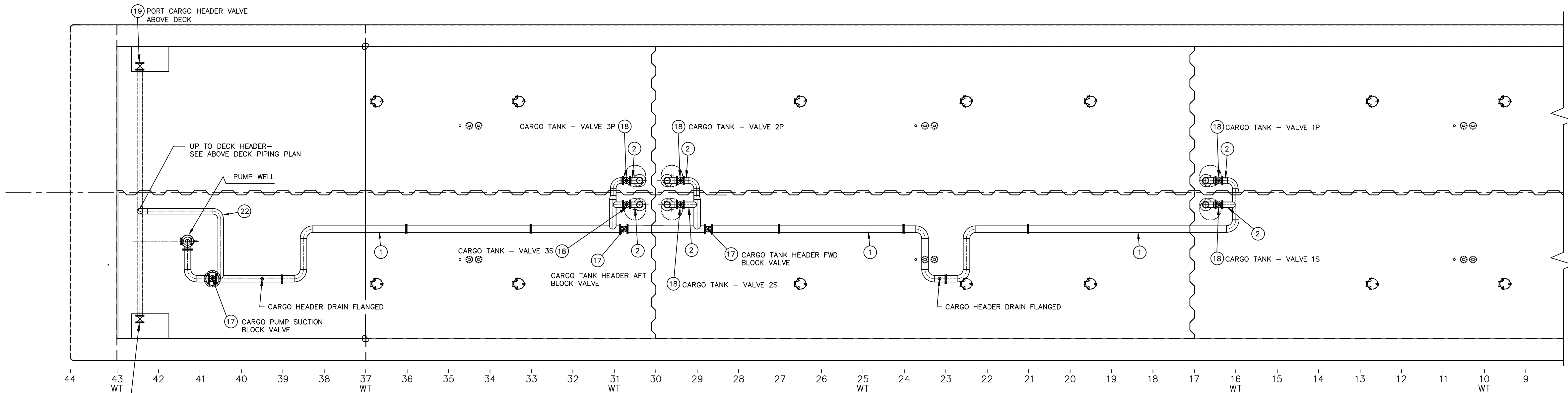
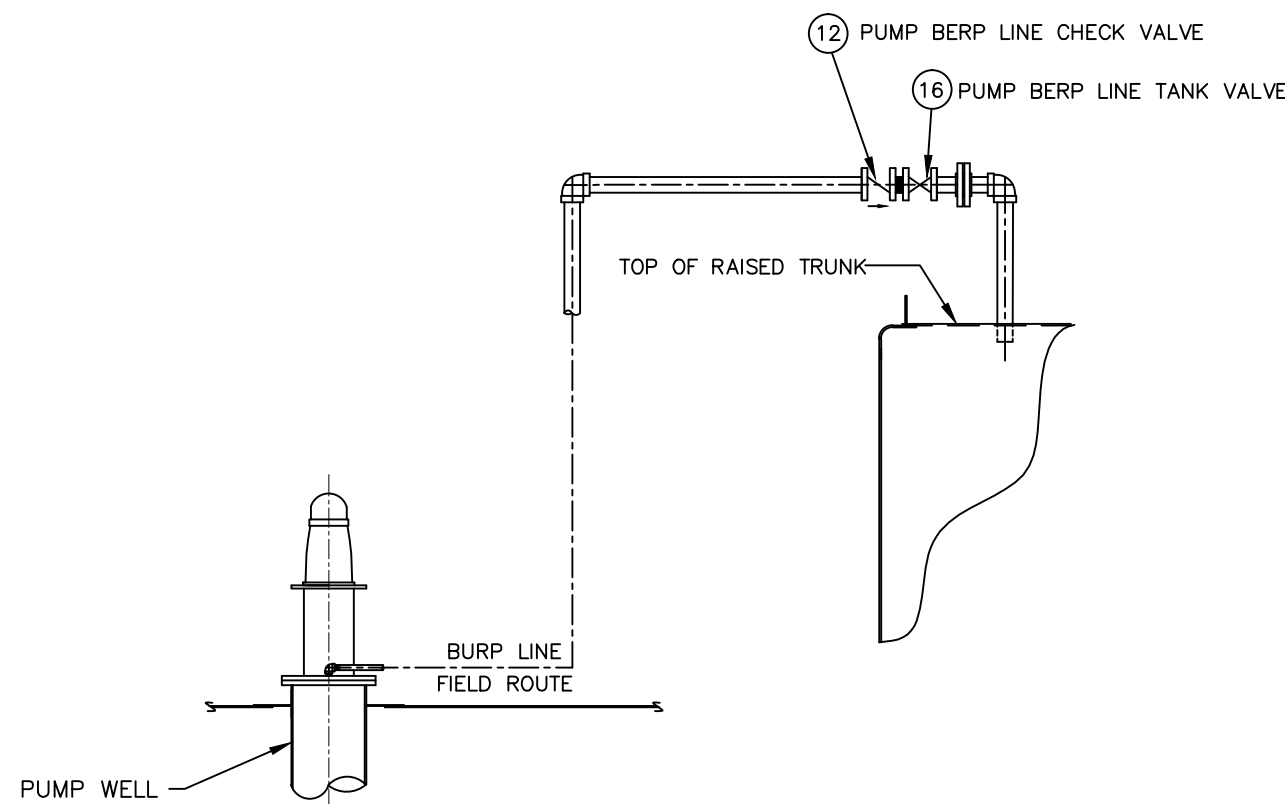


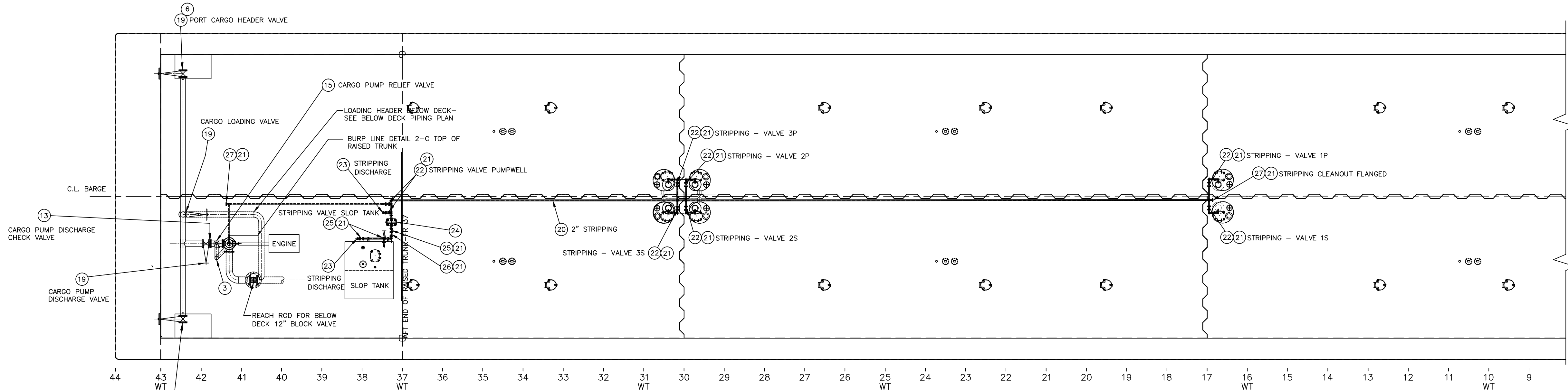
REVISIONS				
REV	ZONE	DESCRIPTION	DATE	APPROVED



BELOW DECK CARGO PIPING PLAN



DETAIL 2-C
BURP LINE
NOT TO SCALE



ABOVE DECK CARGO PIPING PLAN

- GENERAL NOTES:
- ALL PIPING SHALL MEET CURRENT USCG REQUIREMENTS FOR CLASS II PIPING SYSTEMS.
 - PIPES PASSING THROUGH WATER/OIL TIGHT BOUNDARIES SHALL BE WELDED DOUBLE CONTINUOUS.
 - CARGO SYSTEM:
PRESSURE: WORKING 100 PSI
DESIGN 150 PSI
TEST 225 PSI
RELIEF VALVE 125 PSI
 - ALL HATCHES, MANHOLES, STUFFING GLANDS, ETC. ON THE RAISED TRUNK WITH OPENINGS INTO THE CARGO TANKS SHALL BE FITTED WITH TEFLON GASKETS. ALL HATCHES, MANHOLES, ETC. THAT OPEN INTO VOIDS OUTSIDE OF THE CARGO AREA SHALL BE FITTED WITH NEOPRENE GASKETS
 - CARGO PUMP ENGINE IS A CUMMINS MODEL 6CTA8.3D(M) RATED 270HP @ 1800RPM, IMO, US EPA TIER II COMPLIANT, CLASS I, DIVISION I COMPLIANT.
 - CARGO PUMP IS A BYRON JACKSON MODEL12XT16GHC, 3 STAGE, RATED FOR 4285 BBLs/HR @ 105 PSI, COMPLETE WITH AN AMARILLO S250 RIGHT ANGLE DRIVE W/1:1 RATIO AND DANA SL1710 x 48" LG. DRIVE SHAFT AND REMOVABLE GUARD.

MK	QTY	SIZE	DESCRIPTION	MATERIAL	ASTM SPEC	ANSI SPEC	REMARKS
27	AR	2"	FLANGE, 150#, RF BUND	ST. STEEL	TYPE 304	B16.5	
26	1	2"	VALVE, SWING CHECK, FLANGED, 150#, CR13 TRIM, SPACE FIG. 15051C	C. STEEL		B16.34	
25	2	2"	VALVE, GATE, FLANGED, 150#, OS&Y, R.S., CR13 TRIM, SPACE FIG. 15011C	C. STEEL		B16.34	
24	1		PUMP, AIR DIAPHRAGM, VERSA-MATIC MODEL #V3CA3RS30	CAST IRON			
23	2	2"	QUICK-CONNECT, MALE x FEMALE NPT W/DUST CAP & LANYARD	BRASS		B-62	
22	8	2"	VALVE, BALL, FLANGED, 800#, FULL PORT, CR13 TRIM, WARREN MODEL 6156 OR EQUAL	C. STEEL		B16.34	
21	AR	2"	FLANGE, 150#, RFSD	ST. STEEL	TYPE 304	B16.5	
20	AR	2"	PIPE, SCH 40 SEAMLESS	ST. STEEL	TYPE 304	B36.19	
19	4	10"	VALVE, GATE, 150# FLGD, OS&Y, R.S., C.S. BODY, CR13 TRIM, SPACE #15011C	CARBON STL	A-216 GR WCB	B16.5	
18	6	10"	VALVE, GATE, 150# FLGD, NRS, C.S. BODY, CR13 TRIM, SPACE #15021C	CARBON STL	A-216 GR WCB	B16.5	
17	3	12"	VALVE, GATE, 150# FLGD, NRS, C.S. BODY, CR13 TRIM, SPACE #15021C	CARBON STL	A-216 GR WCB	B16.5	
16	1	1 1/4"	GATE VALVE, 200#, SCRD, NRS, 316 S.S. TRIM, SHARPE FIG. 30276	A-351		B16.10	
15	1		RELIEF VALVE SET @ 125 PSI, TELEDYNE #26PATOL OR EQUAL	CARBON STL	A-216	B16.5	
14	AR		PRESSURE GAUGE, 4" DIAL, 1/2" MNPT BOTTOM CONNECTION, ASHCROFT OR EQUAL				
13	1	10"	CHECK VALVE, WAFER TYPE, 150#, CARBON STEEL BODY/316 S.S. TRIM, KEYSTONE #B10 OR EQUAL	CARBON STL	A-216	B16.5	
12	1	1 1/4"	SWING CHECK VALVE, 200# SCRD, 316 S.S. TRIM				
11	AR		HALF COUPLING, 3000# THREADED BLK	FORGED STEEL	A-105	B16.11	
10	AR		CONC. REDUCER, B.W., SCH 40 BLK	STEEL	A-234	B16.9	
9	AR		ELBOW, 90° L.R.B.W., SCH 40 BLK	STEEL	A-234	B16.9	
8	AR		TEE, SCH 40 L.R.B.W.	STEEL	A-234	B16.9	
7	AR		ELBOW, 45° L.R.B.W., SCH 40 BLK	STEEL	A-234	B16.9	
6	2		FLANGE, BUND, 150# R.F., STAINLESS STEEL	ST. STEEL	TYPE 304	B16.5	
5	AR		RING GASKET, 150#, 1/16" THICK, NON-ASBESTOS, GARLOCK OR EQUAL				
4	AR		FLANGE, 150# R.F.S.O.	FORGED STEEL	A105	B16.5	
3	AR	6"	PIPE, SCH 40, ERW	BLK STEEL	A53 GR B	B36.10	
2	AR	10"	PIPE, SCH 40, ERW	BLK STEEL	A53 GR B	B36.10	
1	AR	12"	PIPE, SCH 40, ERW	BLK STEEL	A53 GR B	B36.10	

BILL OF MATERIAL

LEVEL LOADING OF A SINGLE PRODUCT				
Draft (ft ABL)	Total Cargo (ST)	3 P/S (ST)	2 P/S (ST)	1 P/S (ST)
2.5	293.05	62.36	42.01	42.16
3.0	528.79	99.42	81.98	83.00
3.5	765.48	135.85	123.01	123.88
4.0	1,003.04	172.11	164.00	165.41
4.5	1,241.41	207.54	206.50	206.67
5.0	1,480.59	243.00	248.65	248.65
5.5	1,720.57	278.21	291.04	291.04
6.0	1,961.36	313.13	333.77	333.78
6.5	2,202.96	347.67	376.91	376.90
7.0	2,445.36	381.97	420.36	420.35
7.5	2,688.55	415.92	464.17	464.19
8.0	2,932.56	449.48	508.40	508.40
8.5	3,177.36	482.84	552.92	552.92
9.0	3,422.95	515.68	597.90	597.90
9.5	3,669.33	548.32	643.18	643.17
10.0	3,916.49	580.61	688.82	688.82
10.5	4,164.44	612.53	734.84	734.85
11.0	4,413.18	645.16	780.21	780.22
11.5	4,662.70	682.95	824.20	824.20

Notes:
1) Tank Load Values for Level Trim
2) Fuel Tank at 98% Full; Slop Tank Empty
3) Cargo Liquid SG = 1.05
4) Vessel Floating in Fresh Water

HULL APPLICABILITY									
C1012	CBC 378	C1005	CBC 372	H449	CBC 371	C1013	CBC 379	C1006	CBC 373
C1014	CBC 381	C1007	CBC 374	H451	CBC 380	C1015	CBC 382	C1008	CBC 375
C1016	CBC 383	C1011	CBC 377	H453	CBC 386	C1017	CBC 385		



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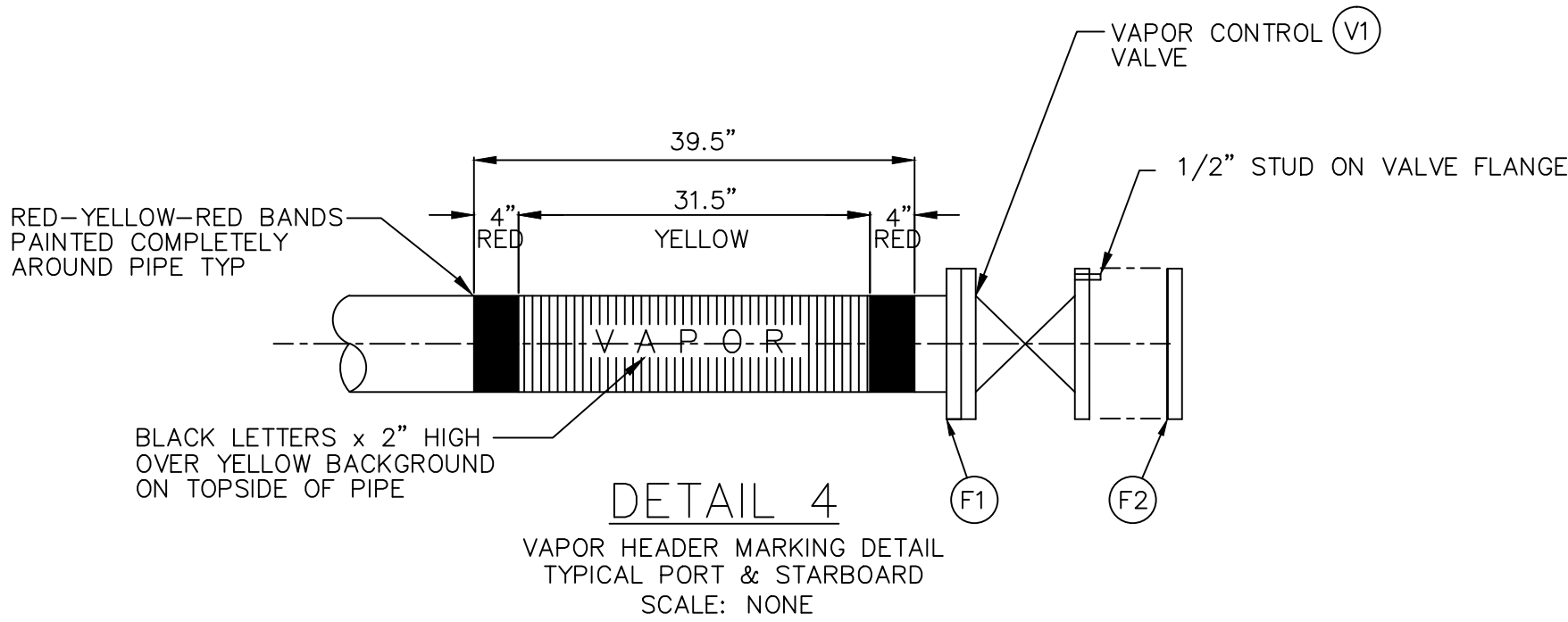
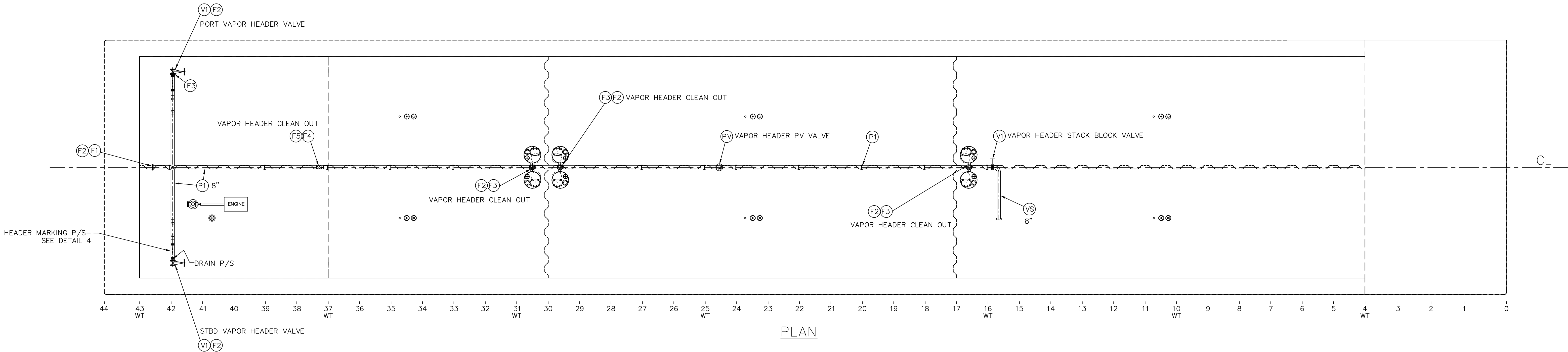
297'-6" x 54' x 12'-0" DOUBLE SKIN TANK BARGE

CARGO DIAGRAM

REVISION	SHEET
0	1

BILL OF MATERIALS					
MK	QTY	SIZE	DESCRIPTION	MATERIAL	ASTM SPEC
P1	AR	8"	PIPE, SCH 40 BLK ERW	MILD STEEL	A53
VS	1	8"	PIPE, .1875" WALL VAPOR STACK	STAINLESS STEEL	304L
PV	1	6"	VALVE, PRESS/VACUUM, FLANGED, ERL SUPERAC PV-6 MARINE HIGH VELOCITY, VAC SET @ 0.5 PSIG, PRESS. SET @ 1.50 PSIG, U.S.C.G. APPROVAL NO. 162.017/139/1	STAINLESS STEEL	316L
V1	3	8"	VALVE, GATE, 150# FLGD, OS&Y, R.S., C.S. BODY, CR13 TRIM, SPACE #15011C	CARBON STL	A-216 GR WCB
F1	AR	8"	FLANGE, 150# R.F.S.O.	ST. STEEL	TYPE 304
F2	AR	8"	FLANGE, BLND, 150# R.F.	FORGED STEEL	A105
F3	AR	8"	FLANGE, 150# R.F.S.O.	FORGED STEEL	A105
F4	1	3"	FLANGE, 150# R.F.S.O.	FORGED STEEL	A105
F5	1	3"	FLANGE, BLND, 150# R.F.	FORGED STEEL	A105

REVISIONS				
REV	ZONE	DESCRIPTION	DATE	APPROVED



GENERAL NOTES:

- VAPOR PIPING IS CLASS II. MAWP IS 125PSI AND TEMP LESS THAN 150°F. CARGO MAWP IS 100 PSI. CARGO PUMP RELIEF VALVE SET AT 125 PSI.
- MAXIMUM DESIGN WORKING PRESSURE OF THE CARGO TANKS IS 3 PSI.
- P/V VALVE IS A 6", ERL "SUPERAC" ALL STAINLESS STEEL. VACUUM RELIEF SET AT 0.5 PSIG VACUUM. PRESSURE SIDE SET AT 1.5 PSIG PRESS.
- ALL PIPING TO BE SCH 40 BLK ERW PIPE UNLESS NOTED OTHERWISE. FIT-UP, WELDING & TESTING SHALL BE TO THE SATISFACTION OF THE OCM.
- ALL WELDING TO BE CONTINUOUS OR DOUBLE CONTINUOUS TYPICAL. WELD JOINTS OF PIPING SHALL CONFORM TO 46 CFR 56.30-5 AND 56.30-10 AS APPLICABLE. WELD FITTINGS SHALL BE IAW 46 CFR 56.70 AND PART 57 AS APPLICABLE.

HULL APPLICABILITY					
C1012	CBC 378	C1005	CBC 372	H449	CBC 371
C1013	CBC 379	C1006	CBC 373	H450	CBC 376
C1014	CBC 381	C1007	CBC 374	H451	CBC 380
C1015	CBC 382	C1008	CBC 375	H452	CBC 384
C1016	CBC 383	C1011	CBC 377	H453	CBC 386
C1017	CBC 385				

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	297'-6" x 54' x 12'-0" DOUBLE SKIN TANK BARGE					
	VAPOR DIAGRAM					
DRAWN BY:	JEN	SCALE:		DRAWING NO.:	REVISION	SHEET
CHECKED BY:	RRN	3/32"=1'-0"				
ABS APPROVAL:		PROJECT:	DATE:	M-100	0	1 OF 1
USCG APPROVAL:		SEE APPLIC	10/25/12			