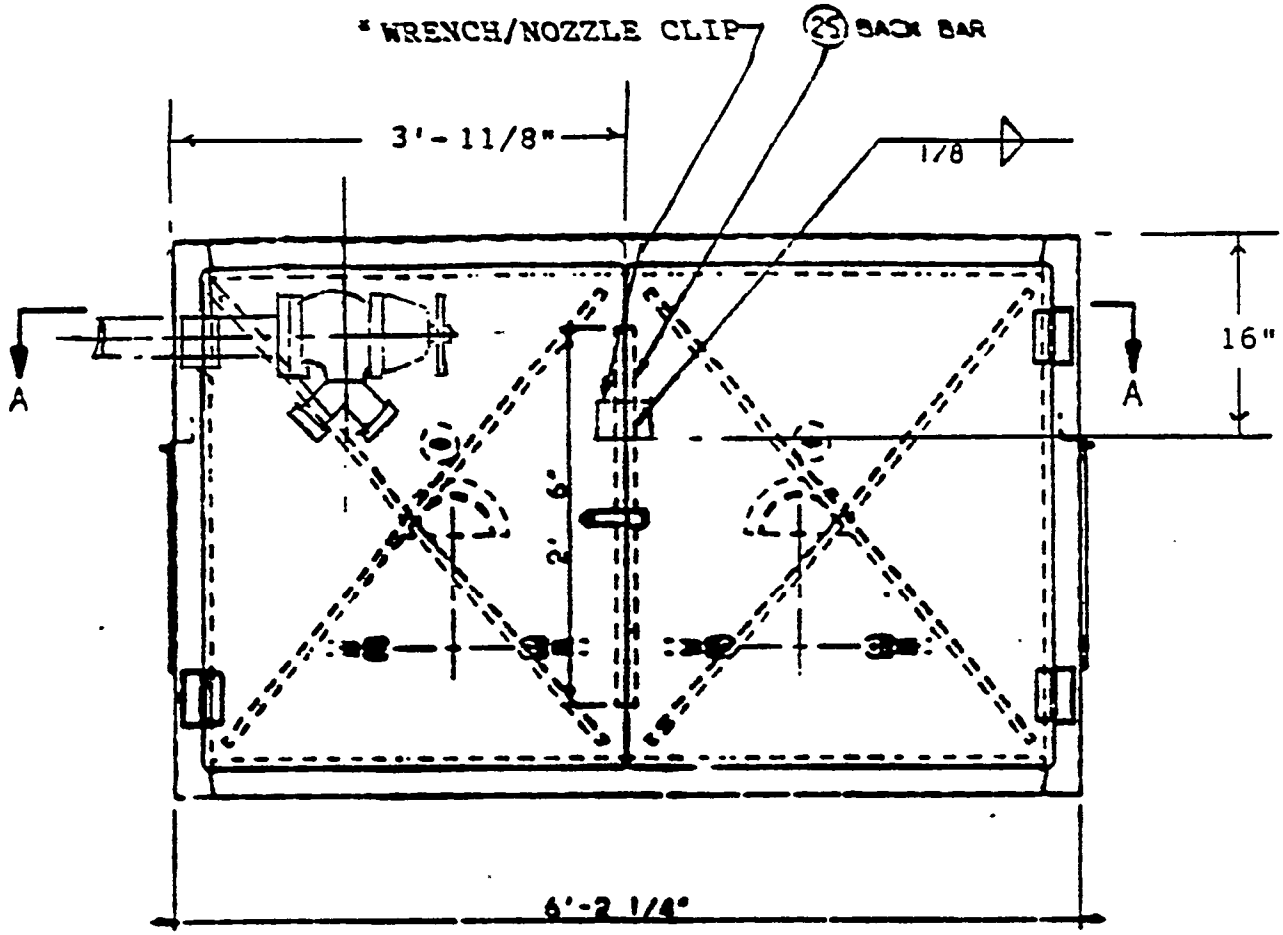


ELEVATION - TYPE I, GRADE 1

FIRE & FOAM CABINET - TYPE I

FIGURE 1

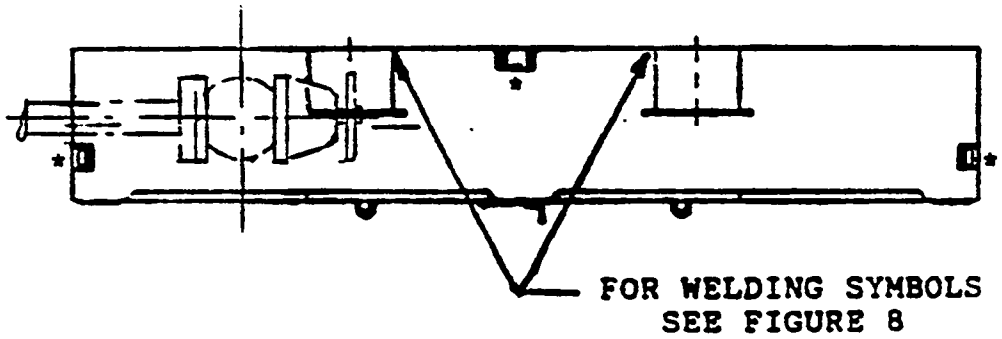
1" = 25.4 mm



ELEVATION - TYPE II

ALL DIMENSIONS IDENTICAL TO TYPE I EXCEPT AS NOTED

NOTE: A "Y" CONNECTION WILL BE SUPPLIED BY MANUFACTURER FOR DOUBLE FIRE & FOAM STATION CABINET



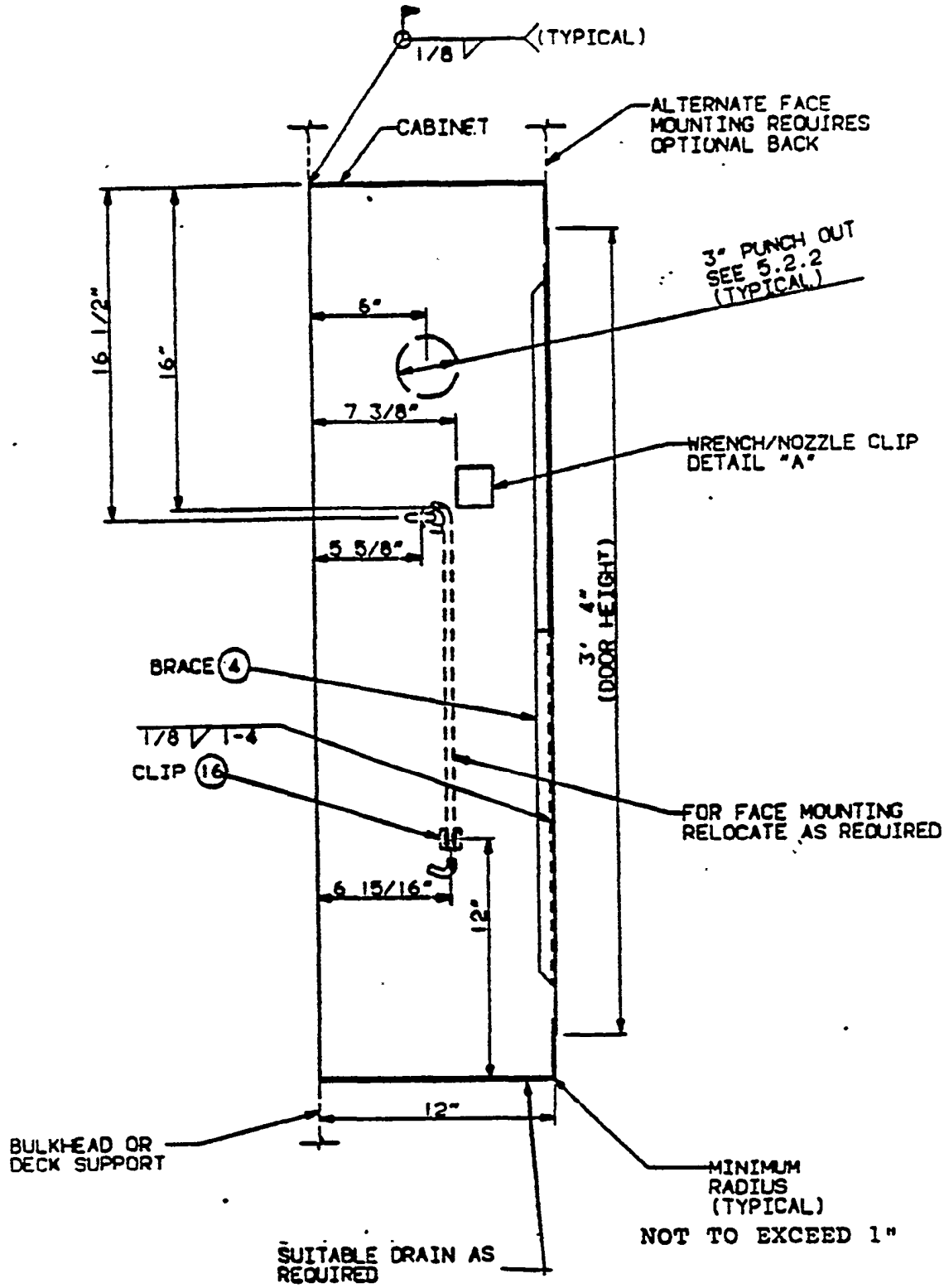
*3-WRENCH/NOZZLE CLIPS SHALL BE INSTALLED ON TYPE II CABINETS

SECTION "A-A"

FIRE & FOAM CABINET - TYPE II

FIGURE 2

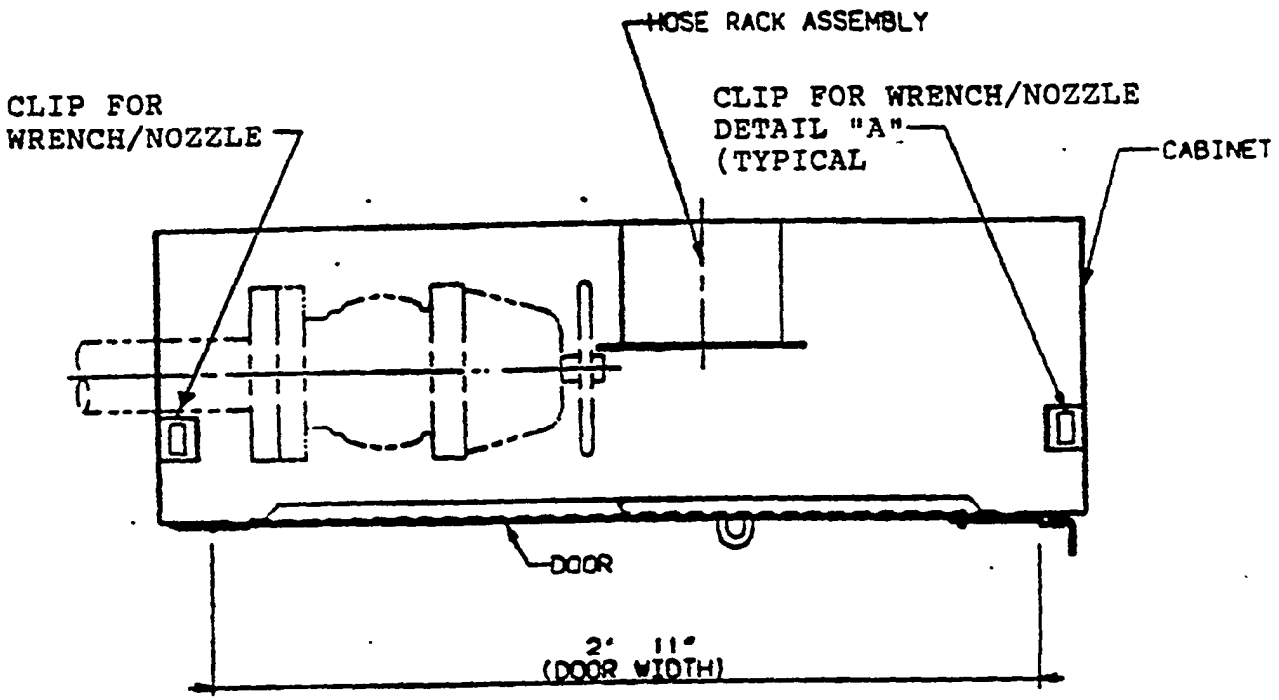
1" - 25.4 mm



SECTION "B-B"

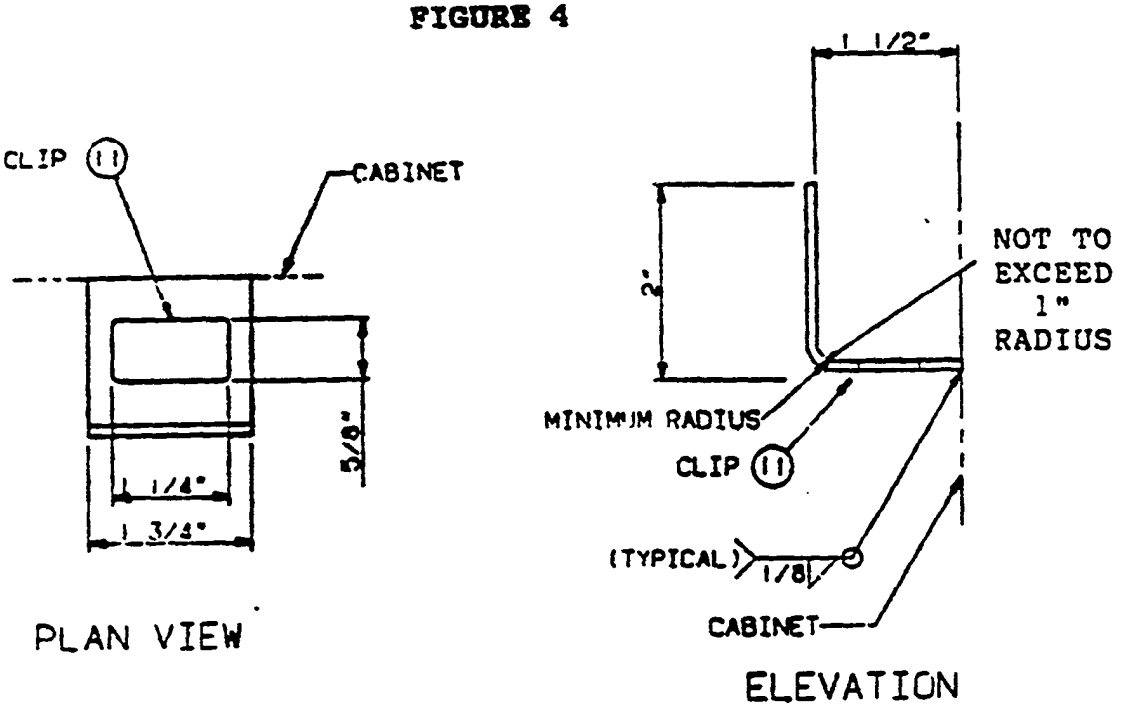
FIGURE 3

1" = 25.4 mm



SECTION "C-C"

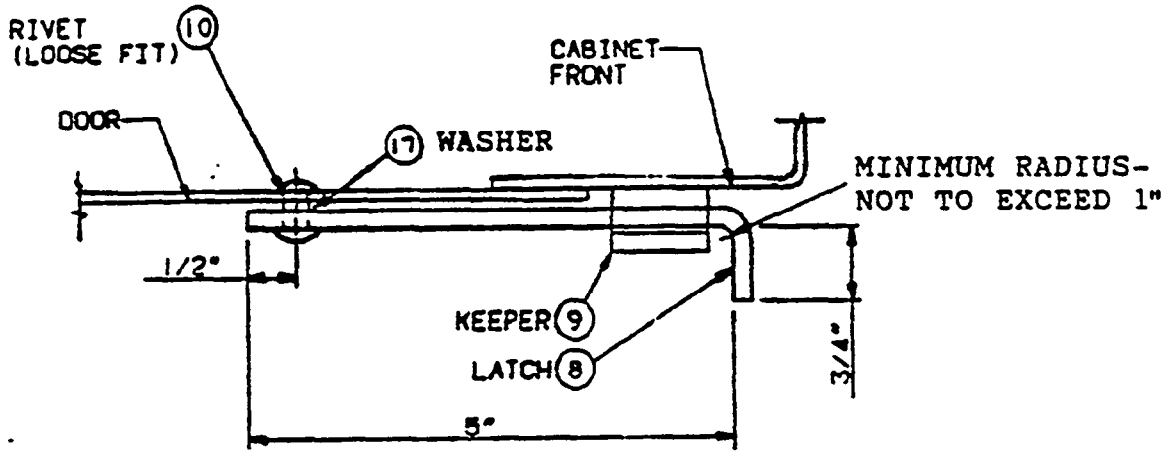
FIGURE 4



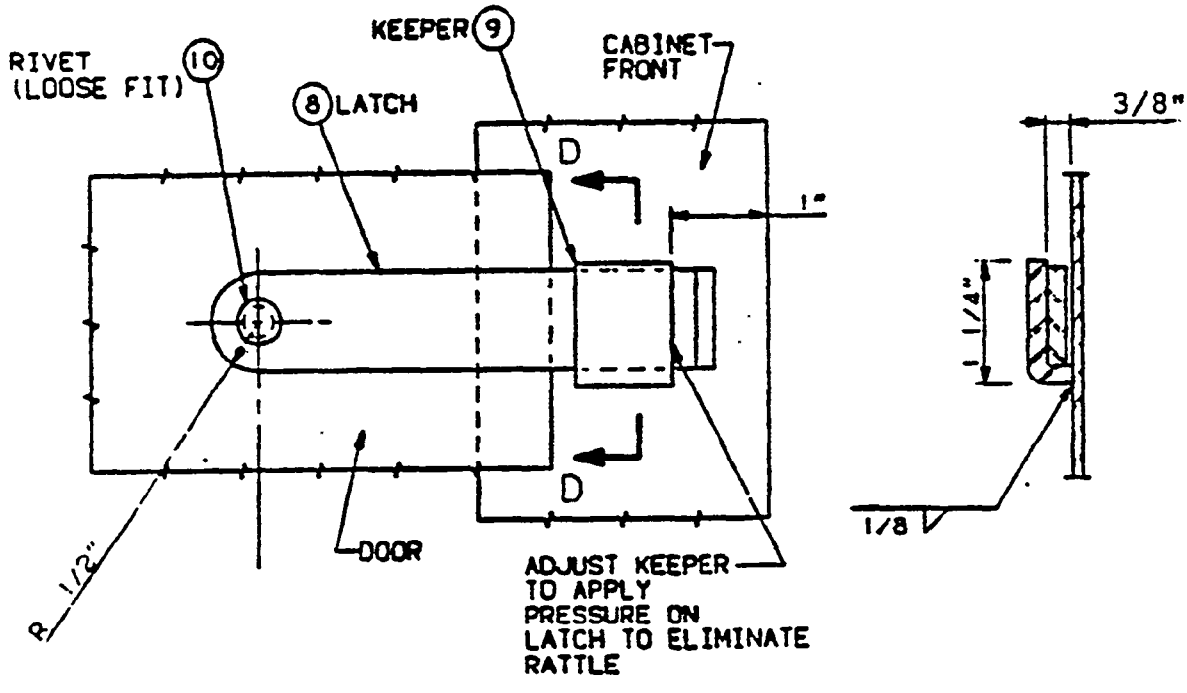
WRENCH/NOZZLE CLIP
DETAIL "A"

FIGURE 5

1" = 25.4 mm



PLAN VIEW



ELEVATION SECTION "D-D"

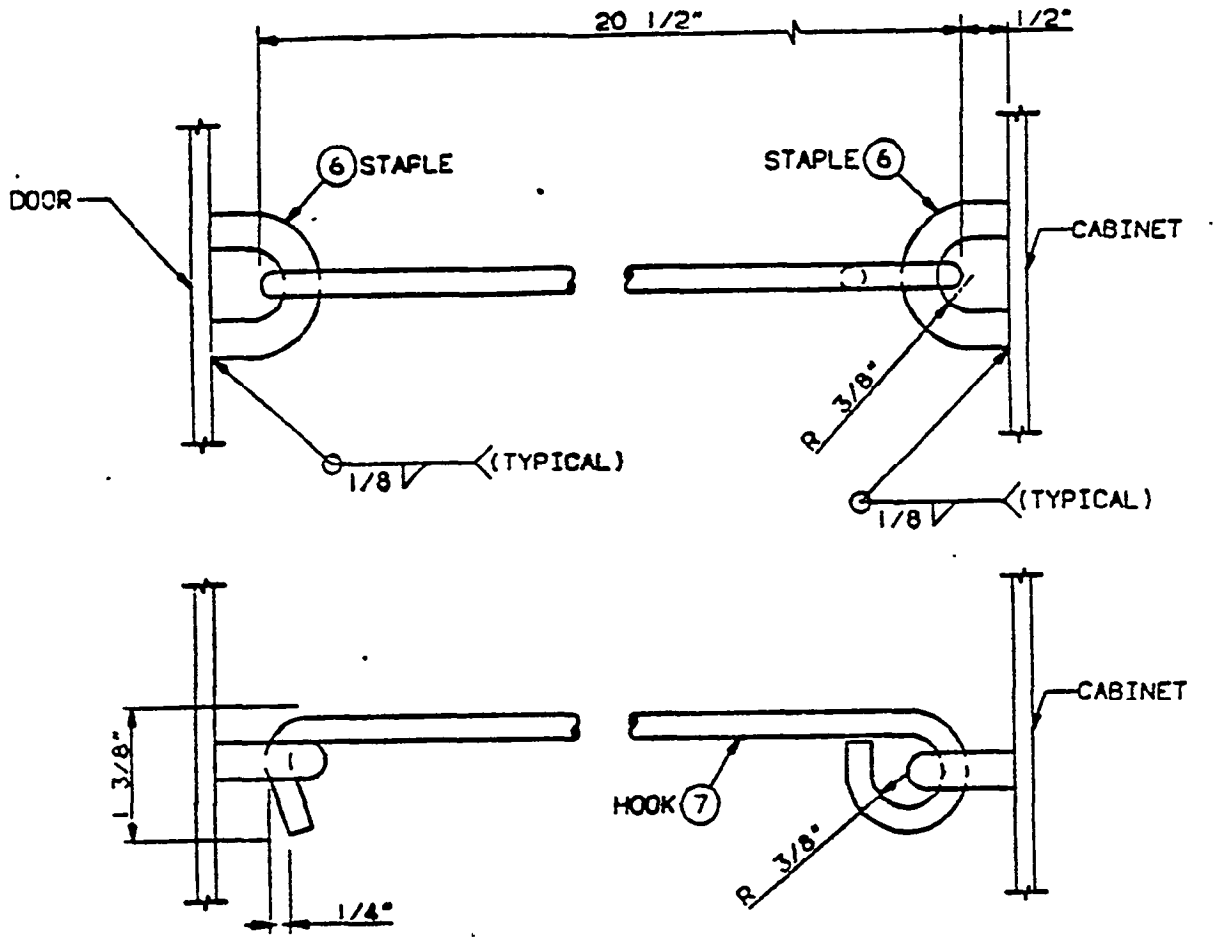
LATCH ASSEMBLY

TYPE II GRADE 1 CABINET SHOWN OTHERS SIMILIAR

DETAIL "B"

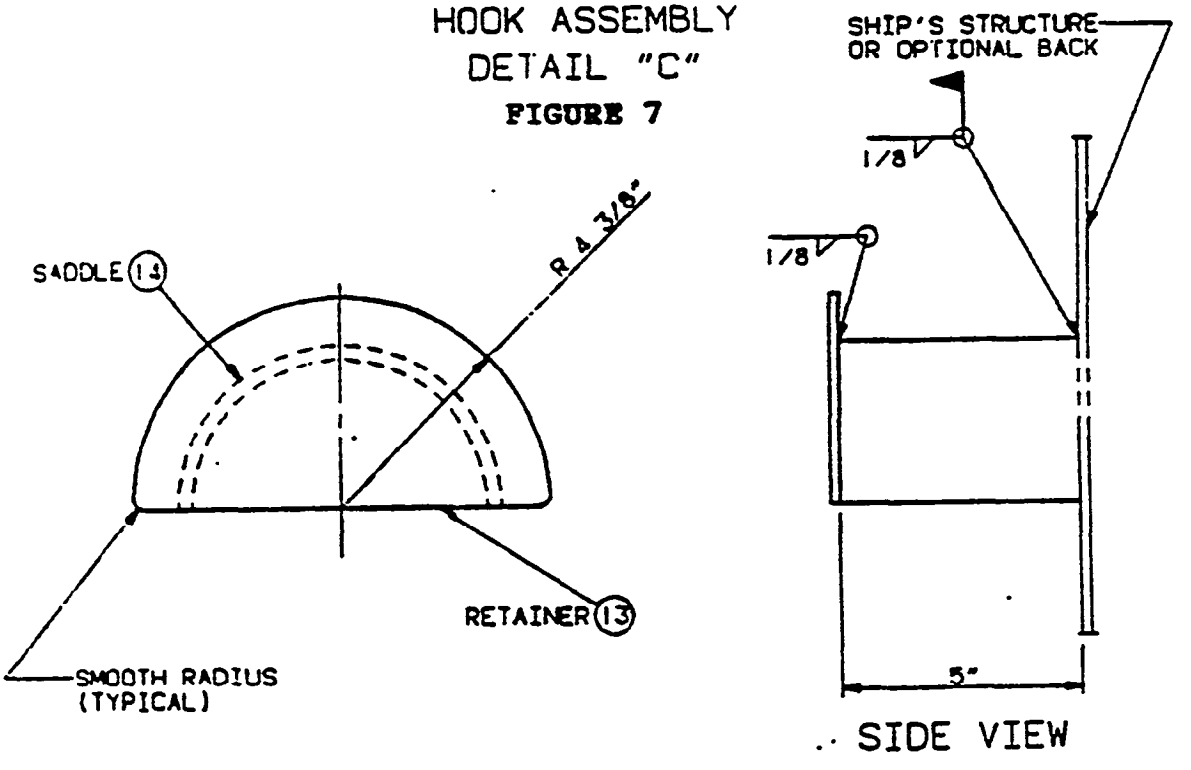
FIGURE 6

1" = 25.4 mm



HOOK ASSEMBLY
DETAIL "C"

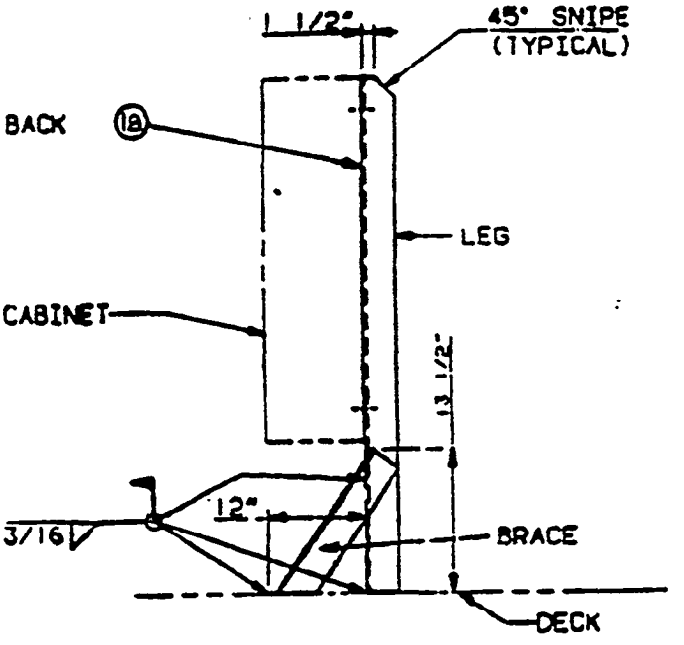
FIGURE 7



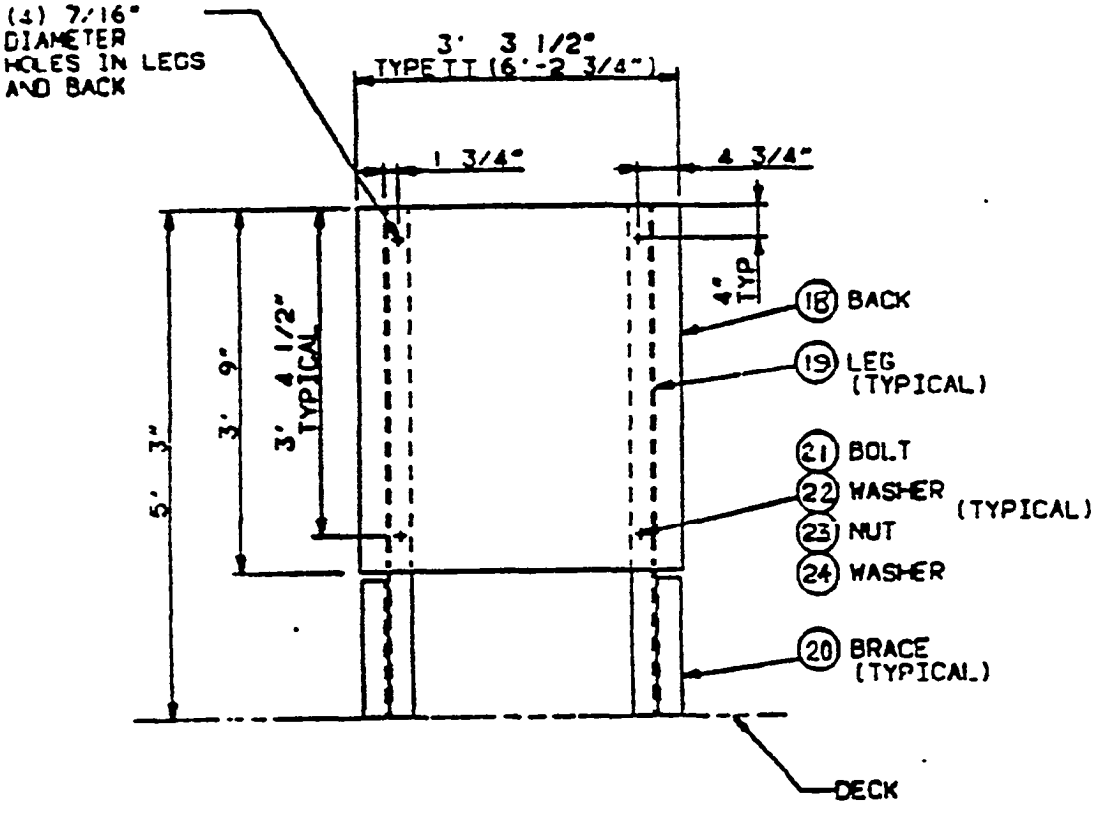
SIDE VIEW

FIGURE 8 - HOSE RACK
DETAIL "D"

1" = 25.4 mm



SIDE VIEW



FRONT VIEW OF BACK
LEG AND BACK OPTION
DETAIL "E"

FIGURE 9

1" = 25.4 mm

DISPOSITICN OF COMMENTS RECEIVED 0N

FIRE AND FOAM STATION CABINETS - DRAFT 1

MARAD 1.	Correct Paragraph designations for classes under 3.1.2.	1. Agreed, corrected 3.1.2.1 and 3.1.3.2
2.	Clarify options	2. Agreed, corrected, revised 4.2.2
3.	Revise (add) reference to 5.2.1	3. Agreed, added ABS to 5.2.1
4.	Paragraph 5.2.2 implies plate thickness	4. Disagree, Tab length is what is implied.
5.	Coat Legs	5. Agreed, revised 6.2.2
6.	Revise Discription of Part 1	6. Agreed, all locations
7.	Add top frame dimension, elevation type 2, grade A	7. Agreed, added "Typical" co bottom call out.
8.	Add piece marks on Elevation-Type 2, grade A to detail call outs.	8. Disagree, applied piece narks to only details to make general view drawings readable.
9.	Use standard way of giving dimensions.	9. Agreed, however no action taken dimension called out is in standard form.
10.	Elevation-Type 1 call out is for type “two" correct to type "2"	10. Agreed, corrected.
11.	Punch out cell out for para-graph incorrect section "B-B"	11. Agreed, corrected 5.2.2
12.	add Dimension required in Section "B-B"	12. Agreed, dimensions added.
13.	Side view of detail "E" detail call out incorrect.	13. Agreed, deleted call out of detail "D"
14.	Correct dimensions of back to allow for small reveal	14. Agreed, revised dimensions
15.	Correct name of title for detail "E"	15. Agreed, revised to front view of back leg and back option.
16.	Revise parts list pieces called out as sheetmetal to plate.	16. Agreed, revised.
17.	Add inch marks where required co parts list.	17. Agreed, revised
18.	Part 15 expanded description.	18. Disagree, this item and part 16 are commerical parts chosen by cabinet builder.

DISPOSITION OF COMMENTS RECEIVED ON

FIRE AND FOAM STATION CABINETS - DRAFT 1

MARAD cont.	19.	Correct Salt length part 19.	19 Agreed, corrected to 1 1/4".
MSC	1.	Add welding reference.	1. Agreed, see Marad 3.
	2.	Are cabinets large enough for foam nozzles.	2. Yes
	3.	Add alternate face mounted cabinets.	3. Agreed, cabinet revised.
BATH	1.	Gall out as 4.2.3 “Punchouts standard unless otherwise specified."	1. Disagree, as these cabinets are not watertight Punchouts are standard and no option to delete is required.
	2.	Corrected cabinet type call out in Elevation-Type 1, Grade A.	2. Agreed - Sketch title revised to "Elevation-Type 2, Grade A".
	3.	Corrected cabinet type call out for double cabinet to elevation type 2 and *other* associated notes.	3. Agreed, title now "Elevation Type 2".
	4.	Correct Punch out call out.	4. Agreed, see Marad II.
	5.	Add typical radius call out section “c-c”	5. Disagree, deleted cut out.
	6.	Add weld detail side view detail "D"	6. Agreed, revised.
	7.	Delete detail call outs from Detail "E"-	7. Agreed, see Marad 13.
	8.	Add vertical dimension for Brace.	8. Agreed, revised.
10DD	1.	Sheet 3, type 2 should read type 1.	1. Agreed, see Bath 2.
	2.	Sheet 4, type 1 should read type 2.	2. Agreed, see Bath 3.
	3.	Sheet 5, indicate dimensions for Book Assembly.	3. Agreed, see Marad 12.
	4.	Sheet 5, what is purpose of 1/4" cut out.	4. Deleted, intended to limit required welding, deleted to allow for tight face mounting.
	5.	Sheet 7. Recommend two point locking device, current "does not look robust enough"	5. Disagree, single latch system is adequ

DISPOSITION OF COMMENTS RECEIVED ON

FIRE AND FOAM STATION CABINETS - DRAFT 1

)DD mnt.	6. Sheet 8. View for Hook Assembly in error.	6. Disagree, view acceptable.
	7. Sheet 9. Detail D Incorrectly called out.	7. Agreed, see Bath 13.
	8. Sheets 9 & 10. Recommend back be standard not an option.	8A. Disagree, retain "Existing" Bulkhead Mounting.
	8B. Sheers 9 & 10. Revise material for back to 3/16" plate.	8B. Agreed, revised.
	9. Sheets 9 & 10. Indicate detail of leg assembly.	9. Agreed, added missing dimensions.
ACCONA		
	1. Standard does not specify capacity.	1. Disagree, hose, valves and nozzles are specifically not included.
	2. Term "Grade" is not representative of quality as term implies, revise.	2. Disagree, type, grade, and class is the ASTM order - order of standard is by increasing detail.
	3. Hook Assembly in detail "C" unusable	3. Agreed, detail "C" revised.
	4. Twelve in cabinet depth too deep.	4. Disagree, depth allowed for access to valve.
	5. Provide for aluminum cabinet.	5. Agreed, revised.
	6. Scope LOO abbreviated.	6. Agreed, added 1.2 and 1.3
	7A. Name detail "D" and call out option.	7A. Agreed, revised
	7B. Call out acceptability of other than pipe saddle.	7B. Disagree, full parts list included, minimum machinery required.
	8. Detail "B" weld symbol "all around" incorrect.	8. Agreed, revised.
	4. Latch assembly detail "B" does not provide for type 2 doors.	9. Agreed, revised note in detail "E".
	10A. Braces item 4 appear to lapp.	10A. Disagree, one brace is continious the other innercostal.
	10B. Line 6.1 spatter misspelled.	10B. Agreed, corrected.

DISPOSITION OF COMMENTS RECEIVED ON

FIRE AND FOAM STATION CABINETS - DRAFT 1

TACOMA cont.	11. Callout minmum radius for detail "A" .	11. Disagree, specific variables not required sketch "show" required radius.
	12. Plan & Elevation views unconventionally drawn.	12. Agreed, revised.
	13. Latch projection from cabinet face too large.	13. Agreed, revised.
	14. Weld detail missing from detail "D"	14. Agreed, revised.
	15. If back is optional then detail "D" is optional.	15. Disagree, for bulkhead mounted cabinet hose rack is also mounte on bulkhead, mounting clarified.
	16. Divider shown in section **"A-A"** incorrect.	16. Agreed, revised added part numbe 24.
	17. One quarter inch gap at back questioned.	17. Agreed, see Todd 4.
	18. Revise paragraph 5 and parts list to reflect part 15.	18. Disagree, commericaly purchased item, many products will suit pur
	19. Door dimension and type 2 cabinet don't agree.	19. Agreed, revise to provide 1/4" gap between doors.

AUDIT TRAIL
F O R
CONSTRUCTION OF FIRE anD FOAM STATION CABINETS

DRAFT NO. 3

Frank Darvalics (NASSCO)

9/14/89

1. Page 1 - Note 1.2 - All references to "Flush & Panel" mounting should be deleted.....	Concur - Removed
2. Page 1 - Note 1.3 - Delete this note, it is In conflict with Note 1.2.	Deleted original Note 1.2
3. Page 3 - Para 3 - Replace the existing method with method listed; the existing method is confusing: Type 1 - Single cabinet, right hand door swing. Type 2 - Single cabinet, left hand door swing.....	Agree - See rodifled Para 3 with slight changes to agree with Blue Book.
4. Page 4 - Note 4.1.4 Delete -	Concur - included "Grade & Class" In Para 4.1.3.
5. Page 4 - Note 4.1.5 Delete -	Concur - Moved to Para 4.1.4.
6. Page 15 - Note 4.1.6 Delete -	No such Page, no such Para - Assume It meant 4.1.5.1 & 4.1.5.2 deleted
7. Page 8 - Elevation A - “Y" connection IS needed, this makes the location of the valve unsatisfactory....	Concur
8. Page 8 - Section A-A Weld data is missing.	For weld detail see Figure 8 on Page 12.
9. Page 9 - Section B-B- location for wrench not satisfactory.	Disagree - See Fig 5 detail "A" for arrgt.
10. Page 9 - Indicate Type, size & material of clip 16	Clip Is commercial as noted - indicated materials
11. Page 9 - What IS a minimum radius?	Not to exceed 1".
12. Page 9 - Drain hole should be completed by manufacturer.	Concur
13. Page 11 - Include teflon piece between door and latch in "plan view".	Concur - Indicated in sketch.

Kevin O'Connor (D&P)	9/11/89
14. Section 3 - Change the classification to the following Types I and II, Grades 1 and 2, and Classes A, B and C. This is the preferred method listed In the ASTM "Blue Book".	Concur - See revised Para 3.
15. Para 4.1.1 - Change to "ASTM designation and year of Issue".	Concur
16. Para 6.1 - Change "might" to “may".	Concur
17. Identify the parts list on Page 6 as Table land refer throughout the Spec.	Concur
18. Page 6 - Insert "ANSI'* before B18.22.1 Are pieces 17-23 optional? Is the material listed optional? Or is it something else?	Concur - 17-23 is optional and Is now indicated.
19. Pages 7-13 - These should be indicated as figures, have titles assigned to them & be referenced in the Specs.	Concur

Draft Number 8
ASTM Designation XXX
January, 1991

Standard Specification for

DISPENSING TANKS[1]

1. Scope

1. 1 This specification specifies the design and manufacture of dispensing tanks and foundations.

1.2 This tank design is suitable only for local filling and venting.

1.3 This tank has been designed for the storage of non-f lammahle, non-combustible petroleum base 1 liquids and other non-flammable, non-combustible lubricants or cleaning products of a non-corrosive nature.

1.4 Values stated in *SI* units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A36 Specification for Structural Steel.

A182 Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings and Valves and Parts for High Temperature Service.

A307 Specification for Carbon Steel, Externally Threaded Standard Fasteners.

A563 Specification for Carbon and Alloy Steel Nuts.

A569 Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.

B16 Specification for Free-Cutting Brass Rods, Bar and Shapes for Use in Screw Machines.

B36 Specification for Brass Plate, Sheet, Strip and Rolled Bar.

B584 Specification for Copper Alloy sand Castings for General Applications.

F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.

2.2 American Society of Mechanical Engineers:

ASME Boiler and Pressure Vessel Code, Section VIII, Div.1, Pressure Vessels; Section IX, Welding and Brazing Qualification.[3]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing Steel Vessels.[4]

American Welding Society Publication, AWS D 1.1 Structural Welding Code.[5]

3. Ordering Information

3.1 Tanks ordered under this specification shall include the following:

3.1.1 ASTM Designation, Title and Date of this Specification.

3.1.2 Quantity (number of tanks).

3.1.3 Vacuum Breaker Assembly & Couplings if required.

3.1.4 Number of Compartments & Capacities.

3.1.5 Shock requirements or other special design criteria: if required.

4. Materials and Manufacture

4.1 Materials:

4.**1. 1 Faucet. - Brass,** ASTM B584, c85400/c85700

4.**1.2 Cap and Plugs - Brass, ASTM B16.**

4.1.3 **Flash Arrestor-Brass., ASTM B36, c23000, H01 (Optional)**

4. 1. 4 Angle and Channel Steel, ASTM A36.

1 This Specification is under the jurisdiction of ASTM Committee F. 25 on shipbuilding and is the direct responsibility of Subcommittee F. 25.03 on Outfitting.

2 Available from American Society for Testing and Materials, 1916 Race street, Philadelphia, PA 19103.

3 Available from American Society of Mechanical Engineers, 345 E 47th St., New York, NY 10017.

4 Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910. paramus, N. J. 07653.

5 Available from American Welding Society, 2501 N.W 7th. St. Miami, Florida33125.

4.1.5 Vacuum Breaker Assembly and Couplings - Stainless steel , ASTM 182. Type 316 (Optional).

4.1.6 Tank body and separators - Hot Rolled Steel , ASTM A569.

4.1.7 Bolts - Carbon Steel, ASTM A307. Grade A

4.1.8 Nuts - Carbon Steel, ASTM A563. Grade A

4.1.9 Flange Plates - *Structural* Steel, ASTM A36

4. 1. 10 Label plate - Photo engraved Metal P1ate with permanent adhesive **backing.**

4.2 Manufacture:

4.2.1 *Figures 1,2 and 3 typical of multi-compartment dispensing tank with attachments and fittings.*

4. 2. 2 Welding shall be in accordance with American Bureau of Shipping Rules for Building a and Classing Steel Vessels or American Welding society publication **AWS D1.1 .**

5. Workmanship, Finish and Appearance

5.1 All surface areas, drilled holes and we1 ded areas shall be free of sharp edges, burrs, slag, and other defects which might be hazardous to personnel and equipment.

5.2 Tank interior shall be coated with light. oil.

5.3 Tank exterior shall have the surface prepared and then be coated with one coat. of Inorganic ZincSilicate in accordance with the manufacture's instructions.

5.4 On the vertical centerline of front face of each compartment. and approximately 150mm below top edge of the tank,it. shall contain a label in accordance with ASTM F1166indicating the following:

{a) Compartment contents

(b) Compartment Pressure Rating

(c) Compartment Capacity

(d) “Caution -NOT APPROVED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS”

6. Performance Requirements

6. 1 Tanks shall be designed in accordance with ASME Pressure Vessel code, Section VIII, Div. 1, Pressure Vessels; Section IX, Welding and Brazing Qualification.

6.2 Each compartment of t-he dispensing tank and the entire tank shall tested hydrostatically to a pressure of at least. 150% of the working pressure for a period of at least. ten minutes, There shall be no visible leakage during the test, nor any visible permanent. distortion after the pressure has been removed.

6.3 Foundations shall support the weight of fluid and structure in accordance with American Bureau of Shipping Rules for Building and Classing steel Vessels or other special requirement.

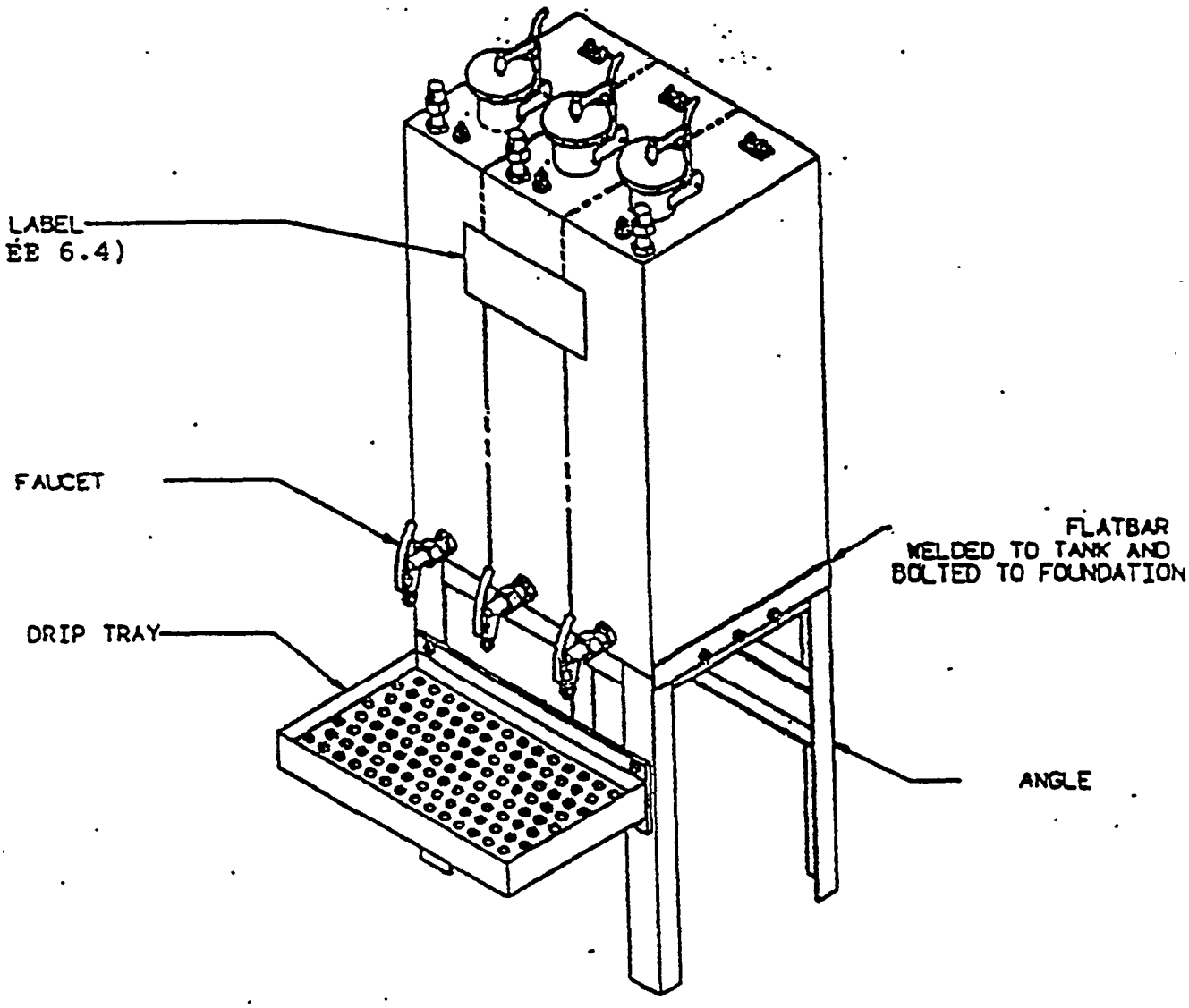
7. Packaging and Package Marking

7. 1 The package or crate shall bear a weather-resistant tag showing the purchase order number, ASTM Designation, Number of compartments and capacities, and name of manufacturer. The markings on the package or crate shall be at. least. 1Omm high.

7.2 The tanks shall be crated or packaged in a manner acceptable for shipment by commercial common carrier. The tanks shall be packaged individually.

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE, THE REVISIONS HAVE BEEN INDICATED IN ITALICS.



- 3 COMPARTMENT TANK

FIGURE 1

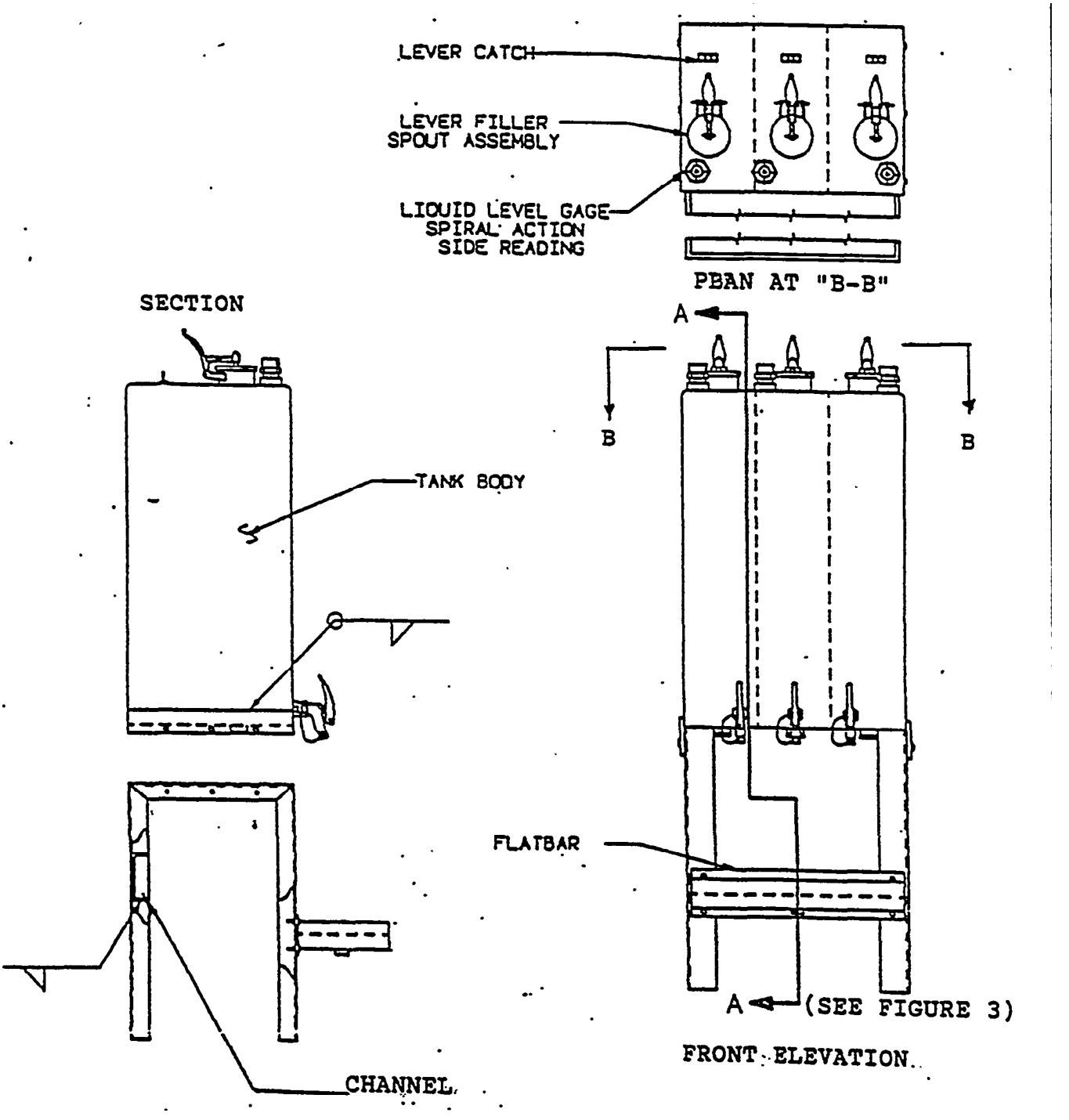
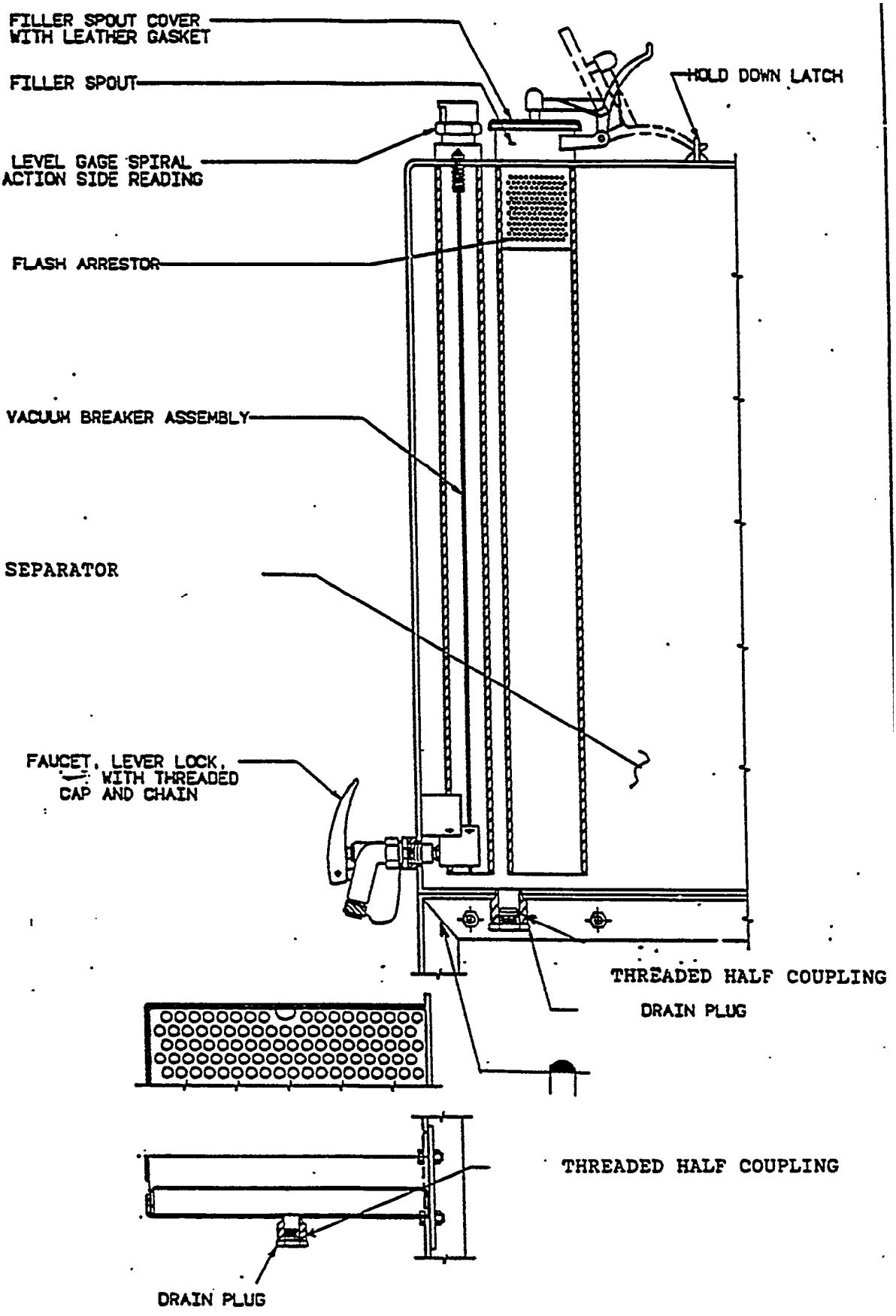

LEVER CATCH
LEVER FILLER SPOUT ASSEMBLY
LIQUID LEVEL GAGE SPIRAL ACTION SIDE READING
PBAN AT "B-B"
SECTION
A
B
B
TANK BODY
FLATBAR
A
(SEE FIGURE 3)
FRONT ELEVATION
CHANNEL

FIGURE.2



SECTION "A-A"

FIGURE 3

AUDIT TRAIL October 1989

THREE COMPARTMENT - 60 GAL DISPENSING TANK

N. Lemley: (USCG)	
1. Label the tank to resolve any conflict "NOT APPROVED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS"	Agree - incorporated in para 6.4
2. Sets performance requirements, but there are no tests procedures given.	Concur - para 7 has been completely revised
K. O'Connor: CD&P Inc.)	
3. Assign figure numbers to pages 5, 6, & 7.	Concur
4. Para 5.1 - Revise para to reflect these new figure numbers	Concur
J. Nachtshelm: (Consultant)	
5. Para 4.2.1 - delete "all welded steel" and **in** lieu insert "in Figures 1,2,& 3"	Concur
6. Para 5.1 - add the following in this para "Figures 1,2,& 3"	Concur
F. Darvalics: (NASSCO)	
7. General comments - This standard is a commercially available product supplied by one vendor and as such should not be an ASTM standard. If this were to be an ASTM standard with the permission of the vendor then a much more higher level of detail and dimensioning would be required to build this item.....	Disagree - At the F25.03 meeting at ASTM on 10/11/89 these comments made by F.Darvalics were considered non-persuasive-because the standard opens up the production to any manufacturer who is capable of producing the product with a vote of 7 to 0.
F25.03 meeting at Orlando Fl., on December 6, 1989.	January 199(
1. Revise some paras. and include technology to be consistent with 65 Gallon specification.	Complied with - see paras. 4.1.3, 4.2.2, 5.2.1, 6.3, 6.4 & 8.1
M. Rosenberg (90-2 MCLB)	Draft No.6
1. Insert hyphens between "Three" & "Compartment" and between "60" & "Gallon" in title.	Concur

2. Para 6.3 - Typo on 2nd line "Silicte" to read "Silicate".	Concur
3. Para 6.4 - Label Plate. Where on the Tank Is the Label Plate to be affixed? Fig. 3 does indicate an approximate location, but.....	Concur - So Indicated
4. Para 4.1 - Insert new Para 4.1.10 and specify the material of Label Plate.....	Concur
5. Para 8.1 - Where is the tag to be affixed? On the Tank or on the package, and is it a tag or is It painted?	Concur - Revised Para
Linda Bashoor	(90-2 MCLB)
6. Para 2.2 - Capitalize "rules"	Concur
7. Para 6.2 - Change "Coat Tank Interior" to "Tank Interior shall be coated".	Concur
8. Para 6.3 - Correct spelling of "Silicate"	Concur - See Comment (21 above
9. Wherever inch-pound units are called out In text include metric value in parentheses afterwards.	Concur
Kevin O'Connor (JJH)	(90-2 MCLB)
10. Fig. 1 & 2 should have title assigned to them.	Concur
11. Fig. 1 - Next to either top or bottom "A" (Detail A-A) insert (See Figure 2).....	Concur
12. Fig. 2 - If "A-A" Section is the title of this Figure Insert..	Non-Concur - Figure No.'s have been changed and comment (10) has been adhered to.
13. Fig. 3 - Under Label revise to show (See 6,4).	Concur
Chas Sinche (JJH)	(90-2 MCLB)
14. Para 5.2.1 - Delete last weight. This IS purely a function of the amount of liquid in the tank - In addition we state the tasks aren't to be filled with water.	Non-Concur - Since S.G. of water Is 1 and since 95% of liquids to be used IS less than 1, we are using this as a factor of safety. The weights are correct.

R. Butler (Deutsch) (90-2 MCLB)

15. General Comment - Key words must be included at the end of document.... Concur

16. ... one standard rather than a series of specifications In 5 Gallon Increments. Non-Concur

ASTM F25.03 - Panel Meeting at San Antonio, Texas - December 1990
Revised the following:

1. Changed the title to a general style,

2. Para 1.1 - Deleted "60 Gal. 3 Equal Compartment".

3. Para 1.4 - Changed "inch-pound" to "S1 Units".

4. Added Para 3.1.4 “number of compartments & capacities"

5. Para 4.1.9 - Deleted "3/4 in NPS".

6. Para 4.2.1 - Rewrote para "Figures 1, 2 & 3 illustrates typical of multi-compartment dispensing tank with attachments and fittings".

7. Deleted Section 5 "Dimensions and Weights" in it's entirety.

8. Section 6 - Changed to Sect.5-

9. New Para 5.3 - Revised to read "tank exterior shall have the surface prepared and one coat of inorganic Zinc Silicate coated in accordance w1 the manufacturer's instructions.

10. New Para 5.4 - Added "of each compartment" between "face" and "and" the 1st line.

11. In the 2nd & 3rd line - Added "in accordance with ASTM 1166", between "label" and "Indicating", in lieu of the existing terminology.

12. Para 5.4 Cd) - Commenced sentence with "caution".

13. New Para 6.1

14. New Para 6.2 - Between “each" & "tank" on 1st line, added "corpartme of the dispensing tank and the" 15 added new para "6.3 Shock Requirement if required".

16. Removed all the dimensions from Figures 1, 2 & 3.

Frank Darvalics <NASSCO>

17. See Comment (7) of October 1989. This standard has now been completly revised in a generic form which also includes the 60 & 65 tanks. See Comments Cl-16 above

Draft No.4
ASTM Designation xxx
June, 1990

Standard Practice for Installation Procedures of VINYL DECK COVERING ON PORTABLE PLATES IN ELECTRICAL AND ELECTRONIC SPACES 1

1. Scope.

1.1 This practice covers the acceptable method for installing Insulated deck covering on portable deck plates.

1.2 This deck covering shall be installed, in way of the electrical and electronic spaces, for marine use.

1.3 The values stated in S1 ('metric) units are to be regarded as the standard.

2. Referenced Documents:

2.1 ASTM standards:[2]

D1338 - standard Test Method for Working Life of Liquid or Paste Adhesives by Consistency and Bond Strength.

D2393 - Epoxy Resins & Related Components, Viscosity of.

D4389 - Finished Glass Fabrics Woven, from Glass Fiber *Rovings.

F150 - Flooring, Conducive, Resilient, Electrical Resistance of, Standard Test Method of.

2.2 Other Documents:

Steel Structural Painting Council SP-11.[s]

1 This *Specification* is *under the jurisdiction of ASTM committee F25 or shipbuilding and is the direct responsibility of Subcommittee F25.03 or outfitting.*
2 Available from American Society fur Testing and Materials, 1916 Race street., Philadelphia, PA 19103.
3 AvailabLe from Steel Structures Painting Council, 4400 Fifth Avenue, Pitsburg, Pa 15213.

3. **Requirements.**

3.1 Operations Area.

3.1.1 Typical areas for application of the electric insulating deck covering are:

3.1.2 The operating areas in front and rear of power and lighting switchboard, interior-communication switchboards, test switchboards, fire-contra 1 switchboards , and shipboard announcing-systems amplifiers and control panels.

3. 1.3 The area around electronic equipment which may **be contacted personnel in servicing or tuning energized equipment.**

3.1.4 Vinyl sheets should *be* **confined to the minimum deck** areas **(generally 3 ft. (0.9mm) wide) surrounding the apparatus** necessary to **prevent electric shock, and should, unless otherwise specified, be cemented to the deck in lieu of other specified deck coverings**

3.2 Installation

7.2.1 Vinyl Sheets.

3.2.2 Installation of deck covering shall be in accordance with Fig 1 through 7, using vinyl sheet and **fiberglass binding strips (see Figures 1 and 5).**

Vinyl sheets and fiberglass sheets shall be united at the edges in a rabbet joint. as shown (see Fig. 7). and such that the fiberglass overlaps at all joints. All rabbeted surfaces shall be smooth and corners sharp and square, such that at installation the overlapping areas fit firmly and flush.. Vinyl shall meet requirements and tests provided in ASTM F150.

3.3 Adhesive

3.3.1. Vinyl sheets shall be secured to each portable plate with adhesive. Adhesive should not extend beyond edges of vinyl sheet.

3.3.2 Silicons compound, with 1x liquid catalyst, *should* be applied between lapping areas in accordance with ASTM D1338.

3.4 Fiberglass

3.4.1 Glass fiber base, epoxy resin sheets furnished under this specification, (Figs. 1 and 5) shall be a product consisting of plies or layers of cloth or nonwoven parallel aligned fibers bonded with an epox: res in compound, conforming to ASTM 04389.

3 5 Fastening with nylon screws.

3.5.1 Fiberglass binding strips shall be secured to deck with nylon screws. A 3-in.(76mm) wide strip over joints between portable plates shall be fastened with a double row of screws. A 1 1/2 in. *(38mm)* wide strip or shape to suit *at* deck edges shall be fastened with a single ro of *screws,* spacing between screws not to exceed 5 in.(l27mm) *Center* to Center and located to clear deck plate screws. (See Fig. 7).

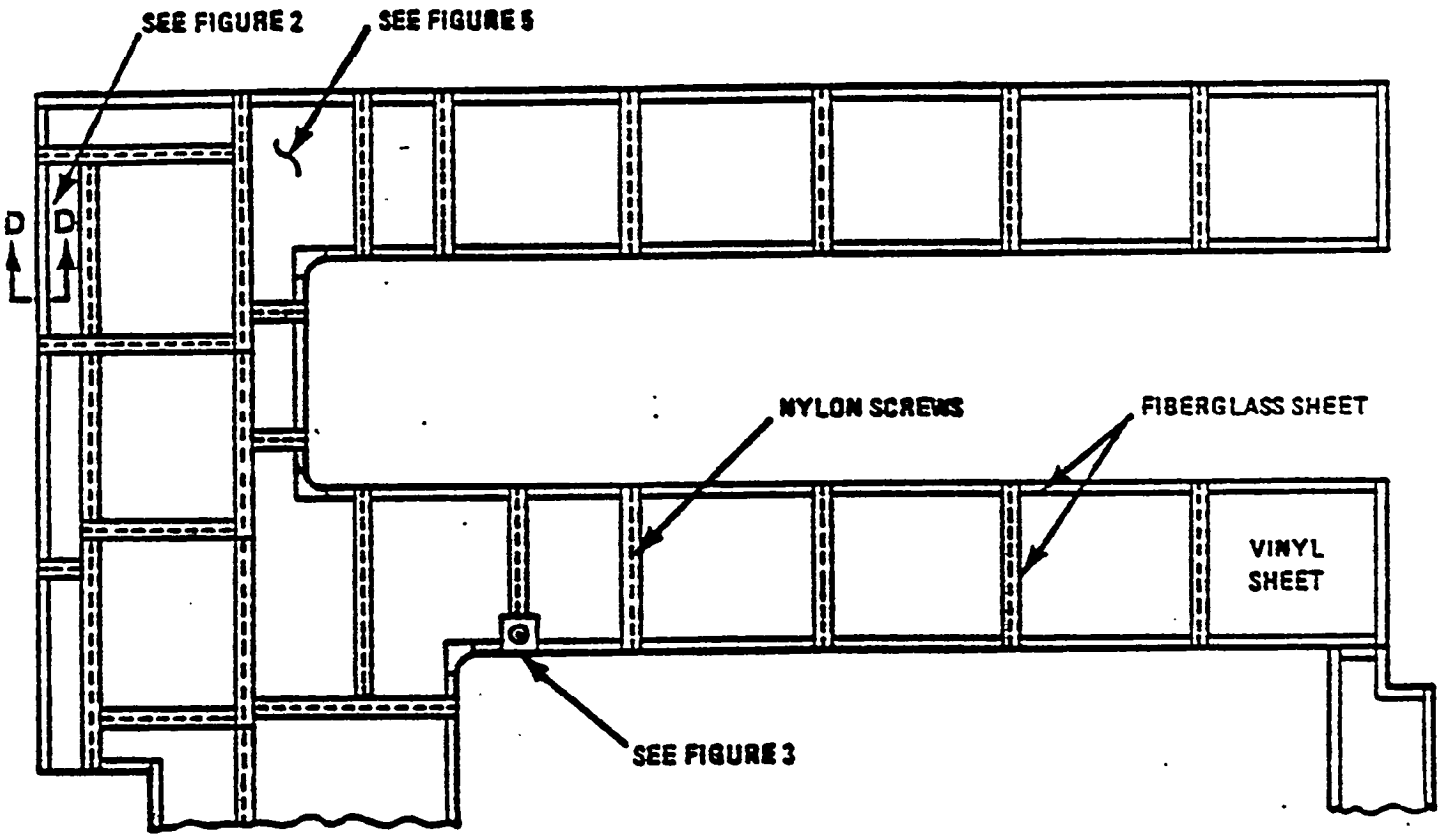
3.4 Exposed areas treated with epoxy.

3.6.1 Before *the* epoxy is applied, the surface to be covered *should* be (a) cleaned with a solvent and (b) *further treated in accordance wit SSPC SP-11.*

3.6.2 *Epozy* resin shall be applied to the exposed vertical lip of deck edges on stanch ions, to approximately 12 in. *(305mm)* above deck, after al 1 other deck covering work has been completed. Application of epoxy shall be by brush to approximately 1/16 in.(1.5mm) thickness, and in accordance with ASTM D2393. (For location of epoxy to be applied, se Figs. 3 and 4).

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE. THE LATEST REVISIONS HAVE BEEN INDICATED IN ITALICS.



PORTABLE DECK PLATES. ELECT/ELEX. SPACE

FIGURE 1 TYPICAL DECK COVERING -PLAN VIEW

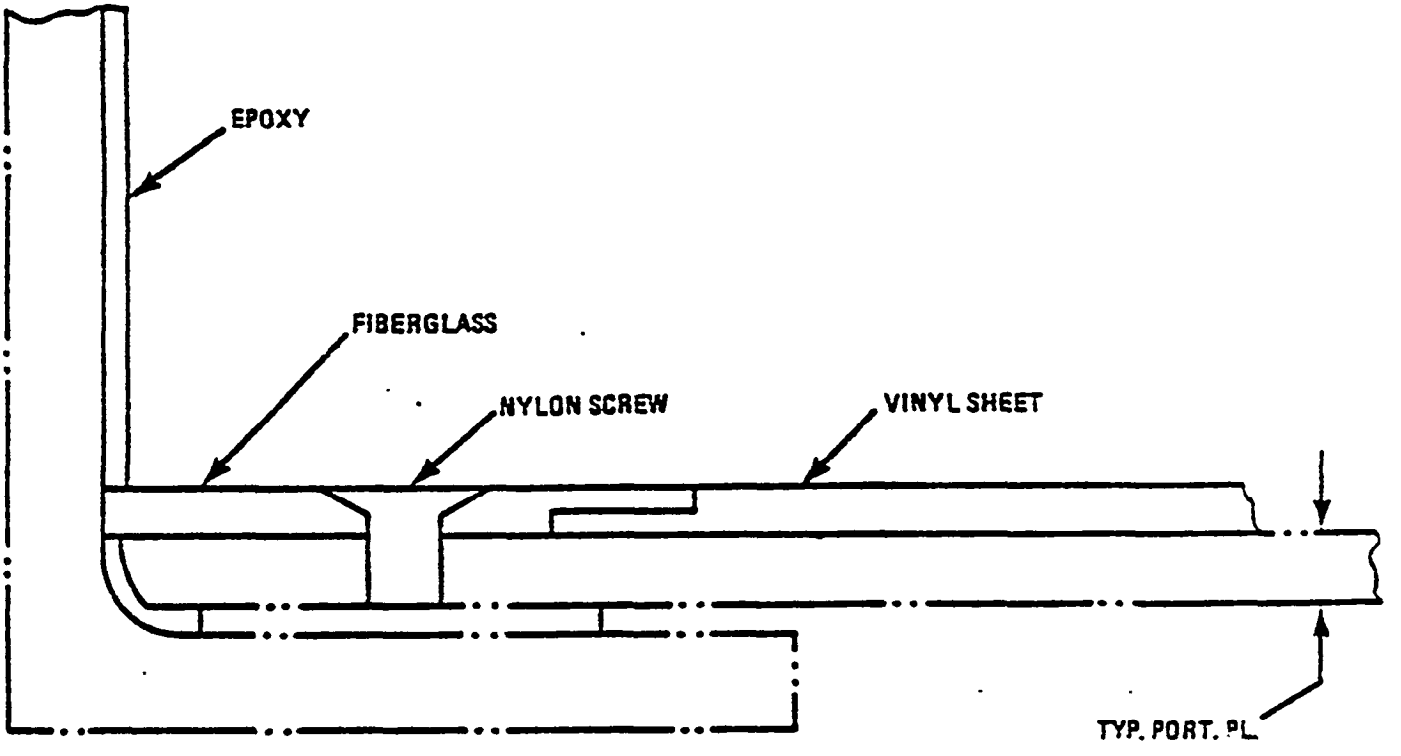


FIGURE 2 SECTION "D-D" (SEE FIGURE 1)

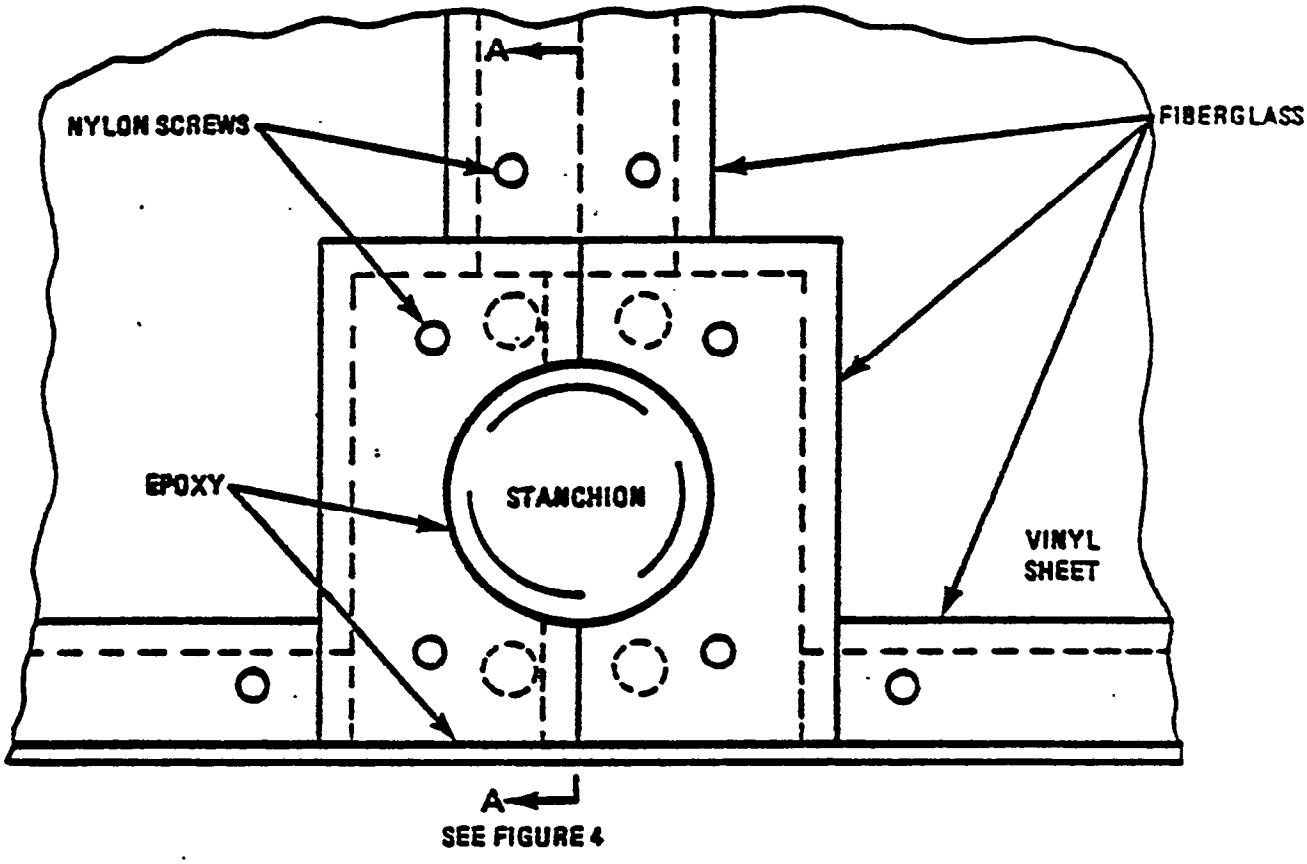


FIGURE 3 EXPANDED VIEW OF DECK COVERING AT STANCHION (TYP)

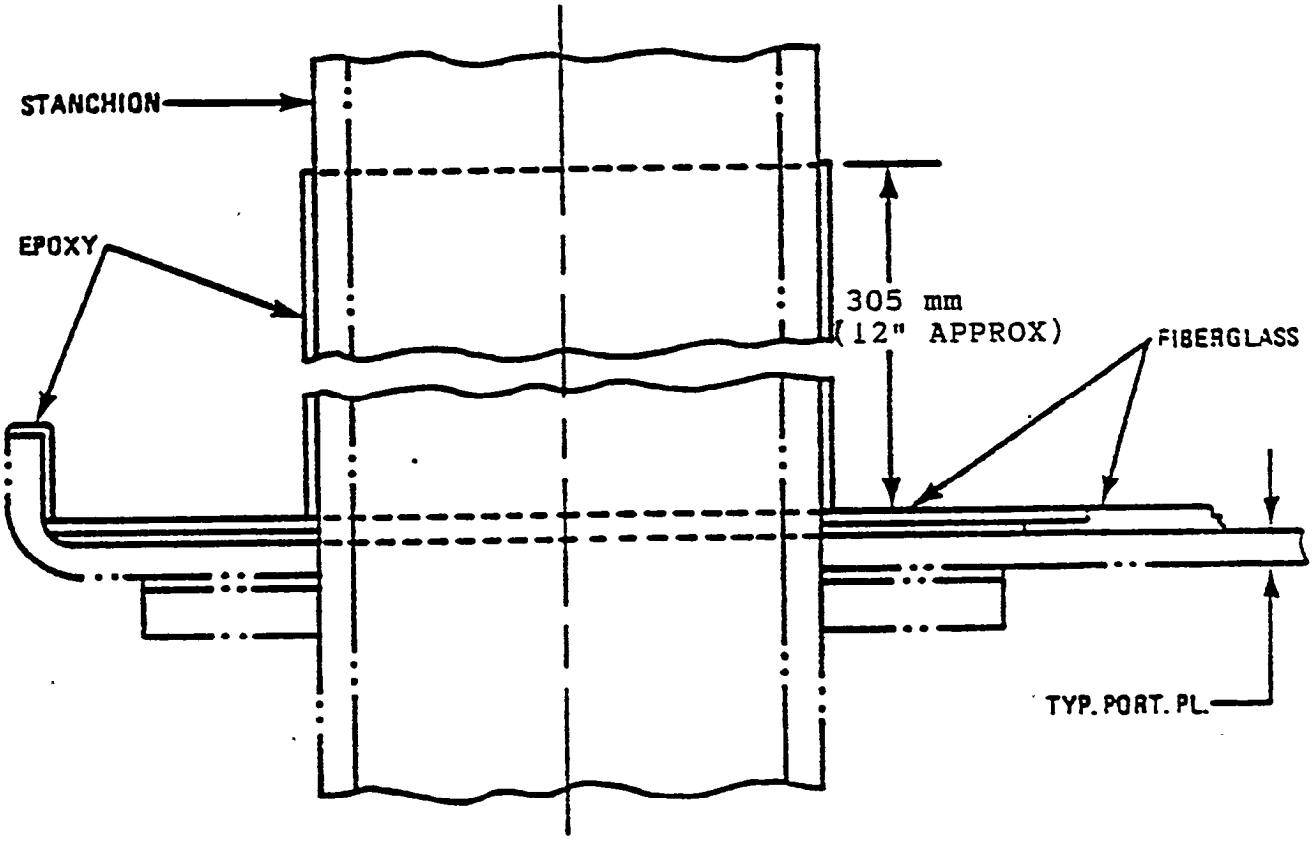


FIGURE 4 SECTION "A-A" (SEE FIGURE 3)

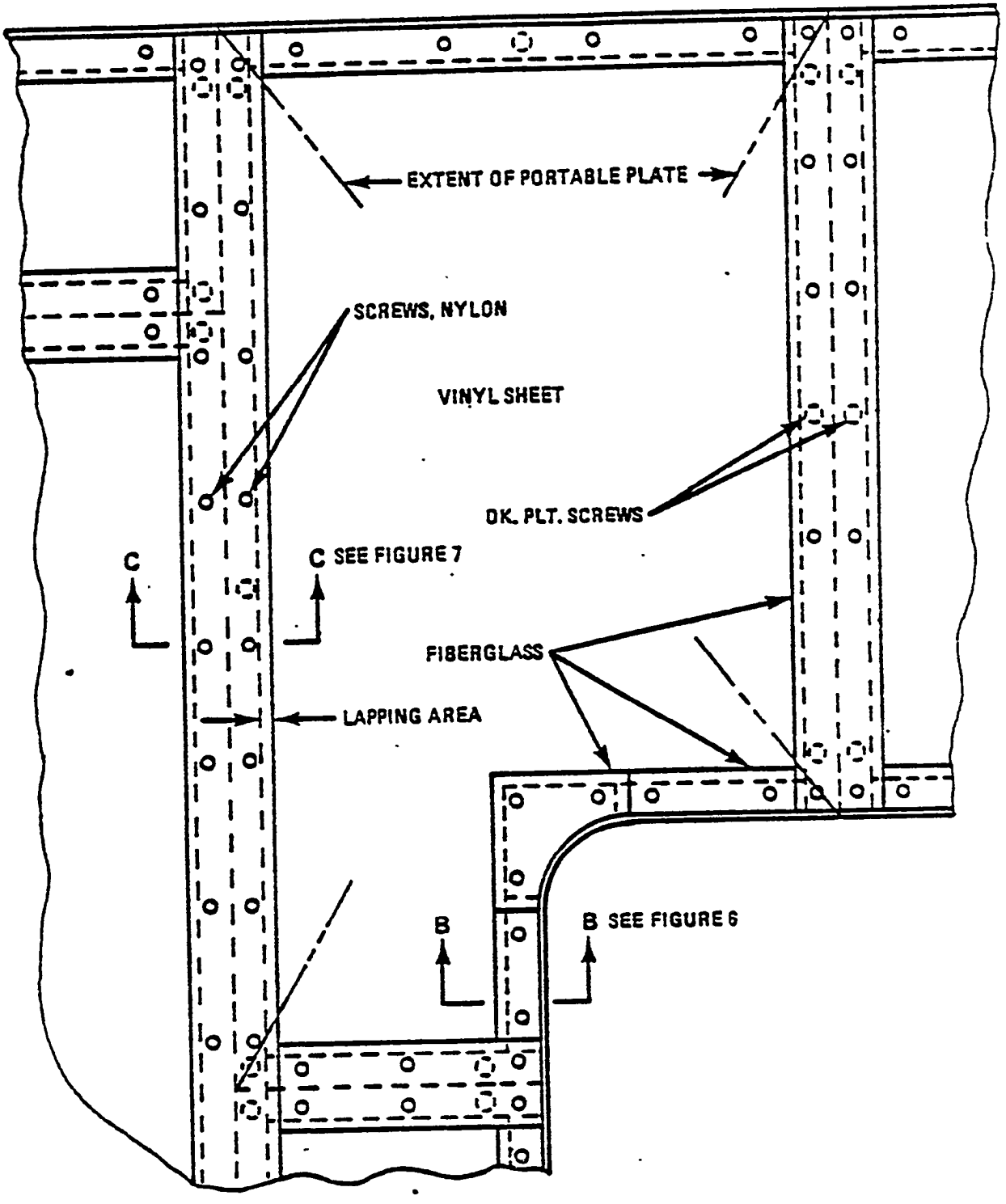


FIGURE 5 EXPANDED VIEW OF ONE PORTABLE PLATE (TYPI

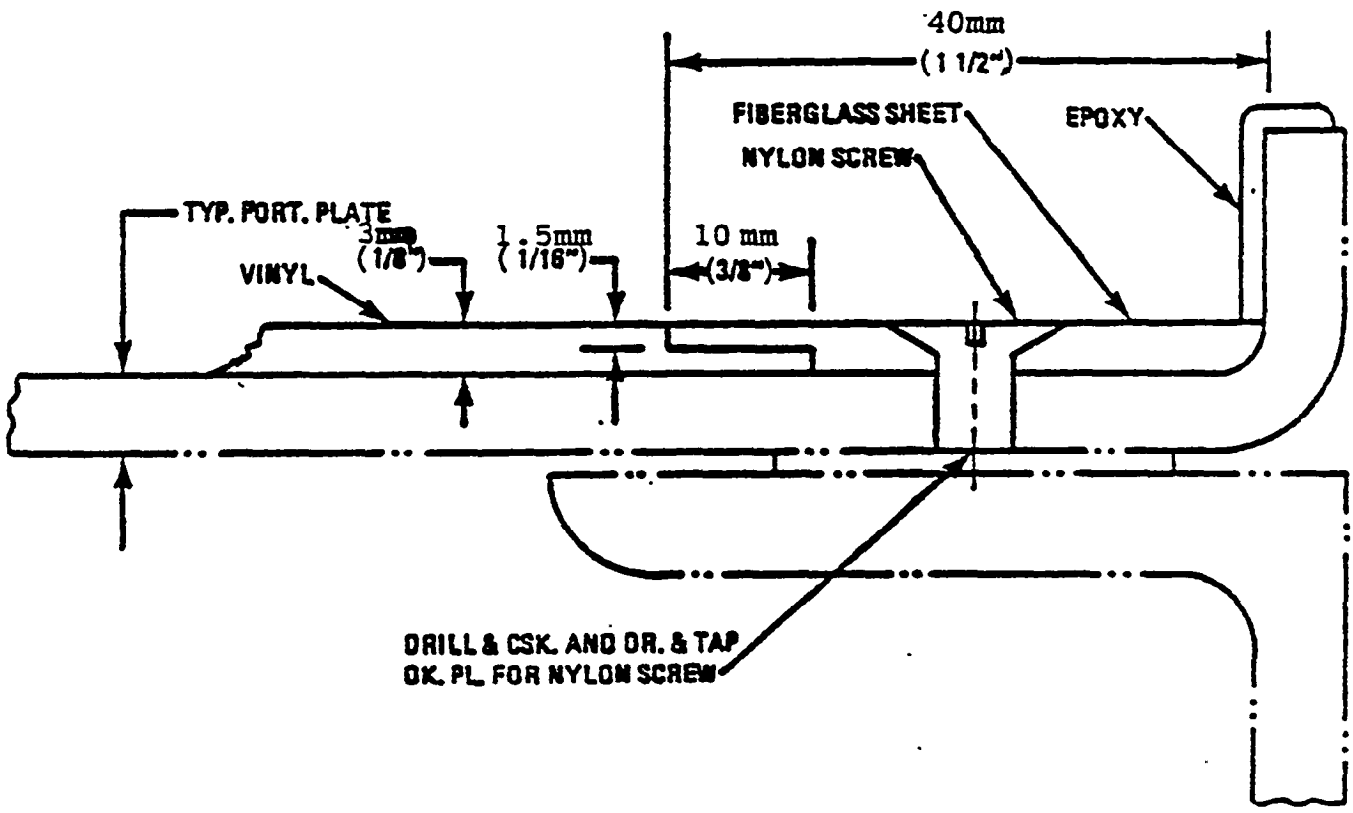


FIGURE **6** SECTION **"8-8" (SEE FIGURE 5)**

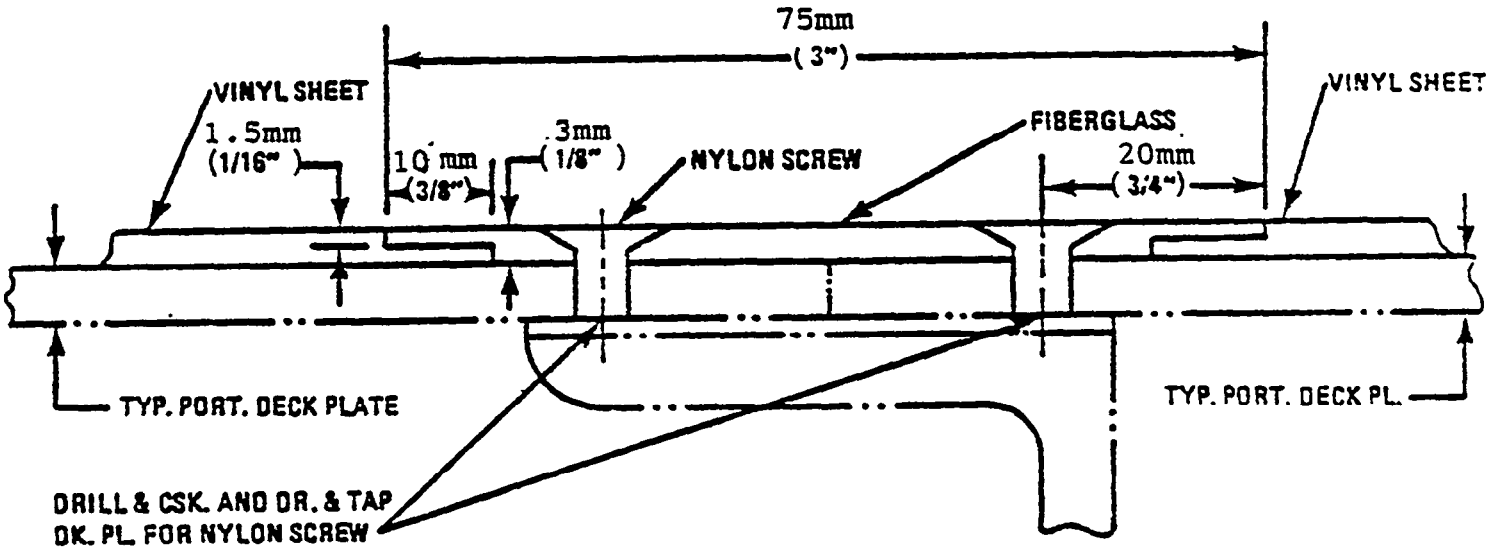


FIGURE 7 SECTION."C-C" (SEE FIGURE 5)

AUDIT TRAIL

FOR

VINYL DECK COVERING IN ELECTRICAL & ELECTRONIC SPACES

December '89 (Draft No.

ASTM F25.03 meeting at Orlando Fl.,
on December 6, 1989

1. Remove Paras. 4, 5 & 6 on Test Methods, Packaging and Marking respectively.	Deleted as indicated

Draft No.3

V. Burnett (J.J.H)

1. Sec. 3.1.4 - Delete this section. "stripship" Is a Navy tern and should not be used in the standard.. . .	Concur-
2. Sec. 3.1.5 - Change "should" to "shall". After "shall" ln third line add "unless otherwise specified"....	Disagree - "shall" is used In Regulations, Specs., etc. What is mandatory - "should" is used to soften direct statement such as In Guides, Practices, etc. Concur with third line.
3. Sec. 3.5.1 - Change "C to C" to "Center to Center".	Concur

L. Bashoor

4. Add - "On Portable Deck Plates" into title.	Concur
5. Para 1.3 on first line change "a" to "the".	Concur
6. Para 2 - Initial Cap the words in the titles.	Concur
7. Para 3.3.1, 3.3.2 & 3.6.1 - Include the word "shall" as noted.	Disagree - See Comment (2) abo
8. Para 3.6.2 - First line should read . . . .the exposed vertical 11p...."	Concur

K. O'Connor

9. Indicate "See Figure 1, see Figure 3 see Figure 5, & see Figure 5" in Figures 2, 4, 6, & 7 respectively an shown.	**Concur**

R.W. Butler (Deutsch M.C.).

10. Para 2 - D4029, D41142, D4389, F150 & F521 not referenced in body of Specs.	**Disagree - See Paras 3.2.3,** 3.3.2, 3.4.1, & 3.6.2 **for referenced Docs.**
11. Para 3.1.5 - Should vinyl be used, It's slippery when wet.	**Should cause no problem.**

N. Lemlev (U.S.C.G.)

12. Dimensions are not *in* metric measurement which is contrary to ASTM F25 policy.	**Concur - Indicated metric**

E. Morgenstern (E.A.)

13. Para 3.6.1 - What is "Paste Acid"? Why is it used?	**Removed terminology - Revised Para 3.6.1.**

C. Sinche (JJH)

14. Para 3.1.4 - I don't see the rele-Vance or usefulness of this paragraph. Recommend delete.	**Concur** - See Comment **(1) above**

Draft Number 7
ASTM Designation xx:
May, 1992

Standard. Specification for

CLEAT ASSEMBLY, MARINE HARDWARE 1

1. Scope

1.1 This specification covers the cleat assembly, comprising cleats pads and bolts, for marine use.

1.2 The cleat assembly shall be used where securing of boat handli lines is required onboard commercial or navy boats and craft.

1.3 The values stated in inch/pound units are to be regarded as the standard;.

2; Referenced Documents

2.1 ASTM Standards:2

A743/A743M - General Applications for Castings,' Iron-Chromium, Iron-Chromium Nickel, Nickel-Base, Corrosion Resistant.

B584 -Specification for Sand Castings, Copper 'Alloy, for Gener - Applications.

F593 - Specification for Stainless Steel Bolts, Hex. Cap Screws Studs.

2.2 Other Documents:[a]

ANSI Standards:

B46.1 - Surface Texture (Surface Roughness, Waviness and Lay)

3. Classification:

3.1 The cleats and pads are furnished in two types as follows:

3.1.1 Type A - Cast Bronze Cleats - ASTM 8584

3.1.2 Type B - CRES Cleats -ASTM A743/A743M

This practice is under the jurisdiction of ASTM F25 Committee on Shipbuilding and is the direct responsibility of Subcommittee F25.03 on Outfitting.

Copies of ASTM Standards may be obtained from American Society for Testing and Materials, 1916 Race Street Philadelphia, PA 19103.

Copies of ANSI Standards may be_obtained from American National Standards' Institute, 1430 Broadway, New York, NY 10029.

4. Ordering Information

4.1 Orders for material under this specification shall include the following:

4.1.1 ASTM Designation, Title, Number, and Date of this Specification.

4.1.2 Cleat Assembly Size (See Table II)

4.1.3 Quantity

4.1.4 Type (See Para 3.0)

4.1.5 Specific type of CRES material for Type B. (See Para 5.1.1)

4.1.6 Specific type of CRES material and length for bolts. (See Para 5.2.2).

5. Material and Manufacture

5.1 Material

5.1.1 Type A cleats and pads shall be cast bronze in accordance with ASTM B584 (90%-95% copper content), Alloy C83450. Type B cleats and pads shall be of CRES Type 304, 316, 316L or other 300 Series.

5.1.2 Stainless steel bolts shall be in accordance with ASTM F593.

5.1.3 All rope chafing surfaces shall have a surface roughness not. greater than 125 micro inches Rms. For definition of surface roughness see ANSI B46.1.

5.2 Manufacture

5.2.1 Cleats and pads shall be in accordance with Figures 1 and 2; with dimensions in accordance with Tables I and II.

5.2.2 Hold down bolts shall be of stainless steel Type 304, 316, 316L or other.300 Series in accordance with ASTM F593 and sized in accordance with column "R" Table II.

6. Packaging

6.1 Each cleat assembly complete with pad and bolts shall be shipped as a unit and shall be boxed or crated acceptable for shipment by a common carrier. Cleat assemblies can be shipped together in a package.

6.2 The packaging shall afford protection against deterioration and physical damage during shipment from the manufacturer to the using activity.

7. Marking

7.1 Containers shall be stenciled with ASTM Standard Designation, size, purchase order number, and name of manufacturer in black paint with approximately l-inch (25.4 mm)-high letters and numbers.

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall apply only when specified by the purchaser in the contract or order.

S1. Quality Assurance Provisions

S1.1 Responsibility for Inspection - The purchaser reserves the right to perform any inspections that are deemed necessary to assure that supplies and service are in accordance with the prescribed requirements.

s1.2 Source Inspection. The purchaser reserves the-right to inspect the manufacturing process and end product at the manufacturer’s plant.

S2. Certification

S2.1 The purchaser shall be furnished certification that the cleats have been tested in a lateral pull in any direction of the load tests indicated-in Table II and all the specifications have been adhered to. In addition, a report of the test results shall be furnished upon request.

NOTE:

With the exception of the footnote, the latest revisions have been indicated in *ITALICS.*

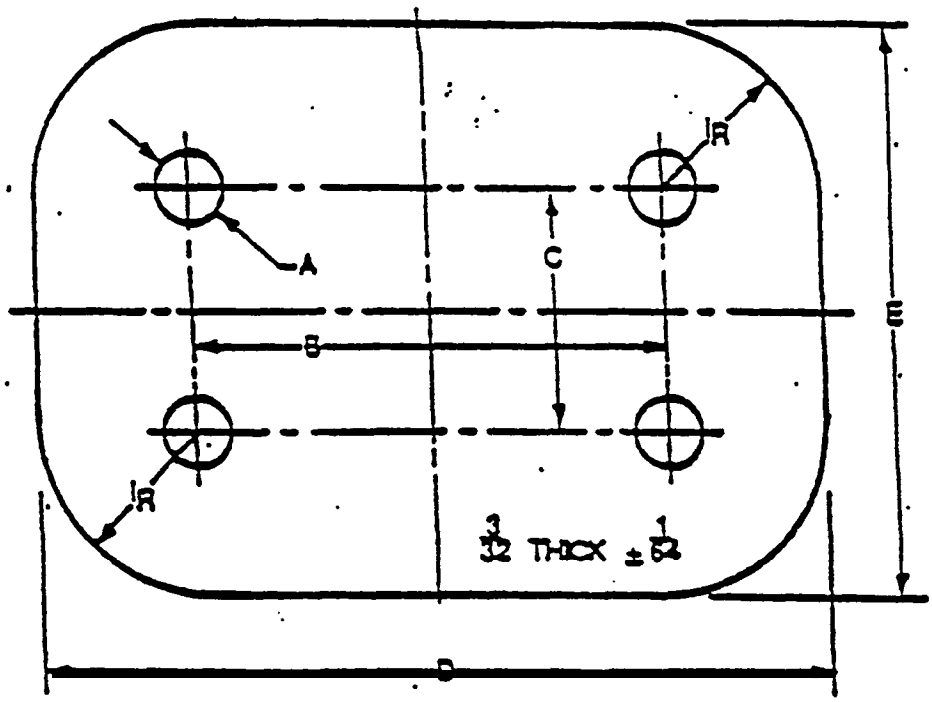


FIGURE 1. CLEAT PAD, MARINE HARDWARE

PAD FOR CLEAT-SIZE	A	B	C	D ±1/8	E ±1/8
	INCH	INCHES	INCHES	INCHES	INCHES
10"	13/32	3-1/2	2-1/4	5-1/2	4-1/4
12"	17/32	4	2-3/8	6	4-3/8
15"	17/32	5	2-5/8	7	4-5/8

TI 5086

1"=25.4mm

TABLE I. DIMENSIONS OF CLEAT PAD

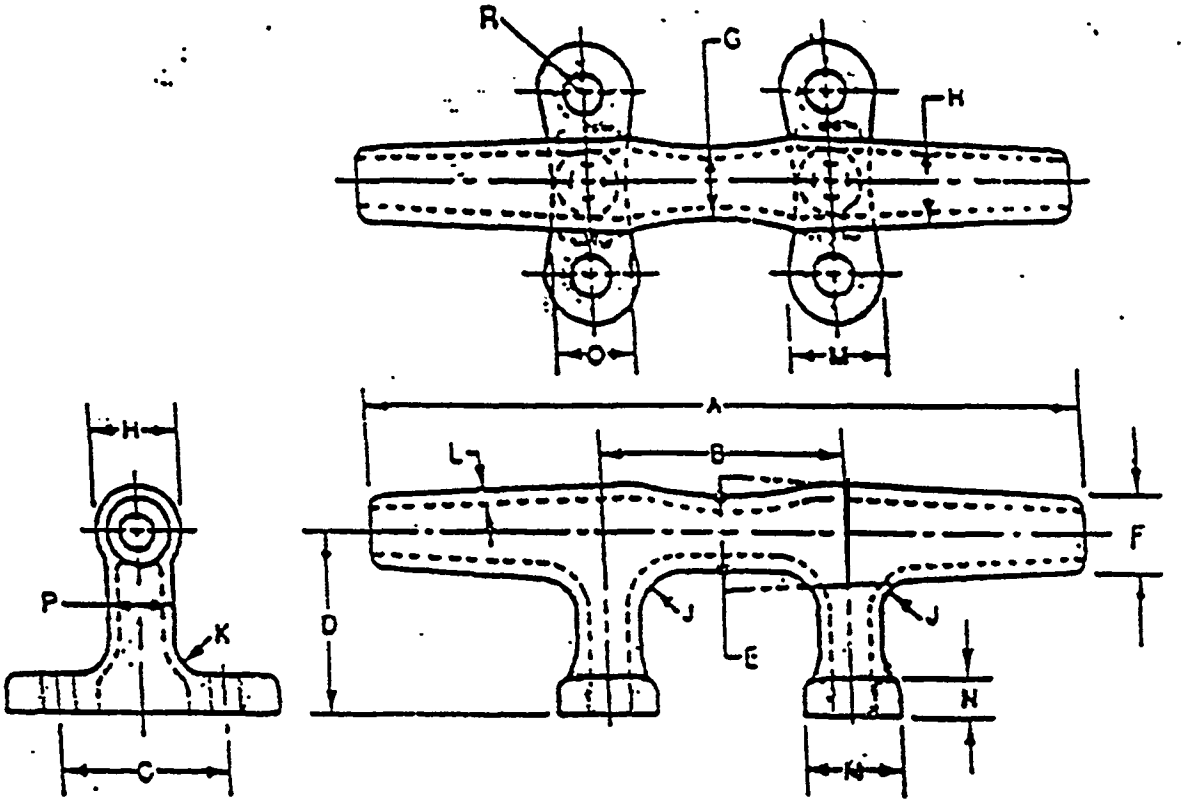


FIGURE2 CLEAT, MARINE HARDWARE

SIZE OF CLEAT	DIMENSIONS OF CLEATS AND BOLTS (INCHES)* *																CLEAT TEST LOAD-LBS
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R*	
10	10	3 1/2	2 1/4	2 9/16	1 3/8	7/8	1	1 3/16	1/2	3/8	5/32	1 1/4	7/16	1	13/16	3/8	3900
12	12	4	2 3/8	3	1 1/2	1	1 1/8	1 5/16	5/8	3/8	3/16	1/8	1/2	1 1/8	1	1/2	6600
15	15	5	2 5/8	3 1/4	1 1/2	1	1 1/8	1 5/16	5/8	3/8	3/16	1/8	1/2	1 1/8	1	1/2	9700

* * TOLERANCES IN INCHES:
LENGTH OF HORNS . . . . . e 114
OTHER DIMENSIONS (EXCEPT HOLES) . . . . . ± 1/32
HOLES(BOLT) . . . . . +1/32
-0

* R - DIAMETER OF HOLDING DOWN BOLTS.
(ASTM F593)

1 "= 25.4mm
ILB (FORCE) = 4.448N

TABLE II. DIMENSIONS

AUDIT TRAIL,
FOR
CLEATS: MARINE HARDWARE

AVONDALE

1. Combine 1.1, 1.2 and 1.3 into one statement.	Disagree- however we eliminate 1.2.
2. Delete MIL-STD-129	Agree
3. Para.4.1.1 - Why not reference A181 as done in 4.1.27	Disagree - Eliminated A181. Reference B140.
4. Delete reference to "commercial" in 4.1.1 and 4.1.2.	Agree
5. Paras.4.2.1 and 4.2.2 - Delete "Design feature of". These are not optional features, they are 'mandatory construction requirements.	Disagree - "Design features" do not imply "Optional features“
6. Para.4.2.1.1 and 4.2.2.1 - Figures 1 & 2 do not indicate any finish requirements.	Revised
7. Delete 5.1 & 5.2 - They are covered by 4.1.1 & 4.1.2.	Complied
8. Paras.5.2.1 & 5.3 should be in manufacture section.	See paras.4.2.3 and 4.2.4.
9.Delete Section 6 (Quality Control)	See S2 in Supplementary
10 Delete reference to MIL-STD-129 -	Agree
11 Delete the supplementary requirement section.	Negative-We find it required f #9 (above) and the supersessior statement
12 Figure 1-Dimension extension . lines should not cross.	Disagree - This will not harm the spec.
13 Why not (up) a tolerance section in the body of the standard.	Disagree - Tolerances are well presented.-

NASSCO:

14 Satisfactory

PETERSON BUILDERS:

15 Satisfactory

TACOMA:

16 No Comment	

NAVSEA:

17 Include, in the Table the test load requirements.	Complied - See Table II
General Dynamics (Electric Boat)	1 1 / 8 / 8 9
1 Para 2.1 Spec Nos. A240 & B140 should, be interchanged.	Complied
2 ASTM A240 not listed in the body of the draft, indicate where used.	Complied - see para. 4.2.4
NAVSEA (56Y21)	11/8/89
3 ASTM B140 in paras 4.1.1 and 2.1 are in contradiction, resolve the situation..	Agree - see comment (1) above
NAVSEA (552)	11/13/89
4 Para 1.2 Change "ships" to "boats. and craft"	Agree
5 Para 4.1 Navy uses CRES cleats. Therefore para .4.1 must call out CRES	Agree
6 Para 4.1.1 insert "cast" before "bronze"	Agree
7 Add para 4.1.2 - "Para 4.1.2 All rope chafing surfaces shall have a surface roughness of 125 micro inches Rms,or,less. For definition of surface roughness see ANSI 846.1	Complied - See new para 4.1.2
8. Delete paras 4.2.l.l and 4.2.2 as these two paras are redundant.	Agree - since para 4.1.1 was revised- and para 4.1.2 was inserted (see comment 7 above)
9 Para 4.2.3 - renumber as "4.2.2"	Agree
10. Para 4.2.4 change "holding" to "hold" and renumber to "4.2.3"	Agree
11 Para 6.1 - last line after “number" delete the period and insert "with the following Address, purchase order number and manufacturer's name“	Disagree - this is redundant

12 Para 2.2 - add "2.2 Other Documents" under this heading list "ANSI/ASME 846.1 Surface Texture (Surface roughness; Waviness and Lay)"	Aqree but ASME has been removed since it does not belong to this

G. Nelson (Allied Insulation Supply) **DRAFT NO.3**

13 Para 4.1 - After "CRES" and before "and" insert "304, 316, 316L or other as approved“.	Complied with

NAVSEA

14 Delete "Hollow" from Para 1.1..	Complied with
15 Paras. 4.1 & 4.2.3, indicate the type of Cres/Stainless Steel to be "304, 316, 316L or other as approved;'.	Complied with

M. Rosenberg (Consultant)

16 Para 1.2 - Delete "shall" and rewrite "The cleats described in this....."	Disagree - It is mandatory in *a* Spec. but not quite so in a "Guir or "Practice".
17 Para 4.1 - Change the "and" to "or" .	Concur.
18 Para 3 - Insert a new Para "Material or manufacture: CRES or Cast Bronze.	Concur
19 Para 52.1 - Responsibility for Inspection states that the purch- aser reserves the right to perform	Concur with rewording as noted in S2.1.
20 Table II - The correct version is 1 pound (force) - 4.448 newtons not 1 lb - 0.45 kg.	Concur - Revised

J. Forney (NAVSEA)

21 Para 4.1.1 - ASTM B140 is not Cast Bronze.....should be ASTM B584, Alloy C83450.	Concur
22 Para 4.1 - Spec. for Stainless Steel Castings is ASTM A743/A743M.	Included in Specs.
23 Para 4.2.2 - ASTM A240 is not the correct Spec. for Stainless Steel Bolts - Correct Spec is ASTM F593.	Concur - Revised

Vernon Olson (NET)

24 Para 4.1 - Material shall be Cres or Cast Bronze.	Concur - See Comment (17).
25 Para 4.1.1 - Indicate ASTM No. for Cres Cleats.	Concur
26 Para 4.2.2 - Copper content indicated isn't it redundant?	Not redundant - Making sure the right copper content. is in mater a

Victor Burnett

27 Para 3 - Add new "3.1.2 Cleat size" and renumber remaining paras.	C o n c u r
28 Para 4.1 & 4.1.1 conflict - Revise Specs. to cover Type A - Cast Bronze Cleats and Type B - Cres Cleats & add as an option in ordering info.	Concur
29 Para 4.2 - Revise, i.e delete "design" & "shall be"..	Concur - Revised
30 Para 4.2.2 - Revise to cover Cres Cleats	Concur - Added 4.2.2.1
31 Delete paras S1 & S2 or add inspection requirements....	Deleted S1 - Navy may want to invoke inspection & indicate test load as noted in Table 11.
32 Table II - What is it's purpose; the last column?	This is intended to be a require ment if the Navy wants it so.

Tom Hopkins

33 Add Types of Cres that are acceptable.	Concur - See Comment (13)

Kevin O'Connor (D&P)

34 Para 4:1 - Add (304, 316....)	Concur - See Comment (13)

Vic Burnett (JJH) **Draft No.4**

1. Paras 4.1.1 & 4.1.1.1 - Move to new Para 3. Classification.	Concur
2. Para 3.1.4 - Delete & substitute "3.1.4 Type"..	Since Para 3 is on Classification Revised para reads "4.1.4 Type".

Charles Sinche (JJH)	
3. Renumber the supplement	**Concur**
Marvin Rosenberg (MR)	
4. Para 4.2.2 & 4.2.2.1 - Insert a classification para. defining two types.	**Concur - See comment (1).**
5. Para 4.1 - Insert "300 Series" on 1st line.	**Concur**
6. Para 4.1 - "as approved" by whom?	**"Approved by purchaser" has now been noted in the draft.**
7. Para 4.2.2- Don't understand as written.....	**Further clarified**
8. Para 4.2.2 & 4.2.2.1 - Is the 30 kpsi the tensile strength of the material used in fabrication of the cleat, or is for the as built cleat?	**This is the tensile strength for the as-built cleat and has now been clarified.**
9. 4.2.2.1 - This para is not a sub-para of 4.2.2; it should be changed.	**Concur**
10. Para 4.2.3 - Hold down bolts, 3rd line insert "ASTM F593".	**Concur**
11. Figure 2 - Delete "Hollow".	**Concur**
12. General Comment - There should be a first article test, tensile test,...	**Included a new Para 6 on certification tests.**
Sam Morrison (SM)	**DRAFT NO.5**
1. Para 5.2.2 is deficient in at least two respects:	
(a) It specifies a minimum tensile strength for cleats but does not list a Std Test Method.....	**Concur - See Para 2 a S1.3**
(b) The requirement for Copper content is a material requirement.....	**Concur - Removed from Para 5.2.2 and indicated in material section.**
Rogers A Moore (RM)	
2. Figure noted in column M in Table II to be corrected.	**Concur - was a typo!**
Charles Sinche	
3. In Figure 1, change Figures under "M" to 1 3/8".	**I believe you mean Table II Concur - See Comment (2) abc**

N.A. Jergovich (MARAD)	DRAFT NO.6
1. scope - Recommend clarify terms of "cleat" be defined as an assembly of cleat, pad & bolt...	Concur
2. Footnote 2 - "American Society of Testing Materials" be revised to read "American Society for Testing Materials",	Revised
3. Paras 4.1.2, 4.1.4 & 4.1.5 - Recommend after each of these, identify the paras in this spec....	Concur
4. Para 4.1.5 - Either delete packing from this para or provide a para with "packing requirements",	Concur - Deleted
5. Para 5.1.1 (a) - Specific type of CRES material for Type B cleats be shown in para 4. (b) All the options available in ordering info for Type A alloy, and therefor "as approved by purchaser" should be deleted.	Concur
6. Para 5.2.3 - Insert a line in para 4, showing specific type of SS steel reqd, and the bolt length for bolts.	Concur
7. Para S1.1 - Since no inspection reqts are in this spec., it is recommended "perform any of the inspections setforth in this spec." be deleted.	Concur
8. Para S1.2 - States "inspect the manufacturing process and end....	Concur - Revised
9. Para S1.3 - This requires cleats to be tested per ASTM A370. Para 2.1 shows ASTM 370 apples to steel products....	Concur - Deleted
H. T. Haller <MARAD>	
10. Comments identical, to comments (1) to (9) above.	See resolution to Comments to (9) above.
Sam Morrison	
11. Para 5.2.2- The tensile strength of the cleat material should he determined	Concur - Deleted

I.A.W. applicable material specs A743 or 8584. . . . . ..Should eleminate this para.	
12. 51.3 - There is nothing in A370 that covers the type of test reqts.....	Not Reqd - Deleted this para
Gary North	
13. Table II - Change first cleat size "16" to "10"	Concur
Ray Parzych	
14. Para 5.1.1 - Reverse sentences.....	Concur
15. Para.6.1 - Remove last 3 words "for 'immediate use"...	Concur
16. S2 Certification - Add "upon request" to end of sentence.	Non-Concur
17. General - The spec should address nuts & washers.	Non-Concur - Covered in F59
Chas Sinche	
18. Para 5.1.1 - Type A cleats should be described before Type B cleats.	Concur - See Comment (14) above.
19. para 5.2.2 - There should be a metric equivalent to 30,000 p.s.i.	Non-Concur - Deleted - See Comment (11).
Stan Krohn	
20. Para 1.2 - Revise "and" to read "or" 2nd line.	Concur
21. Para 4.1.5 - Change "packing" to read "preservation".	Non-concur - Deleted, Not R
22. Para 5.1.1 - Revise to read as noted.	Non-concur - Descriptions o Type "A" should read before Type "8".
23. Paras 5.1.1 & 5.1.2 - Revise to	Concur
24. Para 5.2.3 - "As approved" is questionable after "300 Series".	Deleted - See Comment (5) above.
25. Para 6.1 - Delete "for immediate use" from end of para.	Concur

24. Para **S1. 1 -** Revise **para as noted.**	Concur - **Revised per** Comment **(7) .**
27. General - Correct editorial changes as noted.	**concur**

H. W. Thurber

28. Questionable **whether F593 is correct,** since **Fig.2 is shown as drilled & counter-sunk** making **flat or** CSK head mach. screws....	Concur **- Modified Fig.2 to suit.**
29. Para 5.1.1 - Type A **should be first....**	Concur - See Comment (7) abo :
30. Para 5.1.1 - **Shouldn't Type A also include** pads?	Concur - Revised
31 . **Para 5.1.2 - See** my **comment (29) above.**	**Corrected**
32. Para 5.1.3 - "Chaffing" is misspelled.	Corrected

D.C. Beacon

33. Revise "and to read “or".	**Concur -** See Comment (21).
34. Para 3.1.2 - Capitalize CRES.	Concur
35. Para **5.1.1 -** Type **“A" should come after Type “B“ as noted.**	Concur - See Comment (7)

Draft No. 8
ASTM Designation XXXX
February, 1982

Standard Practice for

PLATFORMS IN CARGO TANKS[1]

1. Scope

1.1 This Standard Practice provides design, construction and installation criteria for Platforms in Cargo Tanks.

1.2 Where platforms are attached to ladders see Figures 1,2,3 & 4. This practice will be used in conjunction with ASTM XXX "Standard Practice for Inclined Cargo Tank Ladders".

1.3 The values stated in metric (SI) units are to be regarded as the standard. The values stated in parentheses are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

A36 Specification for Structural Steel.[2]

2.2 Military Specifications:

MIL-C-27725 - Coatings, Corrosion Preventive, for Aircraft Integral Fuel Tanks[3]

MIL-G-18015 - Grating, Metal, other than Bar Type (Shipboard Use).[3]

2.3 **Other Documents :**

American Bureau of Shipping Rules for Building and Classing Steel Vessels.[4]

American Welding Society Publication, AWS D1.1 Structural Welding Code.[8]

steel *Structure Painting Council Specification'*

This practice is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee F25.03 On outfitting.

Available from American Society of Testing *Materials, 1916 Race Stree Philadelphia, PA 19103.*

Available *from Naval Publications and Form Center, 5801 Tabor Ave, Philadelphia, PA 19120.*

4 *Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, Paramus, N.J. 07653.*

5 *Available from American Welding Society, 2501 N.W. 7th st., Miami, F1 33125.*

6 *Available from Steel Structure Painting Council, 4400 5th Ave., Pittsburgh, PA 15213.*

3. Significance and Use

3.1 This practice establishes the procedure for the construction and installation of platforms to be fabricated and installed by the shipyards within the cargo tanks.

4. **Materials and Manufacture**

4.1 **Material:**

4.1.1 Gratings - 1.8 kg (4lb) expanded metal fabricated from MIL-G-18015.

4.1.2 Flanged Plate Supports - Fabricated from 10 mm 3/8 in. appro) 380 mm (l5 in. approx) of carbon steel ASTM A36.

4.1.3 Angle Supports - 75 mm (3 in. approx) x 75 mm x 10 mm 3/8 in. approx) structural angles of carbon steel ASTM A36

4.1.4 Stanchions - 25 *mm (1 in.* approx) diameter carbon steel.

4.2 **Manufacture:**

4.2.1 Platforms shall be constructed as shown in Figures 1, 2, 3 & 4.

4.2.2 The dimensions indicated in Figures 1, 2, 3 & 4 are for the commonly used sizes.However dimensions can be modified to suit other existing structures.

4.2.3 Platforms shall be designed to support static loads of at least 9.58 kPa (200 psf approx).

4.2.4 Platforms shall be locally reinforced where greater loads are contemplated for removal or disassembly of machinery.

4.2.5 All welding shall be in accordance with American Bureau of shipping and Classing Steel Vessels or American Welding Society Publication AWS D1.1.

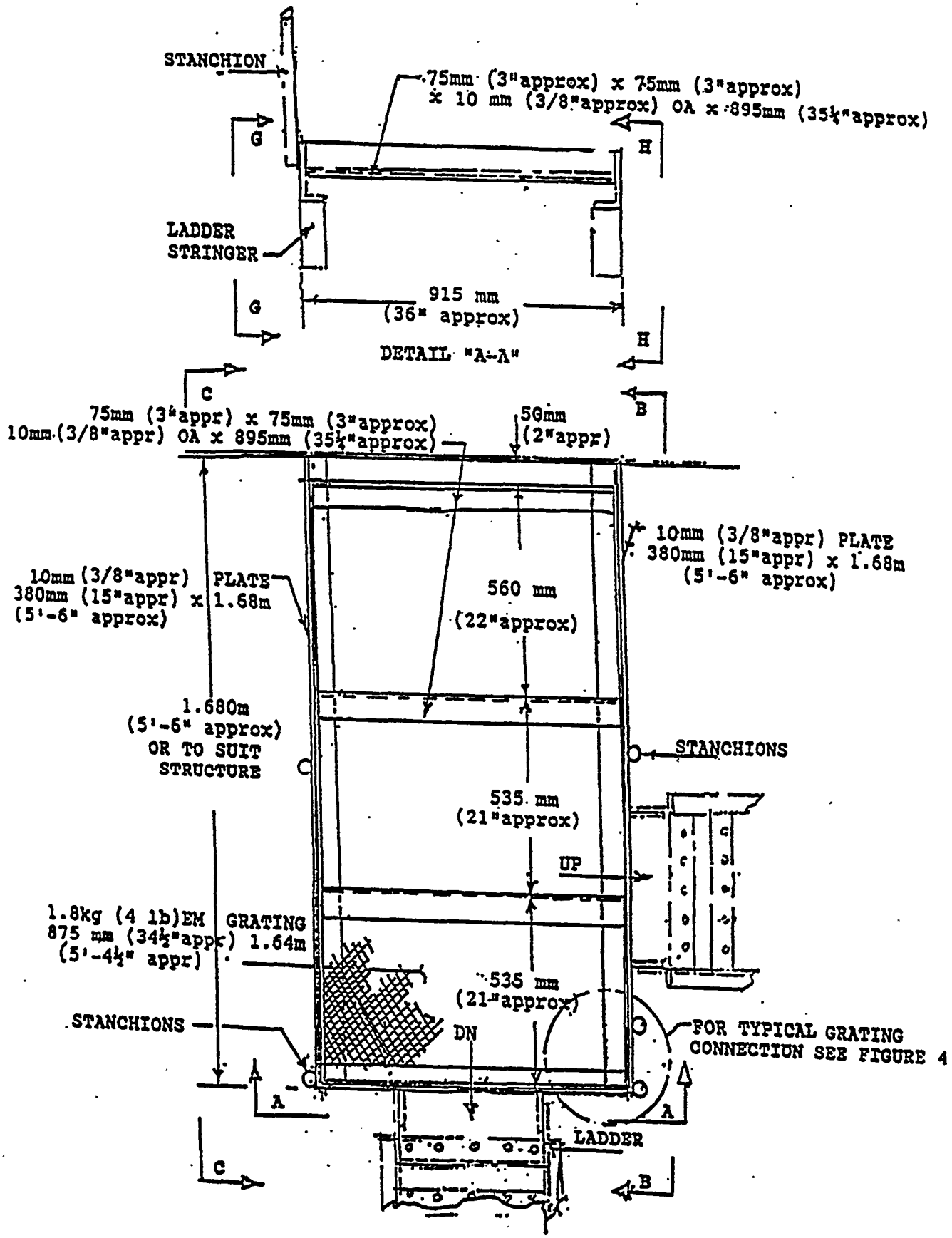
4.2.4 Tolerances shall be ± 6 mm (1/4 in. approx).

5. **Workmanship, Finish and Appearance**

5.1 Platforms shall be free of all sharp edges, burrs., projections, weld splatter and other defects which might be injurious to personnel or equipment or both .

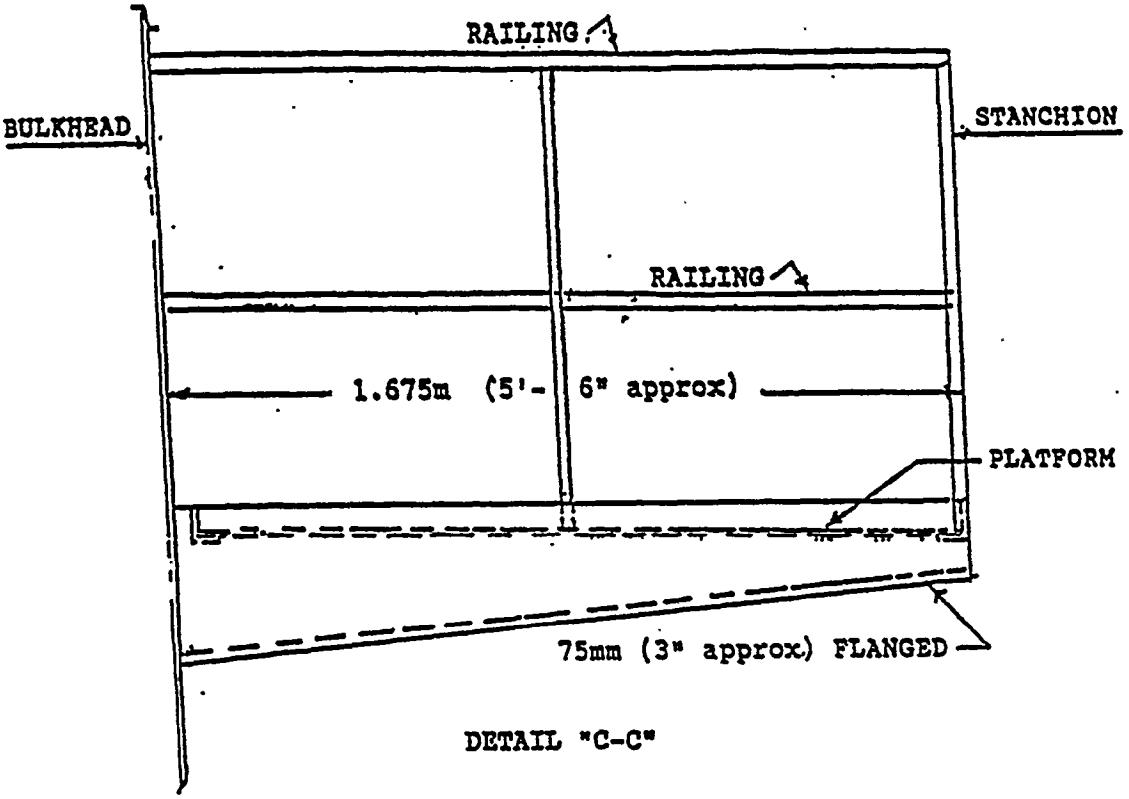
5.2 For cargo tanks carrying cargo other than fuel oils, coat platfo with one coat 3.0 MIL dry film thickness inorganic zinc silicate following surface preparation in accordance with the Steel Structure Painting Counci specifications or paint manufacturer’s instructions.

5.3 For spaces carrying fuel oil cargo, one coat of 3.0 MIL dry film thickness of corrosion preventive coating shall be applied to the platform in accordance with MIL-C-27725.

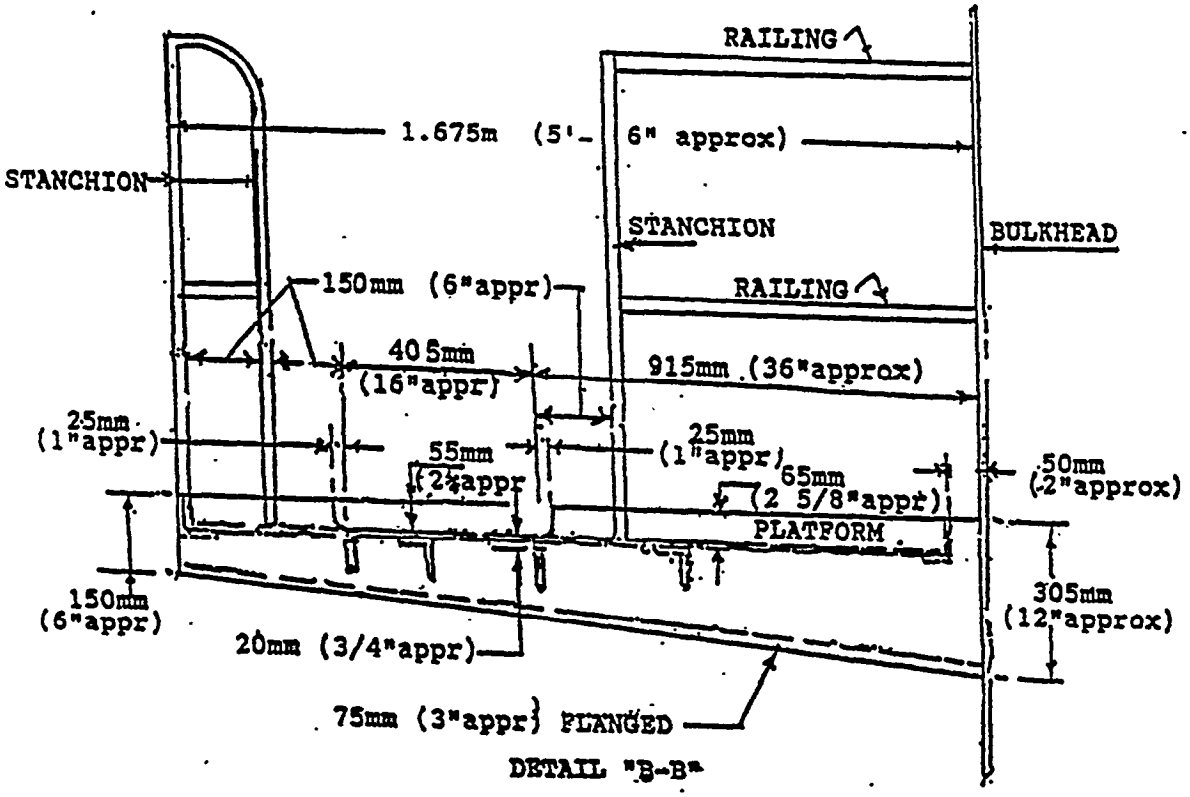


PLAN VIEW

FIGURE 1



DETAIL "C-C"



DETAIL "B-B"

FIGURE 2

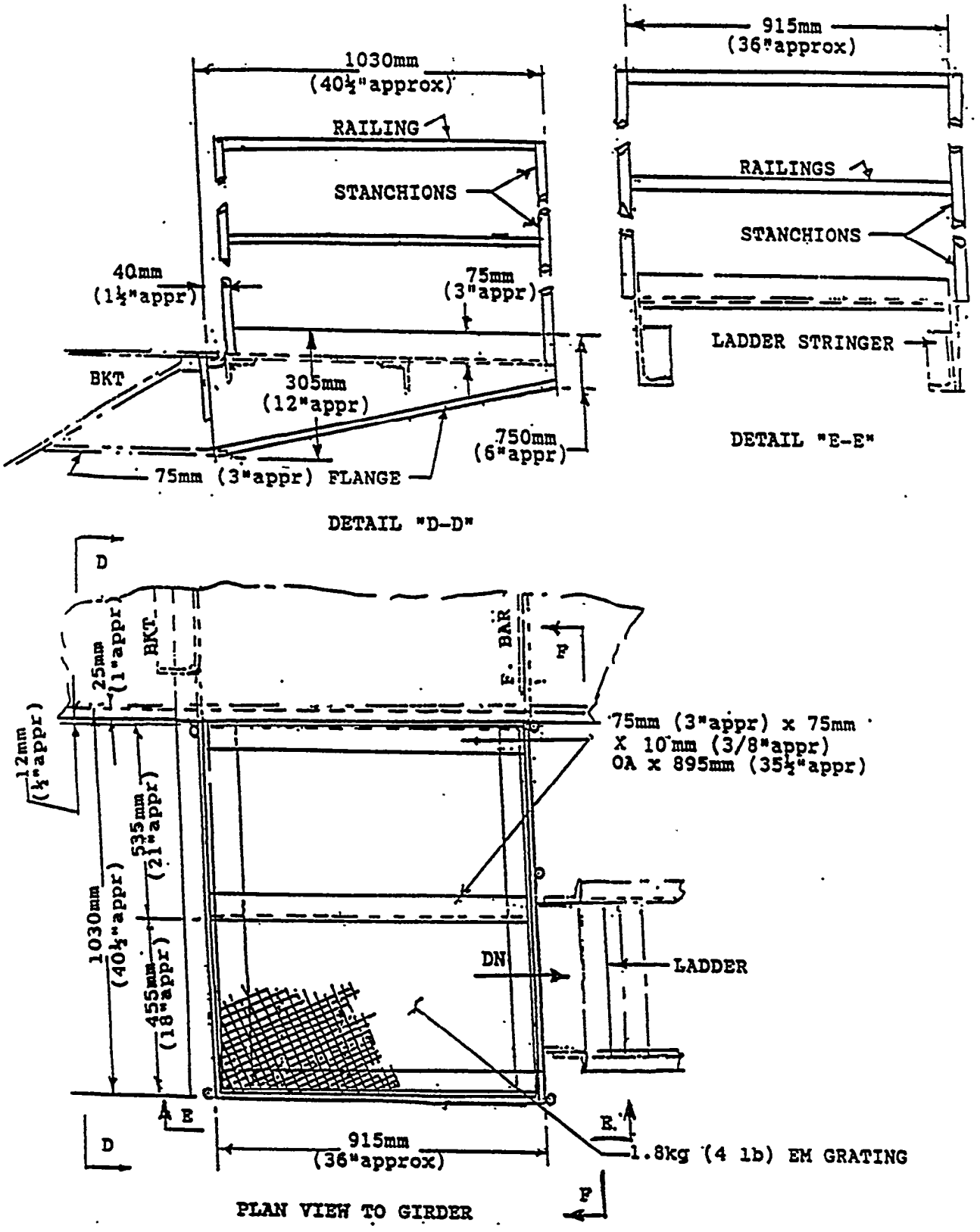
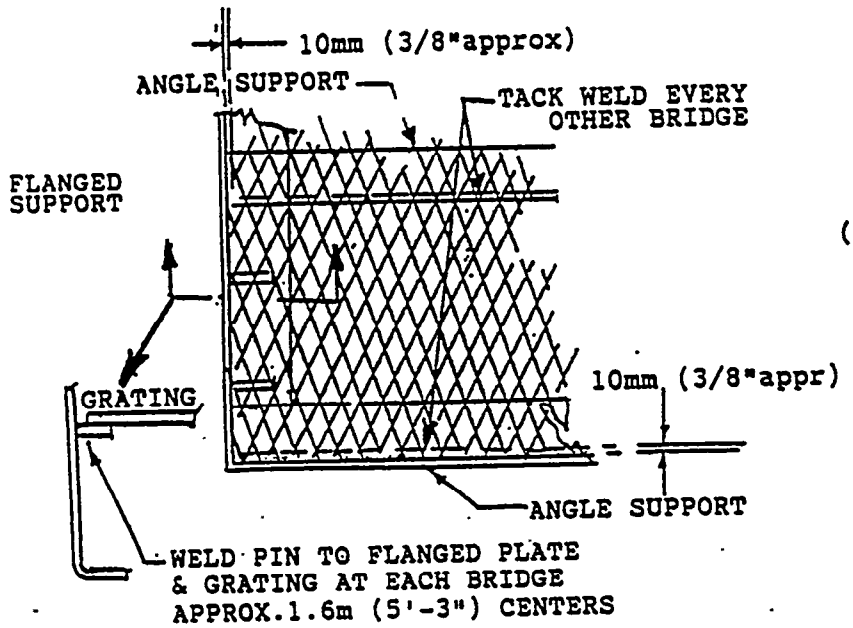
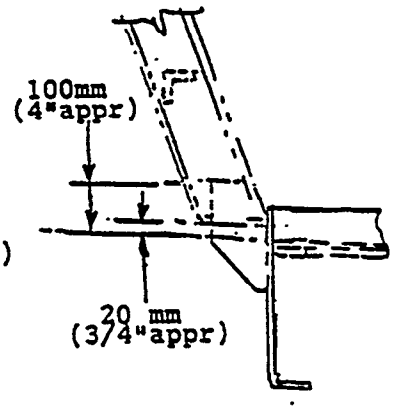

1030mm
(40½"approx)
RAILING
STANCHIONS
40mm
(1½"appr)
75mm
(3"appr)
BKT
305mm
(12"appr)
750mm
(6"appr)
75mm (3"appr) FLANGE
DETAIL "D-D"
915mm
(36"approx)
RAILINGS
STANCHIONS
LADDER STRINGER
DETAIL "E-E"
D
25mm
(1"appr)
BKT
F. BAR
F
12mm
(½"appr)
75mm (3"appr) x 75mm
X 10mm (3/8"appr)
OA x 895mm (35½"appr)
535mm
(21"appr)
1030mm
(40½"appr)
455mm
(18"appr)
DN
LADDER
E
E
D
915mm
(36"approx)
1.8kg (4 lb) EM GRATING
F
PLAN VIEW TO GIRDER

FIGURE 3



TYPICAL GRATING CONNECTION



TYPICAL LADDER & PLATFORM CONNECTION

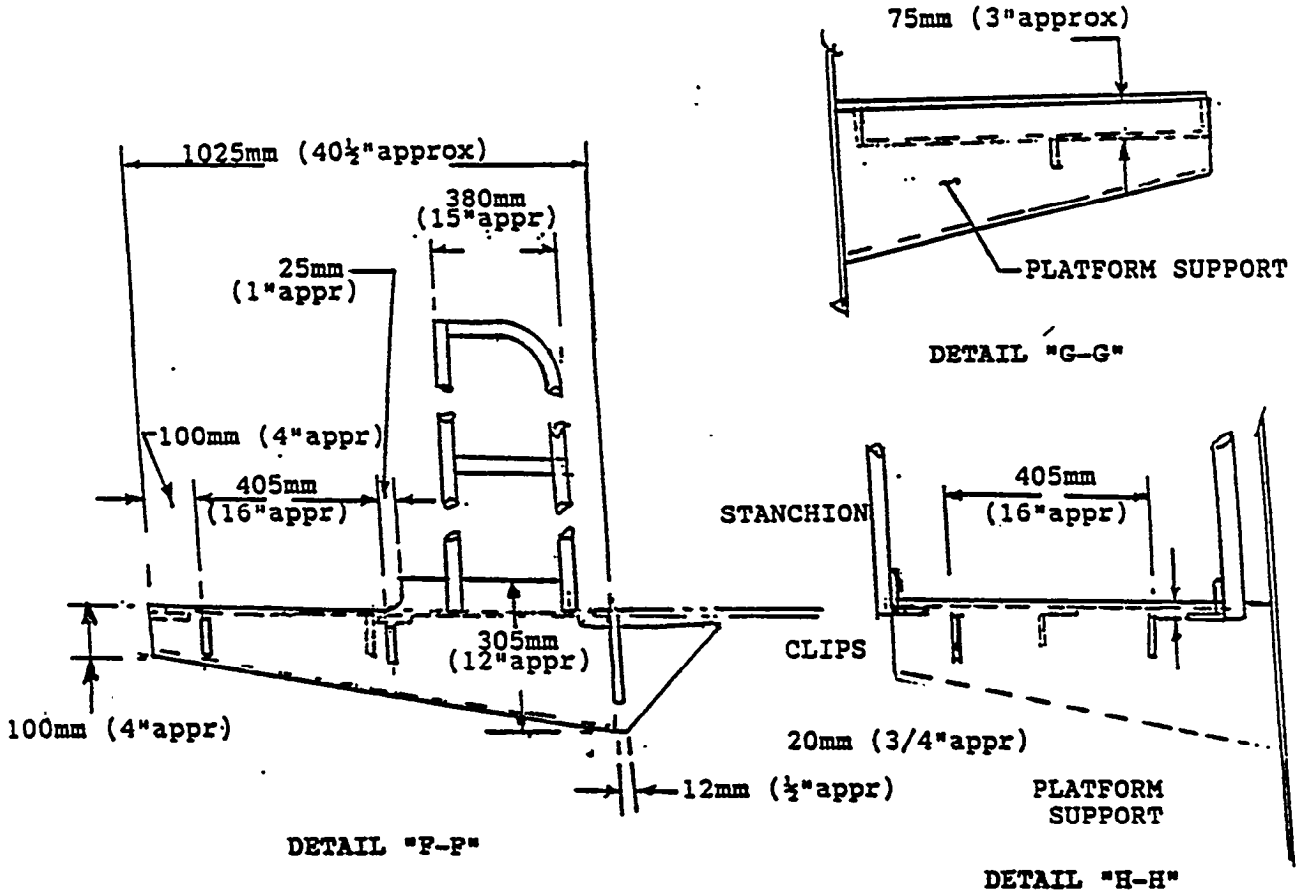


FIGURE 4

AUDIT TRAIL

FOR

PLATFORMS IN CAR80 TANKS

F. Darvalics <NASSCO>	**Draft No.7**
General Comments - This standard should be deleted or totally reviewed to incorporate "the state of the art" methods used in the industry today. The platforms are much too heavy and are labour intensive. The cost to build this type and the weight considerations make this standard out of date.	Completed - Revised th standard in the form Draft No.7.
Thurbur	**Draft No.8**
1. In 1.3 - Change “valves" to "values".	Concur
2. In 4.2.3 - Unit loading should be 9.576 kPa (200 psf approx).	Concur
3. In 5.2 - Correct. spelling of "manufacturer's".	Concur
Soik	
4. In 4.2.3 - It should read 200 psf	Concur – See (2) above
5. In 4.1.4 - Change stanchions and railings to 3/4" sch 40 pipe.	Do not concur - Shipya practice is 1" dia. roed bar.
6. Coating system should be identical to that called for on tank interior by the ship's specs. These sections have the potential of requiring a completely different paint system for platforms.	Disagree - The shipyar practice is as specifi in paras 5.2 & 5.3.
7. Figure 1 - How can C.L Dimension (location) be given.....?	Concur - Deleted
8. Detail AA - The structural labelled ladder stringer is actually part of the platform.	Disagree - It's the ladder stringer, hence shown chain dotted (nc part of the drawing).

9. In general drafting is very primitive..	Cleaned up the draft in
Rosenberg	
10. Para 1.3 - Change "valves" to "values"	Concur - See Comment (
11. Para 2 - Steel Structures Painting Council should be cited....	Concur
12. Para 3 - This should include a boiler plate disclaimer be USCG regs & other laws...	Do, not concur - This not a Specification.
13. Para 5.2 - Revise to read "Steel Structures Paint Council".....	Concur
14. Para 5.2 - Revise to read "..... paint manufacturers instructions..."	Concur
15. Para 5.3 - Hyhenate "fuel-oil cargo" wherever it appears.	Disagree - Never seen this term hyphenated.
O'Connor	
16. Editorial corrections on Pages 1 & 3.	Concur
Gary North	
17. Para 4.1.1 - Please substitute a commercial Std for the MIL.SPEC...	Do not have a sub.
18. Change 10mm to 9mm in Sec.4.1.2 & 4.1.3	Disagree - The metric system in this case i 10mm .
19. Sec. 5.3 - Commercial Spec if available.	None available
20. Fig.1 - Change all 9.5mm to 9mm.	Revised 9.5mm to 10mm
21. Fig. 2 - Change "406" to "405".	Concur
22. *Fig..3* - Change 1028 to 1030. 38mm to 40mm, 458mm to 455mm, & 533mm to 535mm.	Concur

This document is in the process of development and is for ASTM Committee use. It shall not be reproduced, circulated or quoted, in whole or in part, outside of ASTM Committee activities except with the approval of the Chairman of the Committee with jurisdiction or the President of the Society.

Draft No. 6
ASTM Designation XXXX
February, 1992

Standard Practice for INCLINED CARGO TANK LADDERS[1]

1. Scope

1.1 This practice prOVideS design, construct-i on and installation criteria for inclined ladders to be installed within cargo. tanks.

1.2 Where ladders are attached to platforms, see Figures 1 & 2. This practice will be used in conjunction with ASTM XXX "Standard Practice for Platforms in Cargo Tanks".

1.3 Values stated in metric (SI) units are to be regarded as the standard. The values stated in parentheses are provided for information purposes only.

2. Referenced Documents

2.1 ASTM Standard:

A36 Specification for Structural Steel[2]

2.2 Military Specification:

MIL-C-27725 Coatings, Corrosion Preventive, for Aircraft Integral Fuel Tanks.[3]

2.3 Other Documents:

American Bureau of Shipping Rules for Building and Classing Steel Vessels.[4]

American Welding Society Publication, AWS D1.1-Structural Welding Code.[3]

Steel Structures Painting Council Specification.[6]

[1] This practice is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee F25.03 on Outfitting.
[2] Available from American Society for Testing and Materials, 1916 R Street, Philadelphia, PA 19103.
[3] Available from Naval Publications and Form Center, 5801 Tabor Ave, Philadelphia, PA 19120.
[4] Available from American Bureau of Shipping, 45 Eisenhower Drive, P.O. Box 910, Paramus, NJ 07653.
[5] Available from American Welding Society, 2501 N.W 7th St.. Miami, F1 33125.
[6] Available from Steel structures Painting Council, 4400 5th Ave.. Pittsburgh, PA 15213.

3. Classification

3.1 Ladders shall be classified into two types.

3.1.1 Type I - Ladders installed within cargo tanks carrying cargo other than fuel oil.

3.1.2 Type II - Ladders installed within cargo tanks carrying fue: oil.

4. Significance and Use

4.1 This practice establishes the procedure for the construction and installation of inclined ladders to be fabricated and installed, by the shipyards, within the cargo tanks.

5. Materials and Manufacture

5.1 Materials: (Type I).

5.1.1 Stringers - 230 mm (9 in. approx) x 75 mm (3 in. approx) x 50 mm (1 7/8 in. approx) structural channels of carbon steel, ASTM A36.

5.1.2 Upper and lower clips' - Flat bars of carbon steel, ASTM A36

5.1.3 Handrails and Stanchions - 25 **mm (1 in.** approx) **diameter** carbon **steel, ASTM A36.**

5.1.4 Treads - 75 mm (3 in. approx) x 75 **mm x 10 mm (3/8 in. approx) structural angles of carbon steel, ASTM A36.**

5.2 Materials: (Type **II).**

5.2.1 Stringers - Structural flat bars of carbon steel. ASTM A36.

5.2.2 Upper and Lower Clips - Flat bars of carbon steel, ASTM A36.

5.2.3 Treads - 25 mm (1 in. approx) x 25 mm square bars of carbon steel, ASTM A36.

5.3 Manufacture:

5.3.1 All welding shall be in accordance with American Bureau Rules of **Shipping and Classing Steel Vessels or the American Welding Society Publication** AWS **D1.1.**

6. Dimensions

6.1 Dimensions indicated are **typical.** However these **dimensions** can be **changed to suit other existing** structures.

6.2 The tread lengths, or the clear **widths between the stringers for Type I Ladders, for Commercial** and Naval **ships., shall be 430 mm (18** in. approx) and 600 **mm** (24 **in.** approx) **respectively.**

6.3 The tread lengths or clear widths between stringers for Type II Ladders shall be 380 **mm** Cl5 in. approx).

6.4 The lengths of the ladder shall **be fabricated to suit existir requirements.**

6.5 Tolerance shall be ± 6 mm (1/4 in. approx) .

7. Workmanship, Finish and Appearance

7.1 Ladders shall be free of all sharp edges, burrs., projections, weld platter and other defects which might be injurious to personnel or equipment or both.

7.2 For cargo tanks carrying cargo other than fuel oils, coat the ladders with one coat 3.0 MIL Dry Film Thickness Inorganic Zinc Silicate following surface preparation in accordance with the 'Steel Structures Painting Council specifications or paint manufacturers instructions.

7.3 For spaces carrying fuel oil cargo, one coat of 3.0 NIL Dry Film Thickness of Corrosion Preventive Coating shall be applied to the ladders in accordance with MIL-C-27725.

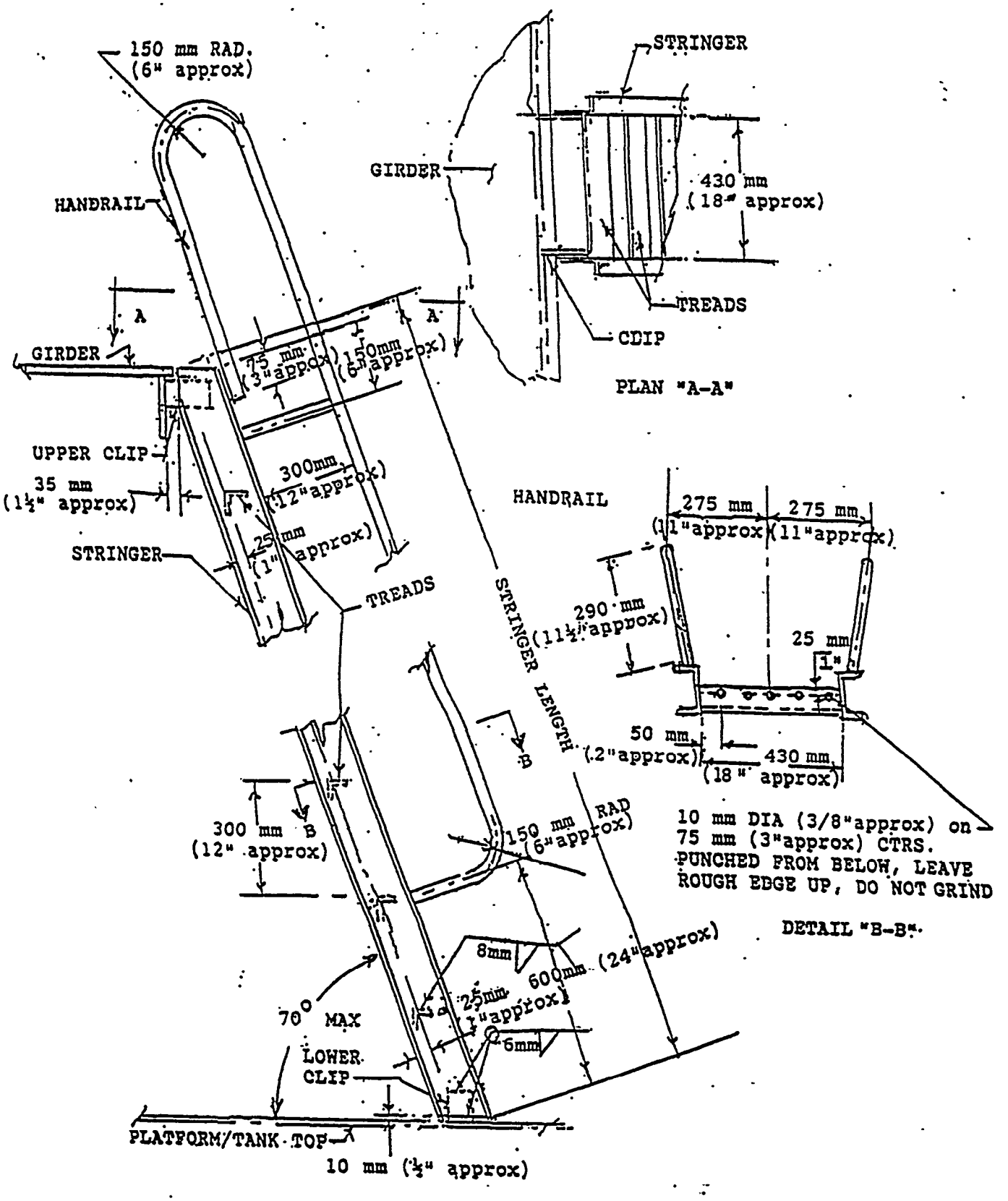


FIGURE 1
TYPE I LADDER ELEVATION

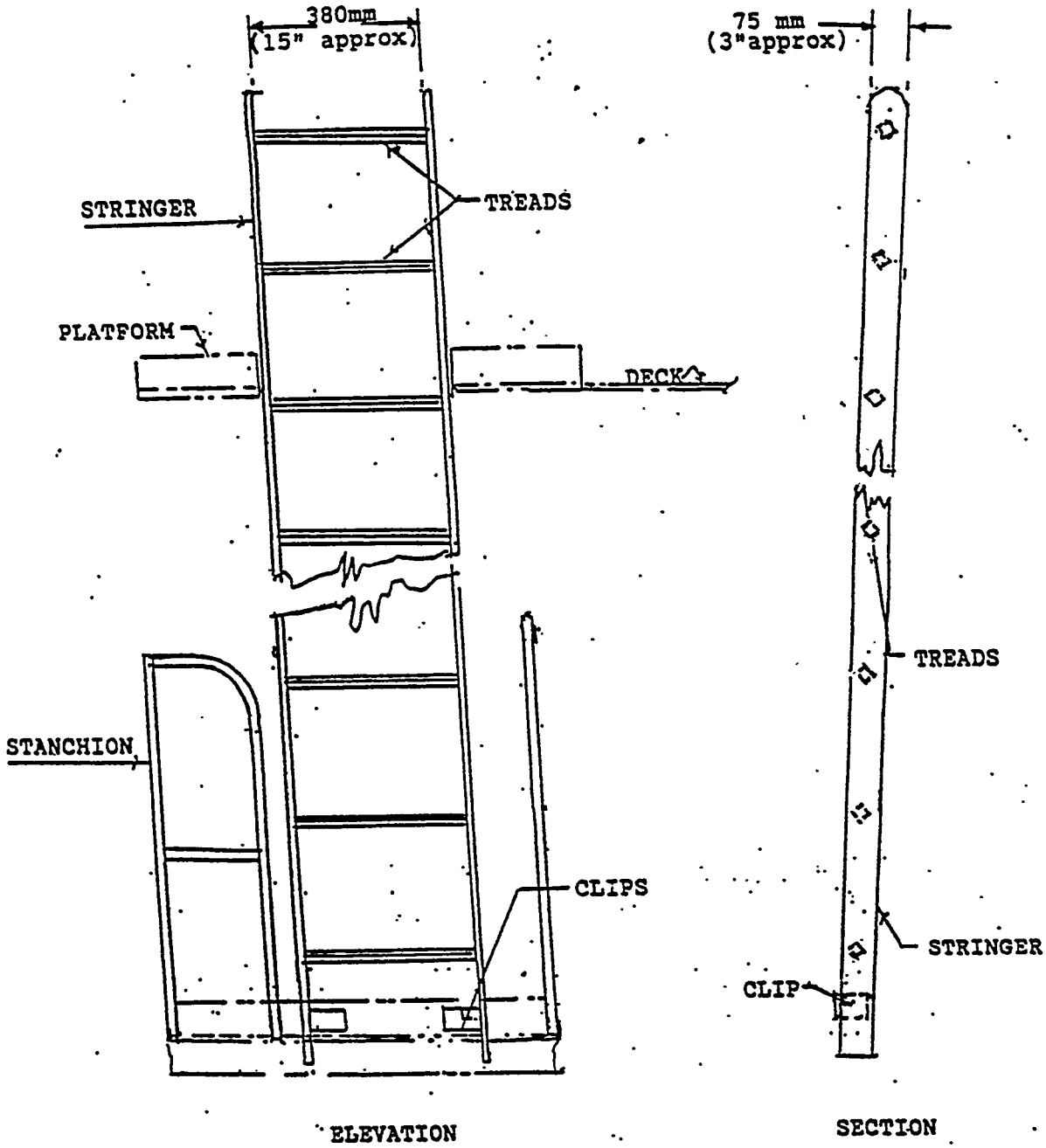


FIGURE 2

TYPE II LADDER

AUDIT TRAIL
FOR
INCLINED CARGO TANK LADDERS

F. Darvalics (NASSCO)	Draft No.5
General Comments - This standard should be deleted or totally reviewed to incorporate "the state of the art" methods used in the industry today. The cost to build this type and the weight considerations make this standard out of date.	completed - Revised thi standard in the form of Draft No.5.
Jim Wilkins	Draft No.6
1. Most of the metric dimensions are rounded off to nearest 5mm. there are many instances where greater simplification would be possible.... for instance it would be preferable to use 300mm. 'Similarly why not use 400mm in lieu of 405mm or (406mm)?	Concur - Revised draft throughout.
M. Rosenberg	
Change title to "cargo tank inclined ladders" or "inclined cargo tank ladders".	Concur
3. Para 4 - This para should include a boiler-plate disclaimer regarding USCG regs & other laws & regs which may take precedence & supersede this standard practice.....	Disagree - The existin para is self explanation
4. Para 7.2 - Change "manufacturers paint instructions to "paint manufacturers instructions".	Concur
5. Para 7.5 - Change "fuel oil cargo' to "fuel-oil cargo".	Disagree
6. Fig.1 & Para 6 - Why is the tread width shown in detail A-A different from that in Detail B-8 & Para 6?	Concur - Revised, see A-A & B-B of Fig.1.
Tam Soik (NS)	
7. Type II ladder looks to be almost identical to ASTM F840 Types I & II..... I see no reason for another std. to do what an existing std. already does.....	Disagree - ASTM F840 i a standard for vertica fixed ladders, whereas this std. is for incli ladders.

AUDIT TRAIL

FOR

METAL ABRASIVE BLASTING

COMMENTS	RESOLUTIONS
NAVSEA:	DRAFT NO. 2
1. Delete para 1.2.1 "Iron Shot.." and insert “or with Iron Shot or Grit. "	Complied With
2. Para 2.1 - Delete ASTM D2200 and use SSPC SP10 in Para 2.3	Complied With
3. Para 3.2 - Delete “2 Incs and Anodes .	Deleted
4. Para 4.3 - Revise "10 Warmer than ” to read “not less than ” 10 above .	Complied With
5. Para 4.11.1 - Delete “zincs, oxides and light rust“ in lieu, insert “and corrosion products " .	Agree
6. para 5.5 - Delete “ASTM D2200” and “Touched up”. in lieu insert "SSPC SP10" and "reblasted respectively” .	Agree
7. Para 5.6 - Continue Para to read: “When specified coatings should be applied to freshly blasted surface before rusting or contamination should occur".	Complied With
N. Lemley (USCG)	(90-2 MCLB)
1. Para 1.2 "unless" should read “using”	Concur
2. Para 2.3 & 6.1 - Which short title is correct “SSPC SP10" or SSPC - SP 10 ?	The latter is incorrect
R.E. Williams	(90-2 MCLB)
3.Para 6.1 - Near "white" finish not “sheet”.	Concur

E.A. Morgenstern	(90-2 MCLB)
4. Para 1.2 - Sentence does not appear complete.....	Concur - See Comment (1) above.
R. G. Grube	(90-2 MCLB)
5. Para 1.2 - Should be editorially corrected.	Concur - See Comment (1) above.
R. Butler (Deutsch)	(90-2 MCLB)
6. Recommend that. “carbon steel" be added in title.	Do not Concur
7. Recommend a safety cavet be added in Para 1.	Concur
8. Para 1.2.1 - Recommend this be moved to Para 4.8.	Concur
9. Para 1.3 - Recommend the word "Standard" be changed to “Guide” .	Do not concur
10. Para 1.3.1 - Recommend this be moved to Para 4.3.1.	Concur
11. Para 1.3.2 - Recommend this be moved to Para 4.8.	Concur
12. ASTM E18 is not referenced in body of Specs.	Have now indicated in Paras 4.9 & 4.10.
13. Para 4 - Recommend this section be laid out to define order of general requirements	Do not Concur - *Section* seems to be laid out order.

Draft. No. 4
ASTM Designation xxx
January. 1991

Standard Specification for TERMINALS, AIR, DIFFUSING, CIRCULAR, FOR SHIPBOARD USE.[1]

1. Scope

1.1 This specification covers the design of circular air supply terminals of the diffusing type.. for shipboard ventilation and air conditioning systems.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:[2]

A493 Specification for Steel., Stainless & Heat Resisting, For Cold Heading & Cold Forging-bar & Wire.

B209 Specification for Aluminum Alloys and Aluminum Alloy Sheet and Plate.

B221 Specification for Pars, Rods, Wires, Shapes & Tubes, Aluminum & Aluminum Alloy Extruded.

8316 Specification for Aluminum Alloy Rivet, and Cold-heading Wire and Rod.

D700 Specification for Phenolic Molding Compounds.

F352 Specification for lock washers made from Stainless Steel.

F593 Specification for Stainless Steel bolts, hex cap screws and studs.

F594 Specification for Stainless Steel nuts.

2.2 Military Standards:[3]

MIL-M-14 Molding Plastics and Molded Plastic Parts, Thermosetting.

MIL-S-901 Shock Test, HI (High Impact) Shipboard Machinery Equipment & Sytems, Requirement for Navy.

2. 3 Other Documents :

American Bureau of Shipping Rules for Building and Classing Steel Vesse1s.[4]

American Welding society Publication. AWS D1.1 Structural Welding Code.[5]

1. This specification is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee F25.03 on Outfitting.
2 Available from American Society for Testing and Materials, 1916 RACE Street, Philadelphia, PA 191033.
3. Available from Naval Publications and Forms Center, 5801 Tabor Ave.) Philadelphia, PA 23220.
4. Available from American Bureau of Shipping, 45 Eisenhower Drive, P.0. Box 910 Parumus, N.J. 074653.
5. Available from American Welding Society 2501 N.W 7th Street, Miami, Florida, 33225.

3. Classification

3.1 Diffusing terminals shall be of the following classes:

3.1.1 Class A - Terminals constructed of aluminum.

3.1.2 Class B - Terminals constructed of plastic.

4. Ordering Information

4.1 Orders for air supply terminals shall include the following information:

4.1.1 ASTM Designation, Title, Number and date of this Specification.

4.1.2 Quantity

4.1.3 Class

4.1.4 Size

5. Requirements

5.1 Design:

5.1.1 Terminals shall be in accordance with Table 1 and Figures 1 through 4. The terminals shall have contours. dimensions and tolerances in accordance with Tables 1, 2, and 3.

5.1 .2 Dimensions of the terminals shall be limited to those shown on Figures 1 through 4 and Tables 1 and 2.

5.1.3 The bellmouth and bottom plate of each terminal shall be perforated with 0.068 in. diameter holes on 1/4 in. centers. The total opening of the holes to be approximately 6.5% of area of the sheet.

5.1.4 Diffusing terminals shall be manufactured and assembled for Grade “A” shock to conform with MIL-5-802.

6. Materials and Manufacture

6.1 Materials:

6.1.1 Stainless Steel screw fasteners (ASTM F593) shall be used to secure bellmouth to throat-.

6.1.2 Gasket material shall be of neoprene or rubber. l

6.1.3 Class A terminals shall be constructed of (ASTM B221) AL5052 or AL3003. The hardest temper that will withstand the forming process shall be used.

6.1.3. 1 Rivets,, beaded or blind shall be (ASTM B316) AL2O14, AL2017, AL2024, AL2117 or AL5056 or of Stainless Steel (ASTM A493).

6.1.4 Class B terminals shall be constructed of high-impact molded plastic in accordance with MIL-M-14 or in accordance with ASTM 0700, Type 21. Color of plastic material shall be equipment gray.

6.2 **Manufacture:**

6.2.1 Terminals shall be free of loose parts which will produce rattle or noise under conditions of vibration.

6.2. 2 The edges of vanes, rings, collars and other parts shall be free of burrs, tears or irregularities which will tend to increase noise or turbulence in the air stream. In spinning or forming the bellmouth and bottom plate some distortion of the hole in in the perforated sheets is unavoidable. However, there shall be no tears or split material between holes.

6.2.3 Welding shall be in accordance with the American Bureau of Shipping Rules for Building and Classing of steel Vessels or the American Welding Society, Structural Welding Code, AWS D1 . 1. .

63 Label Plates:

6.3.1 Each terminal shall carry an identifying label. The information may be pressed into the throat (at piece or a plate or a label may be attached to the threat piece. The following information shall be shown by the label:

6.3.1.1 Air diffusing terminal

6.3.1.2 Size

6.3.1.3 Stock number if assigned by purchaser, if not use manufacturer's part number.

6.3.1.4 Contract number

6.3. 1.5 Manufacturer's name

6.3.1.4 Manufacturer's address

6.3.2 Decalcomanias or adhesive backed metal foil may be used for label plates. Copper bearing metal label plates shall not be used on the Class A terminals.

7. **Test methods**

7.1 Materials for Class B terminals shall be tested in accordance with MIL-M-14 to insure uniform quality and adaptability of materials to the requirements of this specification.

8. Packaging and Package Marking

8.1 The Air Supply Terminals shall be individually packed in a tight fitting, water-resistant, fiberboard box or container.

8.2 The packaging shall afford protection against deterioration and physical damage during shipment from the manufacturer to the using activity fur immediate use.

8.3 The thickness and size of the letters and numbers shall be stenciled, with the ASTM designation, class and name of manufacturer in black paint with a minimum of 1-1/2 in. high letters and numbers. The location of the marking shall be on both sides and on end of containers as supplied by the manufacturer.

SUPPLEMENTARY REQUIREMENTS

The following Supplementary requirements shall apply only when specified by the purchaser in the contract. or order.

S1 **Preparation for Delivery**

51.1. Cleaning - Al 1 brazed joints shall be cleaned of flux and residue by wire brush. Class A terminals shall be cleaned by the use of a dilute aqueous solution of phosphorus acid containing an organic grease solvent. The acid shall be thoroughly removed by thoroughly washing in warm water m Terminals shall be thoroughly dried before packaging.

NOTE:

WITH THE EXCEPTION OF THE FOOTNOTE, ALL REVISIONS HAVE BEEN INDICATED IN *ITALICS.*

TABLE 1

SIZE	CFM AT 1200 FPM THROAT VEL	A	B	C	D	E	F	G	H	J	K	L	M	N
3 1/2	80	3 5/16	4 5/16		7 1/4	5	7/32	1 1/4	3 1/2	1 5/16	3/4	2 11/16	4 1/4	5/16
4	105	3 17/32	4 5/16		9 1/8	5 1/2	1/4	1 1/4	4	1 5/16	1	2 11/16	4 3/4	3/8
5	165	6 1/2	4 3/4		10	6 1/2	5/16	1 11/16	5	1 5/16	1	3 1/8	5 3/4	7/16
6	235	7 1/8	4 15/16		13 1/2	7 1/2	11/32	1 11/16	6	1 1/2	1	3 5/16	6 3/4	17/32
7	320	8 5/32	5 9/16		14 1/8	8 1/2	13/32	1 1/8	7	1 11/16	1	3 15/16	7 3/4	5/8
8	420	8 29/32	5 3/4		17 3/8	9 1/2	7/16	2 1/8	8	1 7/8	1	4 1/8	8 3/4	23/32
9	530	10	6 7/16		17 3/4	10 1/2	1/2	2 9/16	9	2 1/8	1	4 13/16	9 3/4	25/32
10	655	10 23/32	6 5/8		20 5/8	11 1/2	9/16	2 9/16	10	2 5/16	1	5	10 3/4	29/32
12	940	12 7/16	7 7/16		24 1/4	13 1/2	21/32	3	12	2 11/16	1	5 13/16	12 3/4	1 1/16

1 INCH = 25.4 mm

2.2 lbs = 1 kg

TABLE 1 (continued)

SIZE	P	Q	R	W	T	U	V	W	X	Y	Z	AA	BB	CC	APPX WEIGHT LBS
3 1/2	3/8	1/2	11/16	4	90°	6 1/2	11/32	1/8	5 3/4	2	1 5/8	1 1/16	4	1	2
4	7/16	9/16	13/16	6	60°	8 1/8	13/32	5/32	7 1/8	2	1 1/4	1 1/8	4	1	2 1/2
5	1/2	3/4	1	6	60°	9	1/2	3/16	8	3	2 1/4	1 15/16	6	1	3
6	5/8	7/8	1 3/16	8	45°	12 1/2	19/32	7/32	11 1/2	3	2 3/4	2 11/16	6	1 3/16	3 1/2
7	3/4	1 1/32	1 11/32	8	45°	13 1/8	11/16	1/4	12 1/8	4	2 3/4	3 1/4	8	1 3/8	4 1/2
8	7/8	1 3/16	1 5/8	12	30°	16 3/8	13/16	5/16	15 3/8	4	3 3/4	3 7/11	8	1 9/16	5 1/4
9	15/16	1 5/16	1 13/16	12	30°	16 3/4	29/32	11/32	15 3/4	5	4 1/4	3 3/4	10	1 13/16	6
10	1 1/32	1 1/2	2	12	30°	19 5/8	1	3/8	18 5/8	5	5	4 3/8	10	2	8
12	1 1/4	11 3/16	2 3/8	16	22 1/2°	23 1/4	1 1/8	1/2	22 1/4	6	5 7/8	5 1/4	12	2 3/8	12

TABLE NO. 2

PERFORMANCE TABLE FOR CIRCULAR DIFFUSING TERMINALS

	3 1/2" DIA 9.62 □"			4" DIA 12.57 □"			5" DIA 19.64 □"			6" DIA 28.27 □"			7" DIA 38.49 □"			8" DIA 50.27 □"			9" DIA 63.62 □"			10" DIA 78.54 □"			12" DIA 113.1 □"		
CFM	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)	VEL FPM	PRESS REQD (1)	THROW FT (2)
75	1123	.181	3-4	860	.046	3-4																				
100	1497	.321	4-5	1145	.188	3-4	730	.08	3-4																	
125	1871	.502	4-6	1432	.294	3-5	916	.120	4-5																	
150	2245	.723	5-6	1718	.423	4-6	1100	.1741	4-6	764	.084	3-4														
175				2005	.576	4-6	1292	.236	5-6	891	.114	4-5														
200				2290	.752	5-7	1465	.307	5-7	1020	.149	4-6	750	.061	4-5											
250							1830	.43	7-8	1270	.231	5-6	936	.126	5-6	716	.074	4-5								
300							2200	.69	8-9	1530	.336	7-8	1120	.180	6-7	860	.106	5-6								
350										1780	.454	8-9	1310	.246	7-8	1000	.143	6-7	792	.090	6-7					
400										2040	.60	10-11	1500	.323	8-9	1145	.186	7-9	905	.117	6-8					
450										2300	.759	11-12	1686	.408	9-10	1290	.238	8-9	1020	.149	7-9	825	.089	6-8		
500													1872	.50	10-11	1430	.293	9-10	1130	.183	8-10	916	.120	7-9		
600													2250	.726	12-14	1720	.424	10-12	1358	.264	9-11	1100	.174	8-10	764	.084	7-8
700																2000	.574	12-13	1585	.360	10-12	1283	236	9-10	891	.114	8-9
800																2290	.75	13-15	1810	.47	11-13	1466	.308	10-12	1019	.149	9-10
900																			2040	.60	12-14	1650	.390	11-13	1145	.188	10-11
1000																			2260	.732	13-15	1833	.481	12-14	1273	.232	11-12
1100																						2016	.583	13-15	1400	.282	13-14
1200																						2200	.694	14-16	1528	.335	14-15
1300																									1655	.393	15-16
1400																									1782	.455	16-17
1500																									1910	.523	18-19
1600																									2037	.595	19-20
1700																									2165	.672	20-21
1800																									2292	.753	21-22

NOTES:

1. TOTAL PRESSURE (INCHES W.G.) REQUIRED 2'-0" UPSTREAM OF TERMINAL.
2. FOR SELECTION OF A DIFFUSING TERMINAL, THE THROW SHOULD BE TAKEN AS THE DISTANCE FROM THE CENTERLINE OF THE TERMINAL TO THE NEAREST BULKHEAD.

TABLE NO.3 MATERIAL

LIST OF MATERIAL					
NO REQ	PC NO	DESCRIPTION	MATERIAL	ASTM/MIL SPEC	REMARKS
1	1	THROAT	ALUMINUM	B 221	
	2				
1	3	BELLMOUTH	ALUMINUM	B 221	
1	4	BOTTOM PLATE	ALUMINUM	B 209	
AS REQ	5	RINGS	ALUMINUM	B 221	
2	6	STIFFENER RINGS	ALUMINUM	B 221	
AS REQ	7	RIVETS	ALUMN/CRES	B 316 OR A 493	1/4 DIAQ. BEADED OR BLIND
*	8	SPACERS	ALUMINUM	B 209	
6	9	VANES	ALUMINUM	B 221	
1	10	VANE RINGS	ALUMINUM	B 221	
1	11	VANE SUPPORT	ALUMINUM	B 221	
AS REQ	12	RD.HD.MACH.SCREWS	CRES	F 593	NO.10-32NF . 7/16 LONG
*	13	BLIND NUT	CRES	F 594	ONE PIECE REUSABLE TYPE
*	14	LOCK WASHER	CRES	F 352	
*	-	PC. NO. 1-6 & 8-11	PLASTIC	MIL-M-14	DESCRIPTION FOR PC.1-6&8-11 AS NOTED

1 INCH . 25.4 mm

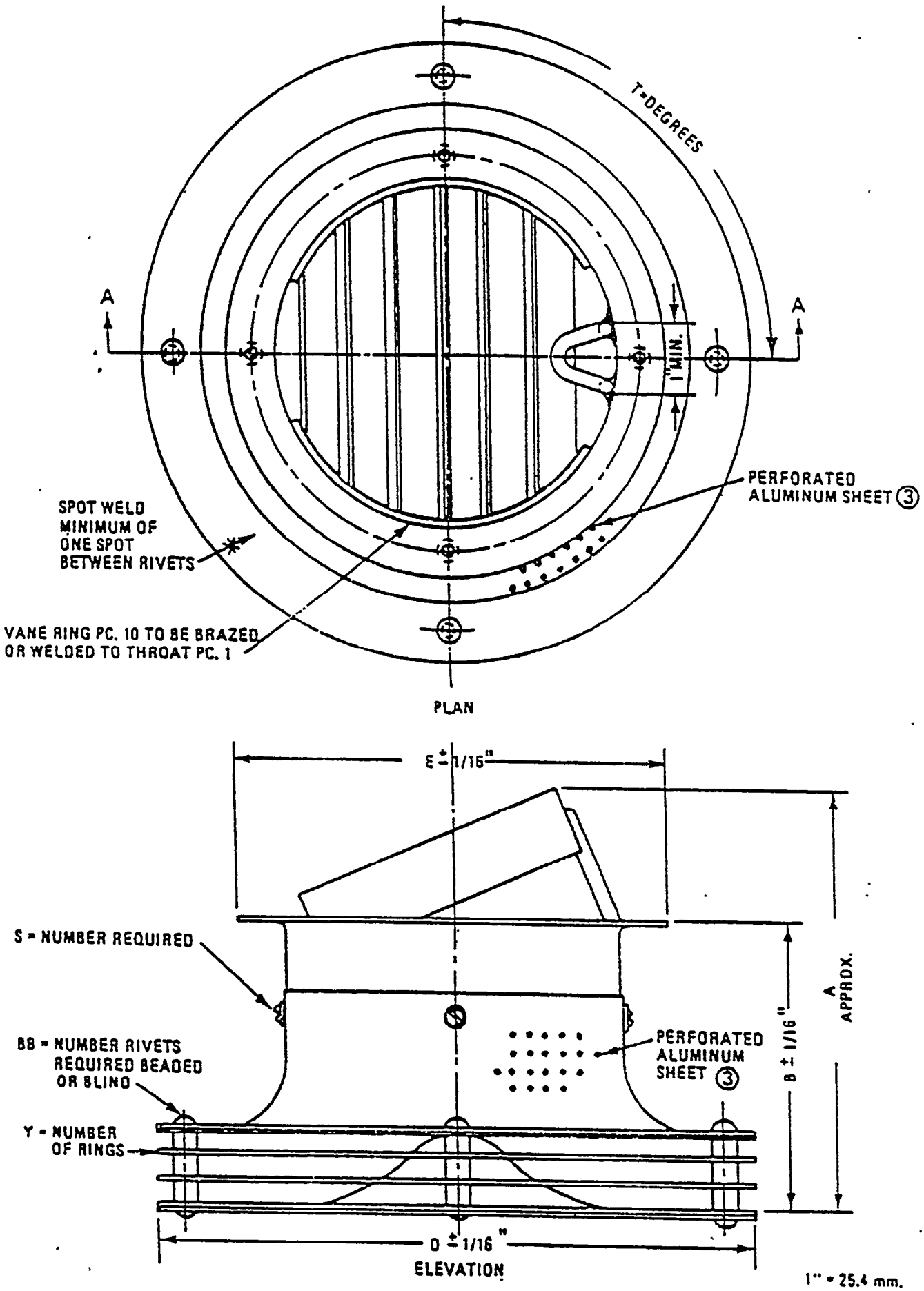


FIGURE 1

FOR DIMENSIONS NOT SHOWN SEE TABLES 1 AND 2

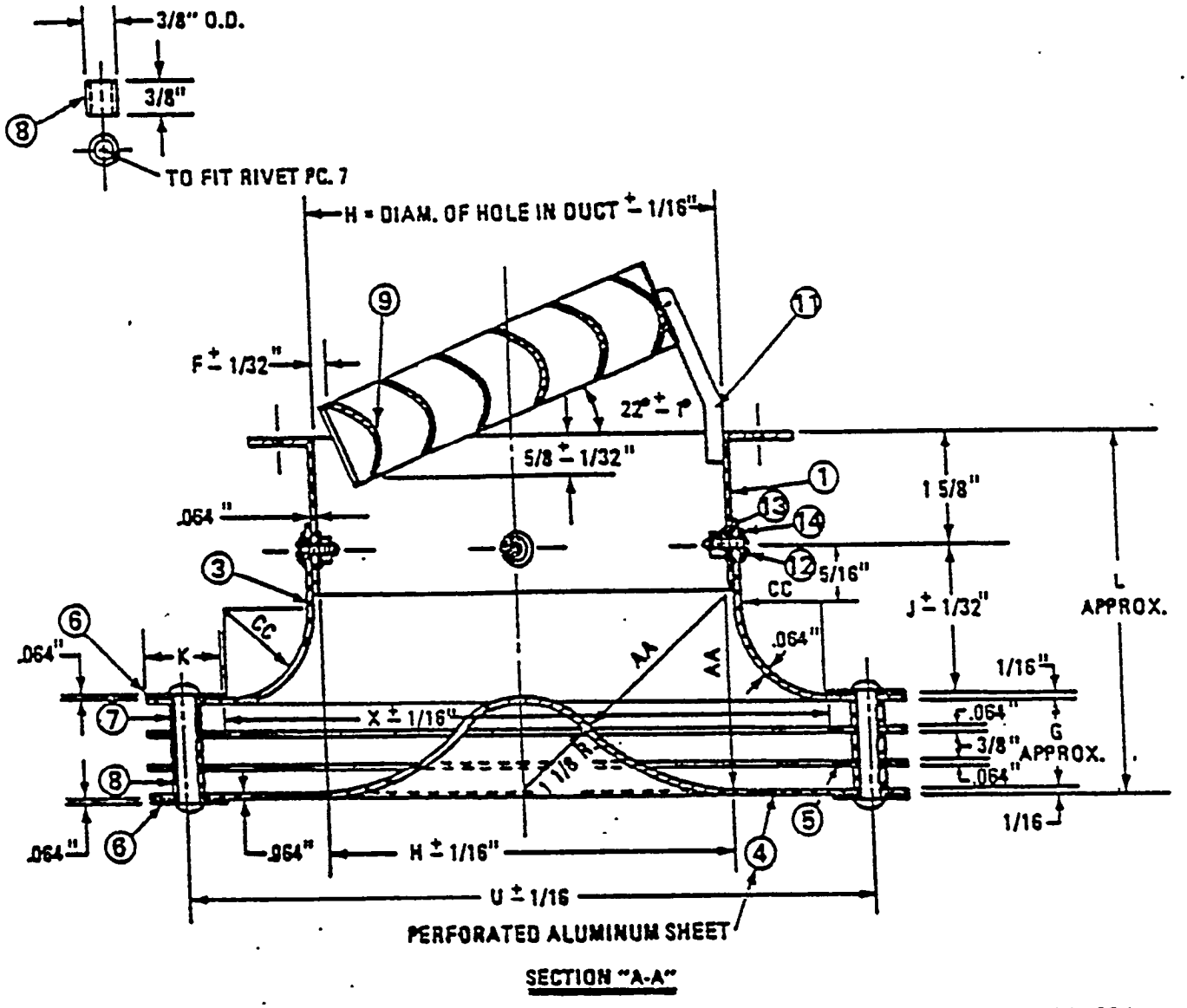


FIGURE 2

FOR DIMENSIONS NOT SHOWN TABLE 1

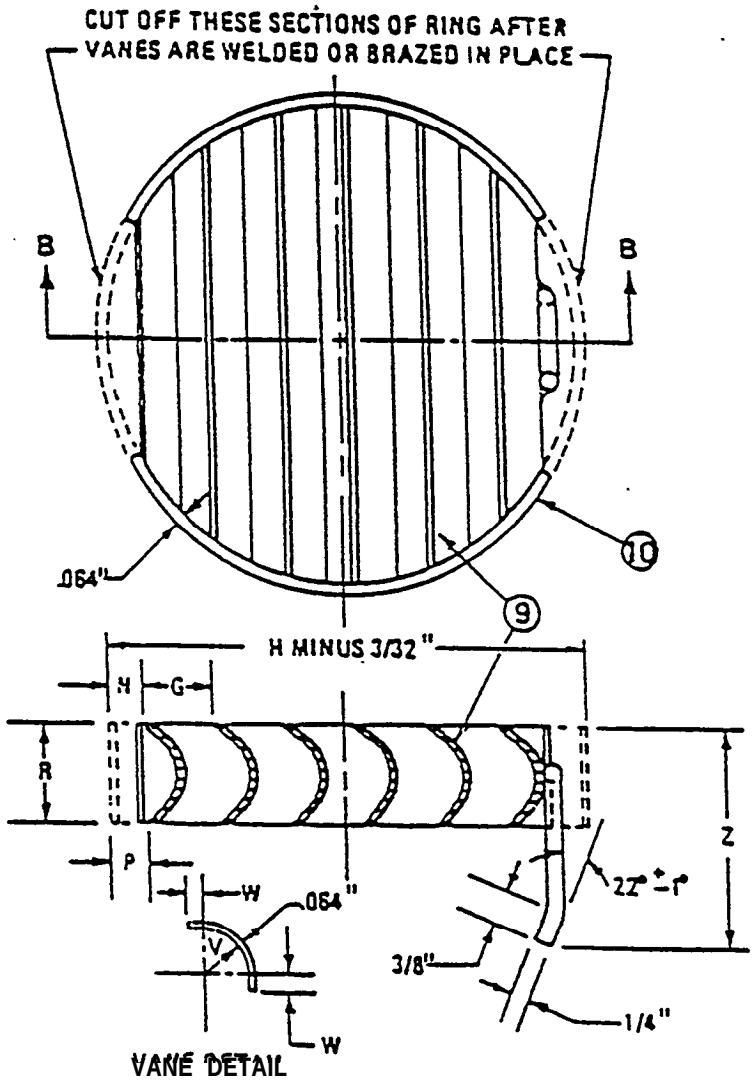
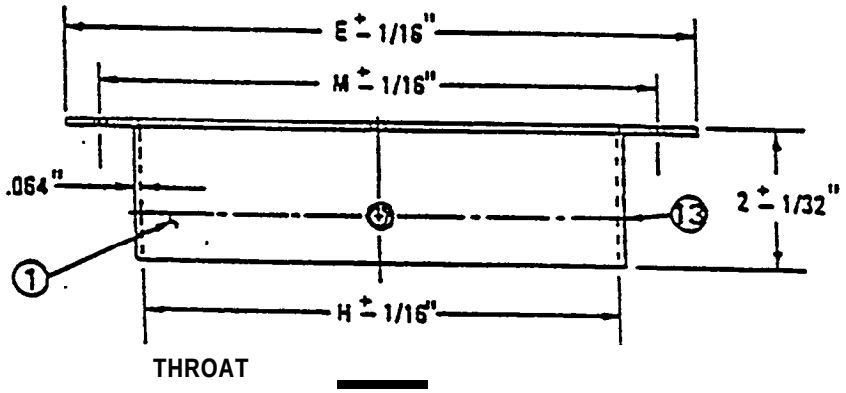


FiGURE 3'



1" = 25.4 mm.

FIGURE 4

FOR DIMENSIONS NOT SHOWN SEE TABLES 1 AND 2

AUDIT TRAIL
FOR
TERMINALS, AIR, DIFFUSING, CIRCULAR, FOR SHIPBOARD USE

DRAFT NO.

John Nachtshelm (G.G.Sharp) **February 1990**

1. Para 2.1 - Correct titles for B209, B308, B316, D1755, D2564 and titles should be initial capitals only for all nouns.	*Concur* - Revised
2. Para 2.2 - MIL-Std-105 listed, is not Invoked within the spec. suggest delete.	Concur - Deleted
3. Para 4.1.3 - Suggest delete "of material required"....	Concur
4. Para 4.1.4 - Suggest delete "dimensions" & substitute "size"'.	Concur
5. Para 4.1.5 - Suggest delete this line.	Concur
6. Para 5.1.1 - Table 1 is not referenced till later in Para 6.2.3. Suggest change Table designations to reference Table 1 first.	Concur - Revised Table designations.
7. Para 5.1.1 - States *in* part "The terminals... are predicted on Class 1 terminal....	Rewrote this Para.
8. Para 5.1.2 - States "Sizes are shown on Figures 1 thru 4 and Table 2". Size is shown on Figure 2 alone, suggest delete Fig-. ure 1 thru 4.	Disagree - But revised word "Sizes" to "Dimensions".
9. Para 6.1.3.1 - Cites "ASTM B3126". There is no B3126; B316 IS probably intended.	Concur - Typo! Corrected to "B316".
10. Para 6.2.4 should read... "American Bureau of Shipping Rules or the American Welding Society Structural Welding Code AWS D1.1".	Concur - Revised
11. S1.1 Suggest delete S1 and note/to Table 1. When Mil-T-22576 is cancelled. Cancellation notice will state its replacement by this spec.	Concur - Deleted

12. Table 1 titled "Material" does not include Class 2 Plastic. It also, as noted above, leans on MIL-T-22576..... Suggest delete this Table in its entirety.	Agree to first comment i:e. Included Class 2 'Plastic in In Table and removed anythin pertaining to Nil-T-225/6. Therefore Table will not be deleted as it now serves a good purpose.
13. Table 2 should be changed to Table 1.	Agree - see comment (6) abov

V. Burnett (JJH) **March 1990**

14. Para 2.1 - Delete F352 and F594, these standards are not referenced in the text.	Disagree - It is now reteren ed In Table 2 previously knc as Table 1.
15. Para 2.2 - Delete Mil-Std.105.	Concur - Deleted
16. Para 5.1.1 - Delete and substitute "Class 1 terminals shall be in accordance with Table 1 and Fig- ures 1 thru 4. The terminals shall have.....	Concur - Rewrote this para.
17. Para 5.1.1 - needs to provide similar information for Class 2 terminals.	Agree - Revised Para 5.1.1 Include all terminals. (Now covers Class A & B).
18. Para 6.1.3.1 - Add ASTM B3126 to Para 2.1 (Blue Book).	B3126 is a Typo. Should reac B316.
19. Para 6.2.3 - Delete Para. It conflicts with 5.1.1.	Concur - Deleted
20. Para 6.3.1.3 - Change to read "Stock number if assigned by purchaser, If not use....	Concur - Revised para.
21. Para 8.3 & 8.4 - Either delete those Paras or clarify.	Concur - Incorporated Para Into 8.3 and further clarit
22. Para S1 and S1.1 - Delete.	Concur - See comment (11) above concur.
23. Table 1 - Delete Note 1.	Concur - Deleted
24. Table 2 - Not legible, assume it will be clarified.	Concur - Table 2 has been r worked and called Table 1.

R. Hardison (Newport News)	**March 1990**
25. A Para 5.1.4 should be added stating "terminals shall be constructed so that component parts will not separate under shock loading".	Concur - Included in Spec.
Joel Krinskv (Navsea)) (X)	**March 1990**
26. Plastic terminal and their use onboard ships..... A safety hazard and possibility of toxic fumes being released when plastic burns rust be considered.	Concur - Deleted the ASTM D1927 & the associated Specs in lieu, substituted with MIL-M-14 which now excludes the toxic fumes being releas
Tom Hopkins (Consultant)	**March 1990**
27. Not clear whether plastic terminals specified are equal or stronger than the comparable aluminum terminals.	Plastic would be leas prone to rupture than aluminium - hence one could say plastic terminals are equal or stror er than the aluminium.
28. Availability of plastic terminals when routinely manufactured.	No Problem
29. Safety hazard of plastic terminals must be considered toxic fumes being released when plastic burns.	Concur - See Comment (26)
John Forney (NAVSEA) (X)	
30. Table 1 for material does not list any specific alloys which are acceptable.....	Concur - Table 1 is now re-titled Table 2 & has been revised.
31. Para 6.1.3 - ASTM B308 contains Alloy 6061 only, correct Spec. should be B221.	Concur - Revised
32. Para 6.1.3.1 - Typo on Spec. No. B3126, should be B316... Correct Spec. for Stainless Steel Wire for Fasteners is A493.	Concur - Revised

David W. Nelson (NAVSEA)

33. Plastic terminals, safety hazard, toxic fumes etc.....	Concur - See Comment (26)

H. Rosenberg

34. Page 5, Para 8.3 & 8.4 - The Para is garbled and something has been omitted.	Concur - Revised & combined Para 8.4 with 8.3. see commen (21).

Howard Wildman & Stan Enatskv (NAVSEA) DRAFT NO.3

1. For each size of terminal a table needs to be added showing the following pressure required, throw distance and velocity; see dwg. NAVSEA 804-690702 Rw H.	Concur - see new Table No.2.
2. Para 5.1.4 should be changed to state "diffusing terminals should be manufact-ured and assembled.....	Concur
3.Dwg.NAVSEA 804-690702 should be reviewed to ensure that the ASTM sketches in the ASTM Spec. are In agreement.	Reviewed

M. Rosenberg

4. Para 1.1 change "shipboard use, In ventilation and air conditioning systems" to read "shipboard ventilation & air cond-itioning systems.	Concur

D. Marangiglio

5. Para 5.1.4 - Delete or include HIL-5-901	Concur - See comment (2) abo

R. Butler (Deutch)

6. Para 1.1 - Recommend "the design of" be added.....	Concur
7. Para 1.2 - Values to be converted to metric (S1) with U.S. Standard (inch/ pound) in parenthesis.	Since this is in the Main Committee level, this is not being changed.
8. Para 2.1 - D1755 not referenced in main body.	Deleted - upon research adde ASTM D700.
9. Para 5.1.4 - Shock load is mentioned here but.....	Rewrote this para; See comme above.

10. Para 7 - When test methods are defined within a spec. the test needs to be formatted.....	Disagree - Check examples in Blue Book; pgs 72 or 77.
11. What inspection reqts are there?	Check HIL-M-14.
12. Sect. 5 & 6 should be revised.	NonConcur
13. The following key words are recommended for Inclusion at end of document. Air. A/C, Air Supply Terminals-Ventilation.	

Draft Number 5
ASTM Designation Xxx
August, 1990

Standard Guide for METALLIC ABRASIVE BLASTING to DESCALE THE INTERIOR OF PIPE[1]

1. Scope

1.1 This document is a guide for metallic abrasive blasting to descale the interior of carbon steel pipe.

2.2 This standard is recommended for use in conjunction with an abrasive reclamation system.

1.3 The values stated in S1 (metric) units are to be regarded *as the standard.*

1.4 The standard may involve *hazardous materials, operations, and equipment. This standard does not purpot to address* all *of the safety problems associated with its use. It is the responsibility of the user of this* standard *to establish appropriate safety and health practices and determine the applicabilitv of regulartory limitations prior to use.*

2. Referenced Document

2.1 ASTM Standards:[2]

D2200 Cast Shot and Grit Size Standards for Painting Steel Surfaces

El8 Test methods for Rockwell Hardness and Rockwell Superficial Hardness of Materials.

2.2 SAE Standards: [s]

3444 Cast Shot & Grit Size Specifications for Peening Cleaning

3827 Cast Steel Shot

2.3 Other Documents:

SSPC SP10 Surface Preparation Specifications[4]

SFSA 20-66 Standard Specification for Cast Steel Abrasives"

3. **Significance and Use**

3.1 The maximum length and minimum diameter of the pipe shall be determined by the capacity of the blast equipment used.

3.2 This standard is recommended for removing mill scale, rust see paints, zincs and oxides.

4. **General Requirements**

4.1 Prior to blasting, pipe shall be dry and free of slag and weld spatter which would not be removed by abrasive blasting. Pipe shall als be free of loose dust and debris which might hamper the effectiveness abrasive blasting.

4.2 Abrasive blasting shall be accomplished in a dry area with the ambient air condition such that condensation does not occur.

4.3 Shot and blasting equipment shall be stored at a temperature no less than -13OC (10° F) above the dew point of the surrounding area.

4.3.1 Abrasive reclamation system shall include a filtration syst capable of removing oxides, debris, dust, shot/grit fragments and fines.

4.4 Compressed air system shall be equipped with moisture removal devices capable of reducing the dew point of the air at the nozzle to - 18° c *approx (O°f)* or less.

This practice is under the jurisdiction of ASTM Committee F25 on Shipbuilding and is the direct responsibility of Subcommittee FL25.13 on Piping systems.

2 Available from the American Society for Testing and Materials (AST) 1916 Race Street, Philadelphia, PA 19103.

3 Available from Society of Automotive Engineers (SAE), 2 Pennsylvan: Plaza, New York, N.Y 10001.

4 Available from Steel Structures Painting Council (SSPC) 4400 Fifth Avenue, Pittsburgh, PA. 15213.

5 Available from Steel Founders Society of America (SFSA) Cast Metal. federation building 20611 2 Center Ridge Road, Rocky River, Ohio 44116.

4.5 Hoses shall have the maximum practical diameter, and shall be as short as possible.

4.6 Nozzles shall have the maximum possible aperture as determined by the capacity of the blast equipment and as limited by the pipe diameter.

4.7 Internal pipe cleaning nozzle assemblies are commercially available and shall be used where required.

4.7.1 Internal pipe cleaning nozzle assemblies shall include a carriage which is capable of centering the nozzle concentrically in the pipe being blasted and a nozzle which is capable of producing a consisten 360° blast pattern.

4.7.2 Diagrams of some commercially available internal pipe cleaning assemblies are provided in Figures 1, 2, 3, and 4.

4.7.3 If a lance is required, it shall be at least as long as the pipe being blasted.

4.8 Blasting shall be accomplished using an abrasive mixture of cast steel shot and grit, or with iron shot or grit.

4.5.1 Iron or grit may be used if desired.

4.8.2 Cast steel shot and grit mixtures shall be sized in accordance with SAE 3444.

4.8.3 Reclaimed shot and grit shall be of the same quality as the original material.

4.9 Cast steel shot shall be manufactured in accordance with SAE J80 and tempered to a hardness of 40-50 rockwell C in accordance with ASTM E18.

4.10 Cast steel grit shall be manufactured in accordance with SFSA 20-66 and tempered to a hardness of 55-65 rockwell C in accordance with ASTM E18.

4.11 Shot and grit size shall be determined by the following criteria:

4.11.1 Smaller shot and grit produces more impacts per inch and is therefore more effective for removing paints and corrosion products.

4.11.2 Larger shot. and grit produces more kinetic energy per impact and is therefore more efficient for removing heavier deposits such as mil scale

4.12 If surface type and profile is specified, abrasive shall be selected using the following criteria:

4.12.1 Shot. produces a wavy rounded surface profile which increase. coating area coverage.

4.12.2. Grit produces a sharp angular profile which forms a better anchor pattern for most coatings.

4.12.3 Table 1 lists some "Typical maximum profiles produced by some commercial abrasive media" as taken from Steel Structures Painting Council, “Surface Preparation Specifications".

4.13 Blasting shall be accomplished with a minimum of 620 kpa (90 PSI) dry air pressure at the nozzle.

4.14 If an abrasive reclamation system is used. it shall be capable of filtering the used abrasive and returning the usable mixture.

5. Procedure

5.1 Pipe shall be located as close as possible to the blast equipme and blown clean of loose debris prior to blasting.

5.2 Pipe with an interior diameter of 100MM approx (4 in.) or large may be manually blasted from both ends if both ends are accessible and : pipe length configuration and equipment capabilities are such that the blasted surface is consistent throughout the pipe.

5.3 If pipe is inaccessible from one end, bent or too long to be hand blasted it will be necessary to use an internal pipe cleaning nozzle assembly.

5.3.1 Nozzle assembly shall be placed inside the pipe in a manner such that the nozzle is concentric with the pipe.

5.3.2 Nozzle assembly shall then be passed through the entire length of the pipe at a constant rate.

5.4 Extreme caution shall be used in all the blasting operations to avoid unnecessary removal of parent metal.

5.5 When blasting is completed, pipe shall be blown clean of residual, debris and visually inspected in accordance with ASTM D2200 reblasted as required.

5.6 Interior of pipe shall then be coated when specified Coatings should be applied to freshly blasted surface before any rusting or contamination should occur.

6. Workmanship, Finish and Appearance

6.1 Pipe shall be blasted to a near white finish in accordance with SSPC SP10, or as otherwise specified.

TABLE 1: * TYPICAL MAXIMUM PROFILES PRODUCED BY SOME COMMERCIAL ABRASIVE MEDIA

ABRASIVE	MAXIMUM PARTICLE SIZE NBS SCREEN No.	TYPICAL PROFILE HEIGHT (MILS) MAXIMUM	AV. MAXIMUM
STEEL ABRASIVES **			
SHOT S230	-#18 + #20	2.9 ± 0.2	2.2+ 0.7
SHOT S280	-#16 + #18	3.5 + 0.3	2.5 + 0.4
SHOT S330	-#14 + #16	3.8 ± 0.4	2.8 + 0.:
SHOT S390	-#12 + #14	4.6 ± 0.5	3.5 + 0.7
GRIT G50	-#25 + #30	2.2 ± 0.3	1.6 ± 0.2
GRIT G40	-#18 + #20	3.4 ± 0.4	2.4 ± 0.:
GRIT G25	-#16 + #18	4.6 ± 0.5	3.1 ± 0.7
GRIT G14	-#10 + #12	6.5 + 0.8	5.1 ± 0.

* Compliments of Steel Structures Painting Council.

** Profile heights shown for steel abrasives were produced with conditioned abrasives of stabilized operating mixes in recirculating abrasive blast cleaning machine profile heights produced by new abrasive having screen analyses shown in SAE 3444 will be appreciably higher.

Cast. Steel Shot: Hardness 40 to 50 Rockwell C.
Cast Steel Grit: Hardness 55 to 60 Rockwell C.

TABLE 2: * STEEL SHOT AND GRIT SPECIFICATIONS **

PROPERTY	SHOT	GRIT
SIZE: New Abrasive as manufactured	All material is screened to meet or exceed SAE #J444 and SFSA #20-66 Specifications	
CHEMISTRY:		
Carbon	0. 85 TO 1. 20%	
Manganese	0.60 TO 1.00%	
Silicon	0.50 TO 1.00%	
Sulfur	< 0. 05%	
Phosphorus	< 0.05%	
MICROSTRUCTURE:	Uniformly tempered martensite, with fine, well distributed carbides., if any. Carbide networks, transformation products, decarburized surfaces, inclusions, and quench cracks are undesirables.	
HARDNESS: Commonly used Structural Steel ***	40 t0 50 RC	40, to 50 RC **** 40 to 60 RC

* Compliments of Steel Structures Painting Council.

** It is extremely important that contractual documents which specify abrasive to be used clearly designate the abrasive by size and by hardness.

*** Both cast steel shot and grit of hardnesses in the range from 30 to 6 rockwell C may be purchased. However, the abrasives of less than 40 RC and greater than 60 RC are generally used for applications other than surface preparation of structural steel.

**** Abrasive manufacturers identify steel grit by designations which include two or more prefix letters, followed by the number size. Prefix letters are different for each of the abrasive suppliers for any given hardness range.

TABLE 3: * TYPES OF STEEL ABRASIVES MOST COMMONLY USED FOR VARIOUS STRUCTURAL STEEL BLAST CLEANING OPERATIONS

	ABRASIVE TYPE Shot	Grit	SIZE RANGE **	HARDNESS CRC: 40 TO 50	50 TO 60
New Steel	X		S170 to S390	X	
Fabricated New Steel	X		S170 to S390	X	
		X	650 t0 625	X	X
Heat Treated Steel		X	650 to 625		
Heavy Steel Plate	X		S230 to S390	X	
Corroded Steel		X	650 to 625		X
Weld Scale	X		S170 to S280	X	
Brush Blast	X		S170 to S280	X	
Repair Work		X	650 to 640	X	
Maintenance		X	680 to 618	X	X

* Compliments of Steel Structures Painting Council.

** Size Range refers to working mix (operating mix) for recirculating abrasive blast. systems. For additional information see Volume 1, Chapter 2 of the “Steel Structures Painting' Manual".

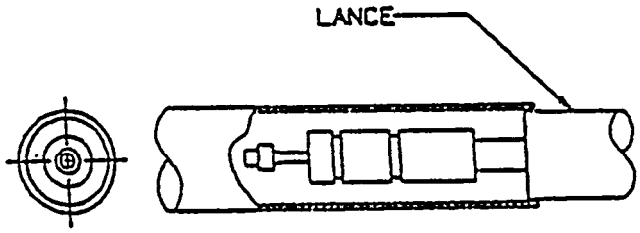


FIGURE 1

FOR 20mm to 50mm approx (3/4" to 2")
INSIDE DIAMETER PIPE

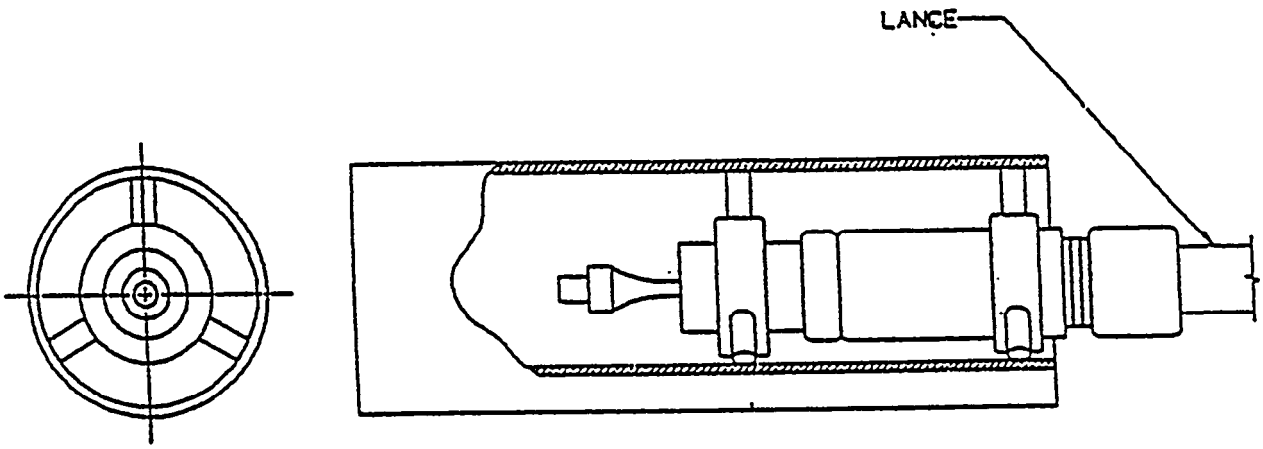


FIGURE 2

FOR 50mm to 125mm approx (2" to 5")
INSIDE DIAMETER PIPE

1 in. = 25.4mm

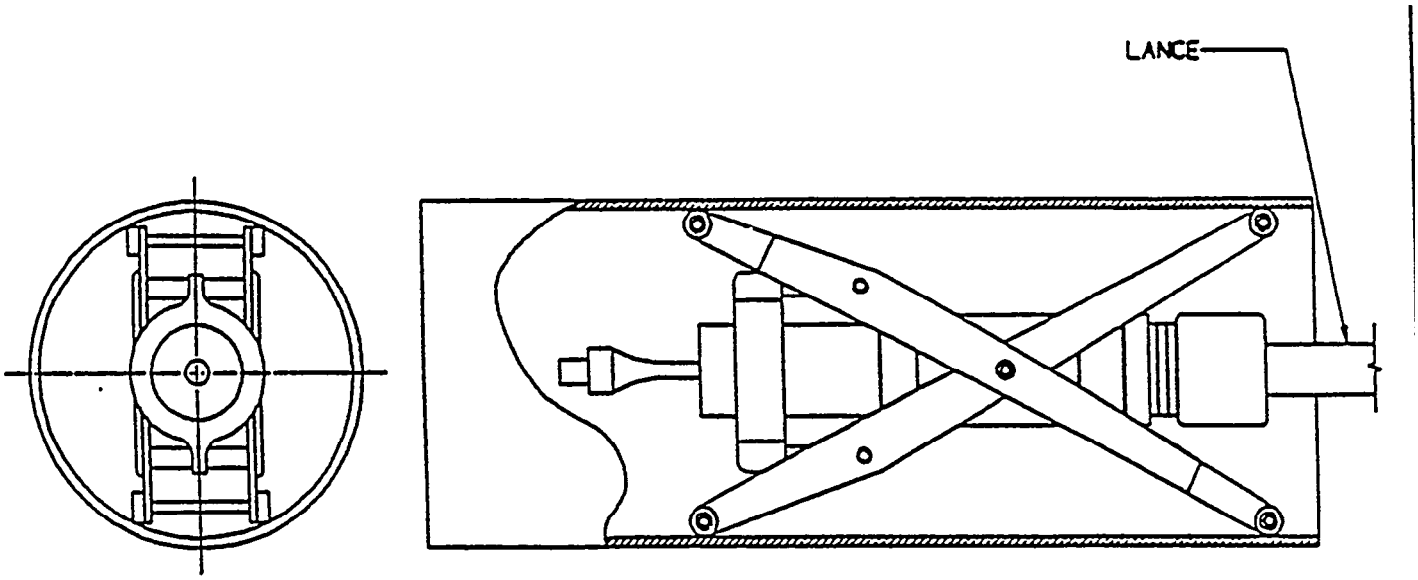


FIGURE 3

FOR 125mm approx to 305mm (5" to 12")
INSIDE DIAMETER PIPE

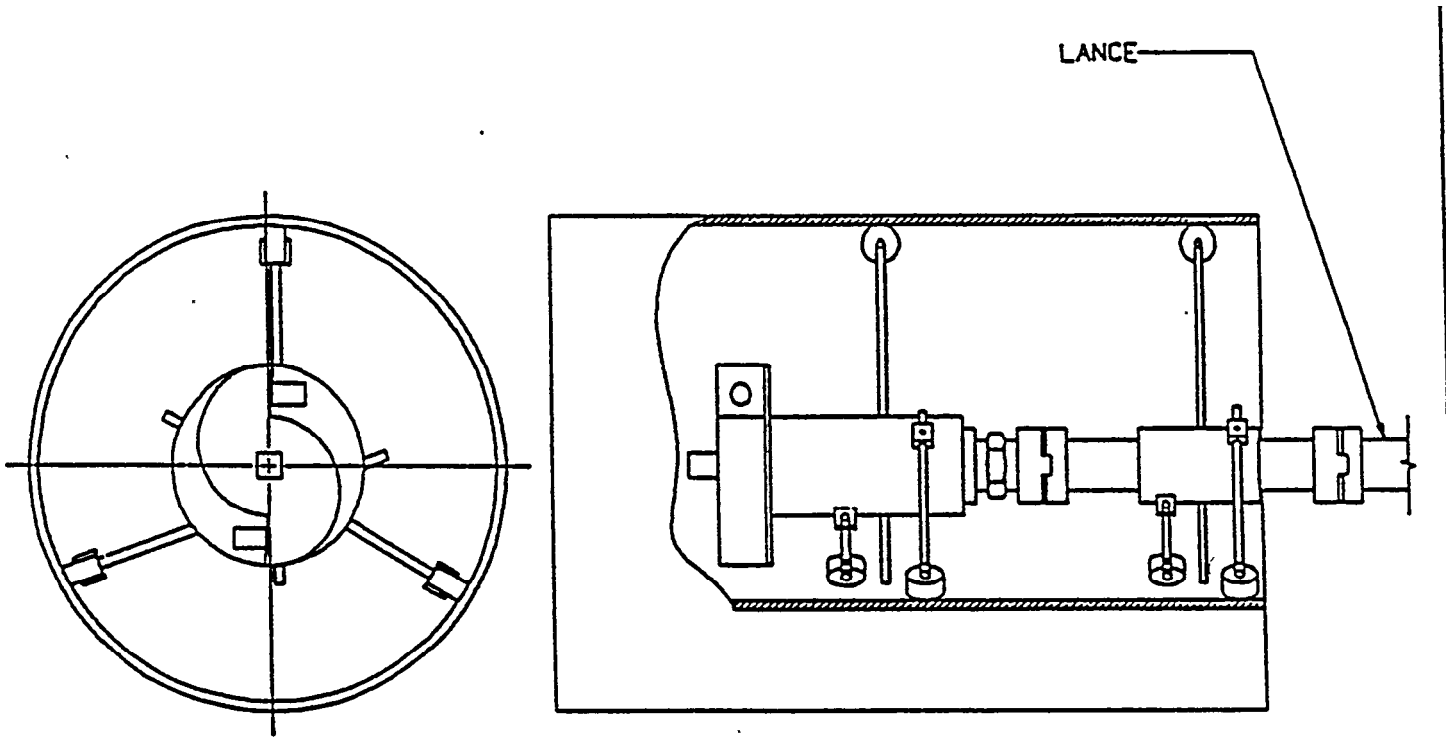


FIGURE 4

FOR 305mm to 915mm (12" to 36")
INSIDE DIAMETER PIPE

1 in. = 24.5 mm.