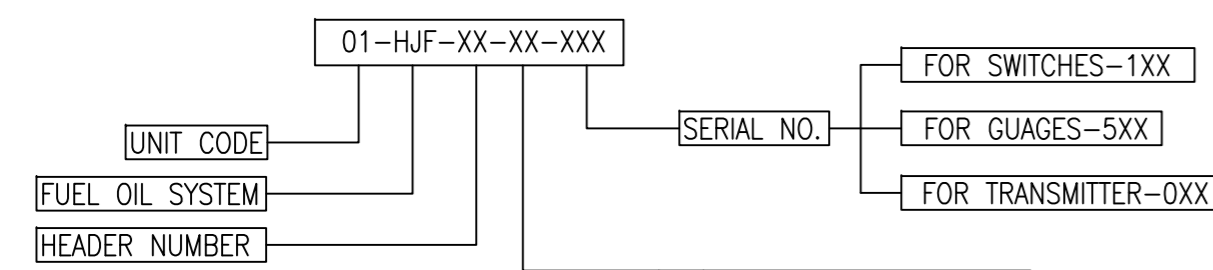


TAG NUMBERING SYSTEM



AA	VALVE
AP	PUMP
BB	STORAGE TANK
DT	DRAIN OIL TANK
ST	DUPLEX STRAINER
CL	LEVEL INSTRUMENT
CP	PRESSURE INSTRUMENT
CT	TEMP. INSTRUMENT
BS	FLAME ARRESTOR

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS
2. VENTS AND DRAINS SHALL BE PROVIDED AT THE HIGHEST AND LOWEST POINTS RESPECTIVELY.
3. THE PIPE SIZING SHALL BE DONE DURING DETAIL ENGINEERING.
4. ALL INSTRUMENTS ISOLATION VALVES SHALL BE GLOBE VALVE.
5. TANK DRAIN VALVES ARE IN NORMALLY CLOSE CONDITION.
6. LDO TRANSFER PUMPS SHALL BE LOCATED INSIDE TRANSFER P/H
7. FOR DRAIN OIL LINES, REFER P & ID NO. PE-DG-408-166-A102.
8. FOR LEGENDS REFER FLOW DIAGRAM FOR HFO TRANSFER AND STORAGE SYSTEM (PE-DG-408-166-102).
9. INDICATED INSTRUMENT AND LINE SIZES ARE THE MINIMUM REQUIREMENT. THE PIPE SIZING SHALL BE DONE DURING DETAIL ENGINEERING BASED ON PIPE SIZING CRITERIA.

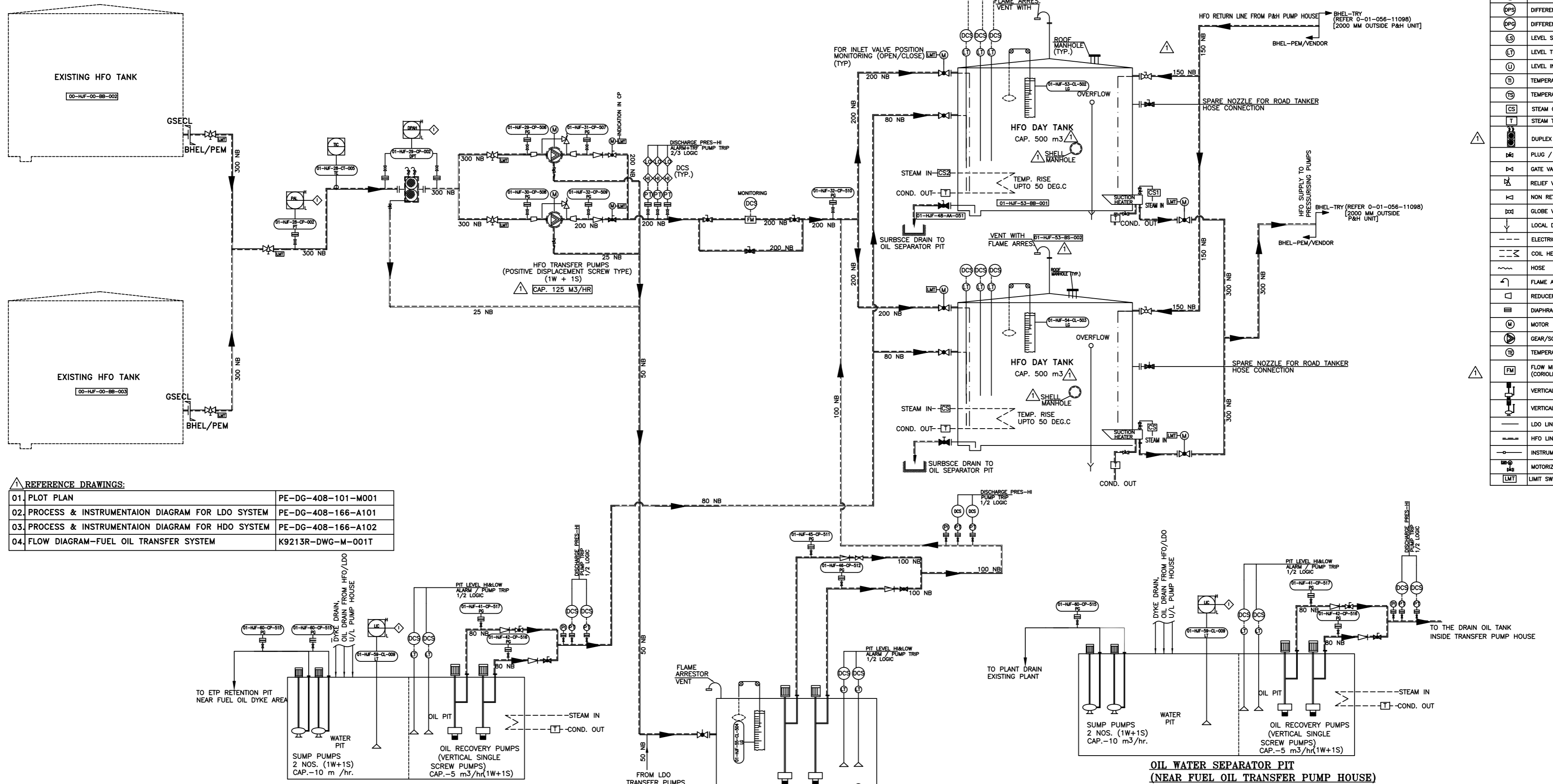
JOB NO.	408			
STATUS	CONTRACT			
DISTRIBUTION				
TO				
No.OFF				
REV	DATE	ALTD	CHD	APPD
01	20.04.15	SRD	HK	SKB

	GUJARAT STATE ELECTRICITY CORPORATION LIMITED VADDARA, GUJARAT 1x800 MW Wanakbori Thermal Power Station Extn. Unit-8				
	DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA MUMBAI CHENNAI NEW DELHI				
	BHARAT HEAVY ELECTRICALS LTD POWER GROUP PROJECTS ENGINEERING MANAGEMENT NEW DELHI	DEPT CODE	M		
		NAME	DRN	SKY	---
		SIGN	---	sd/---	23/02/15
		DATE	---	sd/---	23/02/15
TITLE PROCESS & INSTRUMENTAION DIAGRAM FOR LDO SYSTEM		DEPT. SCALE SIGN		DRAWING NO. PE-DG-408-166-A101	
		SHEET 1 OF 1		REV	

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
 COPY RIGHT AND CONFIDENTIAL. ANY REPRODUCTION OR DISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED.

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

LEGEND	
SYMBOL	DESCRIPTION
	PRESSURE INDICATOR/PRESSURE GAUGE
	PRESSURE SWITCH
	DIFFERENTIAL PRESSURE SWITCH
	DIFFERENTIAL PRESSURE GAUGE
	LEVEL SWITCH
	LEVEL TRANSMITTER (RADAR TYPE)
	LEVEL INDICATOR
	TEMPERATURE INDICATOR
	TEMPERATURE SWITCH
	STEAM CONTROL VALVE
	STEAM TRAP
	DUPLEX STRAINER
	PLUG / BALL VALVE
	GATE VALVE
	RELIEF VALVE
	NON RETURN VALVE
	GLOBE VALVE
	LOCAL DRAIN
	ELECTRIC TRACED HFO PIPE
	HOSE
	COIL HEATER
	FLAME ARRESTOR VENT
	REDUCER
	DIAPHRAGM SEAL
	MOTOR
	GEAR/SCREW PUMP
	TEMPERATURE ELEMENT
	FLOW METER (CORIOLIS TYPE FOR HFO & LDO PUMPS)
	VERTICAL SINGLE SCREW PUMP WITH STRAINER
	VERTICAL CENTRIFUGAL PUMP WITH STRAINER
	LDO LINE
	HFO LINE WITH TRACING AND INSULATION
	INSTRUMENT AIR LINE
	MOTORIZED VALVE WITH LIMIT SWITCH
	LIMIT SWITCH- OPEN-CLOSE INDICATION TO CP



REFERENCE DRAWINGS:

01. PLOT PLAN	PE-DG-408-101-M001
02. PROCESS & INSTRUMENTAION DIAGRAM FOR LDO SYSTEM	PE-DG-408-166-A101
03. PROCESS & INSTRUMENTAION DIAGRAM FOR HDO SYSTEM	PE-DG-408-166-A102
04. FLOW DIAGRAM-FUEL OIL TRANSFER SYSTEM	K9213R-DWG-M-001T

OIL WATER SEPARATOR PIT (NEAR FUEL DAY OIL DYKE AREA)

(LOC:FUEL OIL TRANSFER PUMP HOUSE)

OIL WATER SEPARATOR PIT (NEAR FUEL OIL TRANSFER PUMP HOUSE)

SUMP IN HFO/LDO TRANSFERRING PUMP HOUSE

3 PIPE SIZES INCLUDED IN THE DRAWING.

- NOTES:**
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS.
 - VENTS AND DRAINS SHALL BE PROVIDED AT THE HIGHEST AND LOWEST POINTS RESPECTIVELY.
 - THE PIPE SIZING SHALL BE DONE DURING DETAIL ENGINEERING BASED ON PIPE SIZING CRITERIA.
 - ALL INSTRUMENTS ISOLATION VALVES SHALL BE GLOBE VALVE.
 - COMPLETE ELECTRICAL TRACING [CONSTANT VOLTAGE] TYPE SHALL BE PROVIDED FOR HFO PIPES AND STEAM TRACING SHALL BE PROVIDED FOR PUMPS, STRAINERS.
 - TANK DRAIN VALVES ARE IN NORMALLY CLOSE CONDITION.
 - FOR STEAM & CONDENSATE LINES, REFER P & ID NO. PE-DG-408-166-A103.
 - FOR LDO LINES, REFER P & ID NO. PE-DG-408-166-A101.
 - HFO TRANSFER PUMPS SHALL BE LOCATED INSIDE TRANSFER P/H
 - INDICATED INSTRUMENT AND LINE SIZES ARE THE MINIMUM REQUIREMENT. THE PIPE SIZING SHALL BE DONE DURING DETAIL ENGINEERING BASED ON PIPE SIZING CRITERIA.

JOB NO. 408				
STATUS CONTRACT				
DISTRIBUTION				
TO				
No.OFF				
REV	DATE	ALTD	CHD	APPD
01	20.04.15	SRD	HK	SKB

GUJARAT STATE ELECTRICITY CORPORATION LIMITED
VADODARA, GUJARAT
1x800 MW Wanakbori Thermal Power Station Extn. Unit-8

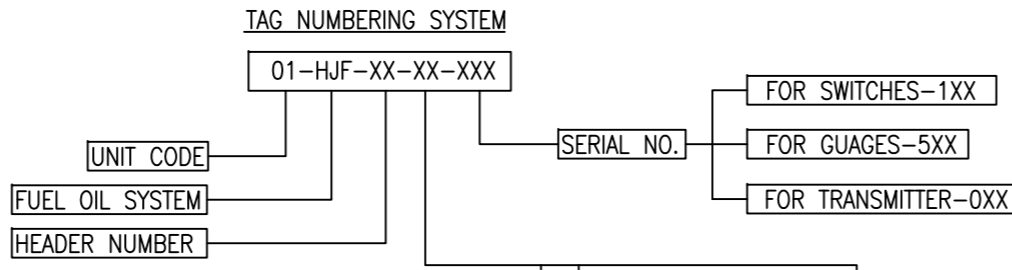
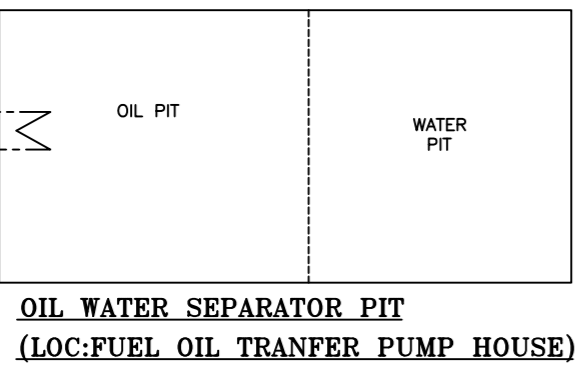
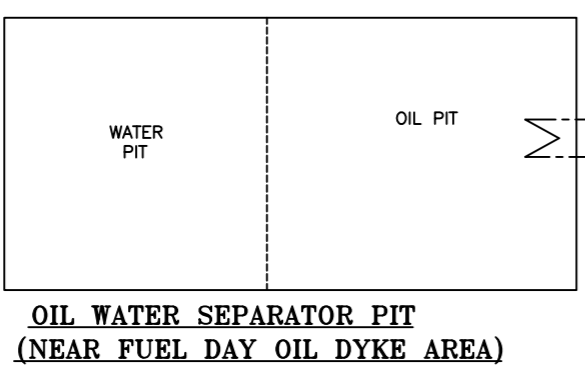
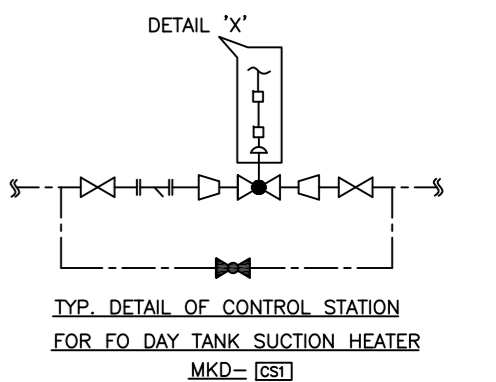
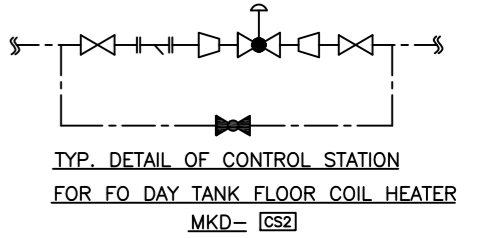
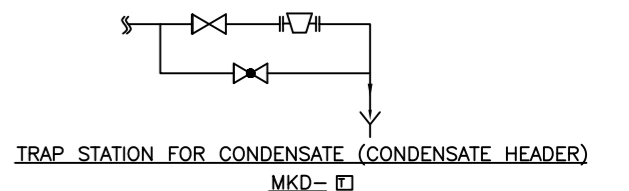
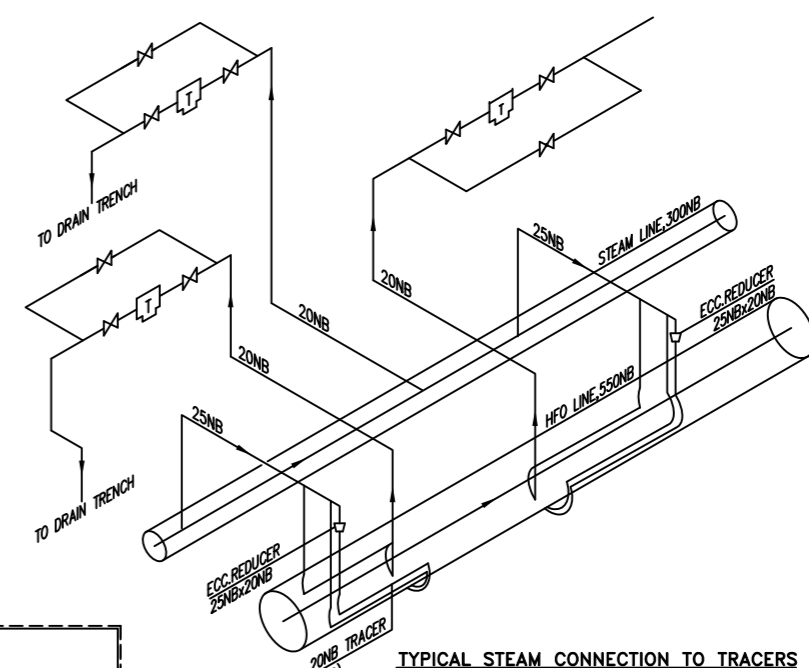
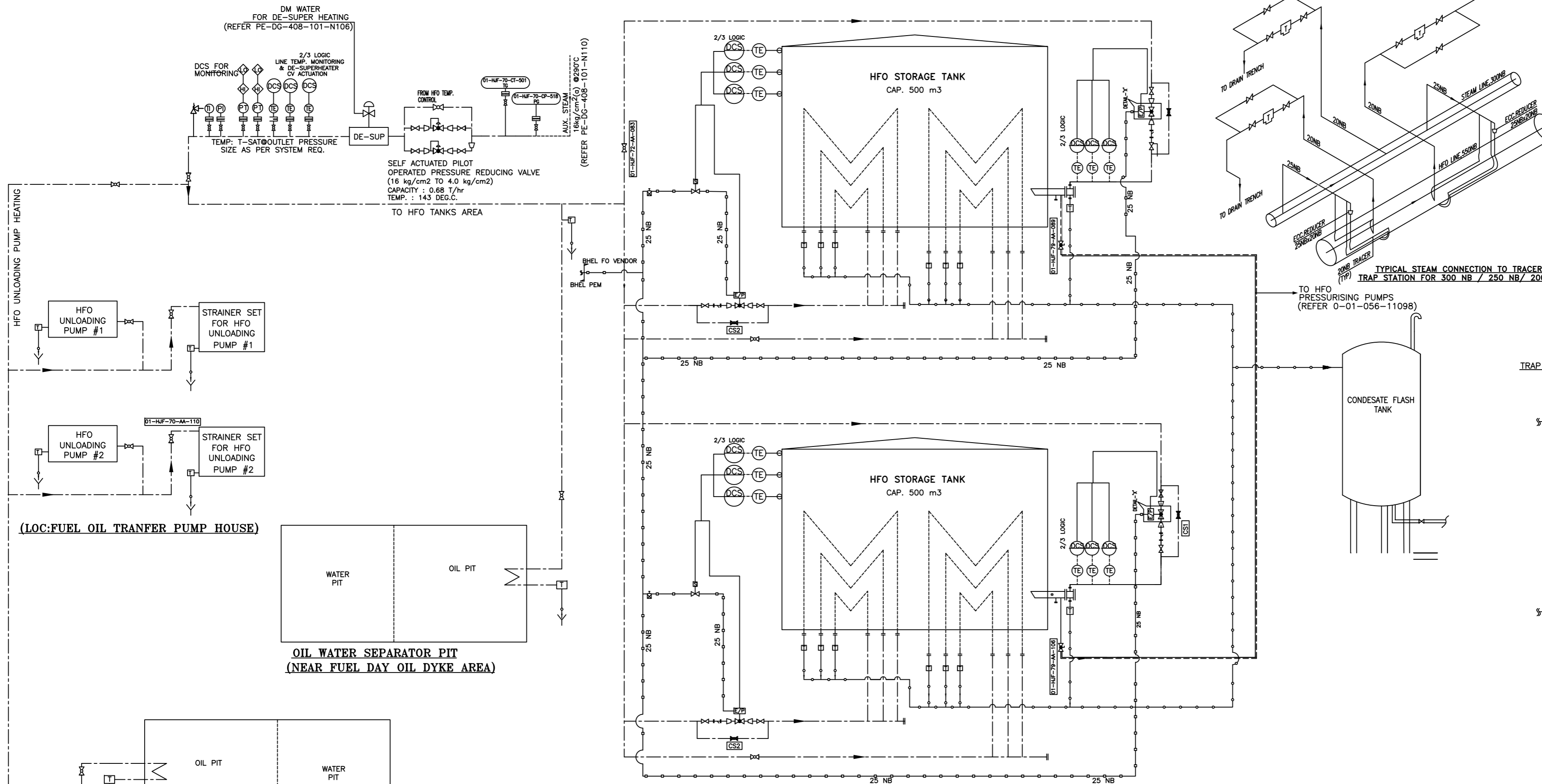
DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA MUMBAI CHENNAI NEW DELHI

<p>BHARAT HEAVY ELECTRICALS LTD POWER GROUP PROJECTS ENGINEERING MANAGEMENT NEW DELHI</p>	DEPT CODE	NAME	SIGN	DATE
	M	DRN	SKY	---sd/--- 23/02/15
		DESN	SR	---sd/--- 23/02/15
		CHD	HK	---sd/--- 23/02/15
	APPD	SKB	---sd/--- 23/02/15	

PROCESS & INSTRUMENTAION DIAGRAM FOR HFO SYSTEM

DEPT.	SCALE	DRAWING NO.
SIGN		PE-DG-408-166-A102
DATE		SHEET 1 OF 1 REV

LEGEND	
SYMBOL	DESCRIPTION
[Symbol]	LIFT CHECK VALVE
[Symbol]	SOLENOID VALVE
[Symbol]	AIR FILTER REGULATOR
[Symbol]	CONTROL VALVE
[Symbol]	TRAP WITH INBUILT STRAINER
[Symbol]	CONDENSATE LINE
[Symbol]	STEAM LINE



AA	VALVE
AP	PUMP
BB	STORAGE TANK
DT	DRAIN OIL TANK
ST	DUPLEX STRAINER
CL	LEVEL INSTRUMENT
CP	PRESSURE INSTRUMENT
CT	TEMP. INSTRUMENT
BS	FLAME ARRESTOR

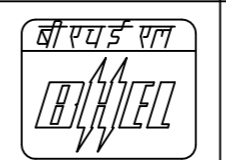
JOB NO.	408			
STATUS	CONTRACT			
DISTRIBUTION				
TO				
No.DFF				
REV	DATE	ALTD	CHD	APPD
01	20.04.15	SRD	HK	SKB



GUJARAT STATE ELECTRICITY CORPORATION LIMITED
VADODARA, GUJARAT
1x800 MW Wanakbori Thermal Power Station Extn. Unit-8



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA MUMBAI CHENNAI NEW DELHI



BHARAT HEAVY ELECTRICALS LTD
POWER GROUP
PROJECTS ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE	NAME	SIGN	DATE
DRN	SKY	---sd/---	23/02/15
DESN	SR	---sd/---	23/02/15
CHD	HK	---sd/---	23/02/15
APPD	SKB	---sd/---	23/02/15

FLOW DIAGRAM FOR STEAM AND CONDENSATE SYSTEM

DEPT.	SCALE	DRAWING NO.
SIGN	[Symbol]	PE-DG-408-166-A103
DATE	[Symbol]	SHEET 1 OF 1
		REV

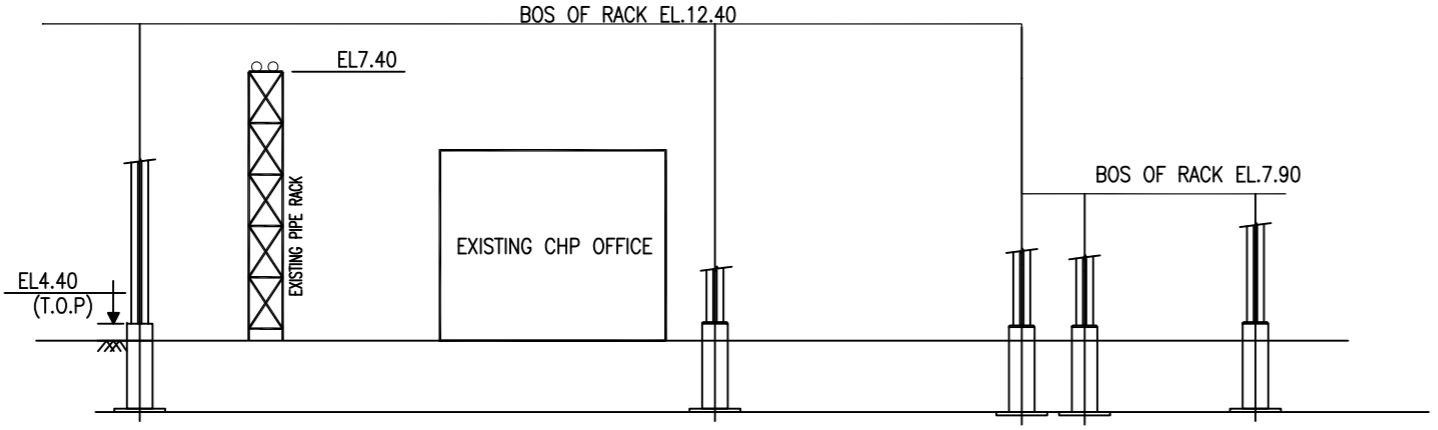
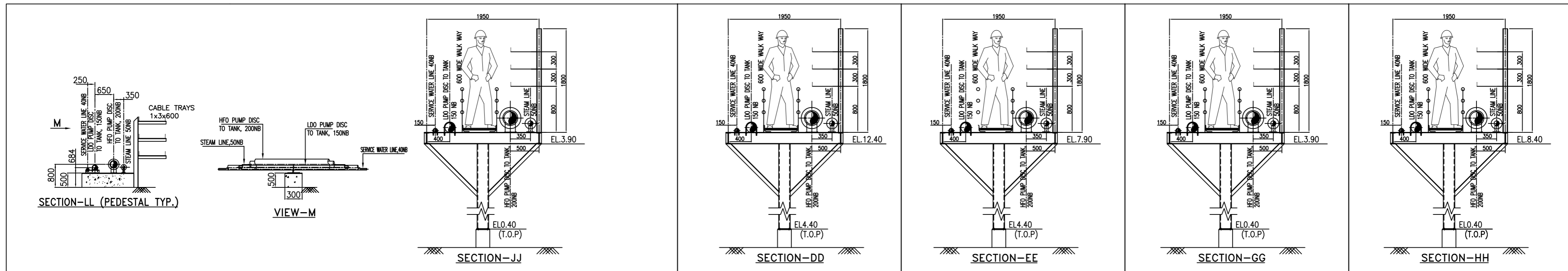
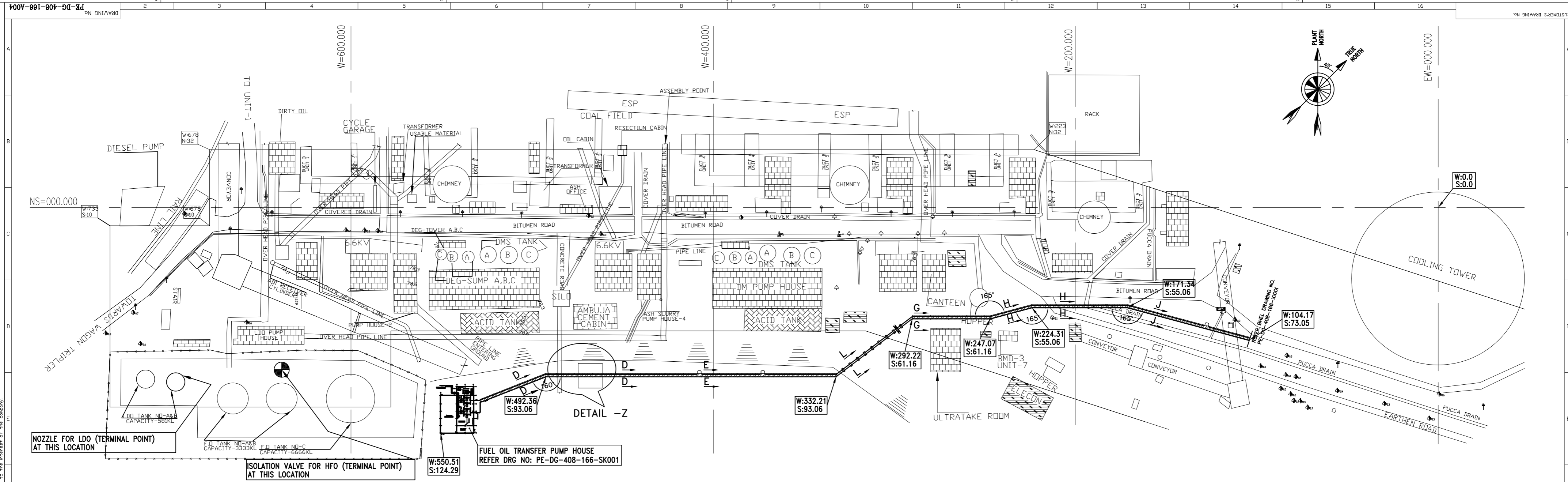
- NOTES:
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS & P & ID NO. PE-DG-408-166-A102.
 - ALL STEAM CONDENSATE LINES SHALL BE INSULATED.
 - FOR STEAM LINES AND TRACER LINES TRAPS SHALL BE PROVIDED AT EVERY 35 TO 40 METRES.
 - NO. OF SECTIONS OF FLOOR COIL HEATER SHOWN IN THE FLOW DIAGRAM IS TENTATIVE. SAME SHALL BE FINALIZED BY FO SYSTEM VENDOR.
 - LEGENDS NOT COVERED IN THIS DRAWING SHALL BE REFERED FROM FLOW DIAGRAM FOR HFO TRANSFER AND STORAGE SYSTEM (PE-DG-408-166-102)
 - INDICATED INSTRUMENT AND LINE SIZES ARE THE MINIMUM REQUIREMENT. THE PIPE SIZING SHALL BE DONE DURING DETAIL ENGINEERING BASED ON PIPE SIZING CRITERIA.

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

User: Staff No. 6074979
Date: 27, 2015 - 10:17pm
COMPUTER FILE NAME: S3a P & I DIAGRAM FOR FDHS 7.dwg

FORMAT SIZE A3



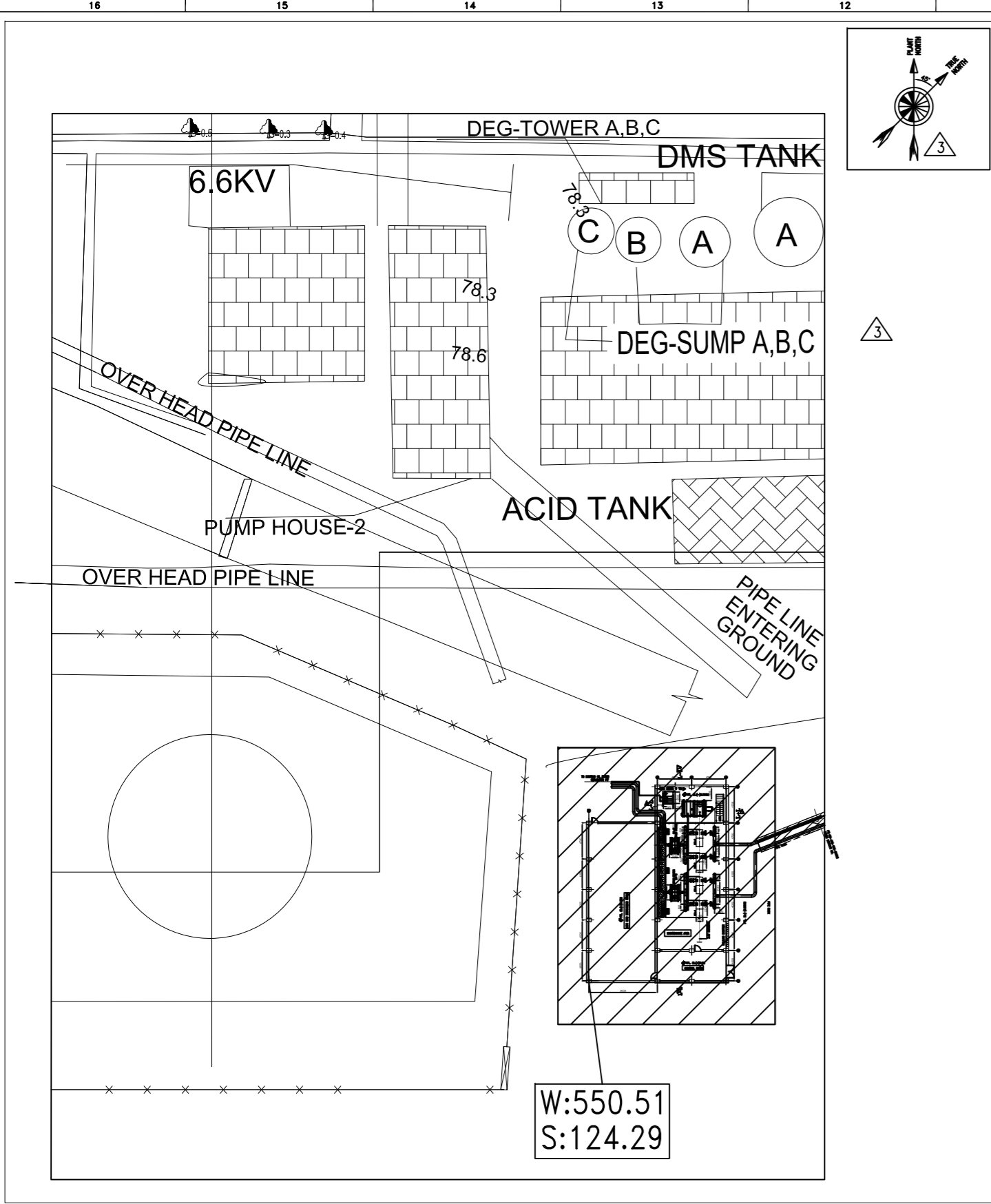
DETAIL # Z: SECTION SHOWING CROSSING OF BHEL PIPE RACK ABOVE GSECL PIPE RACK AND CHP OFFICE.

- REFERENCE DRAWINGS**
- 1). DESIGN MEMORANRUM FOR FUEL OIL TRANSFER & STORAGE SYSTEM: PE-DC-408-166-A001.
 - 2). TOPOGRAPHICAL SURVEY AND GEOTECHNICAL INVESTIGATION FOR 1X800 MW WANAKBORI, SUPER THERMAL POWER PROJECT SUV/2014/3369/PLAN(FEATURES & CONTOUR) SHEET 3 OF 4.
 - 3). LAYOUT OF FO TRANSFER PUMP HOUSE: PE-DG-408-166-SK001

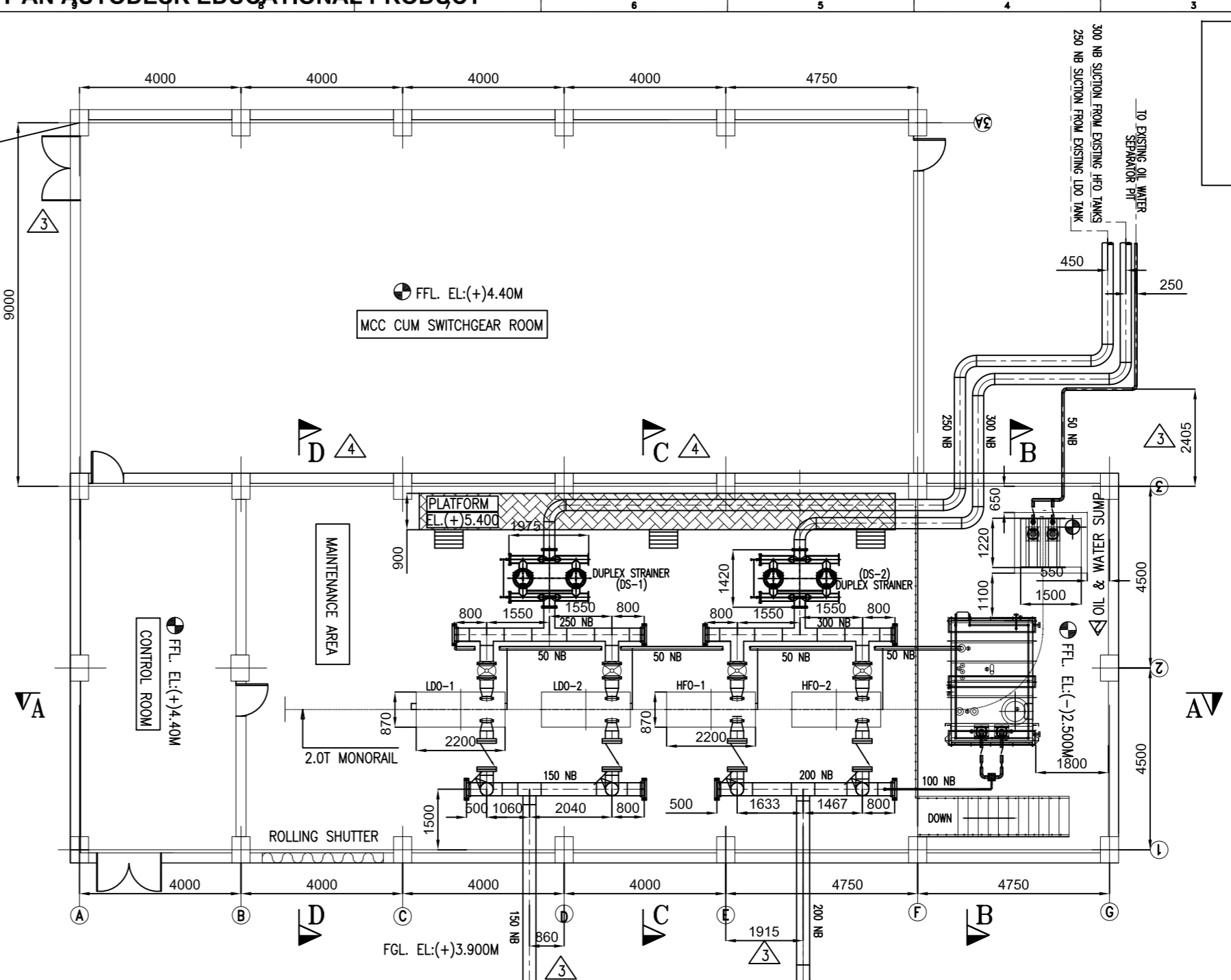
NOTES:

- 1) ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METRES UNLESS OTHERWISE SPECIFIED.
- 2) ALL HFO LINES SHALL BE ELECTRICALLY TRACED AND THE HFO PUMPS, STRAINERS, DRAIN OIL TANKS ARE BEING PROVIDED WITH STEAM TRACING.
- 3) ALL THE LEVELS ARE WITH RESPECT TO THE TOP OF RAILWAY LINE EXISTED NEAR THE WORKSHOP OF UNIT #1 AT WANAKBORI TPS. THE TOP LEVEL OF RAILWAY LINE HAS BEEN CONSIDERED AS 78.2M. EL.0.0M CORRESPONDS TO RL78.20M.THE FINISHED GRADE LEVEL OF POWER BLOCK AREA OF UNIT#8 IS RL. 72.00M. ELEVATION OF TOP OF PEDESTALS HAS BEEN MARKED IN DRAWING AS THE AREA AROUND PIPE RACK IS NOT GRADED.
- 4) THE MAXIMUM DISTANCE BETWEEN TWO COLUMNS SHALL BE 10M.
- 5) THE PIPE SIZES INDICATED IN THE DRAWING ARE MAXIMUM LINE SIZES. ACTUAL LINE SIZES SHALL BE AS PER DETAIL ENGINEERING.
- 6) ALL BENDS SHALL BE MITRE BENDS.
- 7) MINOR MODIFICATION IN ROUTING SHALL BE AS PER SUIT TO SITE.
- 8) WHILE LOCATING FOUNDATION BLOCKS FOR NEW OIL PIPE RACK FROM EXISTING DYKE AREA AND NEW FUEL OIL PUMP HOUSE TO STORAGE TANK AREA NEAR UNIT #8. CARE SHOULD BE TAKEN TO AVOID CLASH WITH EXISTING BURIED PIPES.
- 9) FOR FURTHER ROUTING OF PIPES TO THE FUEL OIL TANKS OF UNIT#8 REFER DRAWING NO.PE-DG-408-100-M001 (PLOT PLAN)

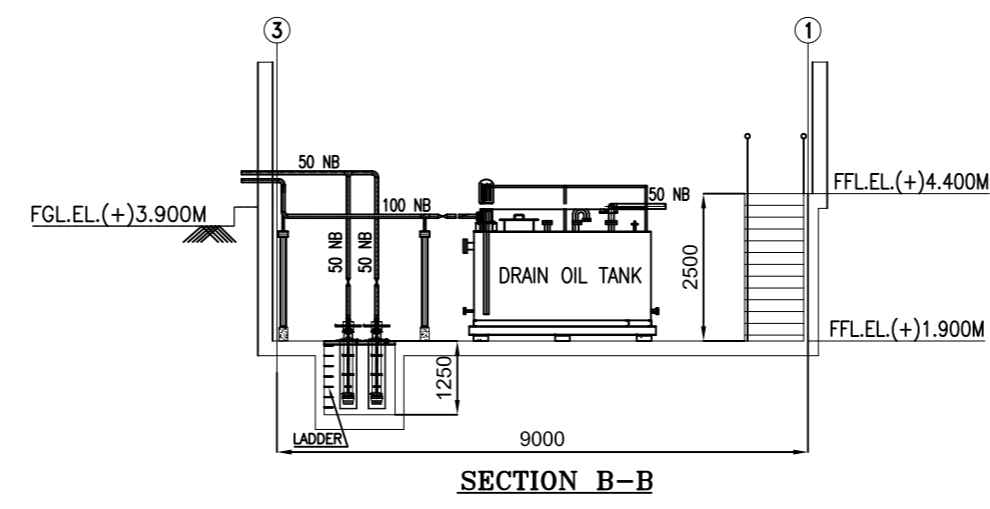
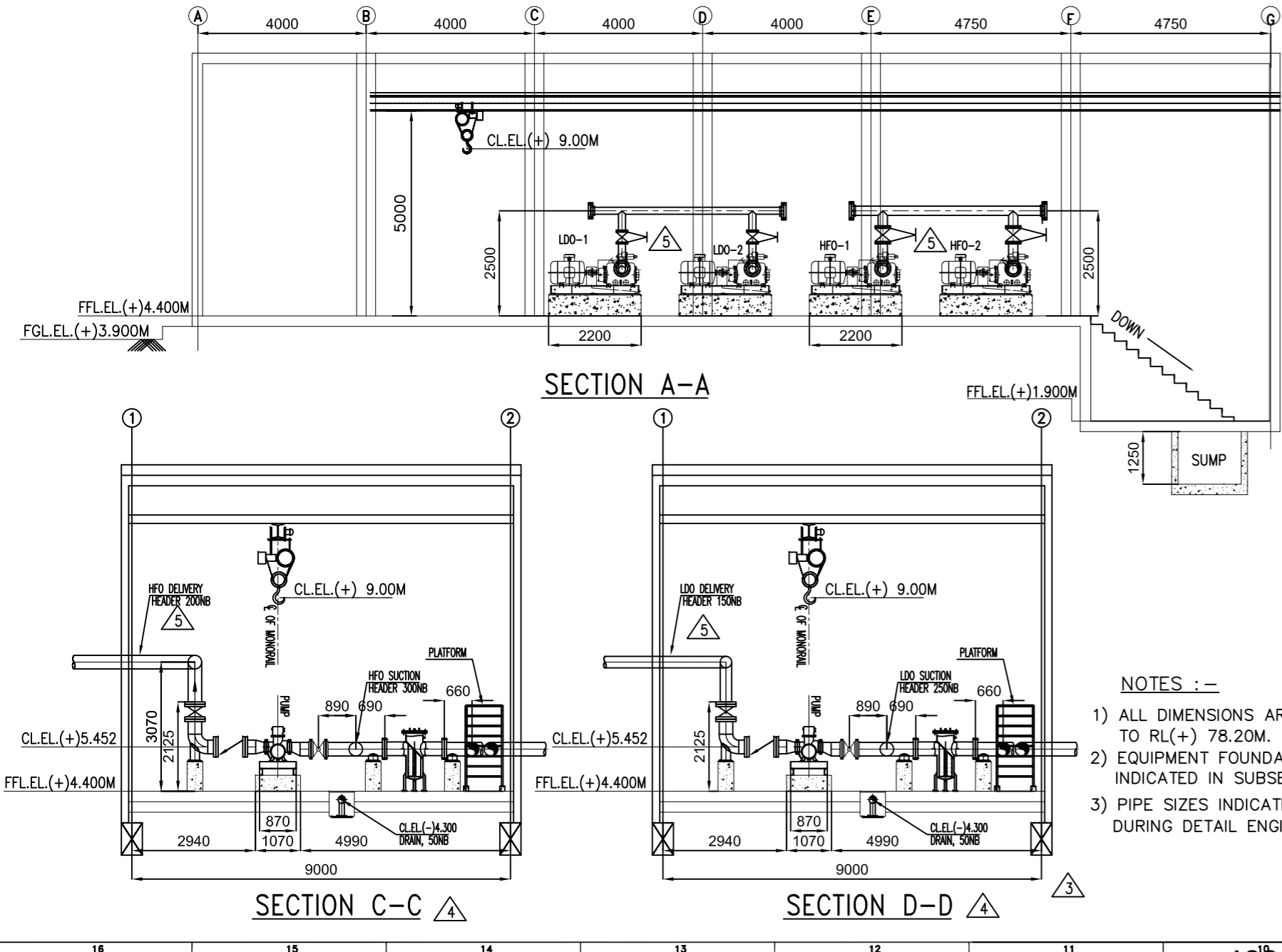
CUSTOMER:	GUJARAT STATE ELECTRICITY CORPORATION LTD VADODARA, GUJARAT								
PROJECT:	1x800 MW Wanakbori Thermal Power Station Extn. Unit-8								
CONSULTANT:	DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA MUMBAI CHENNAI NEW DELHI								
CLIENT:	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA								
JOB NO.	408								
STATUS	CONTRACT								
DISTRIBUTION									
REV.	DATE	ALT	CHD	APPD	REV.	DATE	ALT	CHD	APPD
DEPT. SCALE 1:750 SIGN SHEET 1 OF 1 REV. 00									



W: 550.51
S: 124.29



LAYOUT OF FO TRANSFER PUMP HOUSE



- NOTES :-**
- 1) ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS. EL (+) 0.000 M CORRESPONDS TO RL (+) 78.20M.
 - 2) EQUIPMENT FOUNDATION, PIPING, VALVES, PIPE SIZES AND CABLE SLIT DETAILS SHALL BE INDICATED IN SUBSEQUENT REVISION AFTER FINALIZATION OF PACKAGE VENDOR.
 - 3) PIPE SIZES INDICATED ARE MINIMUM REQUIREMENT. FINAL SIZES SHALL BE DETERMINED DURING DETAIL ENGINEERING

REFER DRAWING NO. PE-DG-408-166-SK004

REFERENCE DRAWINGS:

01. PLOT PLAN	PE-DG-408-100-M001
02. PROCESS & INSTRUMENTATION DIAGRAM FOR LDO SYSTEM	PE-DG-408-166-A101
03. PROCESS & INSTRUMENTATION DIAGRAM FOR HFO SYSTEM	PE-DG-408-166-A102
04. ROUTING OF FUEL OIL PIPES AND OTHER UTILITIES FROM FUEL OIL TRANSFER PUMP HOUSE TO CT-7 (ROUTE-2)	PE-DG-408-166-SK004
05. TOPOGRAPHICAL SURVEY AND GEOTECHNICAL INVESTIGATION FOR 1x800 MW WANAKBORI, SUPER THERMAL POWER PROJECT	SUV/2014/3369/PLAN(FEATURES & CONTOUR) SHEET 3 OF 4.

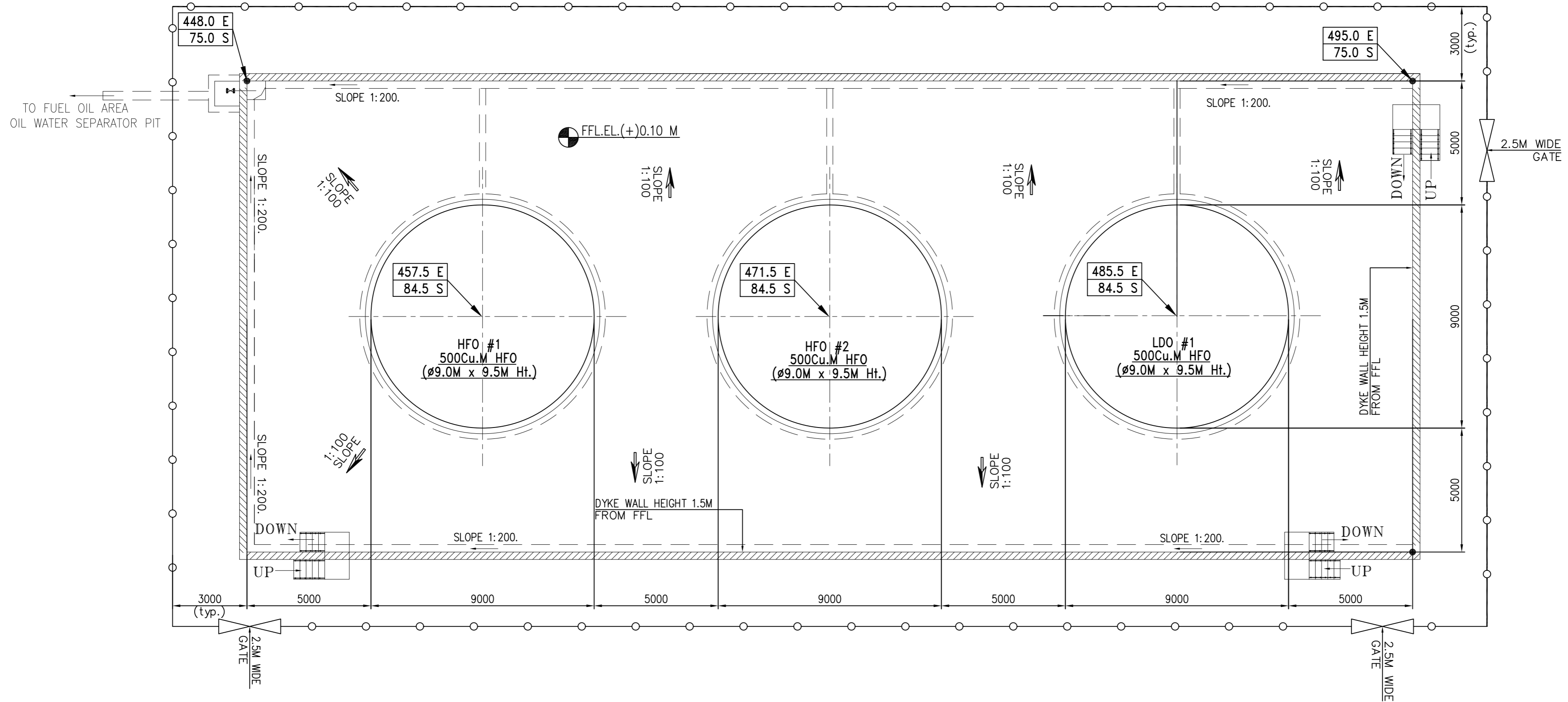
	GUJARAT STATE ELECTRICITY CORPORATION LIMITED VADODARA, GUJARAT 1x800 MW Wanakbori Thermal Power Station Extn. Unit-8			
	DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA MUMBAI CHENNAI NEW DELHI			
JOB NO. 408 STATUS CONTRACT DISTRIBUTION		BHARAT HEAVY ELECTRICALS LTD POWER GROUP PROJECTS ENGINEERING MANAGEMENT NEW DELHI		DEPT CODE M NAME SKY SIGN SR DATE 23/02/15
TO: _____ No. OFF _____ REV DATE ALTD CHD APPD		TITLE LAYOUT OF FO TRANSFER PUMP HOUSE		SIGN _____ DATE _____
DEPT. SCALE SIGN _____ DATE _____		DRAWING NO. PE-DG-408-166-SK001 SHEET 1 OF 1 REV 05		

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

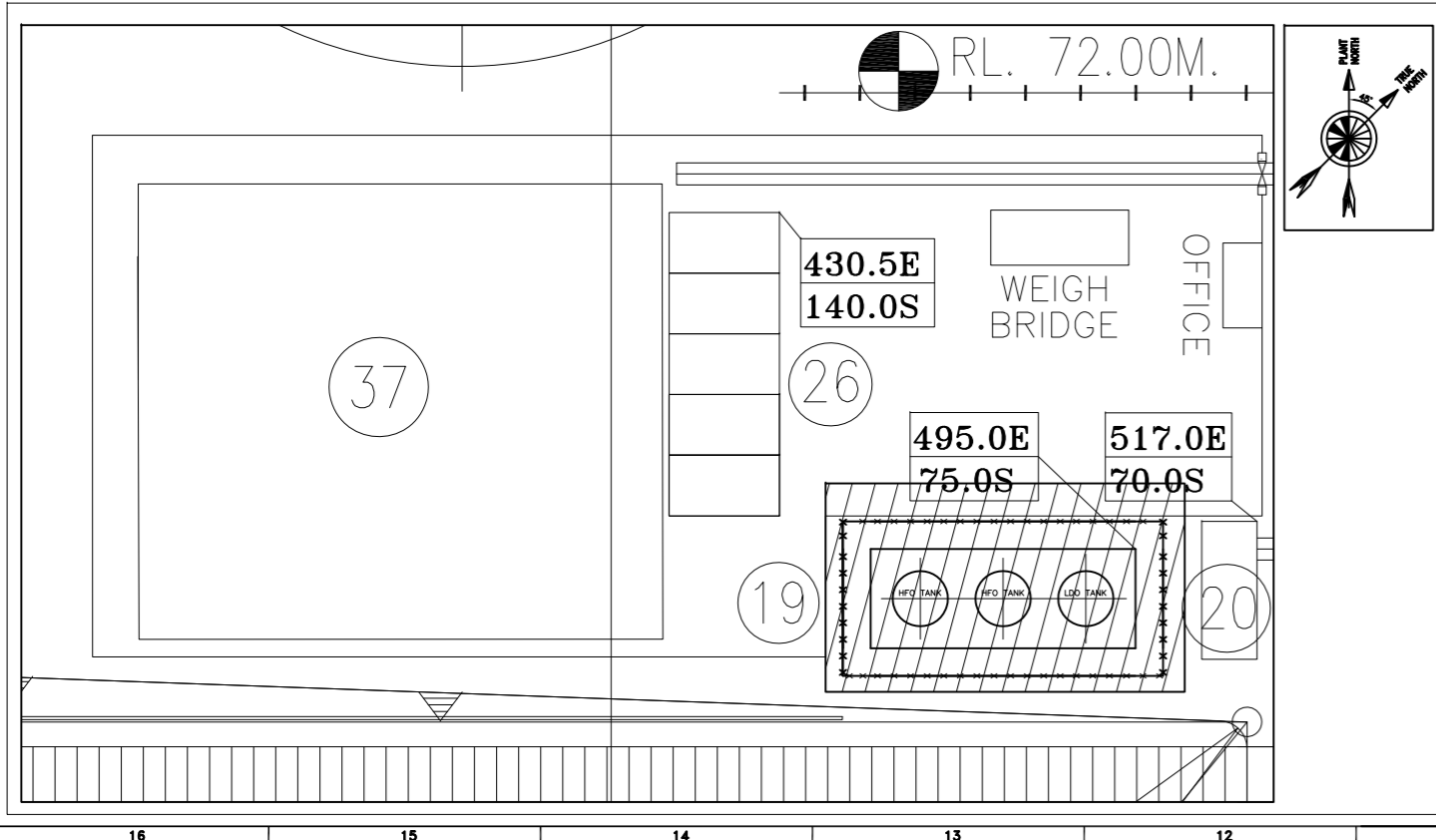
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



FGL.E.L.0.00 M



KEY PLAN



NOTES:-

- 1). ALL DIMENSIONS ARE IN MM, COORDINATES AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE NOTED.
- 2). ALL ELEVATION MARKED ARE W.R.T. TG HALL FINISHED FLOOR ELEVATION OF EL 0.00M WHICH CORRESPONDS TO RL362.0M FINISHED GROUND LEVEL IN TANK FARM AREA AND UNLOADING AREA IS RL. 72.0M
- 3). THE ENTIRE FUEL OIL SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH THE PETROLEUM RULES 2002 & THE STIPULATIONS OF OISD 118.
- 4). THE DIMENSION OF THE TANK INDICATED ARE MINIMUM REQUIREMENT.
- 5). LOCATION AND WIDTH OF DRAIN ARE INDICATIVE ONLY AND SHALL BE AS PER SYSTEM REQUIREMENT.

REFERENCE DRAWINGS:

01.	PLOT PLAN	PE-DG-408-100-M001
02.	PROCESS & INSTRUMENTATION DIAGRAM FOR LDO SYSTEM	PE-DG-408-166-A101
03.	PROCESS & INSTRUMENTATION DIAGRAM FOR HFO SYSTEM	PE-DG-408-166-A102

JOB NO.	408
STATUS	CONTRACT
DISTRIBUTION	
TO	
No.OFF	
REV	DATE
	ALTD
	CHD
	APPD

	GUJARAT STATE ELECTRICITY CORPORATION LIMITED VADODARA, GUJARAT 1x800 MW Wanakbori Thermal Power Station Extn. Unit-8	
	DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA MUMBAI CHENNAI NEW DELHI	
DEPT. CODE M	NAME DRN SKY DESM SR CHD HK APPD SKB	SIGN DATE 23/02/15 23/02/15 23/02/15 23/02/15
TITLE LAYOUT OF DAY TANK FARM AREA		
DEPT. SIGN DATE	SCALE 	DRAWING NO. PE-DG-408-166-SK002 SHEET 1 OF 1 REV