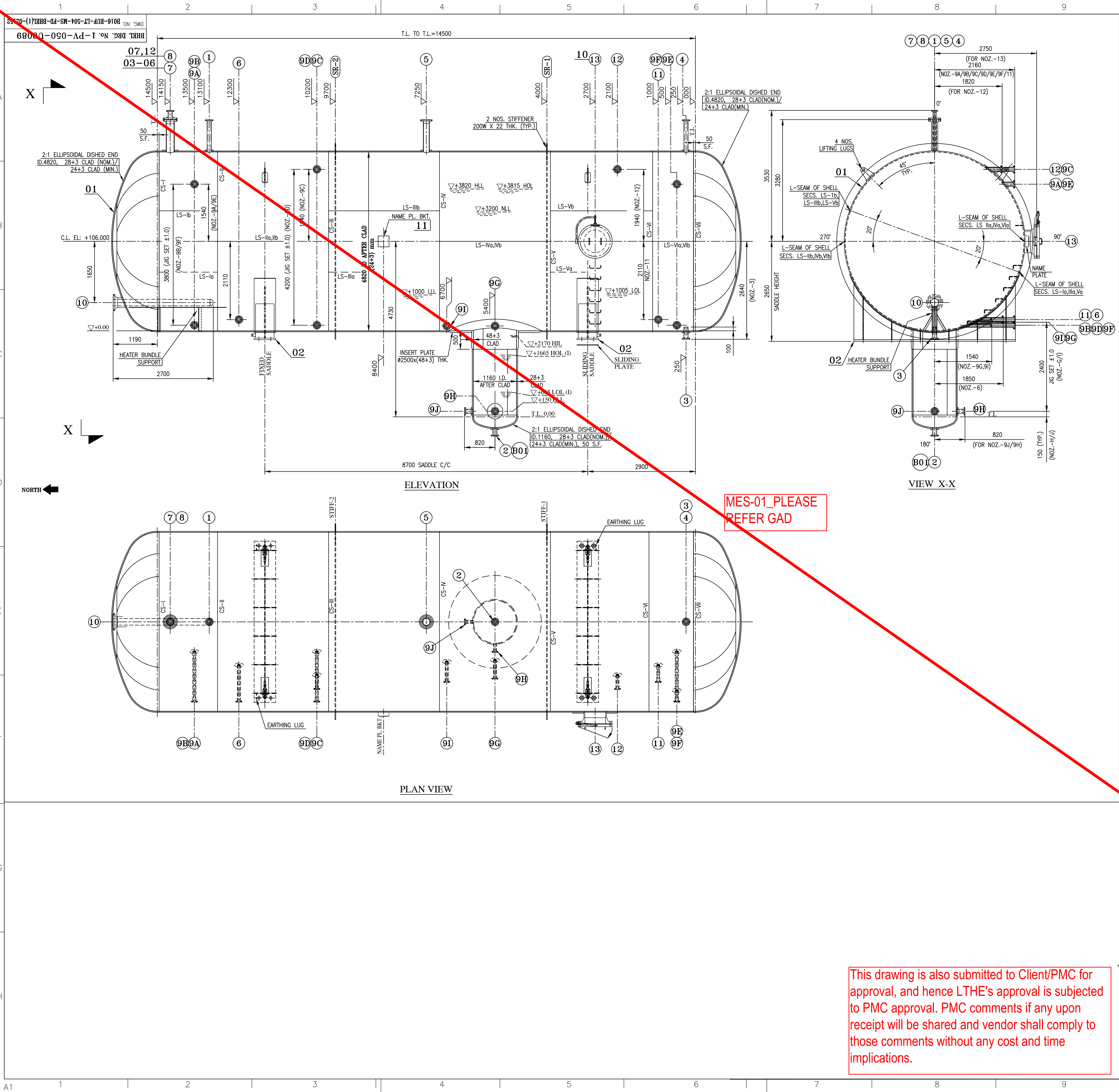


ALL RIGHTS RESERVED
THIS DOCUMENT AND ANY DATA AND INFORMATION CONTAINED THEREIN ARE CONFIDENTIAL AND THE PROPERTY OF BHEL. IT IS TO BE KEPT IN STRICTLY CONFIDENTIAL AND NOT TO BE DISCLOSED TO OTHERS OR REPRODUCED IN ANY MANNER WITHOUT THE PRIOR WRITTEN PERMISSION OF BHEL. THIS DOCUMENT, DATA, OR INFORMATION SHALL BE DISCLOSED TO OTHERS OR REPRODUCED IN ANY MANNER OR USED FOR ANY PURPOSE WHATSOEVER, EXCEPT WITH THE PRIOR WRITTEN PERMISSION OF BHEL.



SPECIAL NOTE:
BHEL SHALL ENSURE COMPLIANCE OF ALL DIMENSIONS/SKETCHES IN THIS MANUFACTURING ASSEMBLY DRAWING W.R.T. GENERAL ASSEMBLY DRAWING.

FOR GENERAL NOTES & OTHER APPLICABLE STD. PLEASE REFER DRG. NO. 3-PV-050-U0149 / B016-RUF-LT-504-MS-FD-BHEL (1) - 02159

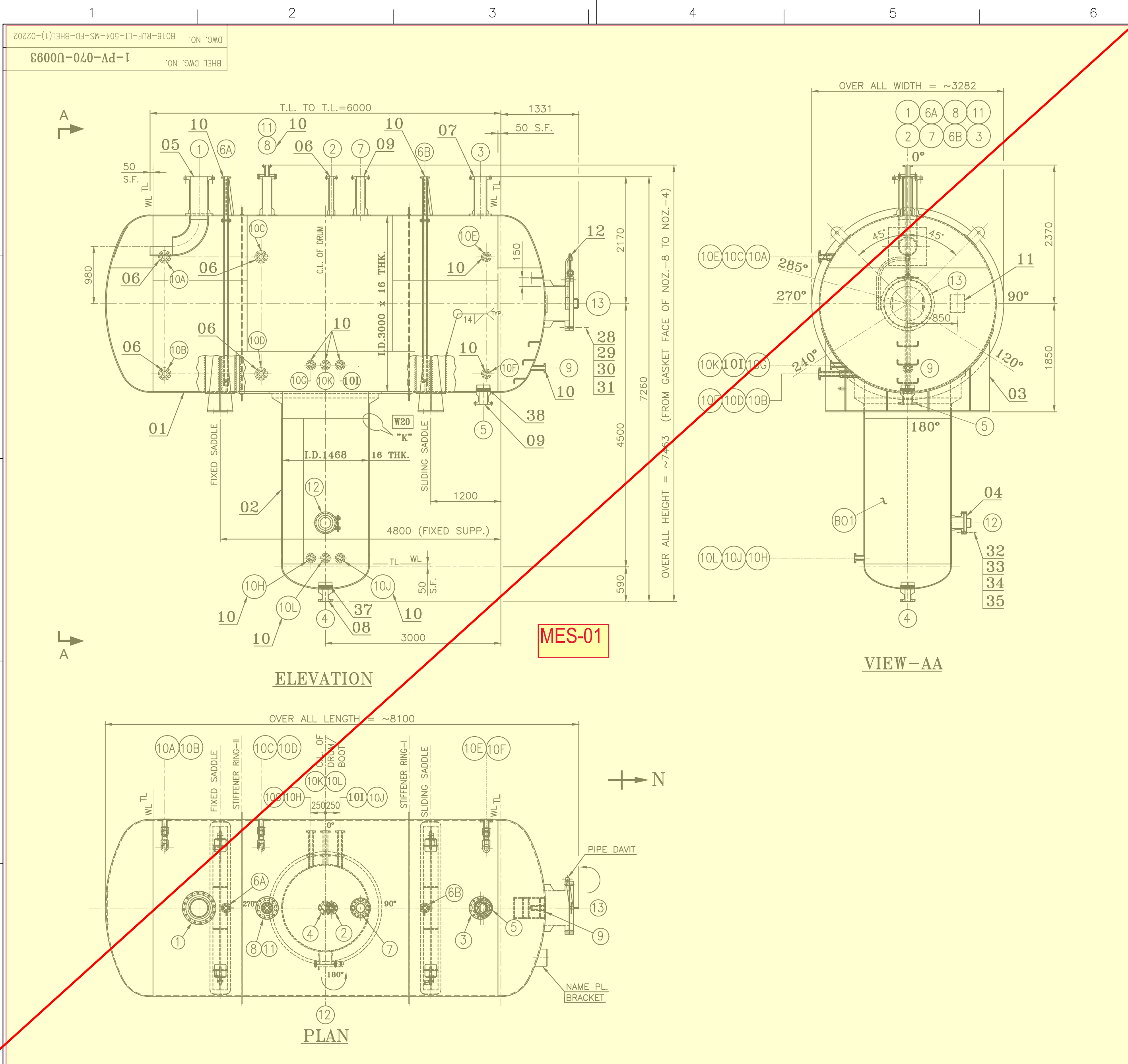
MES-01: AI (Authorized inspector) review is pending for drawing and calculation for this tag, hence M/s BHEL to take approval on drawings and calculation from AI and comments to be incorporated in drawings/calculation if require before performing HYDROTEST OF VESSELS, the same is M/S BHEL responsibility to ensure consistency between calculation & drawings.

TOTAL WT. = 73300.000 Kg.				
12	R/F PAD FOR LWN NOZZLE-8 25 THK. X OD 197 X ID 117	-	XXX	3.870
11	NAME PLATE DETAILS FOR SEAL OIL RESERVOIR (ITEM NO.504-V-122)	3-PV-050-U0148	XXX	5.856
10	DETAIL OF MANWAY DAVIT FOR SEAL OIL RESERVOIR (ITEM NO.504-V-122)	B016-RUF-LT-504-MS-FD-BHEL(1)-02158	WELDMENT	44.74
09	EXTERNAL ATTACHMENTS FOR SEAL OIL RESERVOIR (ITEM NO.504-V-122)	3-PV-050-U0146	XXX	521
08	INSULATION SUPPORT DETAILS FOR SEAL OIL RESERVOIR (ITEM NO.504-V-122)	B016-RUF-LT-504-MS-FD-BHEL(1)-02156	WELDMENT	45.000
07	LWN FLANGE FOR NOZZLE-8 80 NB X 300#, R.F., BORE=66.2, 250 LG	1-PV-050-U0091	XXX	16.611
06	HEAVY HEX NUTS 7/8" -9UNC	B016-RUF-LT-504-MS-FD-BHEL(1)-02154	WELDMENT	0.135
05	FULLY THREADED STUDS 7/8" -9UNC X 170 LG	-	XXX	0.386
04	GASKET FOR NOZZLE-7 200 NB X 300#, R.F., 4.5 THK.	-	SA193GR.B7M	0.200
03	BLIND FLANGE FOR NOZZLE-7 200 NB X 300#, R.F.	-	XXX	36.700
02	SADDLE ASSEMBLY DETAILS OF SEAL OIL RESERVOIR (ITEM NO.504-V-122)	1-PV-050-U0173	XXX + 5 WOL	5771.54
01	SHELL ASSEMBLY DETAILS OF SEAL OIL RESERVOIR (ITEM NO.504-V-122)	1-PV-050-U0172	WELDMENT	66845.021

ITEM NO.	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO. VAR NO.	MATERIAL CODE	MATERIAL SPECIFICATION	UNIT WEIGHT	QUANTITY
02	ISSUED FOR APPROVAL	NPR	UAZ/YPK	SKB			20.03.2021	
01	ISSUED FOR APPROVAL	NPR	UAZ/YPK	SKB			26.10.20	
00	ISSUED FOR APPROVAL	NPR	UAZ/YPK	SKB			15.07.20	
REV.	DESCRIPTION	DRN	CHECKED	APPROVED	REVIEWED	APPROVED	DATE	
OWNER	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY MODERNIZATION PROJECT EPCC-03 PACKAGE FOR RESIDUE UP-GRADATION FACILITY (RUF)							
PMC	ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)							
LSTK CONTRACTOR	L&T Hydrocarbon Engineering							
DETAILED ENGINEERING CENTER	L&T - CHIYODA LIMITED							
VENDOR	Refinery/75000-66912/NG; DATE:18.03.2020							
VENDOR DWG. NO.	1-PV-050-U0089, REV.2							
DATE	SCALE	TITLE						
15.07.2020	1:50	ASSEMBLY DETAILS FOR SEAL OIL RESERVOIR (ITEM NO. 504-V-122)						
DEPT:	PP ENGG.	PROJECT:						
DRN BY: N. PRAKASH		CUSTOMER DRG. NO.:						
CHK BY: UAZ/YPK		PWO NO.:						
APP BY: SKB		B016-RUF-LT-504-MS-FD-BHEL(1)-02152						
CAD REUSE THIS DRG. USING DRG SYSTEM ONLY FILE:								

This drawing is also submitted to Client/PMC for approval, and hence LTHe's approval is subjected to PMC approval. PMC comments if any upon receipt will be shared and vendor shall comply to those comments without any cost and time implications.

ALL RIGHTS RESERVED.
THIS DOCUMENT AND ANY DATA AND INFORMATION CONTAINED THEREIN ARE CONFIDENTIAL AND THE PROPERTY OF L&T HYDROCARBON ENGINEERING (LHE) AND THE COPYRIGHT THEREIN IS RESERVED IN LINE NO PART OF THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN BE LOANED, REPRODUCED OR USED FOR ANY PURPOSE, IN WHATEVER FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF LHE.



SPECIAL NOTE :-

BHEL SHALL ENSURE COMPLIANCE OF ALL DIMENSIONS/SKETCHES IN THIS MANUFACTURING ASSEMBLY DRAWING WITH RESPECT TO GENERAL ASSEMBLY DRAWING.

TOTAL WEIGHT : 23743.000 Kgs.			
ITEM NUMBER	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
38	VORTEX BREAKERS (NOZ.-5)	# 02202 (SHT. 6 OF 8)	40.000
37	VORTEX BREAKERS (NOZ.-4)	# 02202 (SHT. 5 OF 8)	29.500
36	PIPE AT NOZZLE (NOZ.-1)	1560 2075 0000	7.600
35	HEAVY HEX. NUT ; NOZZLE-12	SA 516 GR.70 \$ / SA 106 GR. B	0.190
34	FULLY THREADED STUD ; NOZ.-12	SA 194 GR. 2HM	0.370
33	GASKET ; NOZZLE-12	SA 193 GR. B7M	3.370
32	BLIND FLANGE ; NOZZLE-12	SA105 \$	0.595
31	HEAVY HEX. NUT ; NOZZLE-13	SA 194 GR. 2HM	1.970
30	FULLY THREADED STUD ; NOZ.-13	SA 193 GR. B7M	3.370
29	GASKET ; NOZ.-13	SA106Gr. B \$	342.000
28	BLIND FLANGE ; NOZZLE-13	SA105 \$	0.100
27	WASHER-A12	SS 304	0.050
26	HEAVY HEX. NUT	SA 194 GR. B8	0.250
25	HEX. HD. BOLT	SA 193 GR. B8	1.760
24	VERTICAL CLEAT PLATE	SA 516 GR.70 \$	0.880
23	HORIZONTAL CLEAT PLATE	SA 516 GR.70 \$	0.100
22	WASHER A16 - (NOZ.-6A, 6B)	SS 304	0.050
21	HEAVY HEX. NUT-(NOZ.-6A, 6B)	SA 194 GR. 8	0.170
20	HEX. HD. BOLT-(NOZ.-6A, 6B)	SA 193 GR. B8	0.300
19	C.N.A.F. GASKET-(NOZ.-6A, 6B)	C.N.A.F.	2.985
18	PLATE FLANGE-(NOZ.-6A, 6B)	SA 516 GR.70 \$	70.000
17	INTERNAL FEED PIPE-(NOZ.-6A, 6B)	SA106Gr. B \$	5.624
16	INTERNAL FEED PIPE-(NOZ.-6A, 6B)	SA106Gr. B \$	94.820
15	90° L.R. ELBOW-(NOZZLE-1)	SA 234 WPB \$	18.220
14	PIPE AT NOZZLE-(NOZZLE-1)	SA 516 GR.70 \$	36.300
13	WEAR PLATE	SA 240 TY 304L	44.740
12	DETAILS OF MANWAY DAVIT	(WELDMENT)	5.844
11	NAME PLATE DETAILS	(WELDMENT)	6.092
10	ASSEMBLY OF NOZZLE - 6A-B,	(WELDMENT)	24.857
09	ASSEMBLY OF NOZZLE - 5 & 7	(WELDMENT)	15.758
08	ASSEMBLY OF NOZZLE - 4	(WELDMENT)	38.502
07	ASSEMBLY OF NOZZLE - 3	(WELDMENT)	10.788
06	ASSEMBLY OF NOZ.- 2, 10A-D	(WELDMENT)	106.027
05	ASSEMBLY OF NOZZLE - 1	(WELDMENT)	7.500
04	HANDHOLE HINGE ASSEMBLY OF	(WELDMENT)	2746.000
03	SADDLE SUPPORT ASSEMBLY	(WELDMENT)	1917.500
02	BOOT ASSEMBLY OF HOS	(WELDMENT)	17522.500
01	SHELL ASSEMBLY OF HOS	(WELDMENT)	

REFERENCE DOCUMENTS/DRAWINGS

3-PV-070-U0152	B016-RUF-LT-504-MS-FD-BHEL(1)-02207	GENERAL NOTES FOR HOS PRODUCT DRUM (504-V-201)	**
1-PV-070-U0092	B016-RUF-LT-504-MS-GA-BHEL(1)-02201	GENERAL ASSEMBLY OF HOS PRODUCT DRUM (504-V-201)	**

BHEL DRAWING NO.	CLIENT DOCUMENT NO.	DRAWING TITLE	REV. No.
------------------	---------------------	---------------	----------

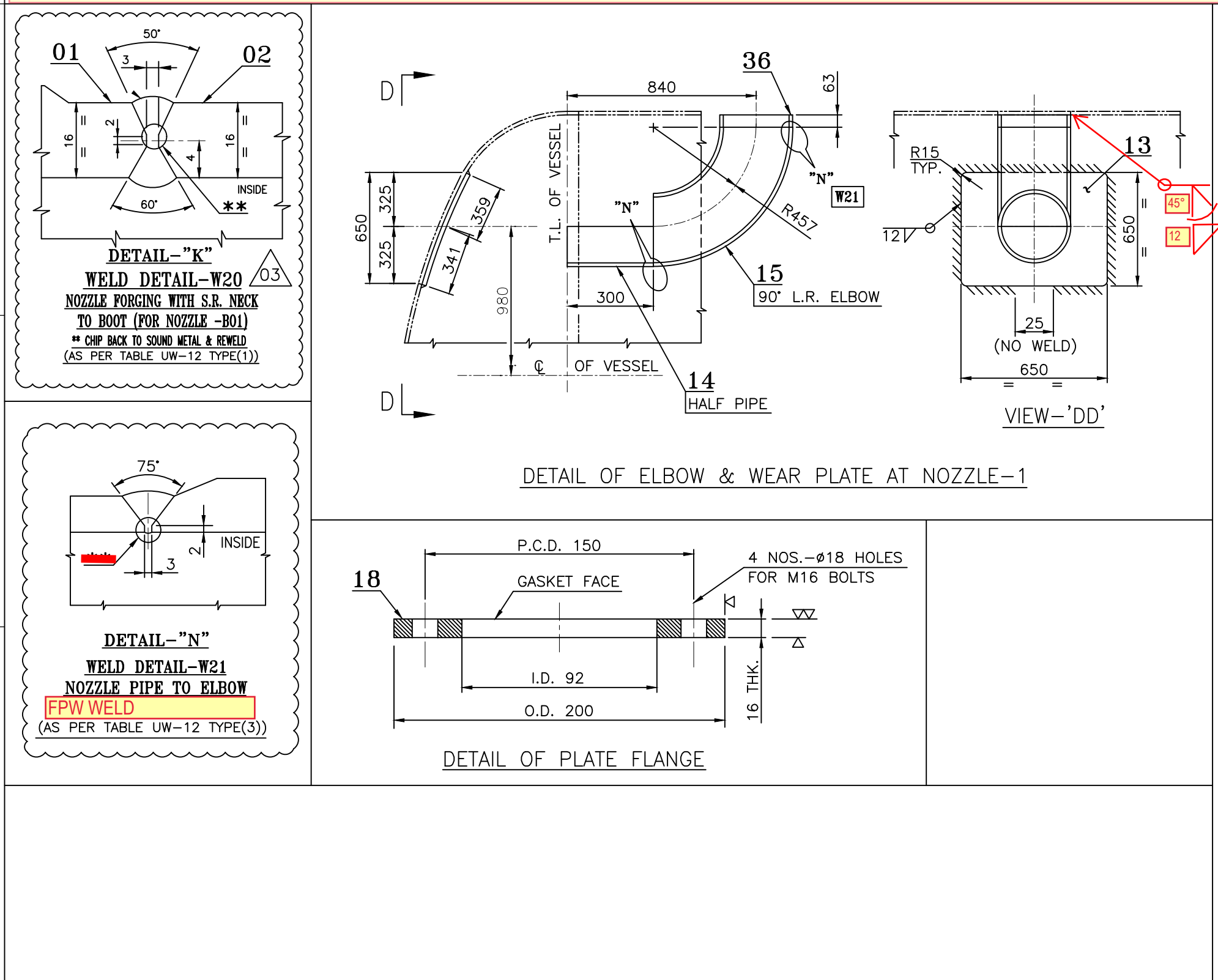
** SHALL BE MENTIONED DURING AS-BUILT DRAWING

# CLIENT DOCUMENT No. : B016-RUF-LT-504-MS-FD-BHEL(1)-		DRG. CATEGORY: (USE TICK MARK)	EL REVIEW/APPROVAL	VPTL NO.:
		SCH. DATE OF SUBMISSION	CODE:	
		DOCUMENT STATUS	REVIEW CODE 1 - NO COMMENTS	
		STATEMENT OF SUB: 1st 2nd 3rd	REVIEW CODE 2 - PROCEED WITH MANUFACTURE / CONSTRUCTION AS PER THE DOCUMENT.	
		FINAL FOR CODE-1	REVIEW CODE 3 - DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS AS MARKED. RESUBMIT FOR REVIEW.	
		AS BUILT	REVIEW CODE 4 - DOCUMENT IS RETAINED FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION	
		CONSTRUCTION	REVIEW	
		SIGN: DATE:	NAME DOCLINE SIGN DATE	
		03	REVISED AS PER CUSTOMER COMMENTS	18.01.2021
		02	REVISED AS PER CUSTOMER COMMENTS	04.12.2020
		01	REVISED AS PER UPDATED GA DRG.	10.08.2020
		00	ISSUED FOR APPROVAL	21.07.2020
		REV. DESCRIPTION	DRN CHECKED APPROVED REVIEWED APPROVED	DATE
		OWNER	HINDUSTAN PETROLEUM CORPORATION LIMITED	
		PMC :	ENGINEERS INDIA LIMITED	
		LSTK CONTRACTOR:	L&T Hydrocarbon Engineering	
		DETAILED ENGINEERING CENTER:	L&T - CHYODA LIMITED	
		VENDOR :	BHEL PO NO:	
			REFINERY / 75000-69912 / NG ; DATE :18.03.2020	
		Bharat Heavy Electricals Limited	BHEL DWS. NO:	
		UNIT: HEAVY PLATES & VESSELS PLANT	1-PV-070-U0093, REV.03	
		VISAKHAPATNAM-530012	ASSEMBLY DETAILS OF	
		DEPT: PP ENGG.	HOS PRODUCT DRUM (504-V-201)	
		DRN BY: T.S.S.RAO	PROJECT: DRG. NO.:	
		CHK BY: D.SATISH	FWO NO.:	
		APP BY: A.N.V.K.K	CAD REVD THIS DRG. USING OUR SYSTEM ONLY FILE:	

This drawing is also submitted to Client/PMC for approval, and hence LTHe's approval is subjected to PMC approval. PMC comments if any upon receipt will be shared and vendor shall comply to those comments without any cost and time implications.

L&T - CHYODA LIMITED			
REVIEW CODE 1 - NO COMMENTS PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.	REVIEW CODE 2 - PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.	REVIEW CODE 3 - DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS AS MARKED. RESUBMIT FOR REVIEW.	REVIEW CODE 4 - DOCUMENT IS RETAINED FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION
PBD	KMD	AG/MS	03/02/21
COMMENTED BY	REVIEWED BY	APPROVED BY	DATE
THIS REVIEW / APPROVAL DOES NOT RELIEVE THE VENDOR / MANUFACTURER OF THE FULL RESPONSIBILITY AS TO DESIGN CORRECTNESS OF DIMENSIONS & COMPLIANCE WITH APPLICABLE REGULATIONS AND WITH THE REQUIREMENTS MADE IN PURCHASER SPECIFICATIONS.			

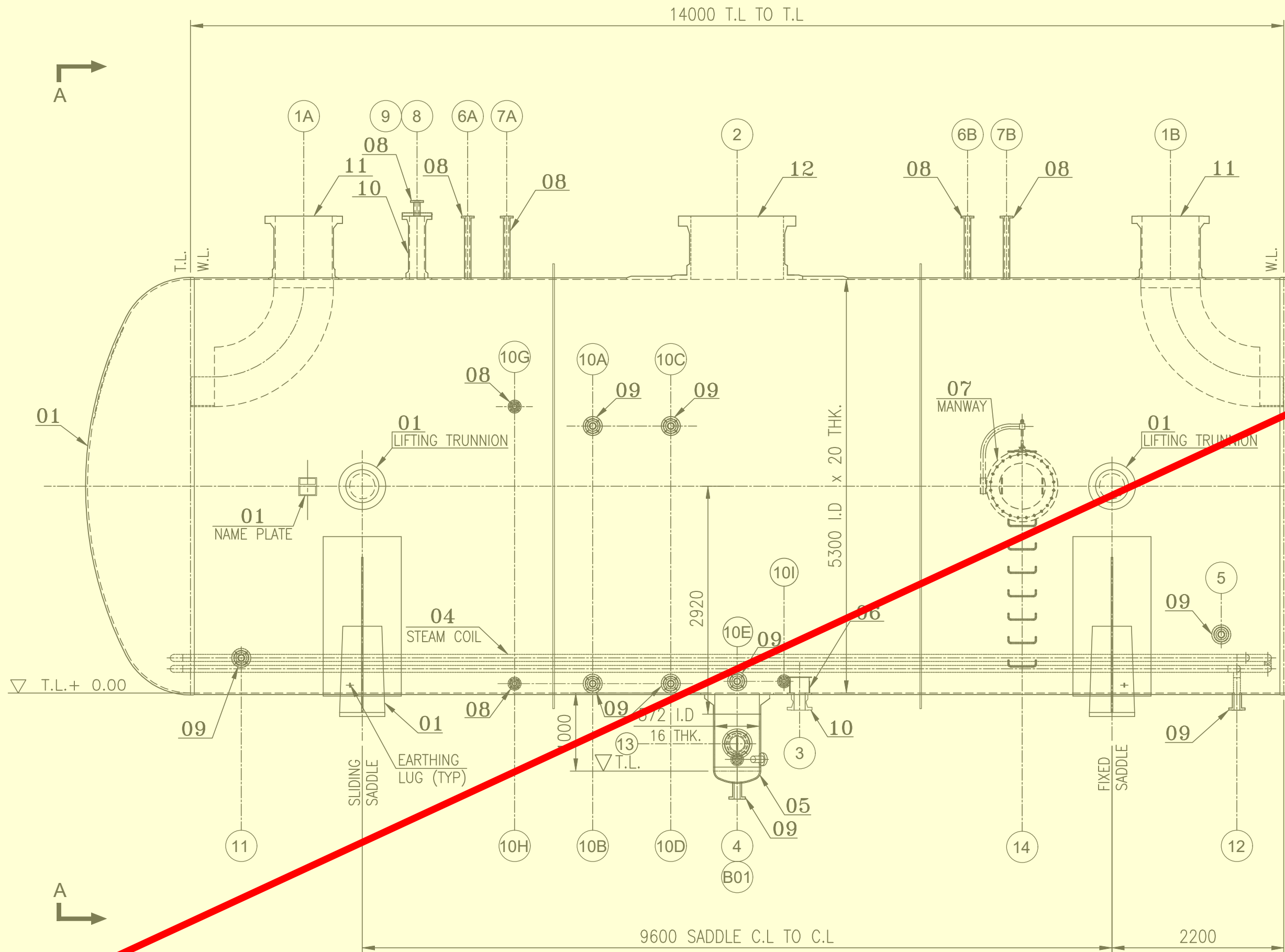
MES-01: Calculation is not with CODE-1, hence the details of HYDROTEST PRESSURE, MAEWP, MAP, LOWEST ALLOWABLE MDMT, CG, FOUNDATION LOAD DATA, FLANGE RATING etc, to be updated as per CODE-1 calculation if required before performing HYDROTEST/PWHT OF VESSESL, the same is M/S BHEL responsibility to ensure consistency between calculation & drawings.

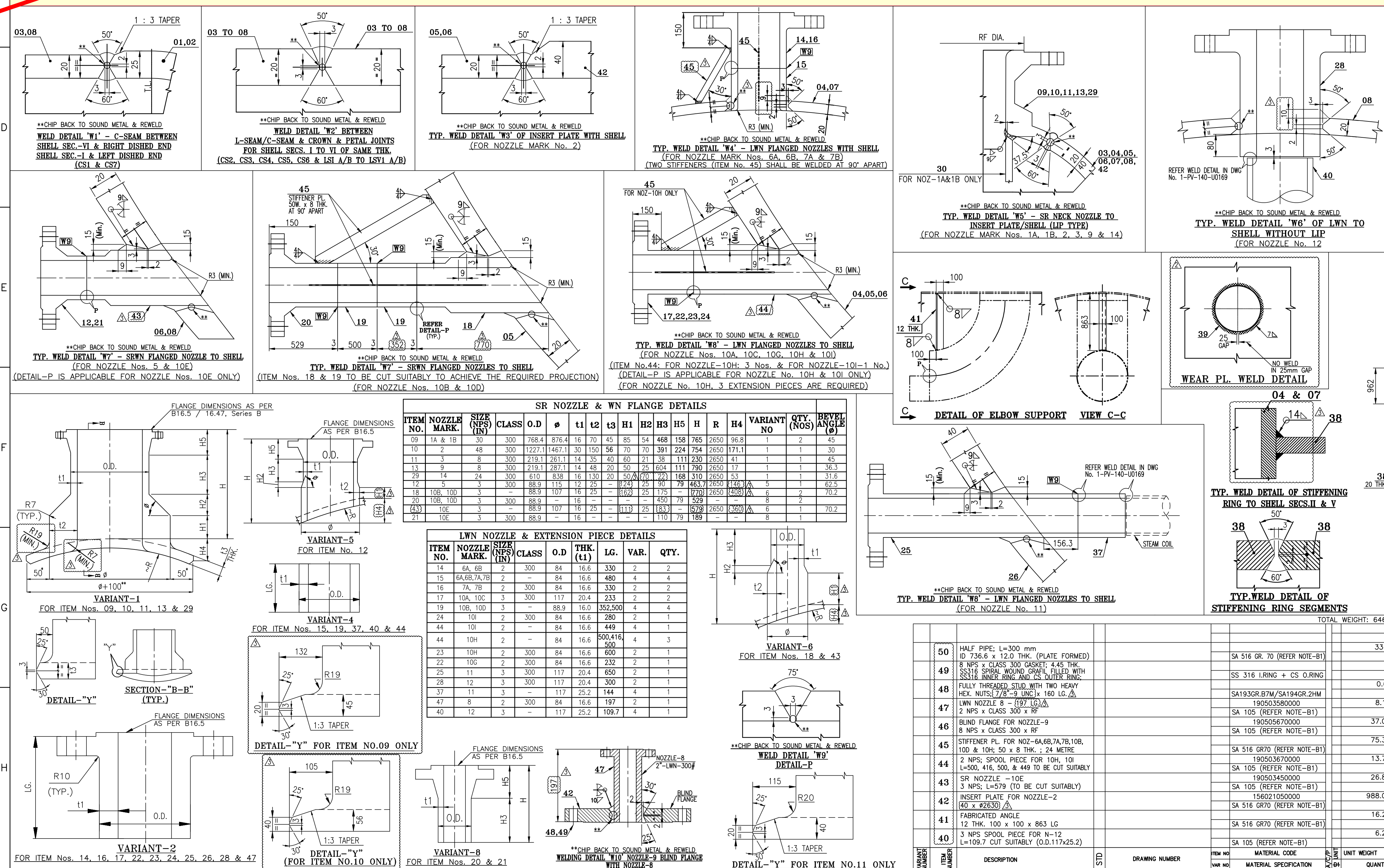
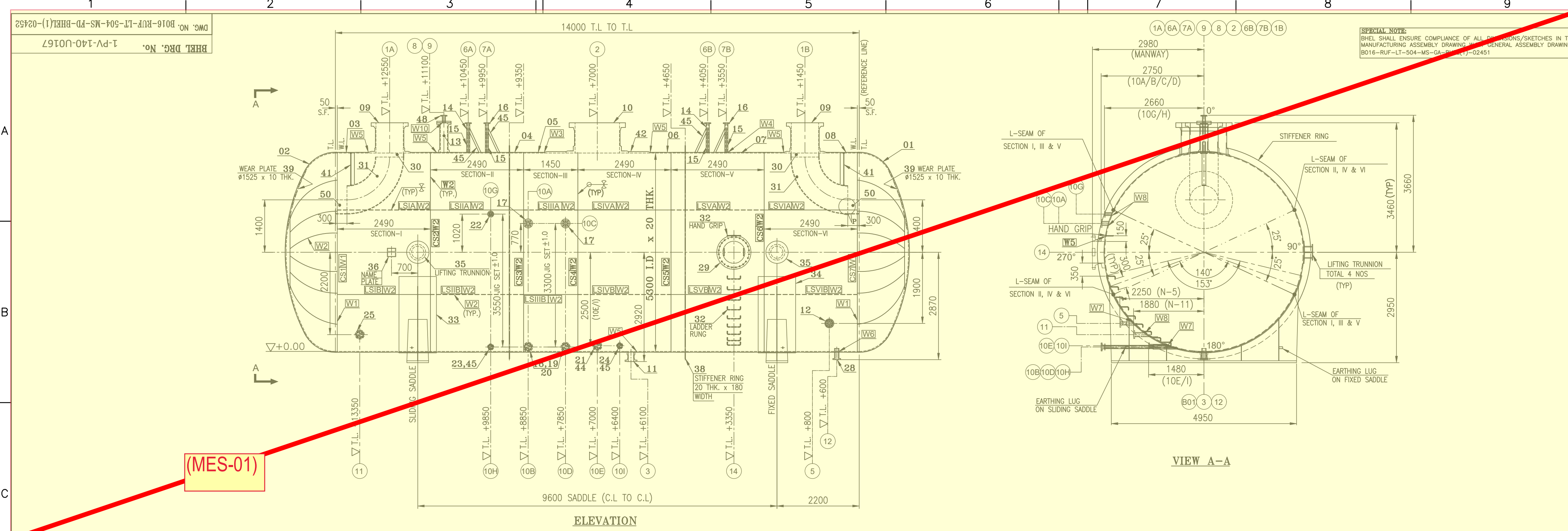


ALL RIGHTS RESERVED.
THIS DOCUMENT AND ANY DATA AND INFORMATION CONTAINED HEREIN ARE CONFIDENTIAL AND THE PROPERTY OF BHEL. IT IS TO BE KEPT SECRET AND NOT TO BE DISCLOSED TO OTHERS OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF BHEL. THIS DOCUMENT, DATA, OR INFORMATION SHALL BE DISCLOSED TO OTHERS OR REPRODUCED IN ANY MANNER OR USED FOR ANY PURPOSE WHATSOEVER, EXCEPT WITH THE PRIOR WRITTEN PERMISSION OF BHEL.

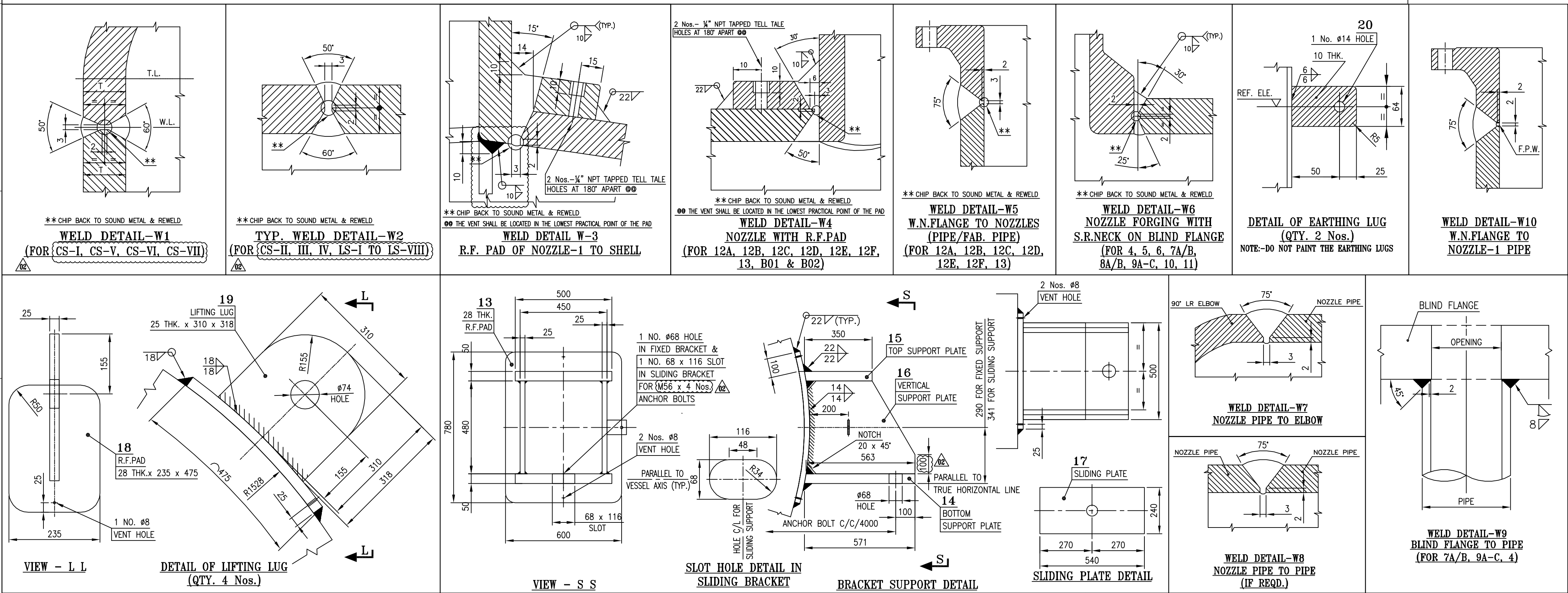
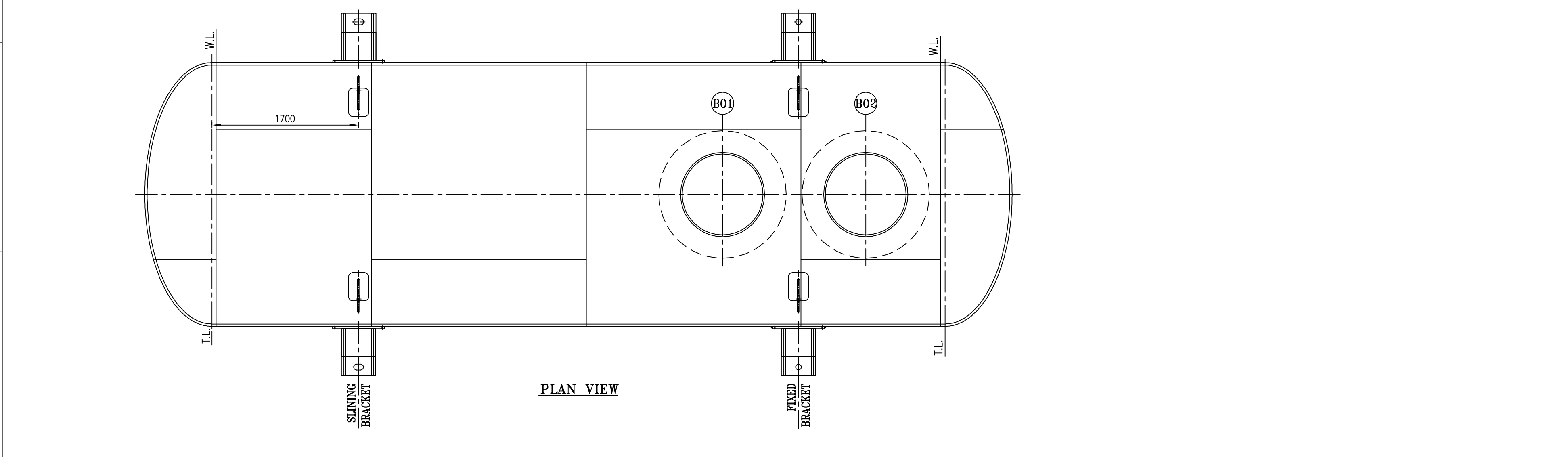
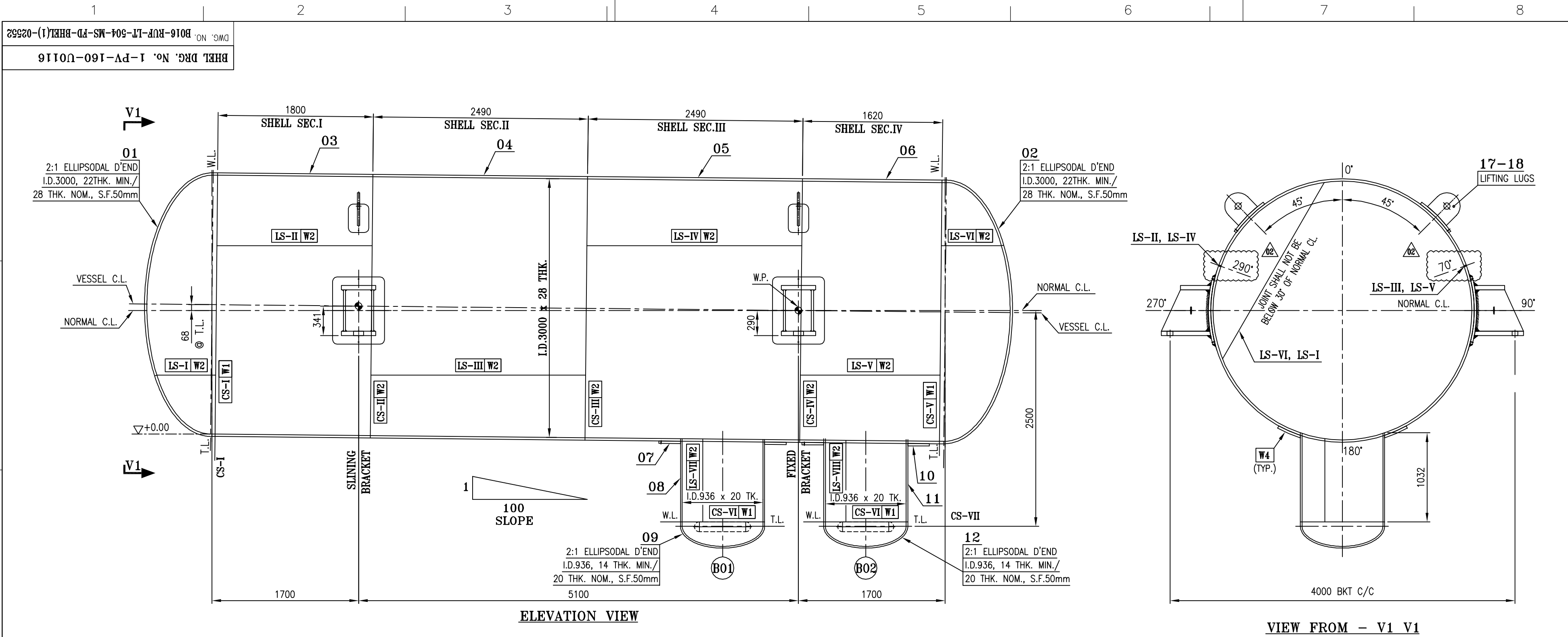
DWG. NO. B016-RUF-LT-504-MS-FD-BHEL(1)-02452
BHEL DRG. No. 1-PV-140-U0108

SPECIAL NOTE:
BHEL SHALL ENSURE COMPLIANCE OF ALL DIMENSIONS/SKETCHES IN THIS MANUFACTURING ASSEMBLY DRAWING W.R.T GENERAL ASSEMBLY DRAWING: B016-RUF-LT-504MS-GA-BHEL(1)-02451



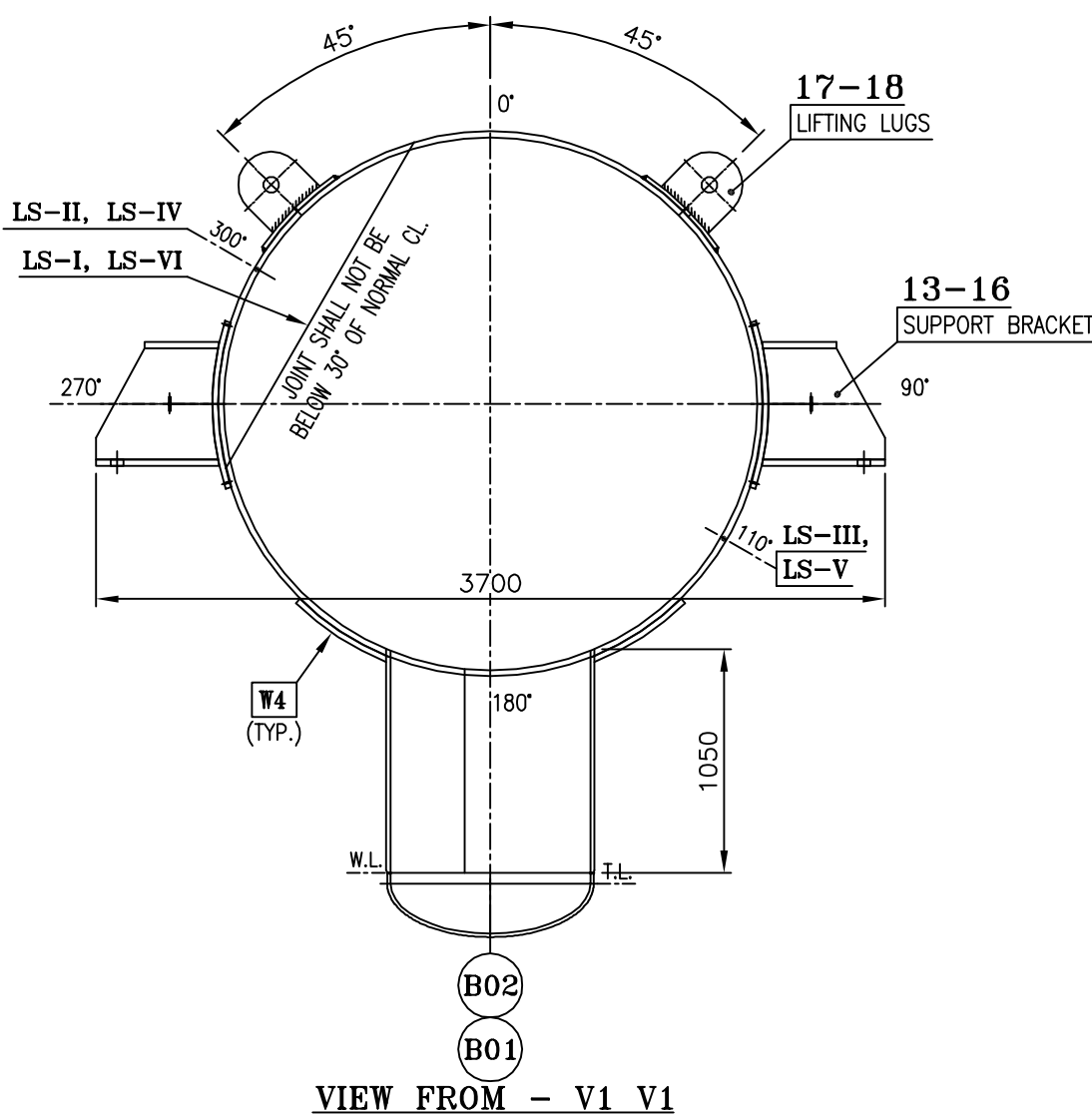


ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT WEIGHT
39	WEAR PLATES #1525 x 10 THK.	SA 240 TYP 304L	146.124	2
38	STIFFENER RING (4 SEGMENTS PER RING) ID 5340 x OD 5700 x 20 THK.	156020990000	122.519	8
37	3 NPS SPOOL PIECE FOR N-11 (O.D. 117x25.2) (L-CUT SUITABLE)	SA 516 GR70 (REFER NOTE-B1)	8.211	1
36	NAME PLATE BRACKET	SA 105 (REFER NOTE-B1)	5.844	1
35	LIFTING TRUNNION	156154730000	110.291	4
34	FIXED SADDLE SUPPORT ASSEMBLY	SA 234 GR. WPB (REFER NOTE-B1)	3062.335	1
33	SLIDING SADDLE SUPPORT ASSEMBLY	SA 516 GR70 (REFER NOTE-B1)	3350.334	1
32	LADDER RUNG & HAND GRIP	SA 105 (REFER NOTE-B1)	28.103	1
31	90° L.R. ELBOW - 1A & 1B 30 NPS x CLASS 300 x RF, L=650	SA 516 GR70 (REFER NOTE-B1)	441.000	1
30	PIPE FOR NOZZLE - 1A & 1B 10.736x12 THK. PL. FORMED, L=107	SA 516 GR70 (REFER NOTE-B1)	23.705	2
29	SRWN NOZZLE - 14 24 NPS x CLASS 300 x RF, LIP TYPE	SA 105 (REFER NOTE-B1)	557.083	1
28	LWN NOZZLE - 12 3 NPS x CLASS 300 x RF, L=300	SA 105 (REFER NOTE-B1)	19.629	1
27				
26				
25	LWN NOZZLE - 11; 3 NPS x CLASS 300 x RF, L=650	SA 105 (REFER NOTE-B1)	29.089	1
24	LWN NOZZLE - 10I 2 NPS x CLASS 300 x RF, L=280	SA 105 (REFER NOTE-B1)	10.327	1
23	LWN NOZZLE - 10H 2 NPS x CLASS 300 x RF, L=600	SA 105 (REFER NOTE-B1)	19.156	1
22	LWN NOZZLE - 10G 2 NPS x CLASS 300 x RF, L=232	SA 105 (REFER NOTE-B1)	9.005	1
21	WN NOZZLE - 10E 3 NPS x CLASS 300 x RF, L=189	SA 105 (REFER NOTE-B1)	12.308	1
20	WN NOZZLE - 10B & 10D 3 NPS x CLASS 300 x RF, L=529	SA 105 (REFER NOTE-B1)	29.033	1
19	3 NPS SPOOL PIECE FOR 10B & 10D (O.D. 88.9); L=500.352 TO BE CUT SUITABLY	SA 105 (REFER NOTE-B1)	25.248	4
18	SR NOZZLE - 10B & 10D 3 NPS; L= 770 (TO BE CUT SUITABLY)	SA 105 (REFER NOTE-B1)	31.854	2
17	LWN NOZZLE - 10A & 10C 3 NPS x CLASS 300 x RF, L=233	SA 105 (REFER NOTE-B1)	16.365	2
16	LWN NOZZLE - 7A & 7B 2 NPS x CLASS 300 x RF, L=330	SA 105 (REFER NOTE-B1)	11.706	2
15	2 NPS SPOOL PIECE, L= TO BE CUT SUITABLY 6A, 6B, 7A, 7B	SA 105 (REFER NOTE-B1)	13.254	4
14	LWN NOZZLE - 6A & 6B 2 NPS x CLASS 300 x RF, L=330	SA 105 (REFER NOTE-B1)	11.706	2
13	SRWN NOZZLE - 9 8 NPS x CLASS 300 x RF, LIP TYPE	SA 105 (REFER NOTE-B1)	110.110	1
12	SRWN NOZZLE - 5 3 NPS x CLASS 300 x RF	SA 105 (REFER NOTE-B1)	27.442	1
11	SRWN NOZZLE - 3 3 NPS x CLASS 300 x RF, LIP TYPE	SA 105 (REFER NOTE-B1)	150.000	1
10	SRWN NOZZLE - 2 48 NPS x CLASS 300 x RF, LIP TYPE	SA 105 (REFER NOTE-B1)	2624.000	1
09	SRWN NOZZLE - 1A & 1B 30 NPS x CLASS 300 x RF, LIP TYPE	SA 105 (REFER NOTE-B1)	810.000	2
08	SHELL SECTION-VI 20 x 2490 x 8357	SA 516 GR70 (REFER NOTE-B1)	3267.002	2
07	SHELL SECTION-V 20 x 2490 x 8357	SA 516 GR70 (REFER NOTE-B1)	3267.002	2
06	SHELL SECTION-IV 20 x 2490 x 8357	SA 516 GR70 (REFER NOTE-B1)	3267.002	2
05	SHELL SECTION-III 20 x 1450 x 8357	SA 516 GR70 (REFER NOTE-B1)	1902.471	2
04	SHELL SECTION-II 20 x 2490 x 8357	SA 516 GR70 (REFER NOTE-B1)	3267.002	2
03	SHELL SECTION-I 20 x 2490 x 8357	SA 516 GR70 (REFER NOTE-B1)	3267.002	2
02	LEFT SIDE DISHED END 25 THK.(NOM.)	SA 516 GR70 (REFER NOTE-B1)	6118.000	2
01	RIGHT SIDE DISHED END 25 THK.(NOM.)	SA 516 GR70 (REFER NOTE-B1)	6118.000	2
ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT WEIGHT
3-PV-140-U0174	GENERAL NOTES FOR HP FLARE KO DRUM ITEM No. 504-Y-801	**		
1-PV-140-U0107	GENERAL ASSEMBLY OF HP FLARE KO DRUM ITEM No. 504-Y-801	REV		
REFERENCE DOCUMENTS / DRAWINGS (** LATEST REVISION NO. TO BE UPDATED IN ASBUILT DRAWING)	DATE	REVISION	DESCRIPTION	DATE
3-PV-140-U0174	06.07.08	1	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	2	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	3	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	4	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	5	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	6	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	7	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	8	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	9	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	10	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	11	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	12	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	13	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	14	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	15	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	16	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	17	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	18	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	19	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	20	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	21	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	22	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	23	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	24	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	25	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	26	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	27	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	28	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	29	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	30	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	31	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	32	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	33	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	34	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	35	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	36	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	37	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	38	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	39	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	40	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	41	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	42	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	43	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	44	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	45	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	46	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	47	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	48	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	49	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	50	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	51	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	52	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	53	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	54	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	55	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	56	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	57	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	58	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	59	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	60	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	61	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	62	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	63	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	64	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	65	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	66	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	67	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	68	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	69	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	70	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	71	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	72	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	73	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	74	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	75	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	76	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	77	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	78	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	79	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	80	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	81	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	82	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	83	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	84	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	85	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	86	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	87	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	88	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	89	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	90	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	91	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	92	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	93	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	94	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	95	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	96	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	97	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	98	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	99	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	100	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	101	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	102	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	103	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	104	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	105	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	106	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	107	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	108	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	109	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	110	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	111	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	112	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	113	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	114	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	115	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	116	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	117	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	118	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	119	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	120	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	121	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	122	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	123	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	124	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	125	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	126	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	127	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	128	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	129	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	130	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	131	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	132	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	133	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	134	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	135	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	136	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	137	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	138	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	139	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	140	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	141	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	142	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	143	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	144	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	145	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	146	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	147	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	148	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	149	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	150	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	151	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	152	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	153	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	154	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	155	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	156	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	157	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	158	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	159	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	160	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	161	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	162	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	163	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	164	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	165	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	166	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	167	ISSUED FOR REVIEW	
3-PV-140-U0174	06.07.08	168	ISSUED FOR REVIEW	
3-PV-1				



TOTAL WEIGHT=24,460 Kgs.					
ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM-NO. VAR-NO.	UNIT WEIGHT
20	EARTHING LUG 10 THK. x 64 x 75	-	-	SA 240 TP 304	0.226
19	LIFTING LUG 25 THK. x 310 x 318	-	-	SA 516 GR.70	19.346
18	R.F.PAD FOR LIFTING LUG 28 THK. x 235 x 475	-	-	SA 516 GR.70	24.535
17	SLIDING PLATE 12 THK. x 240 X 540	-	-	SA 516 GR.70	12.208
16	VERTICAL SUPPORT PLATE 25 THK. x 480 x 563	-	-	SA 516 GR.70	37.358
15	TOP SUPPORT PLATE 50 THK. x 500 x 350	-	-	SA 516 GR.70	54.950
14	BOTTOM SUPPORT PLATE 50 THK. x 500 x 571	-	-	SA 516 GR.70	89.647
13	R.F. PAD FOR SUPPORT BRACKET 28 THK. x 600 x 780	-	-	SA 516 GR.70	102.866
12	BOOT DISHED END-B02 20 THK. x 936	3-PV-010-U0208	-	SA 516 GR.70	208.000
11	BOOT SHELL-B02 20 THK. x 1024 x 3004	-	-	SA 516 GR.70	482.947
10	PAD FOR BOOT SHELL-B02 O.D.1476 x I.D.988 x 32 THK.	-	-	SA 516 GR.70	238.400
09	BOOT DISHED END-B01 20 THK. x 936	3-PV-010-U0208	-	SA 516 GR.70	208.000
08	BOOT SHELL-B01 20 THK. x 1040 x 3004	-	-	SA 516 GR.70	490.493
07	PAD FOR BOOT SHELL-B01 O.D.1476 x I.D.988 x 32 THK.	-	-	SA 516 GR.70	238.400
06	SHELL SECTION-IV 28 THK. x 1620 x 9513	-	-	SA 516 GR.70	3387.351
05	SHELL SECTION-III 28 THK. x 2490 x 9513	-	-	SA 516 GR.70	5206.484
04	SHELL SECTION-II 28 THK. x 2490 x 9513	-	-	SA 516 GR.70	5206.484
03	SHELL SECTION-I 28 THK. x 1800 x 9513	-	-	SA 516 GR.70	3763.723
02	RIGHT SIDE DISHED END 28 THK. x I.D.3000	PPPV-PV-160-001	-	SA 516 GR.70	2363.000
01	LEFT SIDE DISHED END 28 THK. x I.D.3000	PPPV-PV-160-001	-	SA 516 GR.70	2363.000

DRAWING NO.		DRAWING TITLE		REV
REFERENCE DOCUMENTS / DRAWINGS				
DRG. CATEGORY: (USE TICK MARK)	☒ R ☐ I	EIL REVIEW/APPROVAL CODE:		VPFL NO.:
SCH. DATE OF SUBMISSION	DOCUMENT STATUS			
STATEMENT OF SUB: 1st 2nd 3rd	☐ REVIEW CODE 1 - NO COMMENTS PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.			
☐ FINAL FOR CODE-1	☐ AS BUILT	☐ REVIEW CODE 2 - PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE COMMENTED DOCUMENT. REVISED DOCUMENT REQUIRED.		
☐ AS BUILT	☐ INFORMATION	☐ REVIEW CODE 3 - DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS AS MARKED. RESUBMIT FOR REVIEW.		
☐ CONSTRUCTION	☐ REVIEW	☐ R - DOCUMENT IS RETAINED FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION		
SIGN:	DATE:	☐ V-VOID		
		NAME DISCIPLINE SIGN DATE		
O2 COMMENTS: UPDATED.				
O1 ISSUED FOR APPROVAL				
O0 ISSUED FOR SUBMISSION				
REV.	DESCRIPTION	DRN	CHECKED	APPROVED
OWNER	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY MODERNIZATION PROJECT EPCC-03 PACKAGE FOR RESIDUE UP-GRADATION FACILITY (RUF)			
PMC :	L&T Hydrocarbon Engineering			
LSK CONTRACTOR:	L&T - CHYODA LIMITED			
DETAILED ENGINEERING CENTER:	L&T - CHYODA LIMITED			
VENDOR :	VENDOR PO NO:			
Bharat Heavy Electricals Limited		REFINERY/75000-66912/NG		DT:18.03.2020
VISAKHAPATNAM-530012		VENDOR DWG. NO:		1-PV-160-U0116, REV-2
DATE	SCALE	TITLE:		ASSEMBLY DETAILS OF
10.12.2020	1 : 35	HT ENGG.		CLOSED BLOWDOWN DRUM-1
DEPT:	DRN BY:	PROJECT:	DRG. NO.:	(ITEM NO.504-V-803)
HT ENGG.	N.PRAKASH	PWO NO.:	B016-RUP-LT-504-MS-	SH. 01 of 03
CHK BY:	D.SATISH	APP BY:	FD-BHEL(1)-02552	REV. 02
APP BY:	D.SATISH	CAD BASED THE DRG. USING CAD SYSTEM ONLY FILE:		



B016-RUP-IT-504-MS-GENERAL ASSEMBLY CLOSED BLOWDOWN DRUM-2 (ITEM NO.504-V-809)			
DRAWING NO.		DRAWING TITLE	
		REV	

REFERENCE DOCUMENTS / DRAWINGS			
DRG. CATEGORY: (USE TICK MARK)	☐ R	☐ I	EIL REVIEW/APPROVAL CODE:
	VPL NO.:		
SCH. DATE OF SUBMISSION		☐ REVIEW CODE 1 – NO COMMENTS PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE DOCUMENT.	
DOCUMENT STATUS		☐ REVIEW CODE 2 – PROCEED WITH MANUFACTURE / FABRICATION / CONSTRUCTION AS PER THE COMMENTED DOCUMENT. REVISED DOCUMENT REQUIRED.	
STATEMENT OF SUB: 1st 2nd 3rd		☐ REVIEW CODE 3 – DOCUMENT DOES NOT CONFORM TO BASIC REQUIREMENTS AS MARKED. RESUBMIT FOR REVIEW.	
☐ FINAL FOR CODE-1		☐ R – DOCUMENT IS RETAINED FOR RECORDS. PROCEED WITH MANUFACTURE / FABRICATION	
☐ AS BUILT		☐ V-VOID	
☐ CONSTRUCTION		NAME DISCIPLINE SIGN DATE	
SIGN:		DATE:	

NO.	DESCRIPTION	DRN	CHECKED	APPROVED	REVIEWED	APPROVED	DATE
0.3A	AS BUILT COMMENTS INCORPORATED	NPR	D.SATISH	D.SATISH	----	----	24.03.21
0.3	COMMENTS INCORPORATED	NPR	D.SATISH	D.SATISH	----	----	16.02.21
0.2	COMMENTS INCORPORATED	NPR	D.SATISH	D.SATISH	----	----	24.12.20
0.1	COMMENTS INCORPORATED	NPR	D.SATISH	D.SATISH	----	----	04.12.20
0.0	ISSUED FOR SUBMISSION	NPR	D.SATISH	D.SATISH	----	----	21.10.20
REV.	DESCRIPTION	DRN	CHECKED	APPROVED	REVIEWED	APPROVED	DATE

OWNER 	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY MODERNIZATION PROJECT EPPC-03 PACKAGE FOR RESIDUE UP-GRADATION FACILITY (RUF)
-----------	--

PMC : 	INDIRA ENGINEERING & CONSTRUCTION (A Govt. of India Undertaking)
-----------	--

LSTK CONTRACTOR: 	L&T Hydrocarbon Engineering
----------------------	--

DETAILED ENGINEERING CENTER:	
VENDOR : 	VENDOR PO NO.: REFINERY/75000-66912/NG DT:18.03.2020
Bharat Heavy Electricals Limited UNIT: BRATY PLAYS & VESSELS PLANT VISAKHAPATNAM-830012	VENDOR DWG. NO.: 1-PV-200-U0126, REV-3A

ASSEMBLY DETAILS OF CLOSED BLOWDOWN DRUM-2 (ITEM NO.504-V-809)	
DATE: 21.10.2020 SCALE: 1 : 35 HT: ENG.	TITLE:
DRN BY: N.PRAKASH	PROJECT:
CHK BY: D.SATISH	DRG. NO.: B016-RUP-IT-504-MS- FD-BHEL(1)-02752
APP BY: D.SATISH	SHD NO.: 01 of 03 REV. 03A

COMMENTED BY	REVIEWED BY	APPROVED BY	DATE

THIS REVIEW / APPROVAL DOES NOT RELIEVE THE VENDOR / MANUFACTURER OF THE FULL RESPONSIBILITY AS TO DESIGN CORRECTNESS OF DIMENSIONS & COMPLIANCE WITH APPLICABLE REGULATIONS AND WITH THE REQUIREMENTS MADE IN PURCHASER SPECIFICATIONS.	