



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

Joe Becherer  
TransQuip USA, Inc.  
2301 Creekkedge Ct.  
Dallas, TX 76210

April 17, 2020

Reference No. 19-0076

Dear Mr. Becherer:

This letter is in response to your June 10, 2019, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to tank car manway nozzles. Specifically, you ask for clarification on the materials of construction requirements for manway nozzles in “general service cars” (i.e., non-pressure tank cars). You note that in accordance with § 179.200-7(b), ASTM A 537 is not a listed material for construction of manway nozzles though, as you note, it has similar properties as ASTM A 516, which is a listed material.

We have paraphrased and answered your questions as follows:

- Q1. You ask whether this is an oversight based on the similarities between the properties of both materials of construction.
- A1. The answer is no. In accordance with § 179.200-7(b), ASTM A 537 is not a listed carbon steel material of construction for manway nozzles in non-pressure tank cars.
- Q2. You mention that ASTM A 537 has better elongation and yield strengths than ASTM A 516. You also provide designs for manway nozzles for tank cars constructed of ASTM A 537 and ask whether these may be used for non-pressure tank car specifications.
- A2. The answer is no. Since ASTM A 537 is not an authorized material under § 179.200-7(b), a special permit would be required to authorize use of this material. Section 179.4 provides the requirements for changes in specifications for tank cars by AAR Tank Car Committee approval or special permit. To apply for a special permit, please submit an application to the Associate Administrator for Hazardous Materials Safety in conformance with the requirements prescribed in 49 CFR Part 107, Subpart B. You may

obtain information on the special permit application process from our website at <https://www.phmsa.dot.gov/approvals-and-permits/hazmat/hazardous-materials-approvals-and-permits-overview>, or by calling PHMSA's Approvals and Permits Division at (202) 366-4511.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dirk Der Kinderen".

Dirk Der Kinderen  
Chief, Standards Development Branch  
Standards and Rulemaking Division

Cardy  
19-0076

**Dodd, Alice (PHMSA)**

---

**From:** Kelley, Shane (PHMSA)  
**Sent:** Tuesday, June 11, 2019 12:07 PM  
**To:** Hazmat Interps  
**Cc:** Majors, Leonard (PHMSA)  
**Subject:** Fwd: Manway Nozzle Material Question  
**Attachments:** Tank Arrgt 30143 with A519 Fittings Nozzle.pdf; TRQ-2018-0927-10 (CS 12.5 in pro).pdf

Team

Please log for response and have the drafter assigned work with Leonard - if we can expedite this that would be great.

Thanks

Shane

**From:** jbecherer@transquip.com <jbecherer@transquip.com>  
**Sent:** Monday, June 10, 2019 5:36 PM  
**To:** Majors, Leonard (PHMSA) <leonard.majors@dot.gov>  
**Cc:** Strouse, Larry (FRA) <larry.strouse@dot.gov>; Dorsey, Ken <kdorsey@aar.org>; wcroson <wcroson@transquip.com>  
**Subject:** FWD: Re: Manway Nozzle Material Question  
**Importance:** High

Mr. Majors,

I was wondering if I could get your direct interpretation on current Manway Nozzles, and the material they are made of for General Service Cars.

In MSRP M-1002, Appendix M, Table M.10.1 (snapshot attached), ASTM A537 is listed as being an

approved material for Tanks, which would now include any Nozzles, under the new definition of a tank.

When looking at 179.100-7 for Pressure Cars, ASTM A537 is an approved material, but in 179.200-7 for General Service Cars ASTM A537 is not listed as an approved material.

My question is, do you think this was an oversight for when the definition of a tank changed, and that 179.200-7 should read much like 179.100-7 to include A537 as an approved material?

I know there were thousands of General Service cars built with various nozzle materials used, including A537, for Nozzles before the definition changed. So it would seem to me that A537 would still be an acceptable nozzle material today.

So with that in mind, would you consider the attached drawing TRQ-2018-0927-10, acceptable by having Item #2 listed as ASTM A537 material, and knowing it will be applied to a General Service car?

As an example, if you look at the attached drawing of the 30143 gallon tank, the Nozzle "Neck" used to make Item #4 and Item #6 is made from A519 Seamless Pipe/Tubing back in the day. As you may know, a lot of these cars are being retrofitted to become DOT117R's currently.

Leonard, so my big concern is, we have an order going on now where our customer wants a Carbon Steel extension per the TRQ-2018-0927-10 assembly attached, and the material chosen was A537. Should we tell the factory to discontinue applying A537 and start using A516-70, or do you think we are OK to continue with A537? As you see can see from the attached examples, the Nozzle neck/rings were made of A53 and A519 in the past. The properties of A537 is very similar to A516-70 but with better Elongation and Yield strengths, so I can't see why it wouldn't be acceptable.

Mr. Larry Strouse and Mr. Ken Dorsey seem to agree with me, but they had asked me to Consult with you for your direction and/or approval.

Thanks in advance for your time with this matter.

Take Care,

Joe Becherer

TransQuip USA, Inc.

940-231-0809

[jbecherer@transquip.com](mailto:jbecherer@transquip.com)

## Specifications for Tank Cars

### APPENDIX M

#### 7.4 Reports

Mill test reports must be submitted to the AAR Tank Car Committee with the Certificate of Construction.

**Table M.10 Approved materials for tanks fabricated by welding**

The grouping of materials by P-number in this table does not imply that base materials from different analyses within a group may be indiscriminately substituted for a material used in a welding procedure qualification test without consideration of the compatibility of base materials and filler metals from the standpoint of metallurgical properties, postweld treatment, design and service requirements, and mechanical properties.

**Table M.10.1 Carbon steel plate<sup>d/</sup>**

Material Specification	P- Number <sup>b/</sup>	Group Number	Minimum Tensile Strength, Welded Condition <sup>c/</sup>		Minimum Elongation 2 in. (50 mm) V (Longitudinal) %
			psi	MPa	
<b>Material Group 1<sup>d/</sup></b>					
ASTM A516, Gr. 70	1	2	70,000	485	20
ASTM A537	1	2	70,000	485	22
AAR TC128, Gr. B	<i>e/</i>	<i>e/</i>	81,000	560	19

**§179.100-7 Materials. (a) Steel plate:** Steel plate materials to fabricate tank shell and manway nozzle must comply with the following specifications with the indicated minimum tensile strength and elongation in the welded condition. The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon greater than this amount. The plates may be clad with other approved materials.

Specifications	Minimum tensile strength (p.s.i.) welded condition <sup>1</sup>	Minimum elongation inches (percent) welded condition (longitudinal)
AAR TC128, Gr. B	81,000	19
ASTM A 302 <sup>2</sup> , Gr. B	80,000	20
ASTM A 516 <sup>2</sup>	70,000	20
ASTM A 537 <sup>2</sup> , Class 1	70,000	23

<sup>1</sup>Maximum stresses to be used in calculations.

<sup>2</sup>These specifications are incorporated by reference (IBR, see §171.7 of this subchapter).

mented tank.

**§179.200–7 Materials.** (a) Plate material used to fabricate the tank and, when used, expansion dome or manway nozzle material, must meet one of the following specifications with the indicated minimum tensile strength and elongation in the welded condition.

(b) **Carbon steel plate:** The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon content greater than this amount. The plates may be clad with other approved materials:

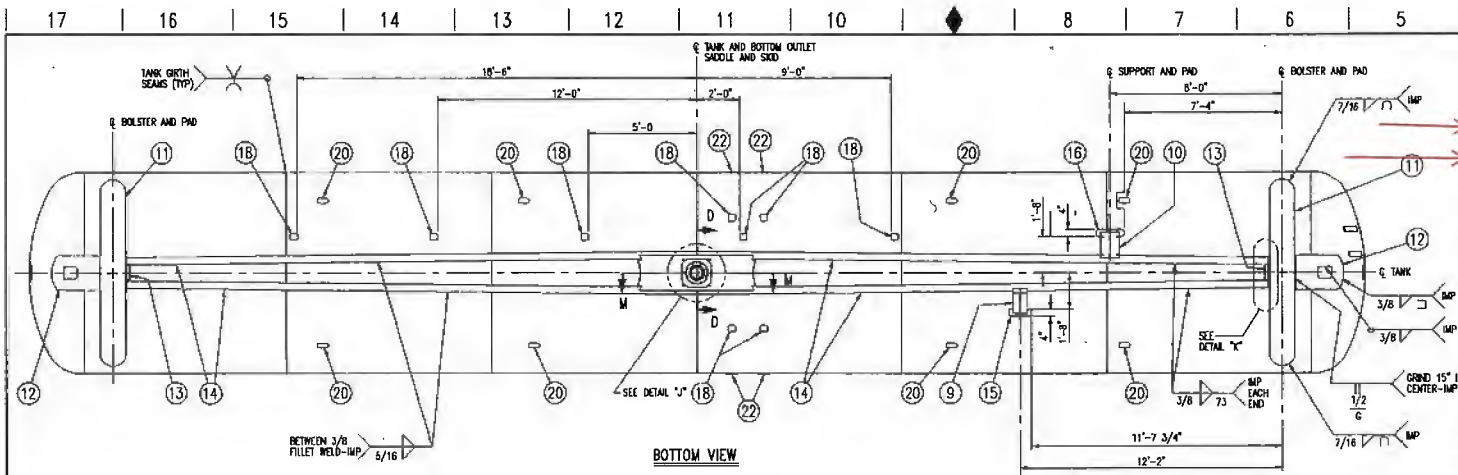
Specifications	Minimum tensile strength (p.s.i.) welded condition <sup>1</sup>	Minimum elongation in 2 inches (percent) weld metal (longitudinal)
AAR TC 128, Gr. B	81,000	19
ASTM A 516 <sup>2</sup>	70,000	20

<sup>1</sup>Maximum stresses to be used in calculations.

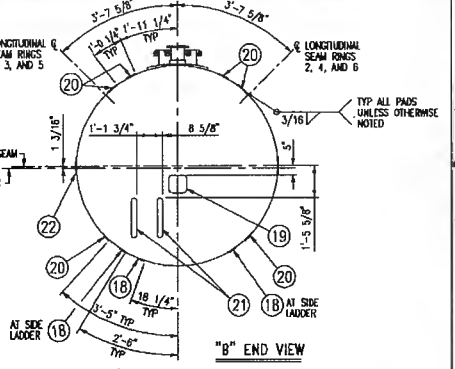
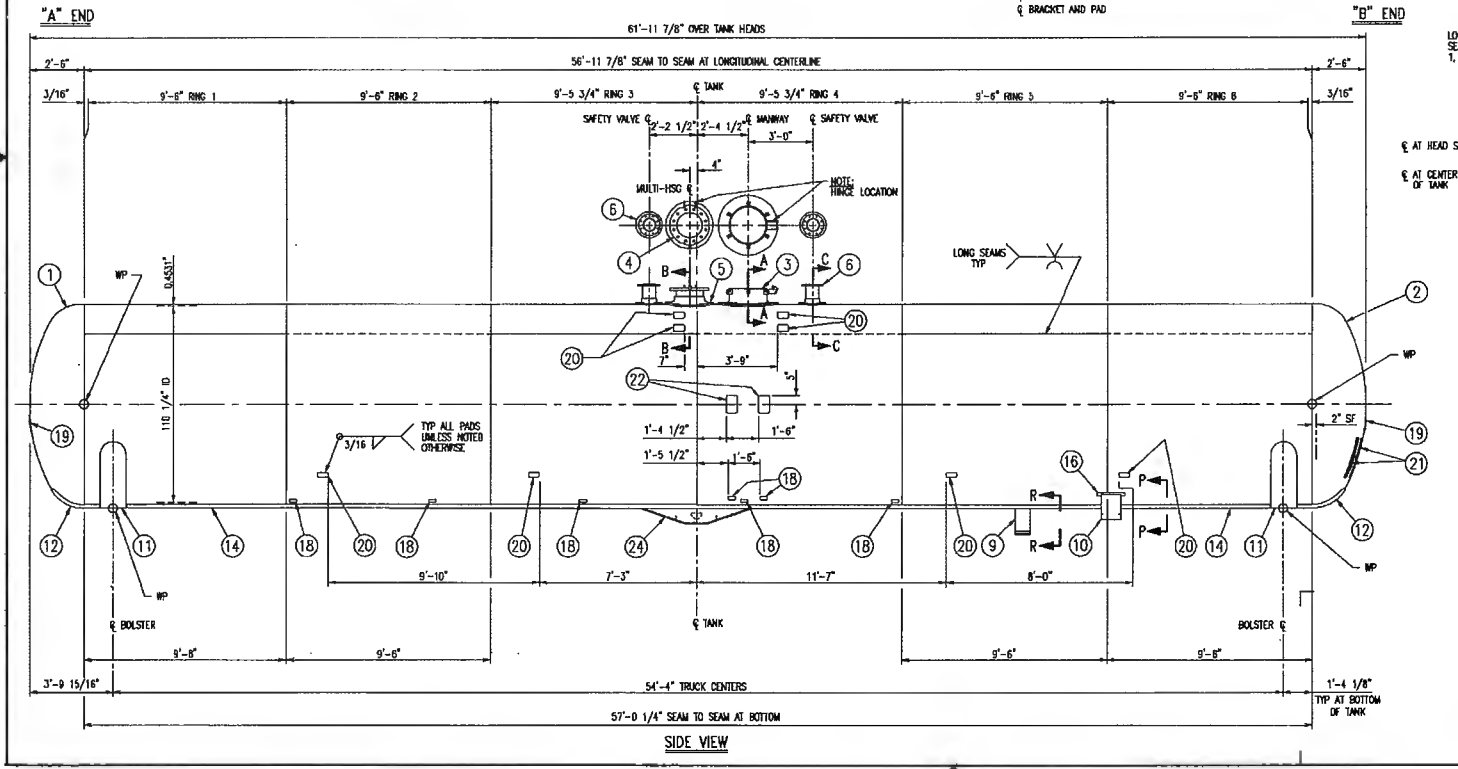
<sup>2</sup>This specification is incorporated by reference (IBR, see §171.7 of this subchapter).







PARTS LIST			
ITEM	PART NO.	QTY	DESCRIPTION
1	B-127577	1	PRETAB BARREL
2	B-127358	1	HEAD, 110 1/4" ID, 2:1 ELLIP, 2" SF, 0.413" MIN THK
3	B-240018	1	NOZZLE ASSEMBLY, 20" MAINWAY, 6-BOLT, FLUID
4	D-401416	1	NOZZLE ASSEMBLY, 15", MULTI-HOUSING FLUID
5	D-440083	1	NOZZLE, 15" FLUID X 4"
6	B-27507-01	2	SAFETY VALVE NOZZLE ASSEMBLY, 6", FLUID
7	D-143834	1	SADDLE, BOTTOM OUTLET
8	B-124099	1	OUTAGE SCALE, 316L SS
9	B-20583	1	DEAD LEVER BRACKET ASSEMBLY
10	B-20586	1	SUPPORT, BRACE CYLINDER
11	B-29714	2	PAD, BOLSTER, 14" WIDE
12	B-28575	2	FRONT SILL PAD, 110 1/4" ID HEAD
13	B-28595	2	REAR SILL PAD
14	B-28588-14	4	REINFORCING PAD, 4" X 1", SQUARE END
15	A-114050	1	PAD, 7/16" X 4" X 12 1/2"
16	A-114049	1	PAD, 7/16" X 4" X 16"
17	B-127494-01	2	PAD, 1/4" X 4" X 10", 316 SS
18	A-17211	9	PAD, 1/4" X 4" X 4"
19	B-125086	2	PAD, 1/4" X 10" X 10"
20	A-17306	16	PAD, 1/4" X 6" X 6"
21	A-19004	2	PAD, 1/4" X 3" X 22"
22	A-17358	4	PAD, 1/4" X 6" X 10"
23			
24	B-243983	1	SND ASSEMBLY
25	B-34052-01 ZSH	1	BOLSTER AND DRAFT SILL ASSEMBLY, A-END
26	B-34052-02 ZSH	1	BOLSTER AND DRAFT SILL ASSEMBLY, B-END
27	C-38546	1	SPECIAL INSTRUCTIONS, G.E. CHRS



NOTES:  
 1. SEE BOTTOM AND SIDE VIEWS FOR PAD LOCATIONS NOT SHOWN.  
 2. DIMENSIONS SHOWN ARE SYMMETRICAL ABOUT CENTERLINE UNLESS NOTED.  
 3. BOLSTER AND DRAFT SILL ASSEMBLY OMITTED THIS DRAWING FOR CLARITY.

E (SLM 8-23-98) DELETED ITEM 23  
 D (SLM 11-28-95) REVERSED SIDE LADDER PAD RELOCATIONS; REVISED ITEM 22  
 C (SLM 3-29-95) REVERSED ITEM QTY ITEM 18; REVISED ITEM 22

REV BY DATE REVISION

P.A.R. APPLICATION NO.

FILE:

TOLERANCES UNLESS OTHERWISE SPECIFIED ON THIS DRAWING THE FOLLOWING TOLERANCES SHALL APPLY:  
 HOLE ±.0020 FOR HORIZONTAL AND CH DIMENSIONS; HORIZONTAL DIMENSIONS ±.0015" (A197)  
 ALL OTHERS ±.0015" (A197) IN RELIEF; 10" & OVER ±.0015" (A197) PER 2013/17  
 DIMENSIONS 3 PLACES ADD 2 PLACES 3/32 1 PLACE ±.1  
 FINISH UNLESS OTHERWISE SPECIFIED: ALL FINISH AS SHOWN.

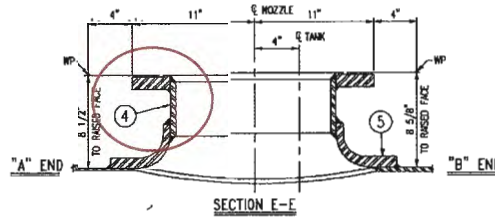
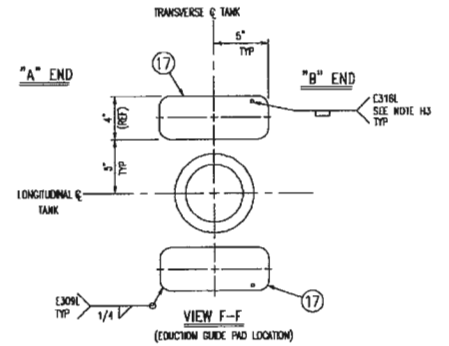
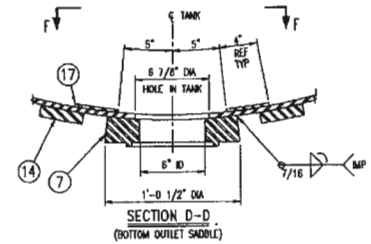
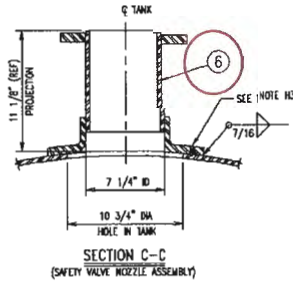
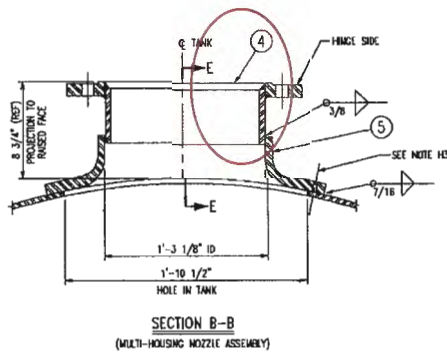
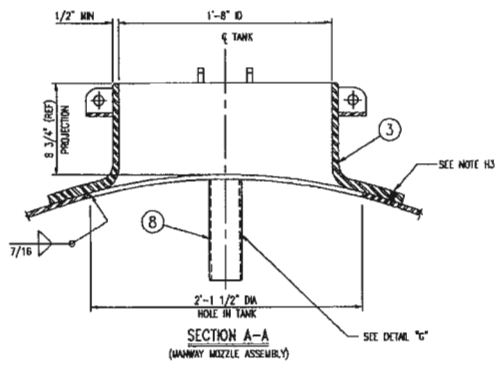
**TRINITY INDUSTRIES, INC.**  
 RAILCAR DIVISION

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DRAWN ORN 9-19-97  
 CHKD SLM 9-22-97  
 APPD JBN 9-22-97  
 LHM FILE 9768  
 NLA  
 WEIGHT

**TANK ARRANGEMENT**  
 29,947 WC, 110 1/4" ID, STR  
 DOT 111A(S)OOR, MC 2-88  
 TYPE 23 U/F, SPECIAL TANK THICKNESS

DRAWING NO. **D-43118** SHEET REV SPEC  
 1 1 E D



**DESIGN AND CONSTRUCTION NOTES**

1. TANK SHALL BE FABRICATED IN ACCORDANCE WITH TANK CAR SPECIFICATION BUT 11A1000T.
2. HYDRO-TEST TANK IN ACCORDANCE WITH HYDRO-TESTING NOTES. (SEE THIS SHEET)
3. ALL TANK SHELL AND HEAD SEAM WELDS SHALL BE FULL PENETRATION BUTT WELDS PER QUALIFIED AND APPROVED TRINITY INDUSTRIES WELD PROCEDURES. FOR WELDS MARKED "MP" USE APPROVED "MP" WELD PROCEDURES ONLY.
4. RADIOGRAPH IN ACCORDANCE WITH AAR APPENDIX W, SECTION 19.00. PARTIAL X-RAY REQUIRED PER PARAGRAPH W19.03. SEE SPECIAL INSTRUCTIONS.
5. STRESS RELIEVING IS REQUIRED IN ACCORDANCE WITH AAR APPENDIX W, PARAGRAPH 17.00. TANK TO BE SUPPORTED AT BOLSTERS.
6. FLANGE BOLT HOLES TO STRADDLE NORMAL TANK CENTERLINES UNLESS OTHERWISE NOTED.
7. TANK SHALL BE CLEANED INSIDE AND OUT, FREE OF DIRT, GREASE, DEBRIS, LOOSE MILL SCALE, WELD SPATTER, ETC.
8. THE SURFACE OF ANY BUTT WELD SHALL BE AT LEAST FLUSH WITH ADJOINING PLATE SURFACE AND MAY BE BUILT UP AS REINFORCEMENT WHICH SHALL NOT EXCEED 3/32\"/>
- 9. ALL CIRCUMFERENTIAL WELDS CROSSING THE BOTTOM LONGITUDINAL CENTERLINE ON INSIDE SURFACE OF THE TANK SHALL BE GROUNDED FLUSH 6\"/>
- 10. STAMP EACH HEAD PER TANK CAR STAMPING DRAWING. (3/8\"/>
- 11. GRIND TANK WELDS LOCATED UNDER PADS FLUSH AT LEAST 1 INCH BEYOND EDGE OF PAD.
- 12. SEE BOLSTER AND DRAFT SILL ARRANGEMENT DRAWING FOR WELDS TO BOLSTER PADS AND DRAFT SILL TO REINFORCING BAR.
- 13. MATERIAL FOR PRESSURE PORTIONS OF TANK MUST HAVE HEAT AND SLAB IDENTIFICATION MARKINGS IN PLAIN VIEW WHEN TANK IS COMPLETE. SEE AAR TANK CAR SPEC 5.1.4. ALL PRESSURE PARTS MUST BE LISTED ON MATERIAL USED RECORD SHEET. MILL TEST REPORTS MUST BE RETAINED.
- 14. INTERIOR SURFACE PREPARATION OPTIONS:
  - INTERIOR SURFACE PREPARATION IS **NOT** REQUIRED.

**SHOP RECORDS REQUIRED**

- MATERIAL USED RECORD
- MILL TEST REPORTS (COPY TO ENGINEERING)
- STRESS RELIEVING CHART
- HYDRO-TEST CHART / TANK
- STAMPING RUB OFF HEAD / COMPARTMENTS
- DIMENSION SHEET
- CERTIFICATE OF HYDRO-TEST (ORIGINAL)
- DRINELL HARDNESS (PER CHECKLIST)
- OTHER

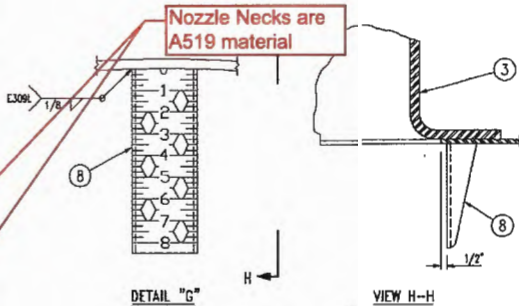
**HYDRO-TEST AND WELD TEST NOTES**

- H1. TANK TO BE HYDROSTATICALLY TESTED AT 125 PSI FOR A MINIMUM PERIOD OF 10 MINUTES. WATER TEMPERATURE NOT TO EXCEED 100°F.
- H2. TANK MUST BE SUPPORTED AT BOLSTERS DURING TEST.
- H3. WELDS ON ALL NOZZLES, BOTTOM OUTLET SADDLE, AND NOZZLE FLUES TO BE PRESSURE TESTED WITH 30 PSIG AIR AND SCAMP SUDS OR OTHER APPROVED METHOD AFTER HYDROTEST TO PROVE WELD INTEGRITY. SEAL WELD TEST AND WELD HOLES AFTER STRESS RELIEF AND BEFORE HYDROTEST. GRIND INTERNAL PAD WELD HOLES FLUSH.

**MATERIAL NOTES**

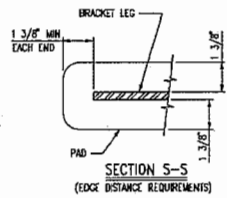
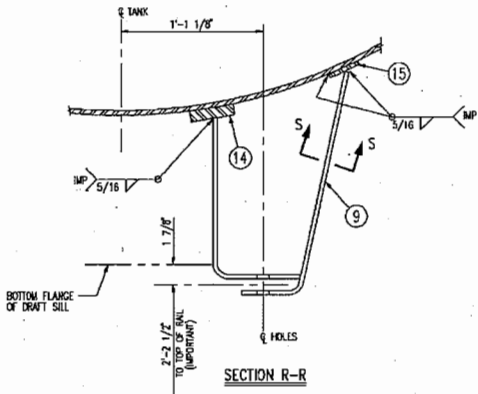
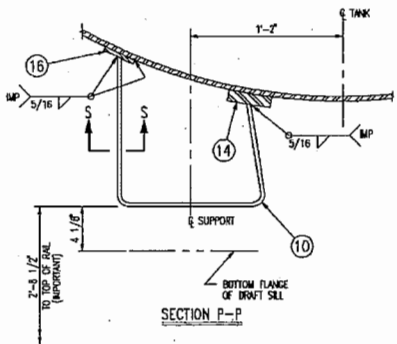
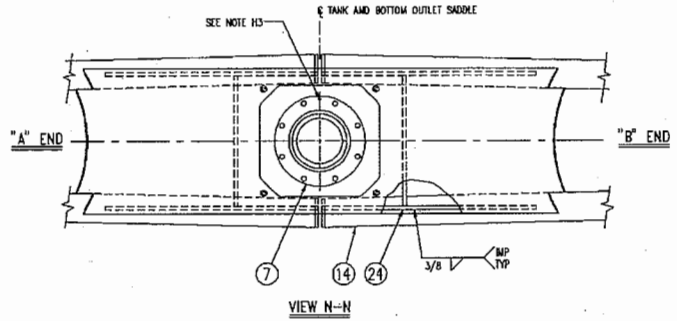
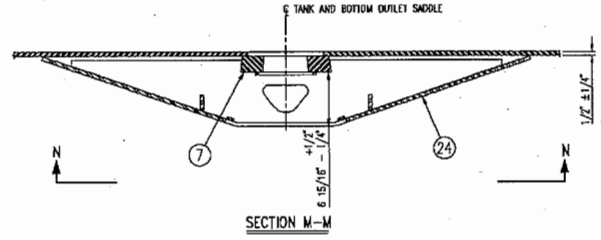
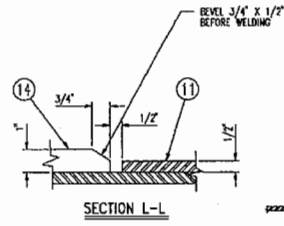
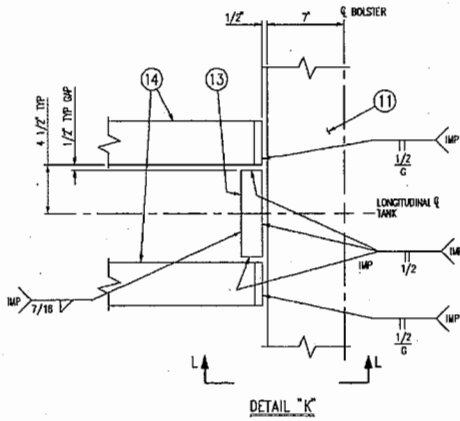
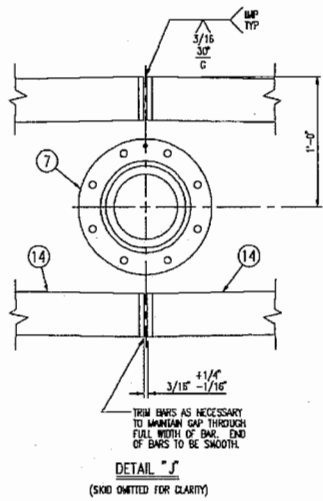
HEADS:	AS18-70
SHELL:	AS16-70
BOLSTER PADS:	AS16-70
REAR SILL PADS:	AS72-50
FRONT SILL PADS:	AS72-50
REINFORCING BARS (ITEM 14):	AS72-50
MANWAY:	
A. FLUED NOZZLE:	AS18-70
MULTI-HOUSING NOZZLE:	
A. NECK:	AS19 SMLS
B. FLANGE:	AS18-70
C. FLUE:	AS18-70
SAFETY VALVE NOZZLE:	
A. FLUED NOZZLE:	AS16-70
B. NECK:	AS19 SMLS
C. FLANGE:	AS18-70
BOTTOM OUTLET SADDLE:	AS16-70 NORM

Nozzle Necks are A519 material



VIEW H-H  
LOC. TO OUTLINE SCALE ON TOP  
1/4\"/>

E	ISM 10-14-99	REVISED NOTE H3
D	ISM 16-18-99	REVISED NOTE H3
C	ISM 16-14-99	REVISED TITLE SIDE AT SECTION B-B
B	ISM 5-4-99	REVISED MATERIAL NOTES
A	JRN 2-2-99	REVISED CUTOFF FOR 15\"/>
REV BY	DATE	REVISION
A.A.R. APPLICATION NO. L88079		
<b>FILE:</b>		
UNLESS OTHERWISE SPECIFIED ON THIS DRAWING THE FOLLOWING DIMENSIONS SHALL APPLY: SEE B-14500 FOR ARRANGING THE POSITION OF TIGHTENING DEVICES AND ALL AS TO BE LOCATED FOR CONVENIENCE WHEN ONLY THE DIMENSIONS ARE NOT COPIED OR USED FOR ANY OTHER PURPOSE. MATERIALS SHALL BE IDENTIFIED BY MILL TEST REPORTS, AND THE TRINITY INDUSTRIES SHALL BE RESPONSIBLE FOR THE QUALITY OF THE MATERIALS USED.		
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DRAWN BY	10-19-97	
CHGD	ISM 9-22-97	
APPRO	JRN 9-22-97	
NO FILE	9768	
NLA		
NOEHT		
TANK ARRANGEMENT 29.947 WG. 110 1/4\"/>		
DRAWING NO:	D-4311B	PART 2 OF 3
REV	E	DATE



REV	BY	DATE	REVISION
AAR APPLICATION NO. L98079			
<b>FILE:</b>			
<small>UNLESS OTHERWISE SPECIFIED ON THIS DRAWING THE FOLLOWING TOLERANCES SHALL APPLY:                  SIZE D-HOLES FOR ASSEMBLY WARE OR TOLERANCES FINISHED DIMENSIONS ± 1/32" (± 0.015")                  ALL DIMENSIONS: 1" &amp; OVER ± 1/32" (± 0.003125"); 1/2" &amp; OVER ± 1/64" (± 0.0015625"); UNDER 1/2" ± 1/128" (± 0.00078125")                  HOLE DIMENSIONS: 3 PLACES ± 0.002; 2 PLACES ± 0.001; 1 PLACE ± 0.001                  UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES. ALL DIMENSIONS SHALL BE WITHIN TOLERANCES UNLESS OTHERWISE SPECIFIED.</small>			
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DRAWN	AMC	9-19-97	
CHD	SLM	9-19-97	
APPD	SLM	9-22-97	
TW	FREE	9768	
FILE			
WEIGH			
<b>DRAWING NO:</b>		<b>SHEET</b>	<b>REV</b>
D-43118		3	D
<b>TANK ARRANGMENT</b> 29.947 WC, 110 1/4" D, STR DOT 117A100W1, MC 2- N TYPE 23 1/2, SPECIAL TANK THICKNESS			

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	9/27/2018	JCB 09-27-18

D

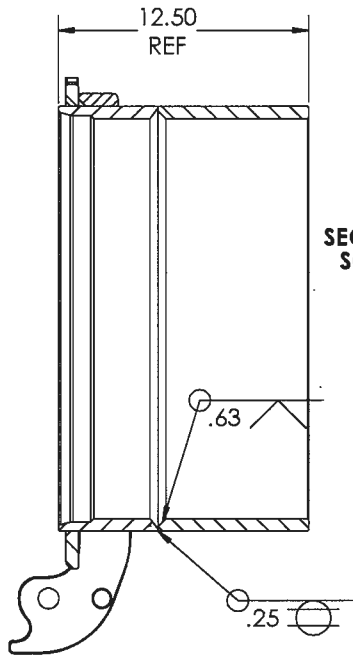
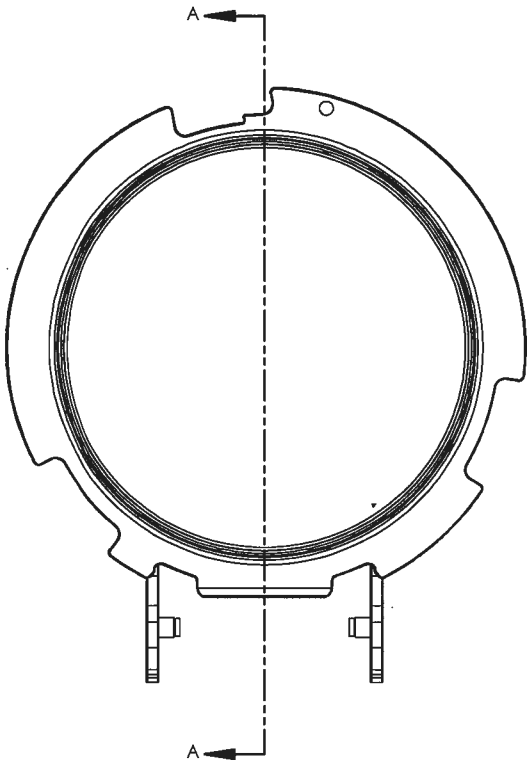
D

C

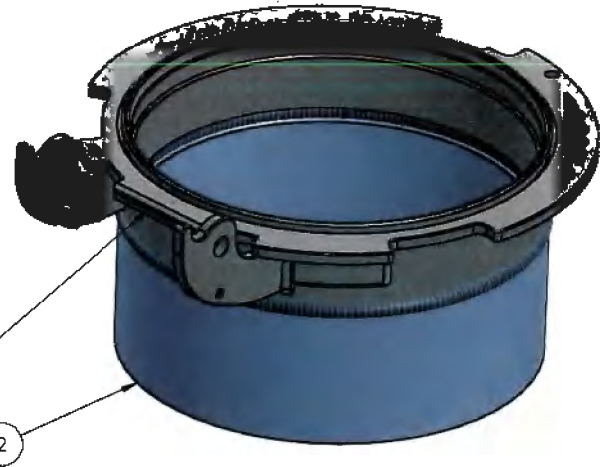
C

B

B



SECTION A-A  
SCALE 1:6



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	08867-401H	20" NOZZLE ASSY 5.0 TALL	1
2	TRQ-2018-0927-1	NOZZLE EXT. 7.5" A537 C.S.	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
X.XX = ±.03  
X.XXXX = ±.015  
X.XXXXX = ±.005

INTERPRET GEOMETRIC  
TOLERANCING PER:  
MATERIAL

FINISH

DO NOT SCALE DRAWING

NAME DATE  
CRAIG 9/27/18  
CHECKED JCB 9-27-18  
ENG APPR.  
MFG APPR.

Q.A.  
COMMENTS:

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IN PART OR AS A WHOLE WITHOUT THE  
WRITTEN PERMISSION OF  
TRANQUIP INC. IS PROHIBITED.

NEXT ASSY

USED ON

APPLICATION

**TransQuip Inc.**  
**20" MANWAY  
NOZZLE EXTENDED  
12.5 OVERALL C.S.**

SIZE DWG. NO. REV  
**B TRQ-2018-0927-10 A**

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

8

7

6

5

4

3

2

1