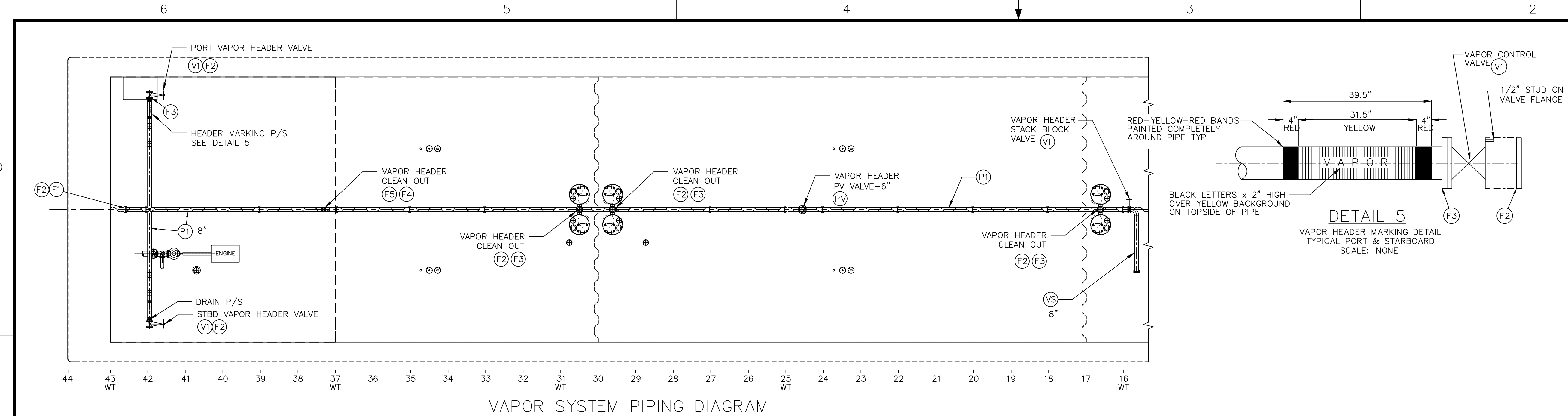


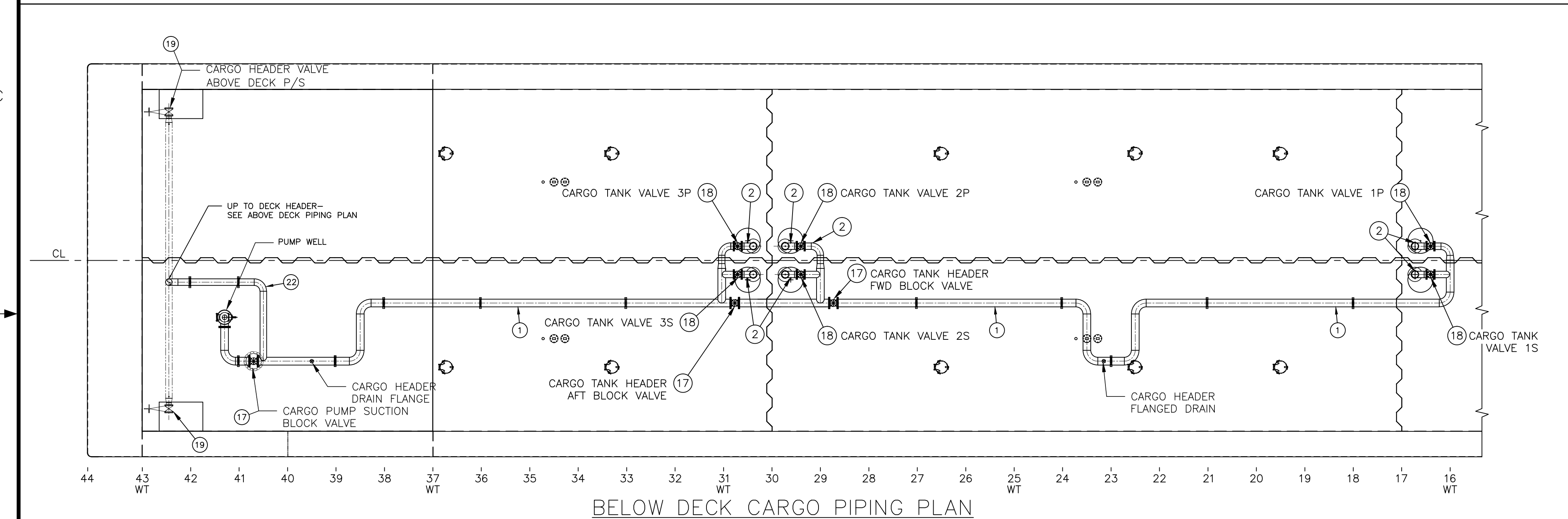


REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED

VAPOR SYSTEM 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 "SUPAC" ALL STAINLESS STEEL. VACUUM RELIEF SET AT 0.5 PSIG VACUUM. PRESSURE SIDE SET AT 1.5 PSIG PRESS. U.S.C.G. APPROVAL NO. 162.017/144/3.
- 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.

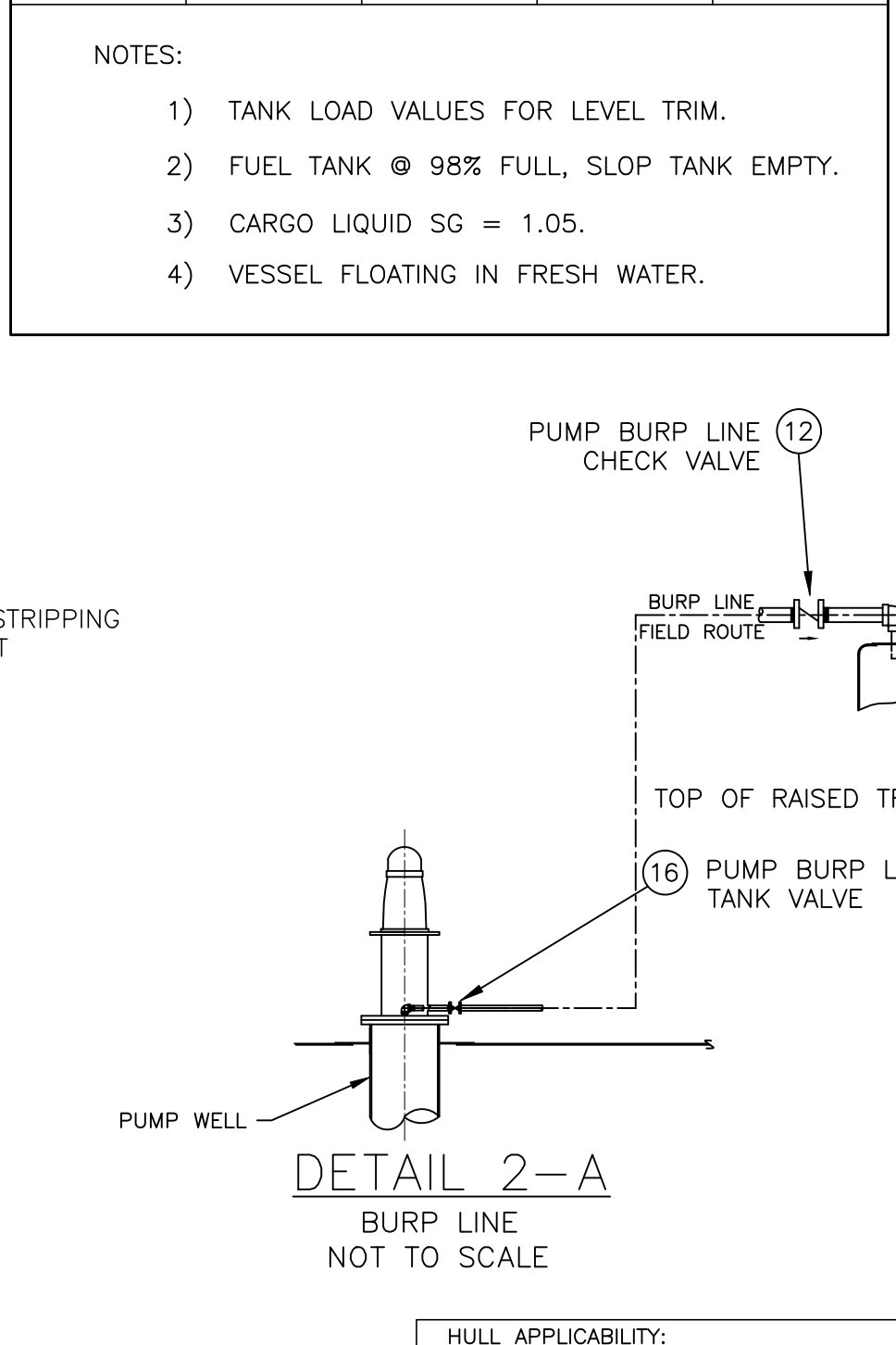
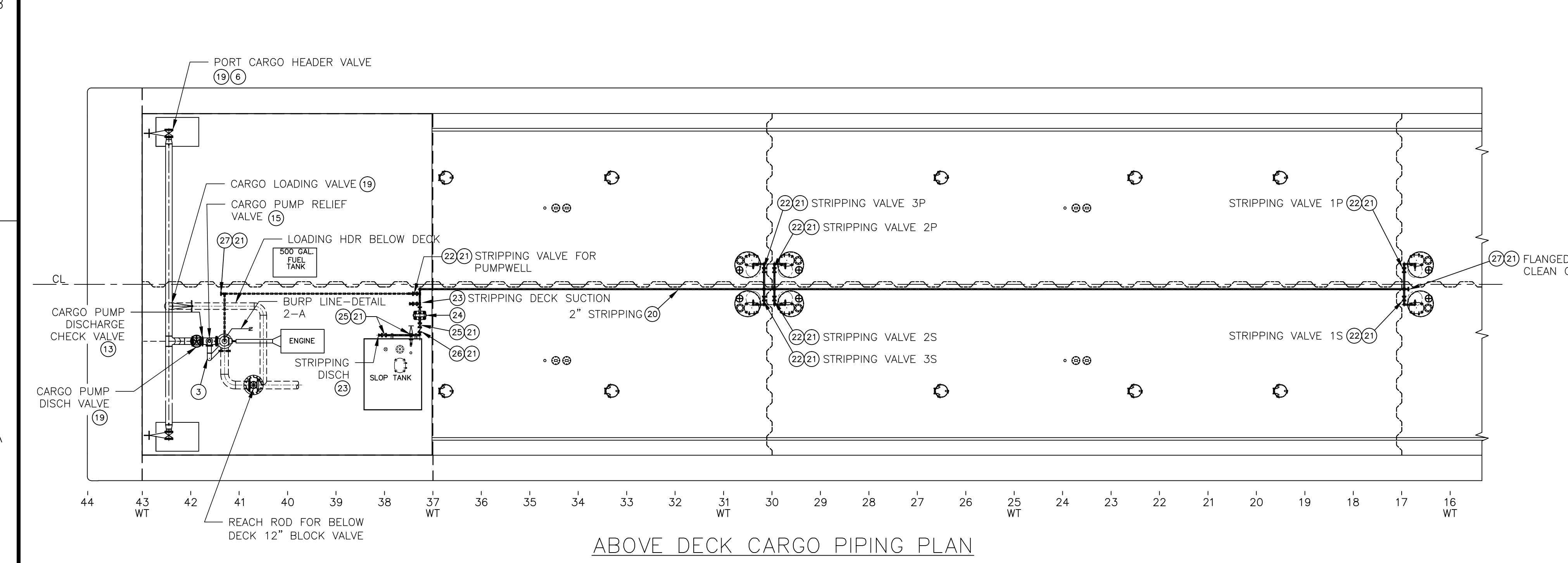


LEVEL LOADING OF A SINGLE PRODUCT				
DRAFT (FT ABL)	TOTAL P/S CARGO (ST)	TANK		
		3 P or S (ST)	2 P or S (ST)	1 P or S (ST)
2.5	293.94	62.30	42.34	42.34
3.0	529.68	99.07	82.88	82.88
3.5	766.38	135.56	123.82	123.82
4.0	1,003.93	171.63	165.17	165.17
4.5	1,242.31	207.48	206.84	206.84
5.0	1,481.48	242.99	248.87	248.87
5.5	1,721.47	278.20	291.27	291.27
6.0	1,962.26	313.13	334.00	334.00
6.5	2,203.85	347.67	377.13	377.13
7.0	2,446.25	381.97	420.58	420.58
7.5	2,689.45	415.91	464.41	464.41
8.0	2,933.45	449.48	508.62	508.62
8.5	3,178.25	482.84	553.14	553.14
9.0	3,423.85	515.68	598.12	598.12
9.5	3,670.22	548.32	643.40	643.40
10.0	3,917.39	580.74	688.98	688.98
10.5	4,165.34	613.32	734.67	734.67
11.0	4,414.07	646.40	780.32	780.32
11.5	4,663.59	682.86	824.47	824.47

NOTES:

- TANK LOAD VALUES FOR LEVEL TRIM.
- FUEL TANK @ 98% FULL, SLOP TANK EMPTY.
- CARGO LIQUID SG = 1.05.
- VESSEL FLOATING IN FRESH WATER.

VAPOR SYSTEM BILL OF MATERIALS					
MK	QTY	SIZE	DESCRIPTION	MATERIAL	ASTM SPEC
P1	AR	8"	PIPE, SCH 40 BLK ERW	STEEL	A53
VS	1	8"	PIPE, .1875" WALL VAPOR STACK W/S.S. FLAME SCREEN, RAIN HOOD & SWIVEL FLANGE	304L ST STL	A312
PV	1	6"	HIGH VELOCITY PRESS/VAC VALVE, FLGD, TANKTECH MODEL KLPH-6, PRESS SET @ 1.50PSI, VAC SET @ 0.50PSI	304L ST STL	A312
V1	3	8"	VALVE, GATE, 150# FLGD, OS&Y, R.S., C.S. BODY, CR13 TRIM, SPACE MODEL #15011C	CARBON STL	A216 GR WCB
F1	AR	8"	FLANGE, 150# R.F.S.O.	304L ST STL	A312
F2	AR	8"	FLANGE, BLIND, 150# R.F.	FORGED STL	A105
F3	AR	8"	FLANGE, 150# R.F.S.O.	FORGED STL	A105
F4	1	3"	FLANGE, 150# R.F.S.O.	FORGED STL	A105
F5	1	3"	FLANGE, BLIND, 150# R.F.	FORGED STL	A105



CARGO SYSTEM 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 RUHRPUMPEN MODEL 12LS16GH, 3 STAGE, RATED FOR 4285 BBL/S/HR @ 105 PSI, COMPLETE WITH AN AMARILLO S250 RIGHT ANGLE DRIVE W/1:1 RATIO AND DANA SL1710 x 48" LG. DRIVE SHAFT WITH REMOVABLE GUARD.

CARGO & STRIPPING SYSTEM BILL OF MATERIALS					
MK	QTY	SIZE	DESCRIPTION	MATERIAL	ASTM SPEC
1	AR	12"	PIPE, SCH 40 BLK ERW	STEEL	A53 GR B
2	AR	10"	PIPE, SCH 40 BLK ERW	STEEL	A53 GR B
3	AR	6"	PIPE, SCH 40 BLK ERW	STEEL	A53 GR B
4	AR	AR	FLANGE, 150# R.F.S.O.	FORGED STEEL	A105
5	AR	AR	RING GASKET, 150#, 1/16" THK, NON-ASBESTOS		
6	2	8"	FLANGE, BLIND, 150# R.F.	304 ST STL	A105
7	AR	AR	ELBOW, 45° L.R.B.W., SCH 40 BLK	STEEL	A234
8	AR	AR	TEE, SCH 40 BLK B.W.	STEEL	A234
9	AR	AR	ELBOW, 90° L.R.B.W., SCH 40 BLK	STEEL	A234
10	AR	AR	CONCENTRIC REDUCER, SCH 40 BLK B.W.	STEEL	A234
11	AR	AR	HALF COUPLING, 3000# THREADED BLK	FORGED STEEL	A105
12	1	1 1/4"	SWING CHECK VALVE, 200# SCRD, 316 S.S. TRIM		A351
13	1	10"	CHECK VALVE, WAFER TYPE 150# 316 S.S. TRIM	CARBON STEEL	A216
14	AR	AR	PRESSURE GAUGE, 4" DIAL, 1/4" MNPT BOTTOM CONN.		
15	1	AR	RELIEF VALVE SET @ 125PSI, TELEDYNE #26PA10L	CARBON STEEL	A216
16	1	1 1/4"	GATE VALVE, 200# SCRD, NRS, 316 S.S. TRIM		A351
17	3	12"	GATE VALVE, 150# FLGD, NRS, CR13 TRIM	CARBON STEEL	A216 GR WCB
18	6	10"	GATE VALVE, 150# FLGD, NRS, CR13 TRIM	CARBON STEEL	A216 GR WCB
19	4	8"	GATE VALVE, 150# FLGD, OS&Y, R.S., CR13 TRIM	CARBON STEEL	A216 GR WCB
20	AR	2"	PIPE, SCH 40 SEAMLESS	304 ST STL	A320
21	AR	2"	FLANGE, 150# R.F.S.O.	304 ST STL	A312
22	8	2"	BALL VALVE, FLGD, 800#, FULL PORT, CR13 TRIM	CARBON STEEL	A216 GR WCB
23	2	2"	QUICK-CONNECT, MxMNPT W/DUST CAP & LANYARD	BRASS	B62
24	1	3"	PUMP, AIR DIAPHRAGM, VERSA-MATIC MODEL V3CA3RS530	CAST IRON	A126-95
25	2	2"	GATE VALVE, 150# FLGD, OS&Y, R.S., CR13 TRIM	CARBON STEEL	A216 GR WCB
26	1	2"	SWING CHECK VALVE, 150# FLGD, CR13 TRIM	CARBON STEEL	A216 GR WCB
27	AR	2"	FLANGE, 150# R.F. BLIND	304 ST STL	A312

STRIPPING SYSTEM GENERAL NOTES:

- STRIPPING PIPING IS CLASS II. MAWP IS 100 PSI AND TEMP LESS THAN 150°F.
- ALL PIPING AND FITTINGS TO BE SCH 40 TYPE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE. PIPING SHALL BE HYDRO-TESTED TO 150 PSI & 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.

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

CARGO & VAPOR SYSTEM PIPING DIAGRAM

HULL APPLICABILITY:
C1039 CBC 387
C1040 CBC 388
C1041 CBC 389
C1043 CBC 390
C1017 CBC 385

H453 CBC 386

DRAWN BY: RLS

CHECKED BY: RRN

ABS APPROVAL: SEE APPLIC

USCG APPROVAL: SEE APPLIC

HULL: SEE APPLIC

SCALE: 3/32"=1'-0"

DATE: 7-15-13

DRAWING NO.: M-100

REVISION: 0

SHEET: 1 OF 1