




TD-106-1 Rev No. 5	Form No.		<b>PRODUCT STANDARD OIL FIELD EQUIPMENT HYDERABAD</b>		OE 70012	
					Rev No. 00	
					PAGE 1 of 6	
<b><u>Specification for carrying out the site works at various sites</u></b>						
<b><u>INTRODUCTION</u></b>						
<p>BHEL will be taking up refurbishment and upgradation of oilrigs at different ONGCL and OIL INDIA sites of southern region, western region and other regions in India.</p>						
<p>This refurbishment includes:</p>						
<ol style="list-style-type: none"> <li>a) Fabrication/ repairs of structural components of mast and sub structure.</li> <li>b) Assembly and welding of various sub assemblies of Mast and Sub structure</li> <li>c) Trial assembly of mast and sub structure.</li> <li>d) Assembly and commissioning of mud system.</li> <li>e) Assembly of various piping like Diesel piping, Air piping and Water piping.</li> <li>f) Assembly and welding of HP Mud line system.</li> <li>g) Grit blasting, primer painting and finish painting of mast and substructure, galvanizing (if required as per order), mud system and other members identified by BHEL (only finish painting).</li> </ol>						
<p>Mast and sub structure is a critically stressed load bearing equipment manufactured out of wide flange beams and angles of low alloy steel. The fabrication/repairs are to be carried out with due care by qualified and experienced welders and fitters.</p>						
<p>Mud system consists cluster of tanks, assembled together and connected with 10", 12" inter connecting pipes with pipe couplings. The alignment of the tanks, alignment of motors and pumps is to be done at site as per layout. The mud-processing equipment shall be installed on to the tanks and the Mud system shall have to be commissioned to the satisfaction of BHEL/CUSTOMER. The representative drawings of Mast and substructure, Mud system layout and Rig lay out are enclosed.</p>						
<b>1.0 <u>SCOPE OF WORK</u></b>						
<b>1.1. <u>FABRICATION AND REPAIRS OF STRUCTURAL COMPONENTS.</u></b>						
<ul style="list-style-type: none"> <li>▪ Remove the damaged lugs and braces of the mast sections.</li> <li>▪ Remove the portal frames on the mast sections.</li> <li>▪ Grind the joints, where lugs and braces are removed.</li> <li>▪ Fabricate new portals and braces, wherever damaged items are removed.</li> <li>▪ Fit up the new lugs, portals and braces to the mast sections and keep them in tack weld condition.</li> <li>▪ Remove damaged braces in sub structure and fit up new braces.</li> <li>▪ Stiffening the sub structure beam with 8/10 thick CS/ AS plates.</li> </ul>						
<p>Fabrication shall be as per the Annexure I.</p>						
Ref. Doc	<b>Revisions :</b>  <b>Refer to record of revisions :</b>	<b>Prepared :</b>  Rajasekhar Balu	<b>Approved :</b>  A.Tirumala Prasad	<b>Date :</b>  <b>31-12-2012</b>		

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TD-106-2 Rev No. 5	Form No.		<p style="text-align: center;"><b>PRODUCT STANDARD</b>  <b>OIL FIELD EQUIPMENT</b>  <b>HYDERABAD</b></p>	<p><b>OE 70012</b></p> <p>Rev No. 00</p> <p>PAGE 2 of 6</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">           COPYRIGHT AND CONFIDENTIAL            The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED.            It must not be used directly or indirectly in any way detrimental to the interest of the company.         </p>		<p><b>1.2. <u>TRIAL ASSEMBLY OF SUBSTRUCTURE.</u></b></p> <ul style="list-style-type: none"> <li>▪ Components of the substructure will be fabricated by BHEL at Hyderabad and sent to the site with the all pin connecting lugs in tack weld condition. All the components, sub assemblies and sub structure shall be trial assembled horizontally and lifted to the floor level (25ft/30 ft) for matching of all the assemblies. This is a trial and error procedure and the sub structure may have to be trial assembled number of times till the matching of all the assemblies is completed. Then lower the sub structure and complete the welding of all tack-welded lugs.</li> <li>▪ The total weight of the components to be trial assembled is given in Annexure I.</li> </ul> <p><b>1.3. <u>CONTROL ASSEMBLY OF MAST</u></b></p> <p>After fabrication/repairs of mast sections (bottom section, lower section, upper section, top section and crown), all these sections shall be control assembled horizontally. All the section faces shall butt to 80% contact. This control assembly is also a trial and error procedure till all the dimensions are achieved.</p> <p>Dismantle all the sections of the mast, complete the welding of all lugs of the mast section.</p> <p><b>1.4. <u>HP MUDLINE ASSEMBLY</u></b></p> <p>All HP mudline pipes, 6 Mtrs. Long 12 numbers, to be edge prepared both ends for full penetration butt joints, assembled with mast and complete all the weld joints. All these joints are X-ray quality joints.</p> <p><b>1.5. <u>PREPERATION OF WELD JOINTS FOR NDT AND CARRYING OUT NDT</u></b></p> <ul style="list-style-type: none"> <li>▪ weld length to be tested by MPI is indicated in Annexure-I</li> <li>▪ weld length to be examined by DPT is indicated in Annexure-I</li> <li>▪ Vendor to prepare, grind all the above weld joints for the DPT/MPI and carry out MPI/DPT</li> </ul>		
		Ref. Doc		

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<p style="text-align: center;">COPYRIGHT AND CONFIDENTIAL</p> <p>The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>		<p><b>1.6. ASSEMBLY OF MUD SYSTEM</b></p> <ul style="list-style-type: none"> <li>▪ All the mud tanks will be fabricated and system will be assembled at BHEL.</li> <li>▪ These tanks will be dismantled and sent to site.</li> <li>▪ All the tanks shall have to be assembled again at the site and complete the inter-connecting piping work. Modifications if required to be carried out at site to suit to the rig conditions.</li> <li>▪ All the mud handling and processing equipment shall have to be installed and commissioned on the tanks supplied.</li> </ul> <p><b>1.7. <u>Site works &amp; Site inputs (Vendor scope)</u></b></p> <p>a) All the jobs of <b>mast and substructure</b> are to be grit blasted to SA 2-1/2 Gr. (white metal finish) using Aluminum Oxide grit. After grit blasting all the sections have to be</p> <ol style="list-style-type: none"> <li>1) spray galvanized to 80-100 microns thick (<i>if specified in order</i>), then apply one coat of epoxy primer to 15-20 microns thick and finished with one coat of polyurethane paint to 15-20 microns thick (color will be specified along with the order). or</li> <li>2) apply one coat of epoxy primer to 15-20 microns thick and finished with two coats of polyurethane paint to 30-40 microns thick (color will be specified along with the order).</li> <li>3) Final area will be certified by BHEL based on actuals after completion of the job.</li> </ol> <p>b) All <b>Mud System components</b> shall be applied with one coat of finish paint at site after completion of assembly (color will be specified along with the order). Final area will be certified by BHEL based on actuals after completion of the job.</p> <p>c) In addition to above some more jobs as identified by the customer may require grit blasting, galvanizing (if specified in the order) and painting at site. Vendor shall also plan for such site requirements Such requirements shall be settled on case-to-case basis based on the region wise site requirements. Final area will be certified by BHEL based on actuals after completion of the job.</p> <p>d) All <b>equipment and consumables required for grit blasting, spray galvanizing, and painting which includes paints, zinc wire, aluminum oxide grit and other necessary consumables are to be arranged by the vendor. The vendor shall also arrange for facility to provide compressed air for grit blasting, and painting <u>in an enclosure</u> in a suitable enclosure. The site availability will be intimated 15-20 days ahead to the vendor to mobilize necessary equipment. Vendor shall ensure uninterrupted completion of grit blasting, galvanizing and painting and plan for at least 200 Sq.Mt. of grit blasting, galvanizing and painting per day.</b></p> <p>e) Grinding Machine and Grinding wheels (consumables) for edge preparation , deburring etc.</p> <p>f) Diesel (for compressor).</p> <p>g) Compressed Air (for works other than grit blasting and painting).</p> <p>h) Gas (oxygen and acetylene cylinders as required).</p> <p>i) Other necessary tools and plants which may be required for completion of R &amp; U works, like spanners, wrenches, chisels, hammers, crow bars, Heavy duty Spanners(open jaw &amp; socket head type), hammers, hoses, screw drivers, scrappers, portable drilling machine, cutting pliers, etc.</p>		
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- j) Lifting tools & tackles like Slings, D-shackles, manila ropes, eye bolts etc.
- k) NDT consumables.
- l) Tarpaulins.
- m) Personal protective equipment for workmen like safety shoes, hand gloves, helmets, safety goggles, ear muffs etc.
- n) Minor turning & machining works like Drilling, boring, tapping, grinding(max. 1000 standard hours for 10 rigs)
- o) All necessary permits for carrying out the works at Rig-sites shall be obtained by the vendor from the concerned agencies.
- p) One welding generator, one gas cutting machine.

**1.8. FACILITIES**

The following facilities will be provided at site by BHEL/CUSTOMER:

- 30 ton cranes to handle material(1or 2 nos as required)
- Welding electrodes.(as required)
- Electric Power
- Water


**1.9. BOARDING, LODGING AND TRANSPORT (Vendor scope)**

The location of the site will be 10 to 50 Km (approx.) away from the nearest town and may not be connected by bus/train route. The vendor has to make his own arrangements for lodging, boarding and transportation from place of stay to the site and back. The vendor crew has to start the job at 7 AM and shall continue up to 8PM every day, as per requirement. An exclusive jeep is to be provided to transport men & materials, during contact period.

Most of the rig sites are in and around Ankleshwar, Mehsana, Ahmedabad(Gujarat) in Western region, Rajahmundry (Andhra Pradesh) and Karaikal(Tamilnadu) in Southern region.

**1.10. MAN POWER (Vendor scope)**

- a) The vendor has to deploy the sufficient qualified personnel like welders and fitters, helpers and skilled painters based on the job requirement and a minimum of one supervisor for supervising the job.
- b) All the welders deployed for carrying the job shall be qualified welders to AWS D1.1/ ASME Sec. 9. The welder qualification records shall be submitted to BHEL before taking up the job.
- c) Site works supervision & coordination.
- d) Compensation to work men arising in any form like medical treatment, accidents, etc shall be the whole responsibility of successful bidder

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<p align="center">COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>		<p><b>1.11. DELIVERY</b></p> <ul style="list-style-type: none"> <li>▪ The responsibility of the vendor ends only after successful completion of all the specified jobs.</li> <li>▪ Vendor to deploy sufficient manpower having <b>135 days of delivery period</b> per rig in mind for full scope of work.</li> <li>▪ In some projects customer may give limited scope of work which may be of lesser duration for 10-50days approximately. Vendor should agree to take up such small duration jobs also.</li> </ul> <p><b>1.12 GENERAL INFORMATION</b></p> <ul style="list-style-type: none"> <li>▪ The quantities mentioned in this specification are projected based on our estimate. There can be variations based on the requirements from region to region and from site to site. It is the responsibility of the vendor to complete the work as per actual requirements.</li> <li>▪ BHEL service person shall be available at site, to monitor the site works.</li> <li>▪ <b>Payment shall be based on actual quantities after completion of the job and duly certified by BHEL –Services Department.</b></li> <li>▪ Detailed scope of work shall be provided along with the order.</li> </ul>		
Ref. Doc				



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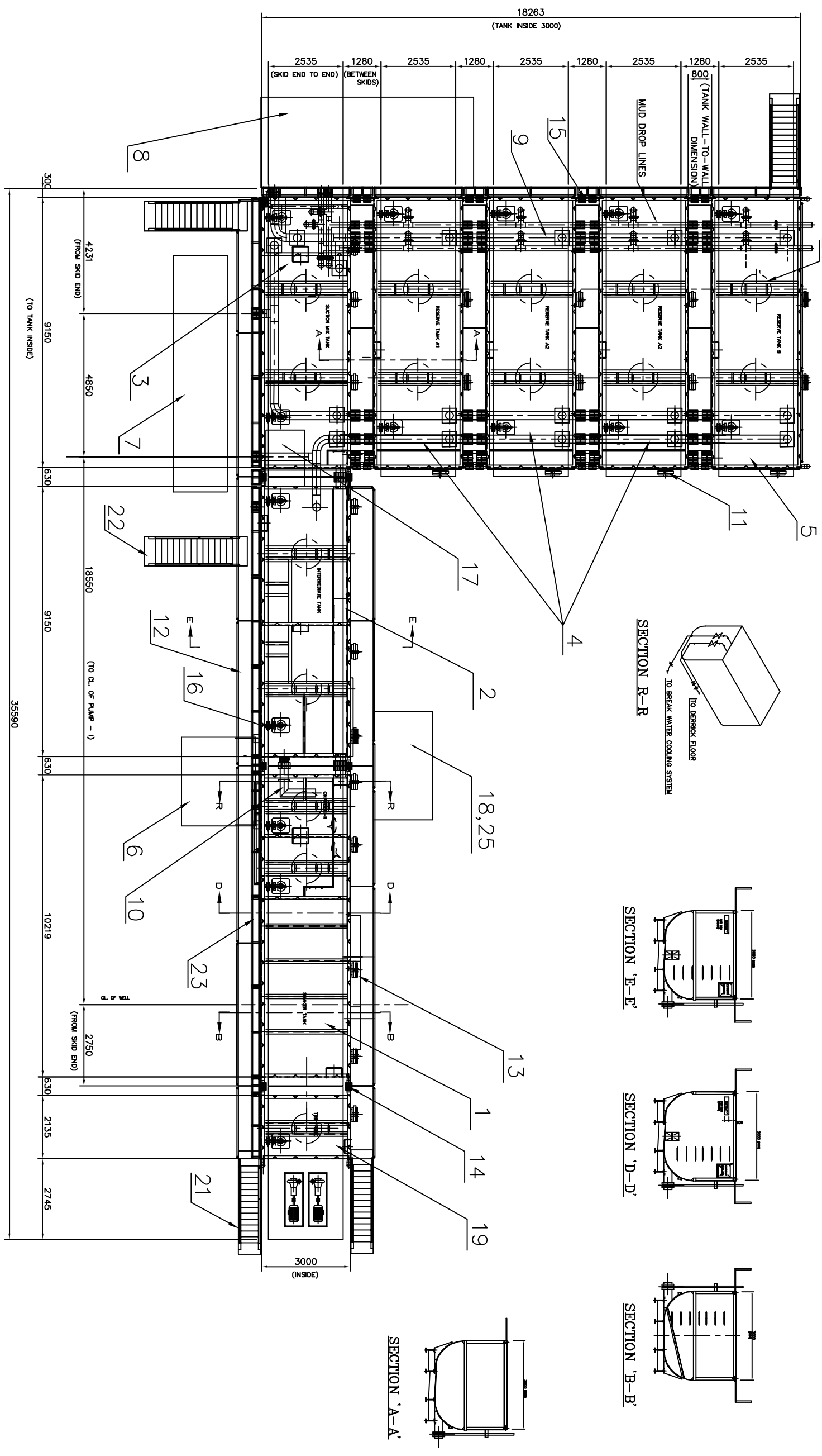
**ANNEXURE I**

**The offer shall contain the following activities as break up**

Sno.	Description of Activities	Quantity
1	Fabrication/repair/assembly of structural components of mast and sub structure.	82000 kg
2	Trial assembly of mast and sub structure.	1740000 kg
3	Assembly and commissioning of mud system.	1080000 kg
4	Assembly and welding of HP Mud line system.	200 joints (5" line )
5	Grit blasting	33000 Sq m
6	primer painting	33000 Sq m
7	finish painting - Single coat	33000 Sq m
8	finish painting - Double coat	33000 Sq m
9	Galvanizing	33000 Sq m
10	Magnetic Particle Inspection	1700 m
11	Dye Penetration Test	700 m

**Notes:**

- 1) The above quantities are for R & U of 10 rigs.
- 2) All the weights, no. of joints, lengths & Areas given are indicative. There can be variation of  $\pm 10\%$  based on the customer order. Hence vendor has to quote as per KG, per joint, per meter and per sq. meter basis.



NOTES:  
 1. TOTAL GRIT BLAST AND PRIMING AREA: 2214 SQ.M  
 2. TOTAL FINAL PAINT AREA: 2354 SQ.M  
 3. \*WEIGHT: 2419KG IS WATER PIPING ON WATER TANKS ONLY.  
 4. WATER PIPING ON "EXTENDED SKID & WATER TANKS" WEIGHT INCLUDED IN  
 5. MUD AGITATOR IN FILL TANK NOT SHOWN FOR CLARITY  
 6. S.L.NOS 24&26 NOT SHOWN

S.L.NO	DESCRIPTION	DRAWING NO	WT(kg)	QTY
26	WATER PIPING ON MUDTANKS	19676233846-00	2419*	1
25	STAND-CABIN FOR CHEMIST	29673433339-01	868	1
24	MUD&WATER TANK NAMES		205	1
23	MUD SYSTEM - ELECTRICS	1-96775-3-3850	827	1
22	STAIRS FOR MUD TANKS	2-96724-3-3385	434	3
21	STAIRS FOR TRIP TANK	2-96724-3-3384	400	2
20	MUD AGITATOR LOCATION	1-96739-3-3845	10862	1
19	TRIP TANK	1-96735-3-3762	6553	1
18	CABIN FOR CHEMIST	0E9753507020	1000	1

S.L.NO	DESCRIPTION	DRAWING NO	WT(kg)	QTY
17	CHEMICAL TREATMENT TANK	1-96733-3-3602	1995	1
16	MUD GUN LOCATION	1-96729-3-3827	1800	1
15	INTER TANK MUD LINES	1-96728-3-3826	504	1
14	INTER TANK WATER LINES	1-96727-3-3825	141	1
13	SHALE SLIDE	2-96726-3-3383	66	3
12	WWS, HRS & PLATFORMS	1-96725-3-3824	18826	1
11	CLEAN OUT GATE LOCATION	1-96723-3-3823	3982	1
10	EQUALIZER LOCATION	1-96722-3-3822	266	1
09	SUCTION VALVE LOCATION	1-96721-3-3821	6282	1
08	HOPPER SKID	0-96719-3-3245	10875	1

S.L.NO	DESCRIPTION	DRAWING NO	WT(kg)	QTY
07	SUPER CHARGER SKID	1-96718-3-3819	8165	1
06	DESANDER/DESILTER & DEGASSER PIPING	1-96717-3-3818	8054	1
05	RESERVE TANK-B	0-96715-3-3244	10556	1
04	RESERVE TANK-A	0-96714-3-3243	10783	3
03	SUCTION TANK	0-96713-3-3242	11511	1
02	INTERMEDIATE TANK	0-96712-3-3241	12252	1
01	SHAKER TANK	0-96711-3-3240	13731	1

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...  
 1. NET TO DIMENSIONS FOR UNPRESSED  
 2. DIMENSIONS FOR SHARP EDGES  
 3. INTERNAL R/OD CORNER RADIUS  
 4. THE SURFACE ROUGHNESS VALUES NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWING ON THE DRAWING SHEETS AT THE TOP MOST RIGHT CORNER OF THE DRC.

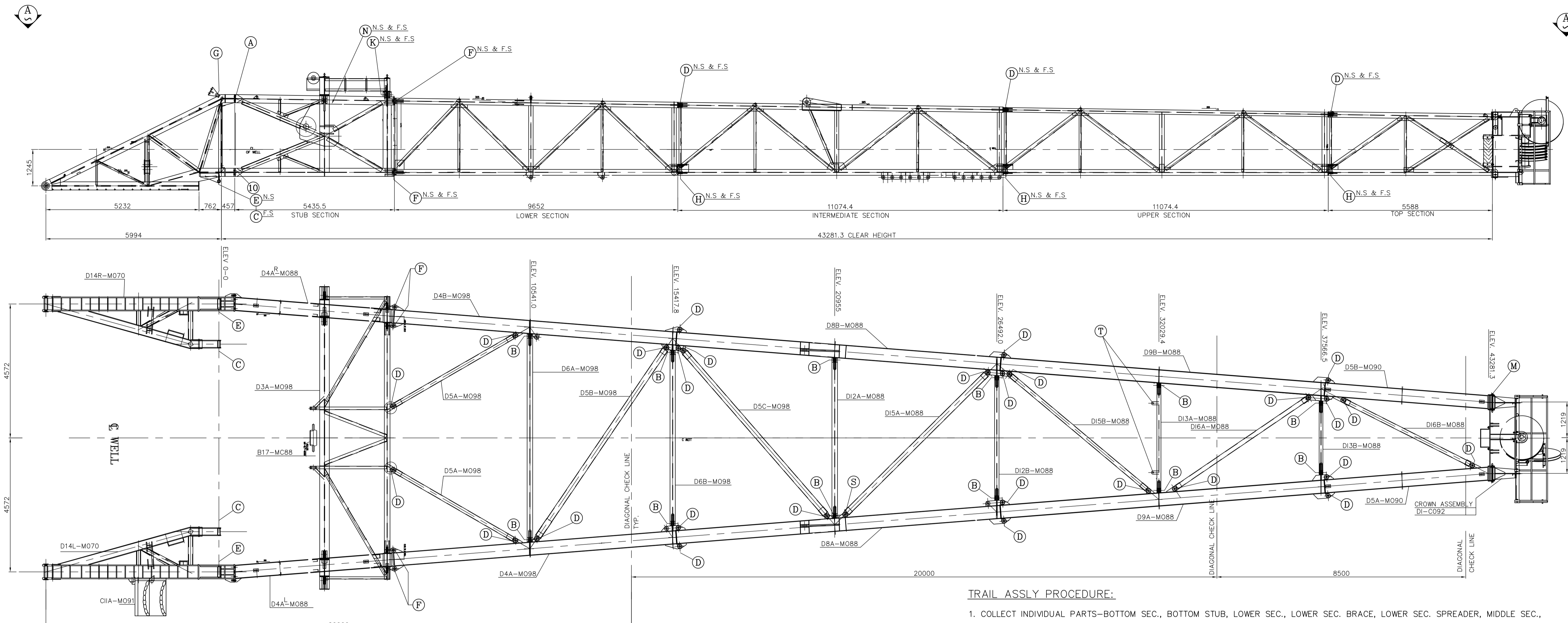
ONGC - AC 2000HP  
 NAME OF CUSTOMER/PROJECT  
 BHARAT HEAVY ELECTRICALS LTD.  
 BHARAT HEAVY ELECTRICALS LTD.  
 HYDERABAD

DRAWING NO. 0-96710-2-3247 00  
 SHEET NO. 01 OF 01

REV.	DATE	BY	CHKD.	DESCRIPTION
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DRILLER'S SIDE

DRAWWORKS SIDE



VIEW A-A

TOTAL PAINT AREA : 1320 SQ.M  
TOTAL MAST Wt : 63754 Kg.

FIELD BOLTS A325 GALV. UNL. NTD.			
A	16	31 x 146 W/ H.N.N & H.W	56

MK NO.	DESCRIPTION	WT.	PAINT AREA IN SQ.M
D4A-M088	STUB SECTION (D.S)	5146	102.9
D4A-M088	STUB SECTION (O.D.S)	5146	102.9
D3A-M098	STUB SECTION SPREADER	4958	99.2
D4A-M098	LOWER SECTION (D.S)	5005	100.1
D4B-M098	LOWER SECTION (O.D.S)	5005	100.1
D8A-M088	INTERMEDIATE SECTION (D.S)	3390	67.80
D8B-M088	INTERMEDIATE SECTION (O.D.S)	3419	68.40
D9A-M088	UPPER SECTION (D.S)	2924	58.55
D9B-M088	UPPER SECTION (O.D.S)	2927	58.55
D6A-M098	GIRT	732	16.0
D6B-M098	do	551	12.10
D12A-M088	do	536	11.80
DI-C092	CROWN FRAME	4812	130
D1-R094	RACKING BOARD ASSLY	2447	11.80
D2-R1103	BELLY BOARD FRAME	1847	130

MK NO.	DESCRIPTION	WT.	PAINT AREA IN SQ.M
D12B-M088	GRIT	445	9.8
D13A-M088	do	316	6.9
D13B-M088	do	226	4.90
D5A-M098	BRACE	181	3.98
D5B-M098	do	347	7.6
D5C-M098	do	339	7.45
D15A-M088	do	321	7.0
D15B-M088	do	229	5.0
D16A-M088	do	194	4.2
D16B-M088	do	186	4.0
C11A-M091	DEADLINE ANCHOR WORK PLAT.	105	2.1
D14-M070	BOTTOM SECTION (D.S)	4533	90.70
D14-M070	BOTTOM SECTION (O.D.S)	4533	90.70
D5A-M090	TOP SECTION (D.S)	1477	29.70
D5B-M090	TOP SECTION (O.D.S)	1477	29.70

MK NO.	QTY.	FIELD DRIVE PINSW/6 SAFETY PINS	WT.
B	24	51 x 127 GRIP	4.08
C	2	51 x 356 GRIP	7.76
D	27	64 x 153 GRIP	7.2
E	2	51 x 508 GRIP	10.2
F	8	64 x 190 GRIP	8.36
G	2	64 X 290 GRIP	10.88
H	12	64 x 345 GRIP	12.27
K	4	76 x 178 GRIP	12.35
M	4	51 x 540 GRIP	10.8
N	4	89 x 197 GRIP	16.7
S	1	64 x 229 GRIP	9.11
T	2	39 x 160 GRIP	2.58

REF. DRGS FOR  
TONG COUNTER WEIGHT ASSLY. - 19652638136  
GOOSE NECK PLATFORM - 29652536216 & 19673138180.  
LADDER ASSEMBLY - 19652218331  
LIGHTING BRACKETS - 19696039239  
BELLY BOARD ASSEMBLY - 19653836687  
RACKING BOARD ASSEMBLY - 19652338145

TRAIL ASSLY PROCEDURE:

- COLLECT INDIVIDUAL PARTS-BOTTOM SEC., BOTTOM STUB, LOWER SEC., LOWER SEC. BRACE, LOWER SEC. SPREADER, MIDDLE SEC., MIDDLE SEC. BRACE, MIDDLE SEC. SPREADER, UPPER SEC. & TOP SECTION.
- ENSURE LEVEL BED FOR THE ENTIRE LENGTH OF MAST.BED HEIGHT MIN 300 MM. LEVEL THE BED WITHIN 6 MM
- MARK LAYOUT ON THE BED WITH DIMENSION AS PER DRG. MARK CENTRELINE OF WELL.
- PLACE THE BOTTOM SECTION DS / ODS ON THE LAYOUT. ENSURE SIDE PANEL VERTICALITY WITHIN 3 MM. ENSURE WATERLEVEL AT MARKED LOCATION.
- PLACE THE STUB SECTION AS PER LAYOUT AND BOLT STUB DS/ODS TO BOTTOM SECTION. CHECK FOR VERTICALITY AND DIAGNOL DISTANCE.
- PLACE STUB SECTION SPREADER WITHOUT DISTURBING THE STUB SECTION AND PIN.
- PLACE LOWER SECTION DS&ODS AND PIN TO STUB SECTION. ENSURE SIDE VERTICALITY AND DIAGNOL DISTANCE. ASSEMBLE GIRTS & BRACES.
- PLACE INTERM. SECTION DS & ODS AND PIN TO LOWER SECTION.ENSURE SIDE VERTICALITY AND DIAGNOL DISTANCE.ASSEMBLE GIRTS & BRACES.
- PLACE UPPER SECTION DS & ODS AND PIN TO INTERMEDIATE SECTION.ENSURE SIDE VERTICALITY AND DIAGNOL DISTANCE.
- PLACE TOP SECTION DS & ODS AND PIN TO LOWER SECTION.ENSURE SIDE VERTICALITY AND DIAGNOL DISTANCE.
- PLACE CROWN ASSEMBLY & BOLT TO TOP SECTION.ENSURE SIDE VERTICALITY.
- AFTER TRAIL ASSEMBLY OF ENTIRE MAST, ENSURE DIAGNOL DISTANCE BETWEEN DIAG. CHECK POINTS AS SHOWN IN DRG. ENSURE DIAGONAL DISTANCE WITH IN ±10mm.
- ASSEMBLE TONG COUNTER WEIGHT.
- ASSEMBLE LADDER, REST PLATFORM AND WELD MOUNTING CLEATS TO MAST.
- ASSEMBLE GOOSE NECK PLATFORM AS PER DRG.
- ASSEMBLE BULL LINE HANGING LUGS.
- ASSEMBLE BELLY BOARD AND BRACE.
- ASSEMBLE RACKING BOARD AND BRACE.
- WELD LIGHTING BRACKETS.
- DISMANTLE AFTER CLEARANCE BY QC AND WELD ALL LUGS.
- INSPECTION OF ALL LUGS BY MPI AS PER MPI HY0850180.
- BLAST CLEAR ALL SECTIONS TO SA 2 1/2 AND SPRAY GALVANISE TO 80 MICRONS.
- PAIN 1 COAT OF 1R22 +2V5 WHITE EPOXY FOR MAST SECTION AND GOLDEN YELLOW FOR CROWN BLOCK.
- ENSURE WATERLEVEL OF MARKED WELL CENTER OF EACH SECTION AFTER EACH ASSEMBLY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT  
BHARAT HEAVY ELECTRICALS LTD HYDERABAD

REV.	DATE	ALTERED	CHK/APPD	REV.	DATE	ALTERED	CHK/APPD	REV.	DATE	ALTERED	CHK/APPD	REV.	DATE	ALTERED	CHK/APPD	REV.	DATE	ALTERED	CHK/APPD	
03	20.9.12	CHD/APPD		02	9.2.11	CHD/APPD		01	10.05.08	CHD/APPD										

DEPT. CODE: 415 UNTO. DMS. OR: 415/415 SCALE: 1:50

TITLE MAST TRIAL ASSLY 142-0 CANTILEVER MAST 1,000K HOOK

DRAWING NO. 1-96510-38162 03

NO. OF SHEETS: 01

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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

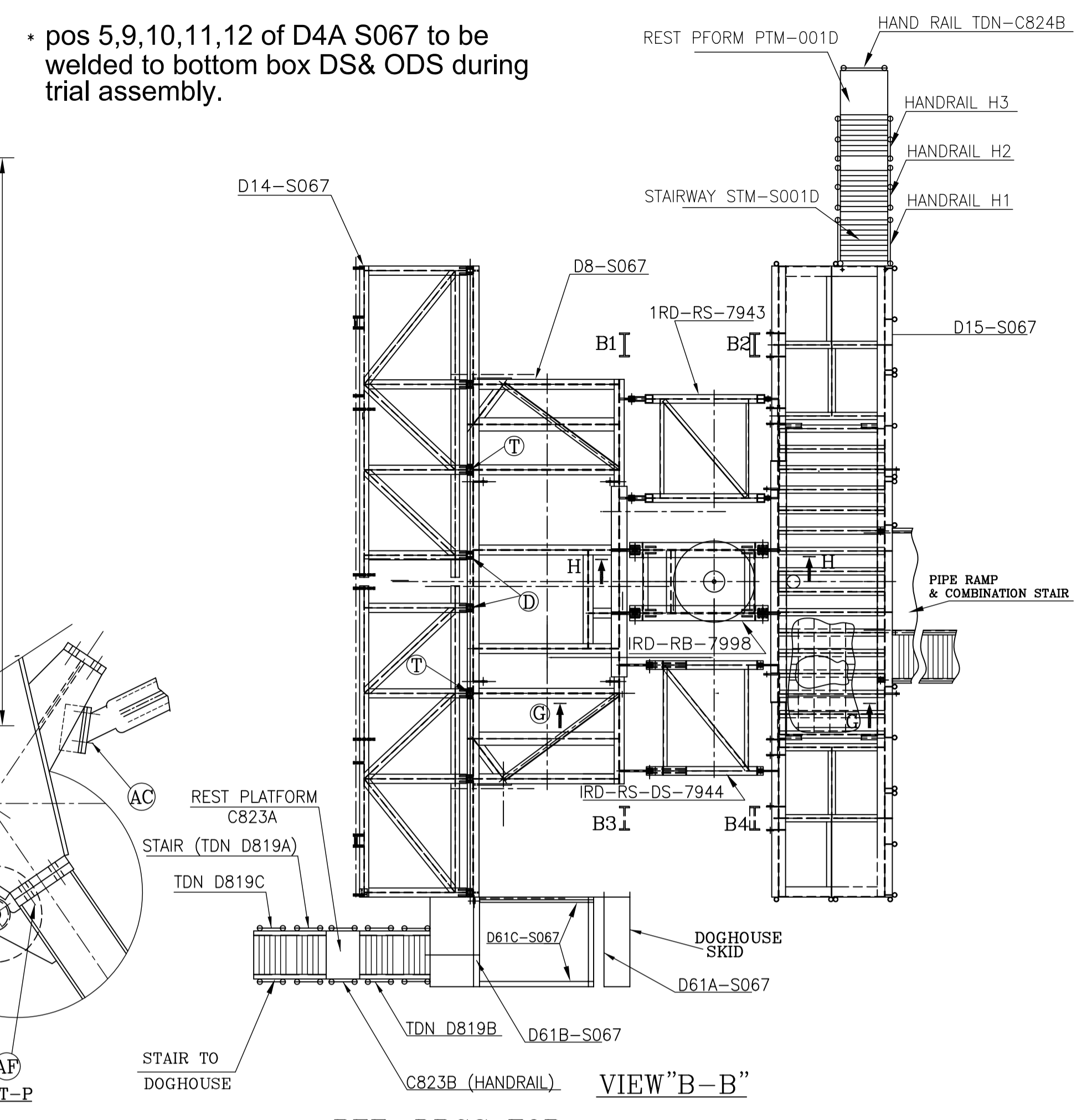
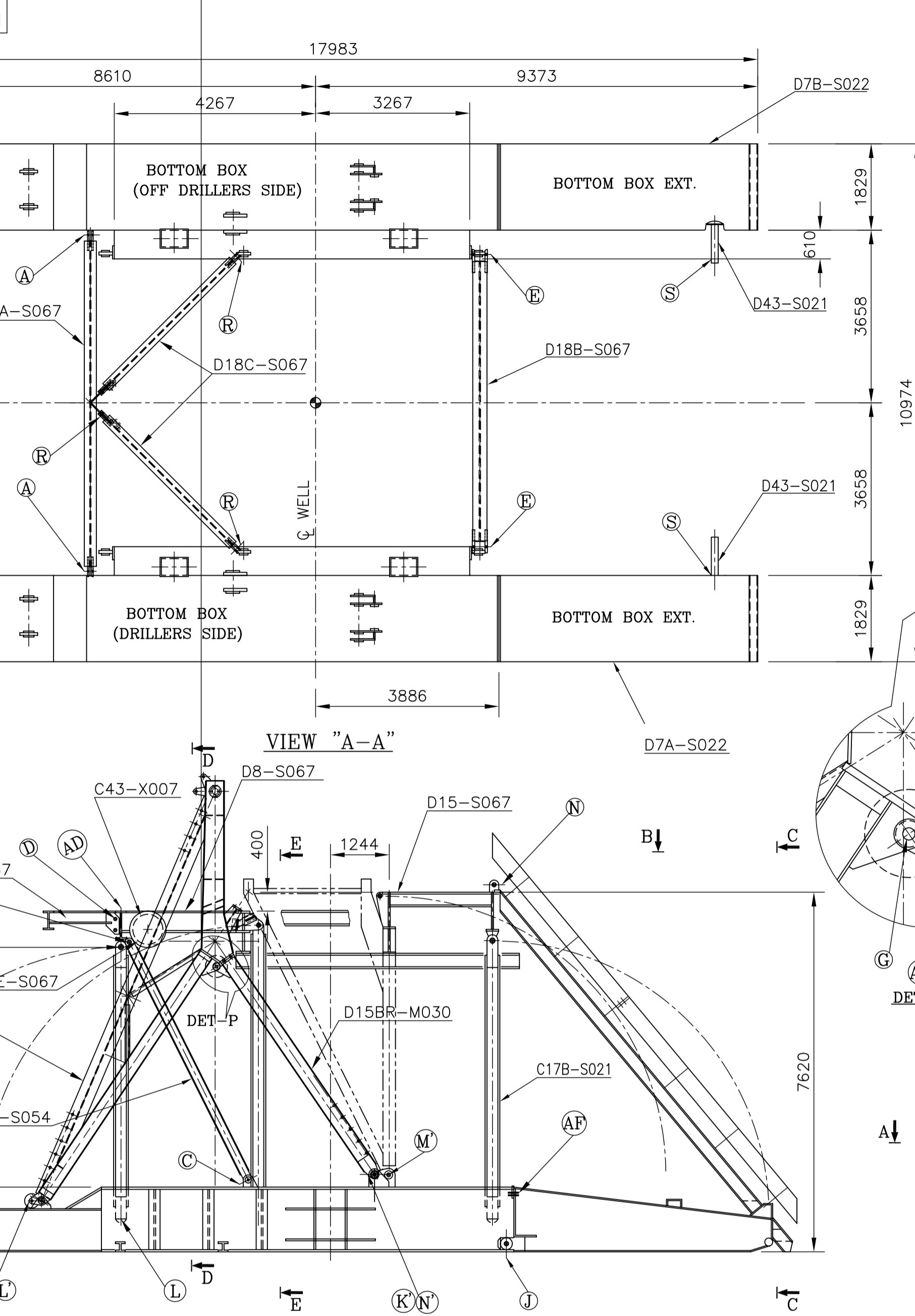
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COMPUTER FILE NAME :

INVENTORY NO. SIGN. AND DATE REF. DRG. NO.

14-02-2011 14:15:12



**BOLT SCHEDULE**

AA	4	M12 X 60 LG.
AB	4	M16 X 83 LG.
AC	8	M24 X 50 LG.
AD	2	M20 X 210 LG.
AE	20	M24 X 102 LG.
AF	16	M24 X 120 LG.

- TRIAL ASSEMBLY PROCEDURE FOR SUBSTRUCTURE:**
- 1) Collect Individual parts - bottom boxes, bottom box extension, bottom box spreader, drawworks support columns (front and rear), drawworks support columns spreaders, drawworks support brace, front set back leg, drawworks support extension, setback spreader, rotary beam, rotary spreaders, ird spreader, A-frame, bottom section & BOP beam
  - 2) Mark layout on level bed
  - 3) Assemble Hydraulic snubbing system to A-frame before trial assembly.
  - 4) Assemble individual parts as per layout on ground. Drive all pins
  - 5) Check individual water levels and A-frame verticality
  - 6) Raise both front & Rear floors to vertical using long boom cranes
  - 7) Match well center line, check the diagonals at bottom section jacking pads, check of bottom section verticality, substructure floor level with in  $\pm 6$ mm.
  - 8) check diagonals of bottom section leg i.e., B1 to B4 and B2 to B3 as shown and from well center to B1, w/c to B2, w/c to B3, w/c to B4 respectively.
  - 9) Lower and carry out full welding. This shall be done with due precaution to avoid distortion due to welding.
  - 10) Dismantle and blast clean and paint as specified.
  - 11) Get inspected at every stage after dismantling.
  - 12) check water level at top of the bottom section legs.
  - 13) Ensure seating of setback spreader rear beam on bottom section bearing leg.
  - 14) Assemble the IRD skid & ensure water level and other related dimensions at the top of the skid. Tack weld positioning plates and locking plate to SS & IRD skid.
  - 15) Weld twin pipe clamps to A-frame (for hyd.snubbing system) and assemble the SS tubes. Assemble the hoses to cylinder from SS tubes. Hose between power pack and SS tube to be assembled at site.
  - 16) Weld T-beams and HP line clamps to bottom box as per the assembly drg.
  - 17) Weld lighting brackets to SS as per drg.
  - 18) Assemble floorings and match handrails as per drg.
  - 19) Weld Air winch base to Setback, Assemble Air winch header to Setback Spreader.

pos 5,9,10,11,12 of D4A S067 to be welded to bottom box DS& ODS during trial assembly.

**MAST PINS**

N'	2	115x254 GRIP- 432 LG.
M'	2	115x660 GRIP- 838 LG.
L'	2	76x305 GRIP- 463 LG.
K'	2	76x203 GRIP- 355 LG.
A'	2	51x229 GRIP- 381 LG.

TOTAL WT = 109473 KG.  
PAINT AREA= 1901 SQM

MARK	REQ	DESCRIPTION	TOTAL. WT
D15BL-M030	1	FRONT A-FRAME (O.D.S)	1553.4
D15AL-M030	1	REAR A-FRAME (O.D.S)	6943.85
D15BR-M030	1	FRONT A-FRAME (D.S)	1553.4
D15AR-M030	1	REAR A-FRAME (D.S)	6943.85
C17B-S021	2	FRONT SET BACK LEGS	654
D43-S021	2	SUPPORT ARM	29
D7A-S022	1	BOTTOM BOX EXTENSION	4769.83
D7B-S022	1	BOTTOM BOX EXTENSION	4822
D10-S054	2	FRONT DWKS SUPPORT COLUMN	1165
D11A-S054	2	DWKS SUPPORT REAR COLUMN	1257.5
D11B-S054	2	COLUMN SPREADERS	137.5
C12-S054	2	DWKS SUPPORT BRACE	315.5
D40-S054	2	BOP TROLLEY BEAM	447.78
D4A-S067	1	BOTTOM BOX(D.S)	13754.85
D4B-S067	1	BOTTOM BOX(O.D.S)	15454.16
D8-S067	1	DWKS SUPPORT	7655
D14-S067	2	DWKS SUPPORT EXTENSION	1547.6
D15-S067	1	SET BACK SPEADER	12500.2
IRD-RB-7998	1	ROTARY BEAM UNIT	1885.2
D18A-S067	1	REAR SPEADER BEAM	547
D18B-S067	1	FRONT SPEADER BEAM	514
D18C-S067	2	SPEADER BRACE	153
IRD-RS-DS-7944	1	ROTARY FLOOR SPREADER (D.S)	466
IRD-RS-7943	1	ROTARY SPREADER (O.D.S)	581
D46A-S067	1	DWKS REAR SUPPORT (D.S)	482.7
D46B-S067	1	DWKS REAR SUPPORT (O.D.S)	482.7
D61A-S067	1	FRONT DOGHOUSE SUPPORT	778
D61B-S067	1	REAR DOGHOUSE SUPPORT	782
D61C-S067	2	DOGHOUSE SUPPORT GIRT	215.4
	1	PIPE RAMP & STAIR COMBINATION	4083.058
C823A	1	REST PLATFORM	533.2
TDN-D819C	4	HANDRAIL	45.56
TDN-D819B	4	HANDRAIL	42.2
TDN-D819A	2	STAIR	460.8
C823B	2	HANDRAIL	21.25
TDN-C824B	1	HANDRAIL	31.4
STM-S001D	1	STAIR	1108
PTM-001D	1	REST PLATFORM	321
H3	2	HANDRAIL	54
H2	2	HANDRAIL	53.5
H1	2	HANDRAIL	39

**PIN SCHEDULE C/W SAFETY CLIPS**

A	18	51x X127 GRIP-279 L.G
B	2	51x X386 GRIP-493 L.G
C	2	51 x356 GRIP-495 L.G
D	16	51 x178 GRIP-317 L.G
E	4	51 x203 GRIP-342 L.G
G	6	64x178 GRIP-317 L.G
H	2	64x406 GRIP-545 L.G
J	12	89x229 GRIP-394 L.G
K	2	89x280 GRIP-445 L.G
L	6	89x432 GRIP-597 L.G
M	8	39x102 GRIP-217 L.G
N	4	39x127 GRIP-229 L.G
P	2	39x229 GRIP-343 L.G
Q	2	39x279 GRIP-394 L.G
R	4	DN39x127 GRIP-254 L.G
S	2	26 x254G GRIP-345 L.G
T	4	51x254G GRIP-393 L.G

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE SPECIFIED:

1. REF. TO HY0230261 FOR TOLERANCES.
2. CHAMFER M/CD SHARP E...
3. INTERNAL M/CD CORNER RADI...
4. THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: E 760/E 1400 (BB)

DRN. SSK, CHD. RAJ, APPD. VSRK

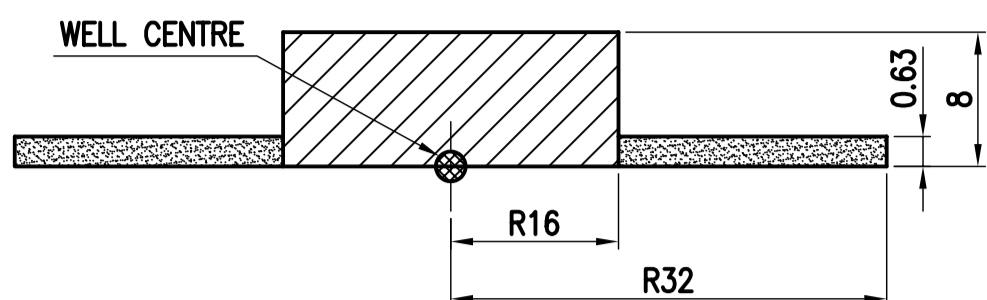
DEPT. OFE, CODE 4430, SCALE NTS, WEIGHT (KG) D1 S 067

TITLE: SUBSTRUCTURE ASSLY

DRAWING NO. 1-96550-3-6429, REV. 04

SHEET NO. 01, NO OF SHEETS 01

**CLASSIFICATION OF HAZARDOUS AREAS FOR ELECT. INSTALLATIONS (AS PER IS:5572 PART-1)**

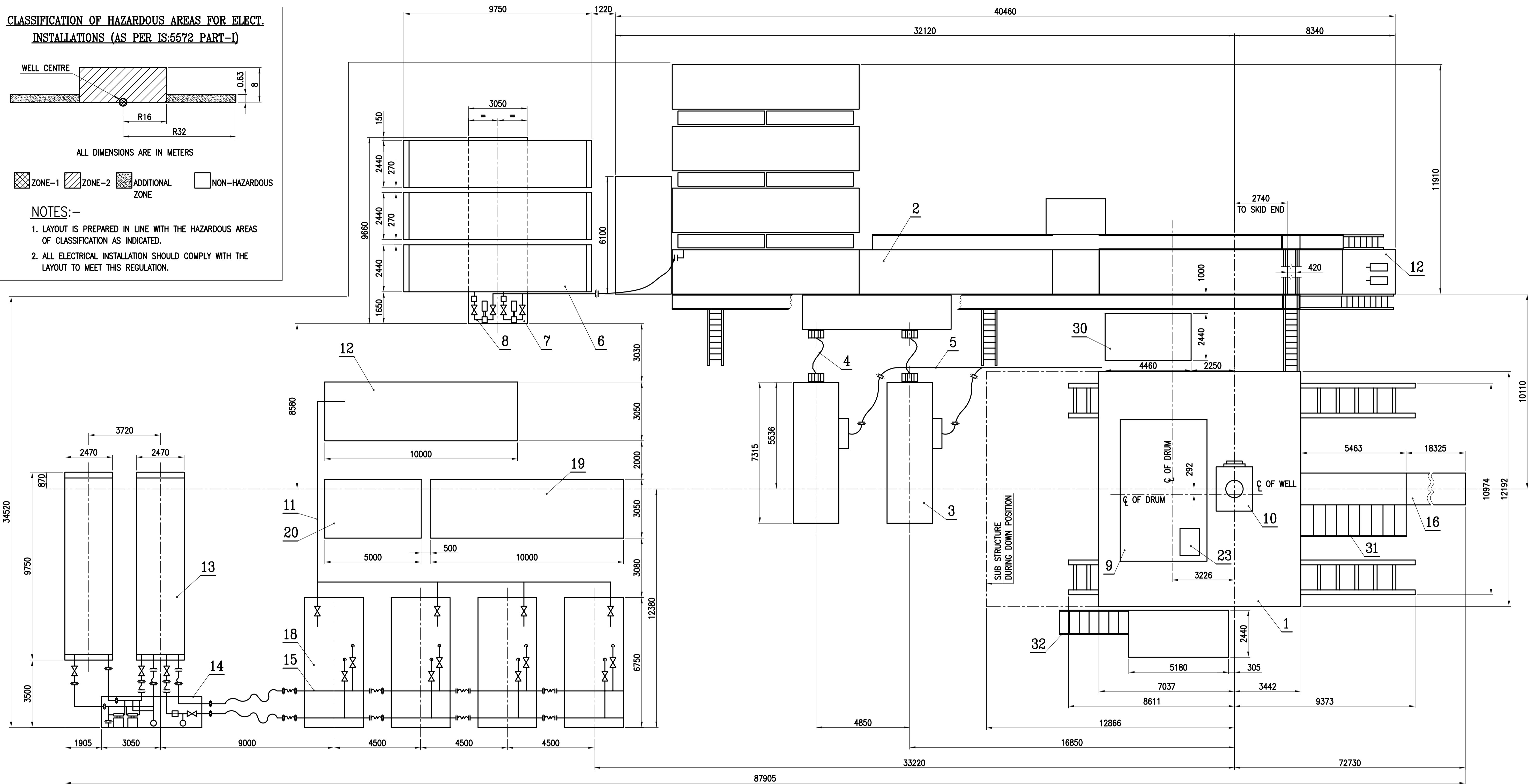


ALL DIMENSIONS ARE IN METERS

ZONE-1
  ZONE-2
  ADDITIONAL ZONE
  NON-HAZARDOUS ZONE

**NOTES:-**

- LAYOUT IS PREPARED IN LINE WITH THE HAZARDOUS AREAS OF CLASSIFICATION AS INDICATED.
- ALL ELECTRICAL INSTALLATION SHOULD COMPLY WITH THE LAYOUT TO MEET THIS REGULATION.



**NOTES:-**

- REF. MUD SYSTEM LAYOUT DRG. 0-96710-3-3093
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.

32	STAIR TO GROUND	1	-	22	VENTILATION DUCTING	1	SET	NOT SHOWN	11	COMPRESSED AIR PIPE LINE	1	-			
31	PIPE RAMP & STAIR	1	-	21	CABLES, CABLE TRAY'S ETC.	1	SET	NOT SHOWN	10	A27 1/2" ROTARY	1	-			
30	BREAK WATER COOLING SYSTEM	1	-	20	A/C SKID	1	-	-	9	E-1400 DRAW WORKS	1	-			
29	AIR DRYING UNIT	1	INCLUDED IN ITEM No.12	19	POWER CONTROL ROOM	1	-	-	8	WATER PIPE LINE	1	PARTLY SHOWN			
28	TRIP TANK	1	-	18	A/C POWER PACK	4	-	-	7	MAIN SKID WATER TANKS	1	-			
27	RIG ACCESSORIES	1	NOT SHOWN	17	DOG HOUSE	1	-	-	6	WATER TANKS	3	-			
26	RIG INSTRUMENTATION	1	SET	16	60' CAT WALK IN TWO PIECES	1	SET	-	5	HIGH PRESSURE MUD LINE	1	-			
25	RIG LIGHTING	1	NOT SHOWN	15	DESEL PIPE LINE TO ENGINES	1	-	-	4	SUCTION LINE	2	-			
24	VESTIBLE	1	NOT SHOWN	14	DIESEL PUMP SKID WITH PIPING	1	-	-	3	MUD PUMPS	2	-			
23	DRILLER CONSOLE	1	-	13	DIESEL TANKS	2	-	-	2	6 TANKS MUD SYSTEM	1	-			
SL No.	DESCRIPTION	QTY.	REMARKS	12	UTILITY HOUSE FOR COMPRESSORS.	1	-	-	1	MAST AND SUB STRUCTURE	1	-			
SL No.	DESCRIPTION	QTY.	REMARKS	SL No.	DESCRIPTION	QTY.	REMARKS	SL No.	DESCRIPTION	QTY.	REMARKS	SL No.	DESCRIPTION	QTY.	REMARKS

**THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED**

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADI 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

ITEM NO.		DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
						MATERIAL SPECN.	QUANTITY	
		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		E-1400 ONGC				
		NAME		DATE	NO. OF VAR.			
		DRN. POORNIMA		27.11.03	-			
		CHD. S.V.R.		27.11.03	-			
		APPD. C.S.R.M		27.11.03	-			
DEPT. OFE-ENGG.		SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS		
CODE 4430		1:100	544837	-NA-	-NA-	-		
TITLE		DRAWING NO.		REV.				
RIG LAYOUT		1-96950-3-3409		04				
SHEET NO. 01		NO OF SHEETS 01						

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COMPUTER FILE NAME :

INVENTORY NO. 1-65-7479