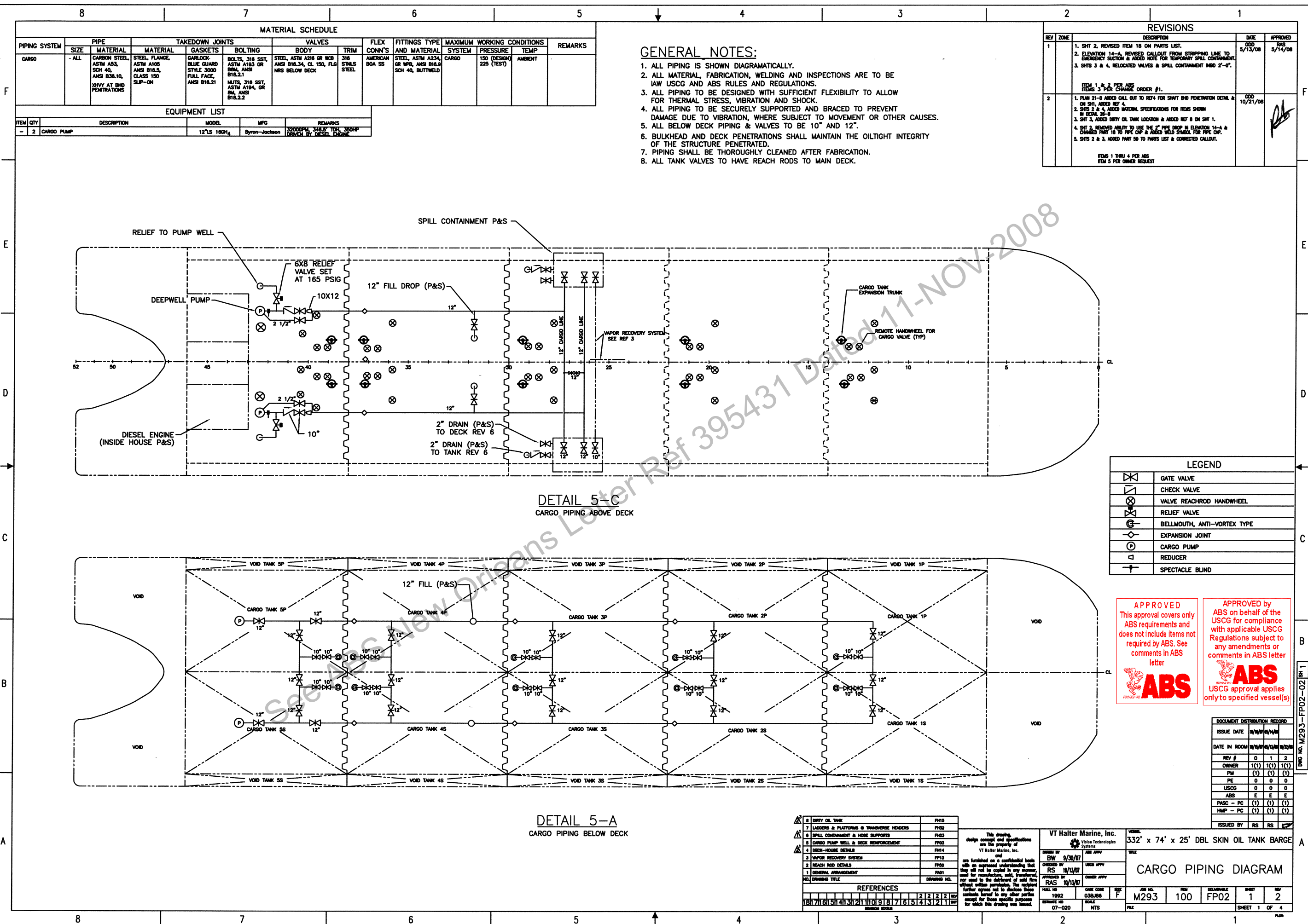




MATERIAL SCHEDULE									
PIPING SYSTEM	PIPE	TAKEDOWN JOINTS	VALVES	FLEX	FITTINGS TYPE	MAXIMUM WORKING CONDITIONS	REMARKS		
SIZE	MATERIAL	GASKETS	BOLTING	CONNS	AND MATERIAL	SYSTEM	TEMP		
CARGO	- ALL	CARBON STEEL, ASTM A53, SCH 40, ANSI B36.10, 10'VY AT BND PENETRATIONS	STEEL, FLANGE, ASTM A105, ANSI B16.5, CLASS 150, SLIP-ON	GARLOCK, BLUE GUARD STYLE 3000 FULL FACE, ANSI B16.21	BOLTS, 316 SST, ASTM A193 GR B7M, ANSI B16.2.1	STEEL, ASTM A216 GR WCB, ANSI B16.34, CL 150, FLO NRS BELOW DECK	316 STMS STEEL	AMERICAN BOA SS	STEEL, ASTM A234, OR WPD, ANSI B16.9 SCH 40, BUTTWELD

EQUIPMENT LIST				
ITEM	QTY	DESCRIPTION	MODEL	REMARKS
-	2	CARGO PUMP	12"LS 180H ₄	Byron-Jackson 3200GPM, 1445' TDH, 3500RPM, DRIVEN BY DIESEL ENGINE

- GENERAL NOTES:**
1. ALL PIPING IS SHOWN DIAGRAMATICALLY.
 2. ALL MATERIAL, FABRICATION, WELDING AND INSPECTIONS ARE TO BE IAW USCG AND ABS RULES AND REGULATIONS.
 3. ALL PIPING TO BE DESIGNED WITH SUFFICIENT FLEXIBILITY TO ALLOW FOR THERMAL STRESS, VIBRATION AND SHOCK.
 4. ALL PIPING TO BE SECURELY SUPPORTED AND BRACED TO PREVENT DAMAGE DUE TO VIBRATION, WHERE SUBJECT TO MOVEMENT OR OTHER CAUSES.
 5. ALL BELOW DECK PIPING & VALVES TO BE 10" AND 12".
 6. BULKHEAD AND DECK PENETRATIONS SHALL MAINTAIN THE OILTIGHT INTEGRITY OF THE STRUCTURE PENETRATED.
 7. PIPING SHALL BE THOROUGHLY CLEANED AFTER FABRICATION.
 8. ALL TANK VALVES TO HAVE REACH RODS TO MAIN DECK.

REVISIONS			
REV	ZONE	DESCRIPTION	DATE
1		1. SHT 2, REVISED ITEM 18 ON PARTS LIST. 2. ELEVATION 14-A, REVISED CALLOUT FROM STRIPPING LINE TO EMERGENCY SUCTION & ADDED NOTE FOR TEMPORARY SPILL CONTAINMENT. 3. SHTS 3 & 4, RELOCATED VALVES & SPILL CONTAINMENT INBD 2'-0".	5/13/08
2		ITEM 1 & 2, PER ABS ITEMS 3 PER CHANGE ORDER #1. 1. PLAN 21-0 ADDED CALL OUT TO REF4 FOR SHFT BND PENETRATION DETAIL & ON SH1, ADDED REF 4. 2. SHTS 2 & 4, ADDED MATERIAL SPECIFICATIONS FOR ITEMS SHOWN IN DETAIL 22-0. 3. SHT 3, ADDED DIRTY OIL TANK LOCATION & ADDED REF 8 ON SHT 1. 4. SHT 3, REMOVED ABILITY TO USE THE 2" PIPE DROP IN ELEVATION 14-A & CHANGED PART 18 TO PIPE CAP & ADDED WELD SMOOGE FOR PIPE CAP. 5. SHTS 2 & 3, ADDED PART 50 TO PARTS LIST & CORRECTED CALLOUT.	10/21/08
ITEMS 1 THRU 4 PER ABS ITEM 5 PER OWNER REQUEST			

LEGEND	
	GATE VALVE
	CHECK VALVE
	VALVE REACHROD HANDWHEEL
	RELIEF VALVE
	BELLMOUTH, ANTI-VORTEX TYPE
	EXPANSION JOINT
	CARGO PUMP
	REDUCER
	SPECTACLE BLIND

APPROVED
This approval covers only
ABS requirements and
does not include items not
required by ABS. See
comments in ABS
letter

APPROVED by
ABS on behalf of the
USCG for compliance
with applicable USCG
Regulations subject to
any amendments or
comments in ABS letter

USCG approval applies
only to specified vessel(s)

1. DIRTY OIL TANK
2. LADDERS & PLATFORMS & TRANSVERSE HEADERS
3. SPILL CONTAINMENT & HOSE SUPPORTS
4. CARGO PUMP WELL & DECK REINFORCEMENT
5. DECK-HOUSE DETAILS
6. VAPOR RECOVERY SYSTEM
7. REACH ROD DETAILS
8. GENERAL ARRANGEMENT

REVISED NO. 211101091876543211

VT Halter Marine, Inc.
Vision Technologies
Systems

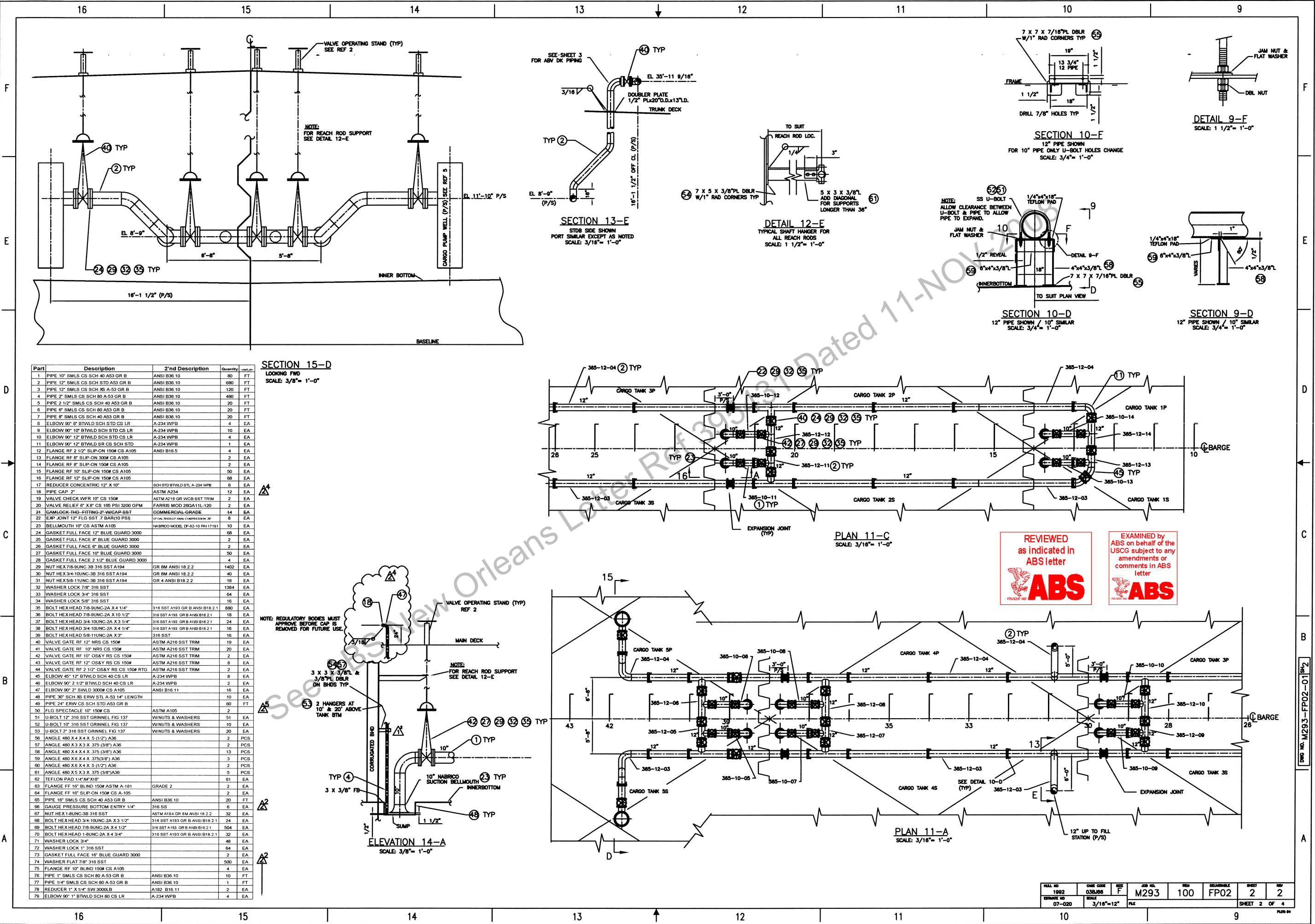
DESIGN BY: EW 9/30/07
CHECKED BY: RS 10/13/07
APPROVED BY: RAS 10/13/07

DATE: 10/13/07
SCALE: NTS
SHEET: 1 OF 4

332' x 74' x 25' DBL SKIN OIL TANK BARGE

CARGO PIPING DIAGRAM

NO. M293 100 FP02 1 2



Part	Description	2nd Description	Quantity	UNIT
1	PIPE 10" SMLS CS SCH 40 A53 GR B	ANSI B36.10	90	FT
2	PIPE 12" SMLS CS SCH STD A53 GR B	ANSI B36.10	590	FT
3	PIPE 12" SMLS CS SCH XS A-53 GR B	ANSI B36.10	120	FT
4	PIPE 2" SMLS CS SCH 80 A-53 GR B	ANSI B36.10	480	FT
5	PIPE 2 1/2" SMLS CS SCH 40 A53 GR B	ANSI B36.10	20	FT
6	PIPE 6" SMLS CS SCH 80 A53 GR B	ANSI B36.10	20	FT
7	PIPE 8" SMLS CS SCH 40 A53 GR B	ANSI B36.10	20	FT
8	ELBOW 90° 8" BTWLD SCH STD CS LR	A-234 WPB	4	EA
9	ELBOW 90° 10" BTWLD SCH STD CS LR	A-234 WPB	10	EA
10	ELBOW 90° 12" BTWLD SCH STD CS LR	A-234 WPB	4	EA
11	ELBOW 90° 12" BTWLD SR CS SCH STD	A-234 WPB	1	EA
12	FLANGE RF 2 1/2" SLIP-ON 150# CS A105	ANSI B16.5	4	EA
13	FLANGE RF 6" SLIP-ON 300# CS A105		2	EA
14	FLANGE RF 8" SLIP-ON 150# CS A105		2	EA
15	FLANGE RF 10" SLIP-ON 150# CS A105		50	EA
16	FLANGE RF 12" SLIP-ON 150# CS A105		68	EA
17	REDUCER CONCENTRIC 12" X 10"	SCH STD BTWLD STL A-234 WPB	6	EA
18	PIPE CAP 2"	ASTM A234	12	EA
19	VALVE CHECK WFR 10" CS 150#	ASTM A216 GR WCB SST TRIM	2	EA
20	VALVE RELIEF 6" X 8" CS 165 PSI 3200 GPM	FARRIS MOD 26Q411L-120	2	EA
21	CAMLOCK THD-FITTING 2" WICAP-SST	COMMERCIAL GRADE	14	EA
22	EXP JOINT 12" FLG SST 7 BAR(10 PSI)	12" OAL WROTH F ANAL COMPRESSION JNT	8	EA
23	BELLMOUTH 10" CS ASTM A105	NABRICO MODEL DF-82-10 P/N 17151	10	EA
24	GASKET FULL FACE 12" BLUE GUARD 3000		68	EA
25	GASKET FULL FACE 6" BLUE GUARD 3000		2	EA
26	GASKET FULL FACE 10" BLUE GUARD 3000		50	EA
27	GASKET FULL FACE 2 1/2" BLUE GUARD 3000		4	EA
28	NUT HEX 7/8-UNC-3B 316 SST A194	GR 8M ANSI 18.2.2	1402	EA
29	NUT HEX 3/4-10UNC-3B 316 SST A194	GR 8M ANSI 18.2.2	40	EA
30	NUT HEX 5/8-11UNC-3B 316 SST A194	GR 4 ANSI B18.2.2	16	EA
31	WASHER LOCK 7/8" 316 SST		1384	EA
32	WASHER LOCK 3/4" 316 SST		64	EA
33	WASHER LOCK 5/8" 316 SST		16	EA
34	BOLT HEX HEAD 7/8-UNC-2A X 4 1/4"	316 SST A193 GR B ANSI B18.2.1	880	EA
35	BOLT HEX HEAD 7/8-UNC-2A X 10 1/2"	316 SST A193 GR B ANSI B18.2.1	18	EA
36	BOLT HEX HEAD 3/4-10UNC-2A X 3 1/4"	316 SST A193 GR B ANSI B18.2.1	24	EA
37	BOLT HEX HEAD 3/4-10UNC-2A X 4 1/4"	316 SST A193 GR B ANSI B18.2.1	16	EA
38	BOLT HEX HEAD 5/8-11UNC-2A X 3"	316 SST	16	EA
39	VALVE GATE RF 12" NRS CS 150#	ASTM A216 SST TRIM	19	EA
40	VALVE GATE RF 10" NRS CS 150#	ASTM A216 SST TRIM	20	EA
41	VALVE GATE RF 10" OS&Y RS CS 150#	ASTM A216 SST TRIM	2	EA
42	VALVE GATE RF 12" OS&Y RS CS 150#	ASTM A216 SST TRIM	8	EA
43	VALVE GATE RF 12" OS&Y RS CS 150# RTG	ASTM A216 SST TRIM	2	EA
44	ELBOW 45° 12" BTWLD SCH 40 CS LR	A-234 WPB	2	EA
45	ELBOW 90° 2 1/2" BTWLD SCH 40 CS LR	A-234 WPB	16	EA
46	PIPE 30" SCH XS ERW STL A-53 14" LENGTH		10	EA
47	PIPE 24" ERW CS SCH STD A53 GR B	ASTM A105	2	EA
48	FLG SPECTACLE 10" 150# CS		51	EA
49	U-BOLT 12" 316 SST GRINNEL FIG 137	WINUTS & WASHERS	10	EA
50	U-BOLT 10" 316 SST GRINNEL FIG 137	WINUTS & WASHERS	20	EA
51	U-BOLT 12" 316 SST GRINNEL FIG 137	WINUTS & WASHERS	2	PCS
52	ANGLE 480 X 4 X 4 X 5 (1/2") A36		2	PCS
53	ANGLE 480 X 4 X 4 X 3/5 (3/8") A36		13	PCS
54	ANGLE 480 X 6 X 4 X 3/5 (3/8") A36		3	PCS
55	ANGLE 480 X 6 X 4 X 5 (1/2") A36		2	PCS
56	ANGLE 480 X 5 X 3 X 3/5 (3/8") A36		5	PCS
57	TEFLON PAD 1/4"X4"X18"		61	EA
58	FLANGE FF 16" BLIND 150# ASTM A-181	GRADE 2	2	EA
59	FLANGE FF 16" SLIP-ON 150# CS A-105	ANSI B36.10	2	EA
60	PIPE 16" SMLS CS SCH 40 A53 GR B		20	FT
61	GAUGE PRESSURE BOTTOM ENTRY 1/4"	316 SS	6	EA
62	NUT HEX 1-8UNC-3B 316 SST	ASTM A194 GR 8M ANSI 18.2.2	32	EA
63	BOLT HEX HEAD 3/4-10UNC-2A X 3 1/2"	316 SST A193 GR B ANSI B18.2.1	24	EA
64	BOLT HEX HEAD 7/8-UNC-2A X 4 1/2"	316 SST A193 GR B ANSI B18.2.1	504	EA
65	BOLT HEX HEAD 1-8UNC-2A X 4 3/4"	316 SST A193 GR B ANSI B18.2.1	32	EA
66	WASHER LOCK 3/4"		48	EA
67	WASHER LOCK 1" 316 SST		64	EA
68	GASKET FULL FACE 16" BLUE GUARD 3000		2	EA
69	WASHER FLAT 7/8" 316 SST		500	EA
70	FLANGE RF 10" BLIND 150# CS A105		4	EA
71	PIPE 1" SMLS CS SCH 80 A-53 GR B	ANSI B36.10	10	FT
72	PIPE 1/4" SMLS CS SCH 80 A-53 GR B	ANSI B36.10	1	FT
73	REDUCER 1" X 1/4" SW 3000LB	A182 B16.11	2	EA
74	ELBOW 90° 1" BTWLD SCH 80 CS LR	A-234 WPB	4	EA

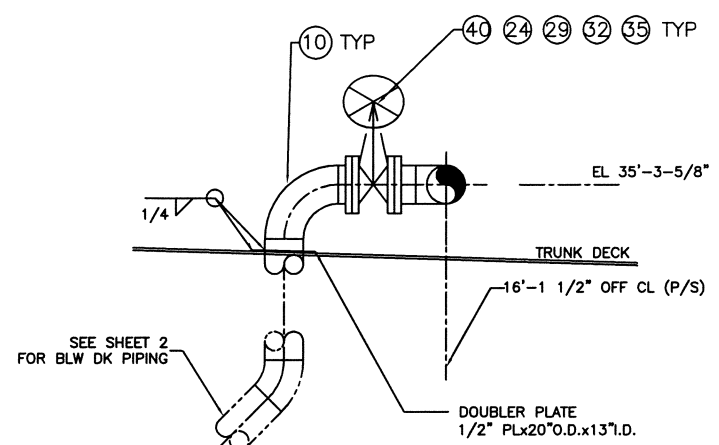
REVIEWED
as indicated in
ABS letter

EXAMINED by
ABS on behalf of the
USCG subject to any
amendments or
comments in ABS
letter

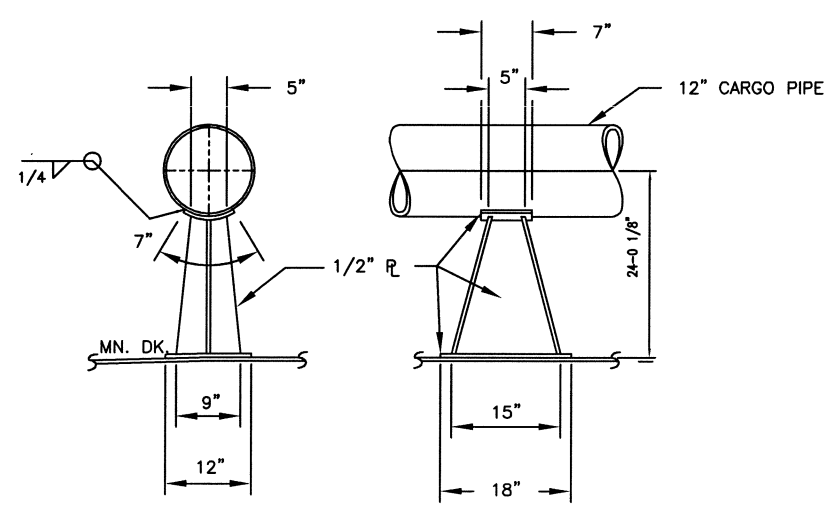
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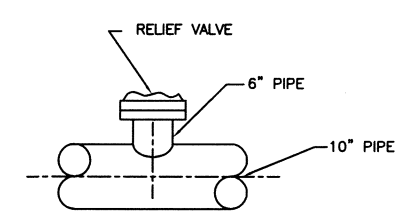
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DATE	07-020	SCALE	3/16"=1'-0"	FILE								SHEET	2	OF	4



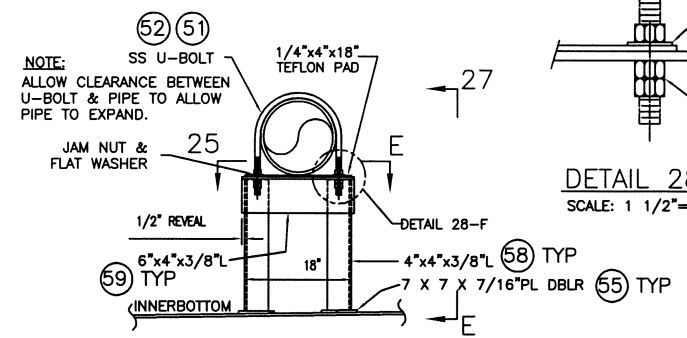
SECTION 31-D
STDB SIDE SHOWN LOOKING FWD
PORT SIMILAR BUT OPPOSITE HAND
SCALE: 3/8" = 1'-0"



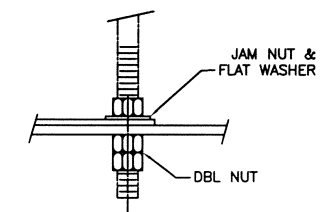
DETAIL 31-B
PIPE ANCHOR ABOVE DECK
SCALE: NTS



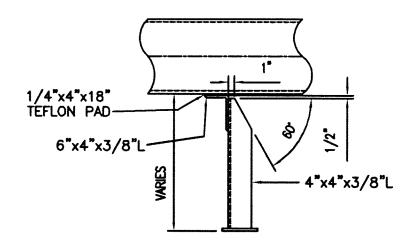
DETAIL 32-A
SECTION OF RELIEF VALVE
SCALE: 3/4" = 1'-0"



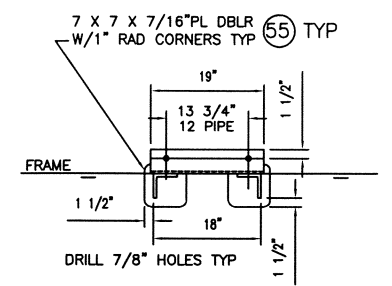
SECTION 29-E
12" PIPE SHOWN / 10" SIMILAR
SCALE: 3/4" = 1'-0"



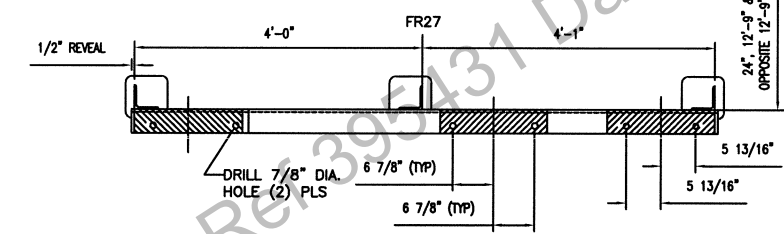
DETAIL 28-F
SCALE: 1 1/2" = 1'-0"



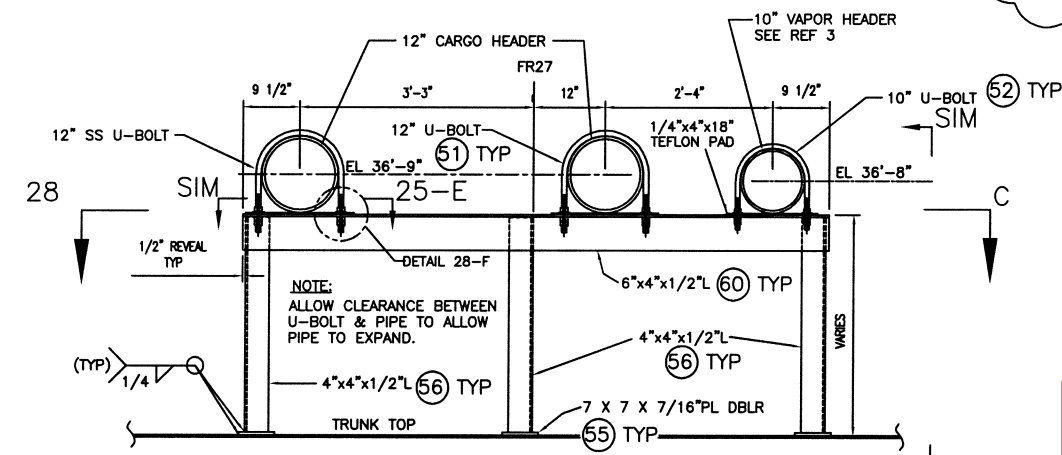
SECTION 27-E
12" PIPE SHOWN / 10" SIMILAR
SCALE: 3/4" = 1'-0"



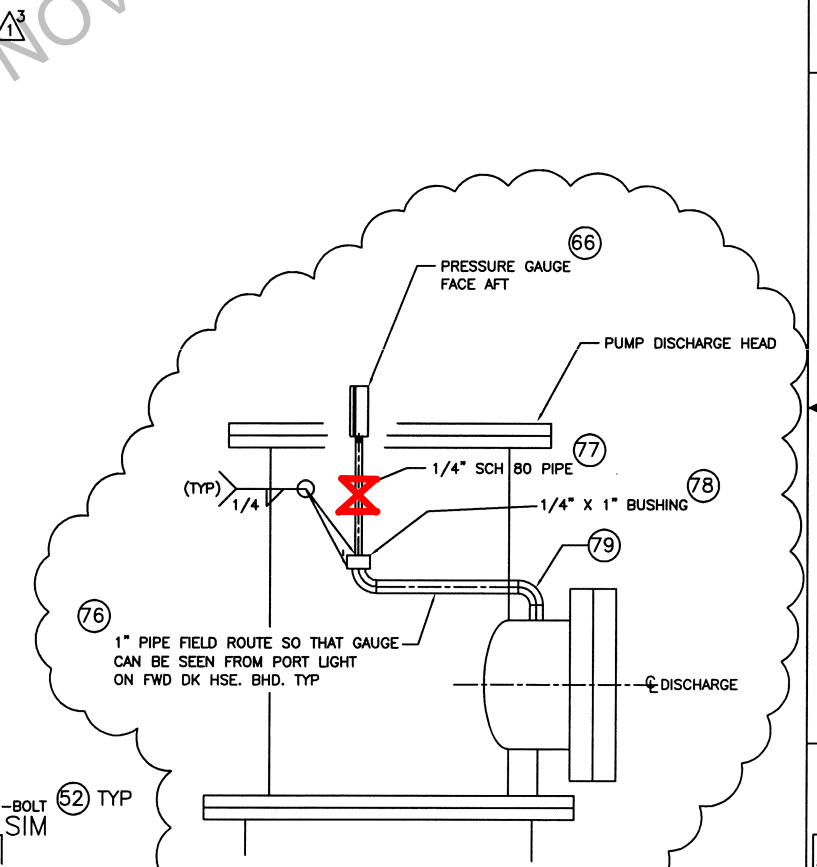
SECTION 25-E
12" PIPE SHOWN
FOR 10" PIPE ONLY U-BOLT SIZE CHANGE
FIELD CHECK U-BOLT SIZE BEFORE DRILLING HOLES TYP.
SCALE: 3/4" = 1'-0"



SECTION 28-C
FIELD CHECK U-BOLT SIZE BEFORE DRILLING HOLES TYP.
SCALE: 3/4" = 1'-0"



SECTION 28-A
PIPE SUPPORT AT TRANSV. HEADERS
STBD LOOKING INBD PORT OPPOSITE
SCALE: 3/4" = 1'-0"



DETAIL 26-B
GAUGE DETAIL
SCALE: 1 1/2" = 1'-0"

REVIEWED
as indicated in
ABS letter

EXAMINED by
ABS on behalf of the
USCG subject to any
amendments or
comments in ABS
letter

CARGO PIPING ABOVE DECK DETAILS									
DATE NO.	03B/06	SIZE	F	JOB NO.	M293	ITEM	100	DELIVERABLE	FP02
ESTIMATE NO.	07-020	SCALE	1/4"=12"	FILE				SHEET	4 OF 4