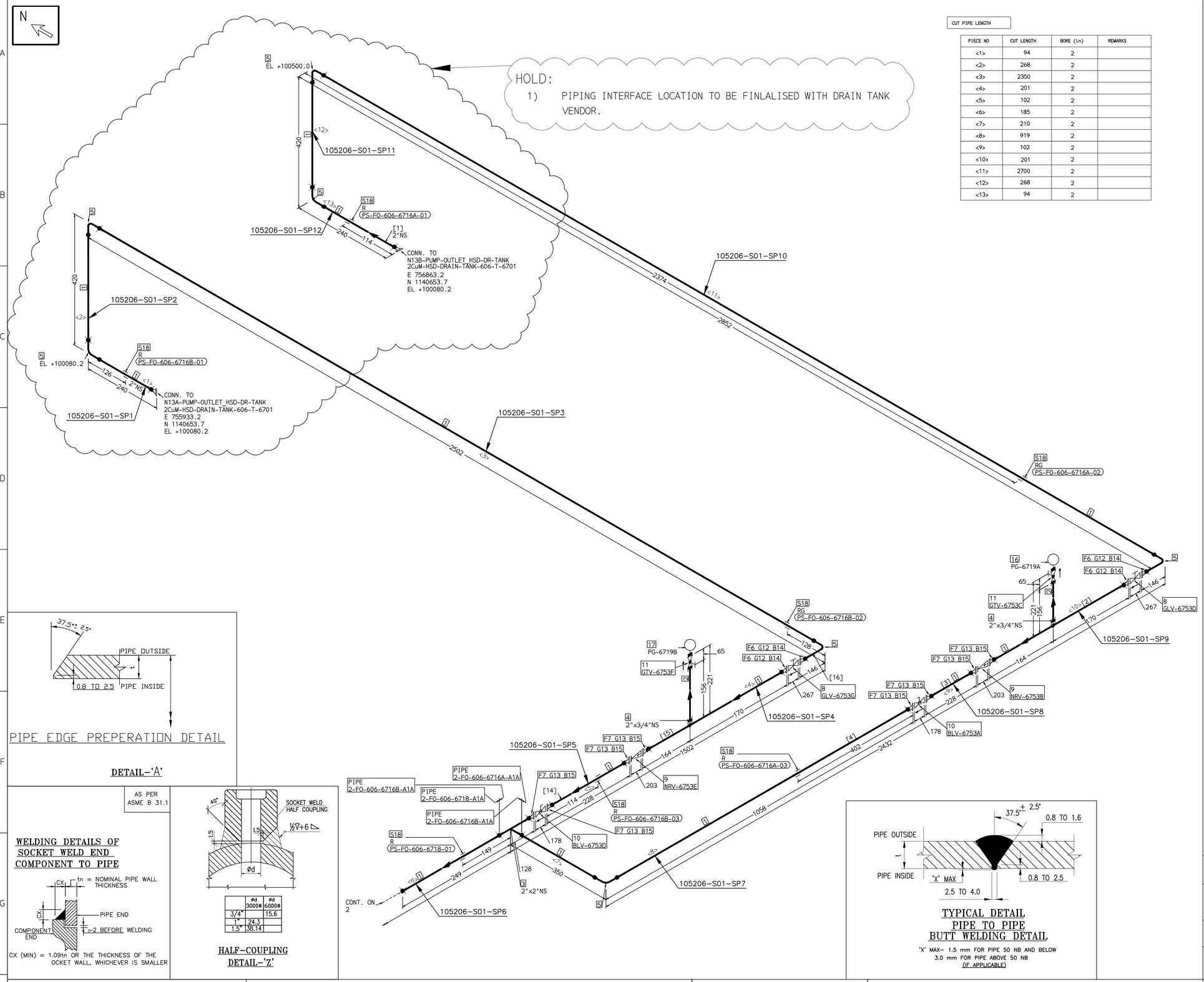
COMPUTER FILE NAME:



CUT PIPE LENGTH			
PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	94	2	
<2>	268	2	
<3>	2350	2	
<4>	201	2	
<5>	102	2	
<6>	185	2	
<7>	210	2	
<8>	919	2	
<9>	102	2	
<10>	201	2	
<11>	2700	2	
<12>	268	2	
<13>	94	2	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		7.7M	7.48	PY9752097154
2	PIPE SMLS ASME B36.10 PE	A106GRB	3/4	S160		0.2M	2.9	PY9752097294
3	TEE STRT ASME B16.9 BW	A234GRWPB	2 x 2	XS		1	1.6	PY9750108172
4	HALF COUPLING ASME B16.11 CL6000 SW	A105	2 x 3/4		CL6000	2	0.29	PY9752093078
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		7	1.02	PY9752101194
6	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	XS	CL300	4	3.64	PY9752086217
7	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	8	2.67	PY9752085210
8	GLOBE VALVE HO ASME B16.10 CL300 RF(16.5)	A216GRWCB	2		CL300	2	27.11	
9	SWING CHECK VALVE ASME B16.10 CL150 RF(B16.5)	A216GRWCB	2		CL150	2	16.79	
10	BALL VALVE FB HO AMSE B16.10 CL150 RF (B16.5)	A216GRWCB	2		CL150	2	14.2	
11	GLOBE VALVE HO CL800 SW	A105	3/4		CL800	2	2	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
12	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	2		CL300	4	0.11	PY9752079059
13	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	8	0.11	PY9752078052
14	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL300	32	0.21	PY9752070086
15	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL150	32	0.2	PY9752070078
16	PRESSURE GAUGE SW PG-6719A		3/4			1	0	
17	PRESSURE GAUGE SW PG-6719B		3/4			1	0	
18	PIPE REST		2			7	0	

[1] [2] [3] [4] [14] [15] [16]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

HALF-COUPLING DETAIL-'Z'

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19

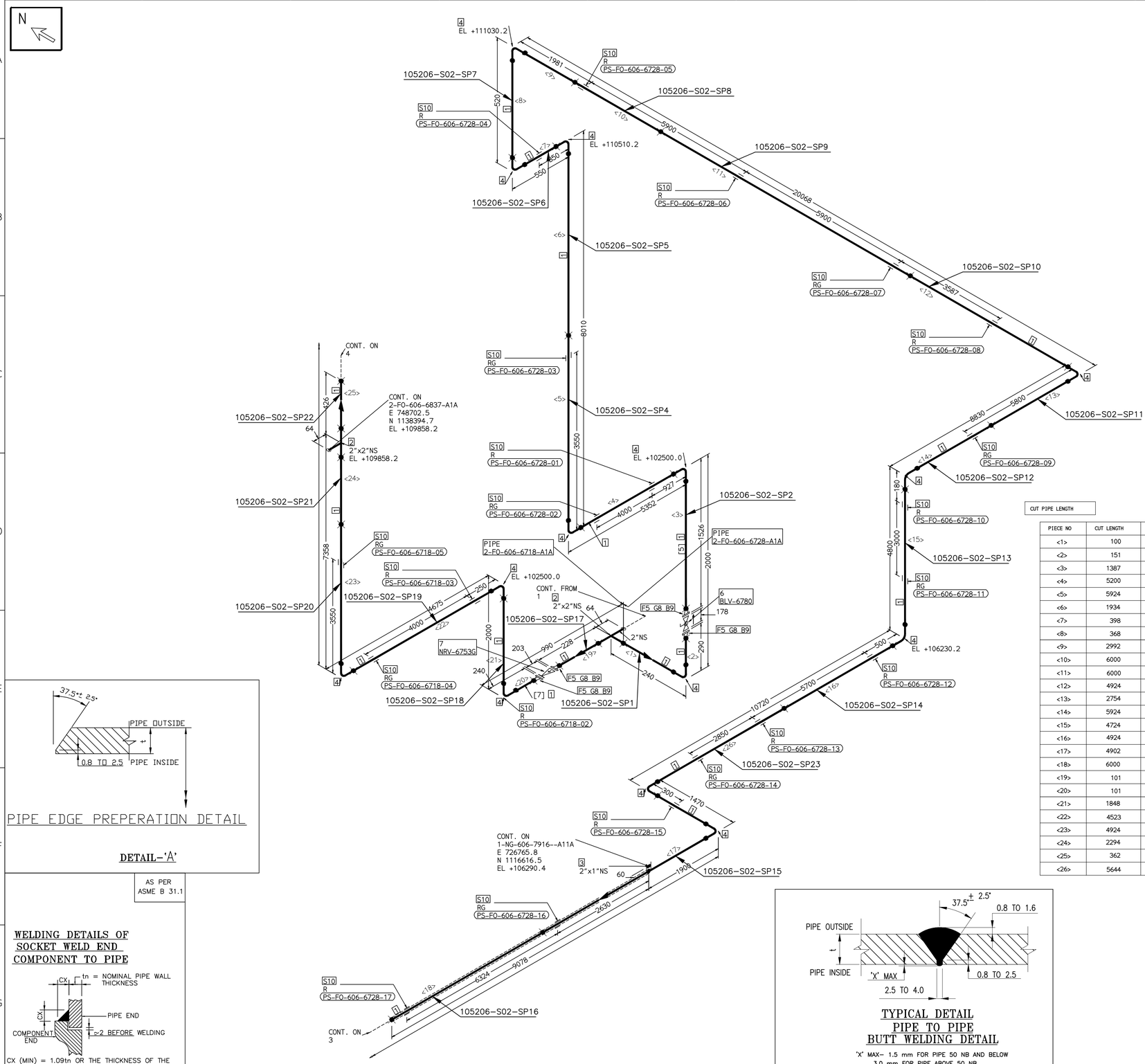
SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 1

PE & SD DRAWING No. PY-DX-1-M104-1052-06-REV0
SHT. No. 1 | No. OF SHEETS: 8

DRAWING No. 1-80-557-U9094 | REV 00

COMPUTER FILE NAME:



FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		85.7M	7.48	PY9752097154
2	TEE STRT ASME B16.9 BW	A234GRWPB	2 x 2	XS		2	1.6	PY9752108172
3	HALF COUPLING ASME B16.11 CL3000 SW	A105	2 x 1		CL3000	1	0.34	PY9752093035
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		14	1.02	PY9752101194
5	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	4	2.67	PY9752085210
6	BALL VALVE FB HO AMSE B16.10 CL150 RF (B16.5)	A216GRWCB	2		CL150	1	14.2	
7	SWING CHECK VALVE ASME B16.10 CL150 RF(B16.5)	A216GRWCB	2		CL150	1	16.79	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
8	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	4	0.11	PY9752078052
9	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL150	16	0.2	PY9752070078
10	PIPE REST		2			21	0	

[5] [7]

CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	100	2	
<2>	151	2	
<3>	1387	2	
<4>	5200	2	
<5>	5924	2	
<6>	1934	2	
<7>	398	2	
<8>	368	2	
<9>	2992	2	
<10>	6000	2	
<11>	6000	2	
<12>	4924	2	
<13>	2754	2	
<14>	5924	2	
<15>	4724	2	
<16>	4924	2	
<17>	4902	2	
<18>	6000	2	
<19>	101	2	
<20>	101	2	
<21>	1848	2	
<22>	4523	2	
<23>	4924	2	
<24>	2294	2	
<25>	362	2	
<26>	5644	2	

PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE

CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

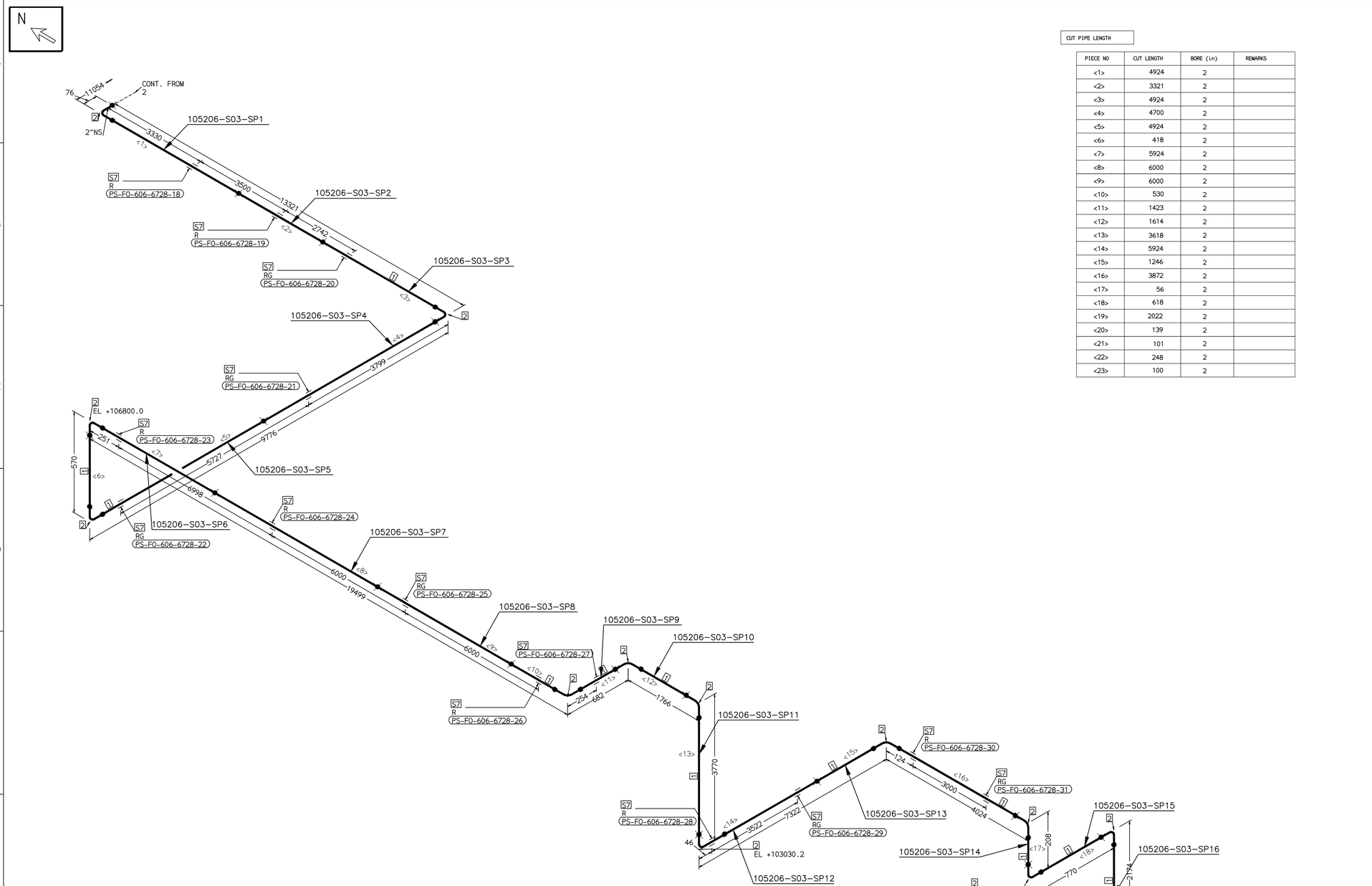
	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19

SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 2

PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0
SHT. No. 2 | No. OF SHEETS: 8

DRAWING No. 1-80-557-U9095 | REV 00



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	4924	2	
<2>	3321	2	
<3>	4924	2	
<4>	4700	2	
<5>	4924	2	
<6>	418	2	
<7>	5924	2	
<8>	6000	2	
<9>	6000	2	
<10>	530	2	
<11>	1423	2	
<12>	1614	2	
<13>	3618	2	
<14>	5924	2	
<15>	1246	2	
<16>	3872	2	
<17>	56	2	
<18>	618	2	
<19>	2022	2	
<20>	139	2	
<21>	101	2	
<22>	248	2	
<23>	100	2	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		62.7M	7.48	PY9752097154
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		15	1.02	PY9752101194
3	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	2	2.67	PY9752085210
4	SWING CHECK VALVE ASME B16.10 CL150 RF(B16.5)	A216GRWCB	2		CL150	1	16.79	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
5	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	2	0.11	PY9752078052
6	90 STUD WITH 2 NUTS ASME B18.2	A193GR87/A194GR2H	5/8		CL150	8	0.2	PY9752070078
7	PIPE REST		2			15	0	

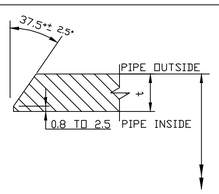
[6]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

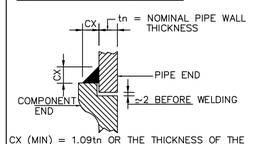


PIPE EDGE PREPERATION DETAIL

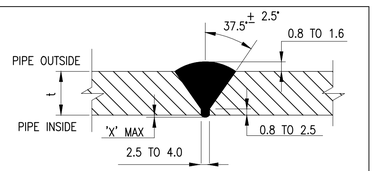
DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER



TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-F0-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-F0-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-F0-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-F0-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-F0-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

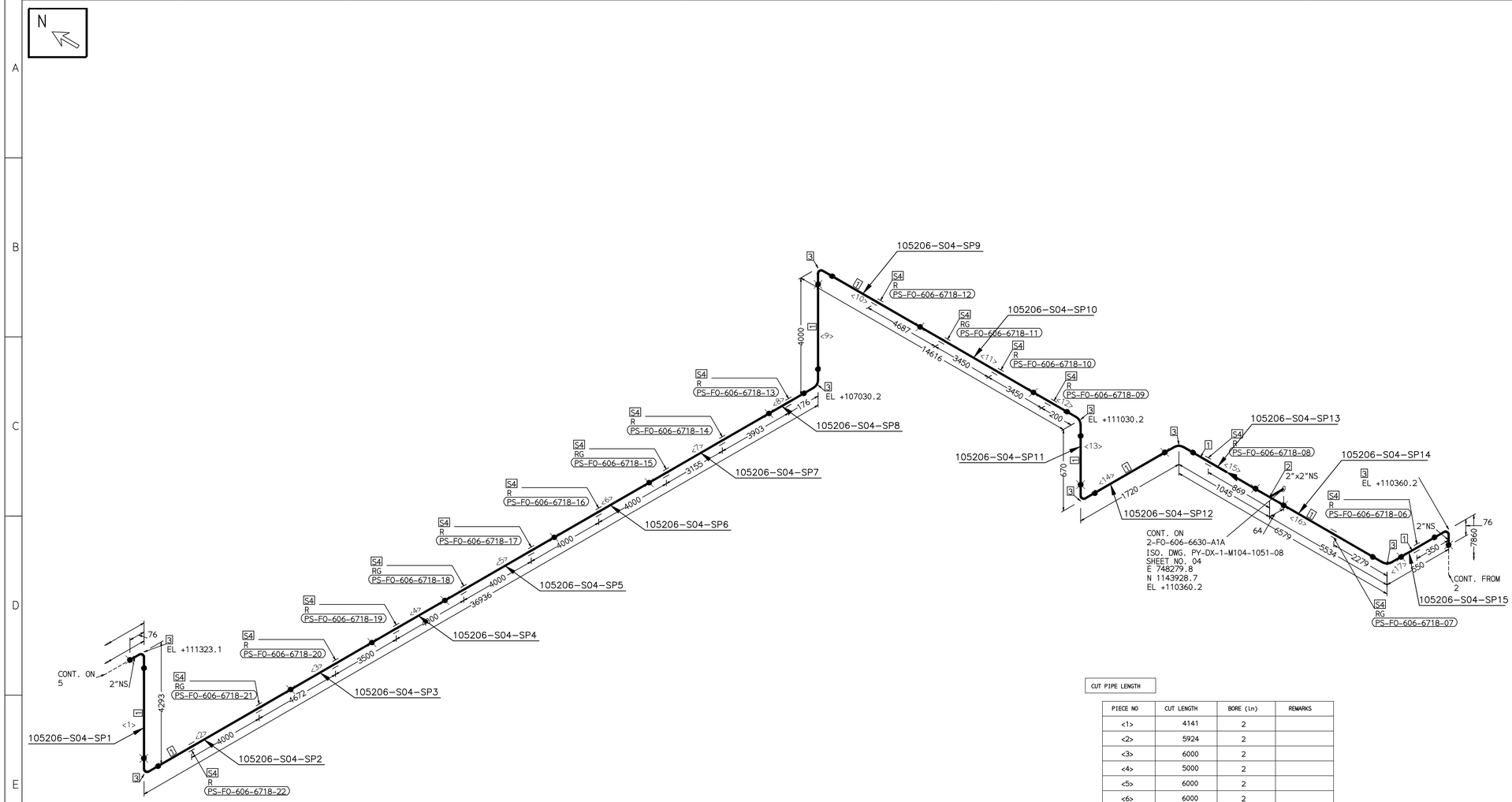
	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19
		SCALE: NTS	

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 3

PE & SD DRAWING No. PY-DX-1-M104-1052-06-REV0
SHT. No. 3 | No. OF SHEETS: 8
DRAWING No. 1-80-557-U9096
REV 00

COMPUTER FILE NAME:

COMPUTER FILE NAME:



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	4141	2	
<2>	5924	2	
<3>	6000	2	
<4>	5000	2	
<5>	6000	2	
<6>	6000	2	
<7>	6000	2	
<8>	860	2	
<9>	3848	2	
<10>	5924	2	
<11>	6000	2	
<12>	518	2	
<13>	2540	2	
<14>	1568	2	
<15>	905	2	
<16>	5394	2	
<17>	398	2	

FABRICATION MATERIALS

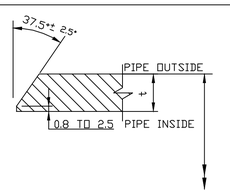
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		68.1M	7.48	PY9752097154
2	TEE STRT ASME B16.9 BW	A234GRWPB	2 x 2	XS		1	1.6	PY9752108172
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		9	1.02	PY9752101194

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
4	PIPE REST		2			17	0	

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

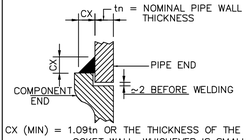


PIPE EDGE PREPERATION DETAIL

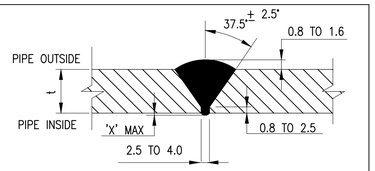
DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER



TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

		NAME	SIGN	DATE
BHARAT HEAVY ELECTRICALS LIMITED HEAVY PLATES AND VESSELS PLANT VISAKHAPATNAM -530012	DRN.	MUNAYYA K	-SD-	27.05.19
	CHKD.	A VENKATA RAO	-SD-	27.05.19
	APPRD.	TARAKESH K	-SD-	27.05.19
			SCALE: NTS	

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

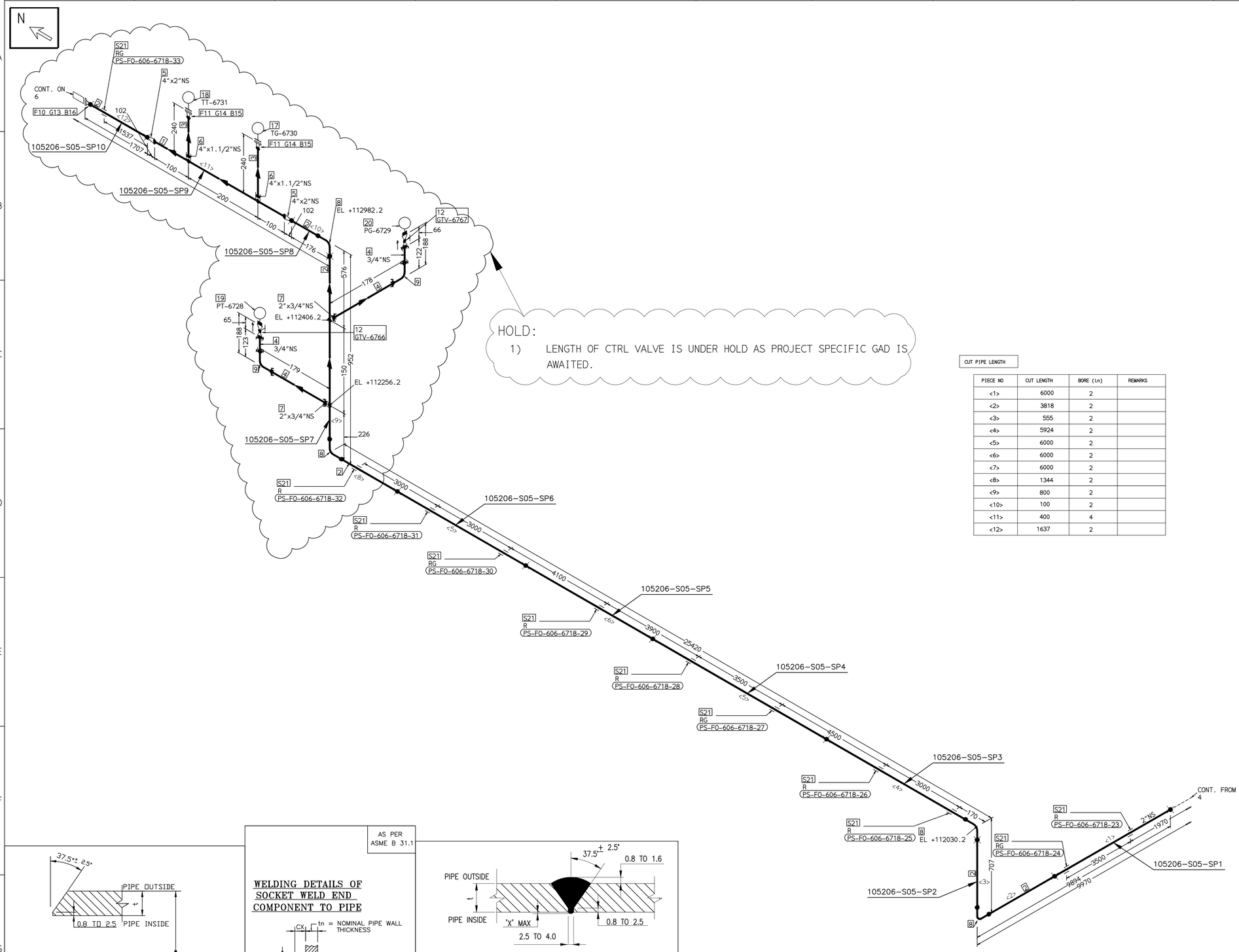
TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 4

PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0

SHT. No. 4 | No. OF SHEETS: 8

DRAWING No. 1-80-557-U9097

REV 00



HOLD:

1) LENGTH OF CTRL VALVE IS UNDER HOLD AS PROJECT SPECIFIC GAD IS AWAITED.

CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	6000	2	
<2>	3818	2	
<3>	555	2	
<4>	5924	2	
<5>	6000	2	
<6>	6000	2	
<7>	6000	2	
<8>	1344	2	
<9>	800	2	
<10>	100	2	
<11>	400	4	
<12>	1637	2	

FABRICATION MATERIALS

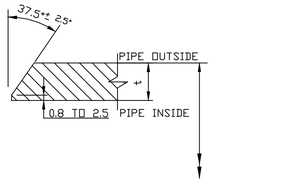
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	4	STD		0.4M	16.08	PY9752097081
2	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		38.2M	7.48	PY9752097154
3	PIPE SMLS ASME B36.10 PE	A106GRB	1.1/2	XS		0.2M	5.41	PY9752097049
4	PIPE SMLS ASME B36.10 PE	A106GRB	3/4	S160		0.4M	2.9	PY9752097294
5	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDXXS		2	1.6	PY9752103316
6	HALF COUPLING ASME B16.11 CL3000 SW	A105	4 x 1.1/2		CL3000	2	0.57	PY9752093043
7	HALF COUPLING ASME B16.11 CL6000 SW	A105	2 x 3/4		CL6000	2	0.29	PY9752093078
8	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		4	1.02	PY9752101194
9	ELBOW 90 DEG LR ASME B16.11 CL6000 SW	A105	3/4		CL6000	2	0.67	PY9752110070
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	XS	CL300	1	3.64	PY9752086217
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	1.1/2	XS	CL300	2	3.06	PY9752086047
12	GLOBE VALVE HO CL800 SW	A105	3/4		CL800	2	2	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
13	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	2		CL300	1	0.11	PY9752079059
14	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	1.1/2		CL300	2	0.08	PY9752079040
15	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	3/4		CL300	8	0.37	PY9752070221
16	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL300	8	0.21	PY9752070086
17	TEMP GAUGE FLGD CL300 RF (B16.5) TG-6730		1.1/2		CL300	1	0	
18	TEMP TRANSMITTER FLGD CL300 RF (B16.5) TT-6731		1.1/2		CL300	1	0	
19	PRESSURE TRANSMITTER SW PT-6728		3/4			1	0	
20	PRESSURE GAUGE SW PG-6729		3/4			1	0	
21	PIPE REST		2			11	0	

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

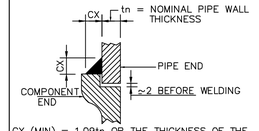


PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE SOCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19

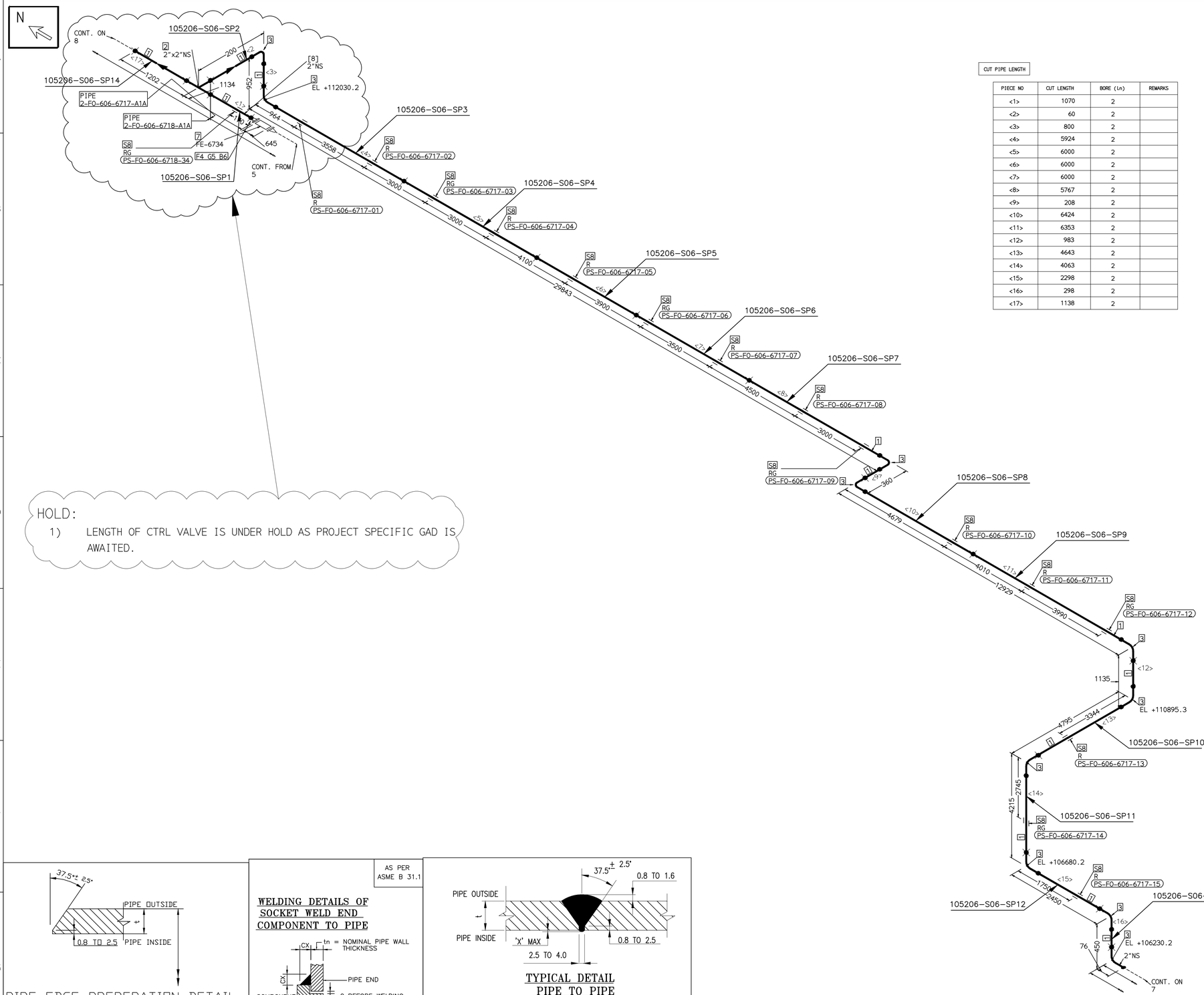
SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 5

PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0
SHT. No. 5 | No. OF SHEETS: 8
DRAWING No. 1-80-557-U9098
REV 00

COMPUTER FILE NAME:

COMPUTER FILE NAME:



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	1070	2	
<2>	60	2	
<3>	800	2	
<4>	5924	2	
<5>	6000	2	
<6>	6000	2	
<7>	6000	2	
<8>	5767	2	
<9>	208	2	
<10>	6424	2	
<11>	6353	2	
<12>	983	2	
<13>	4643	2	
<14>	4063	2	
<15>	2298	2	
<16>	298	2	
<17>	1138	2	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		58.0M	7.48	PY9752097154
2	TEE STRT ASME B16.9 BW	A234GRWPB	2 x 2	XS		1	1.6	PY9752108172
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		10	1.02	PY9752101194
4	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	XS	CL300	1	3.64	PY9752086217

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
5	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	2		CL300	1	0.11	PY9752079059
6	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL300	8	0.21	PY9752070086
7	CORIOLIS FLOW METER FLGD CL300 RF(B16.5) FE-6734	A234GRWPB	2		CL300	1	0	
8	PIPE REST		2			16	0	

[8]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE

CX (MIN) = 1.09tn OR THE THICKNESS OF THE SOCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

SUPPORT LOCATION
DIRECTION OF FLOW
DIRECTION OF SLOPE
WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
SHOP WELD.(BUTT WELD)
FIELD WELD.(BUTT WELD)
SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19

SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 6

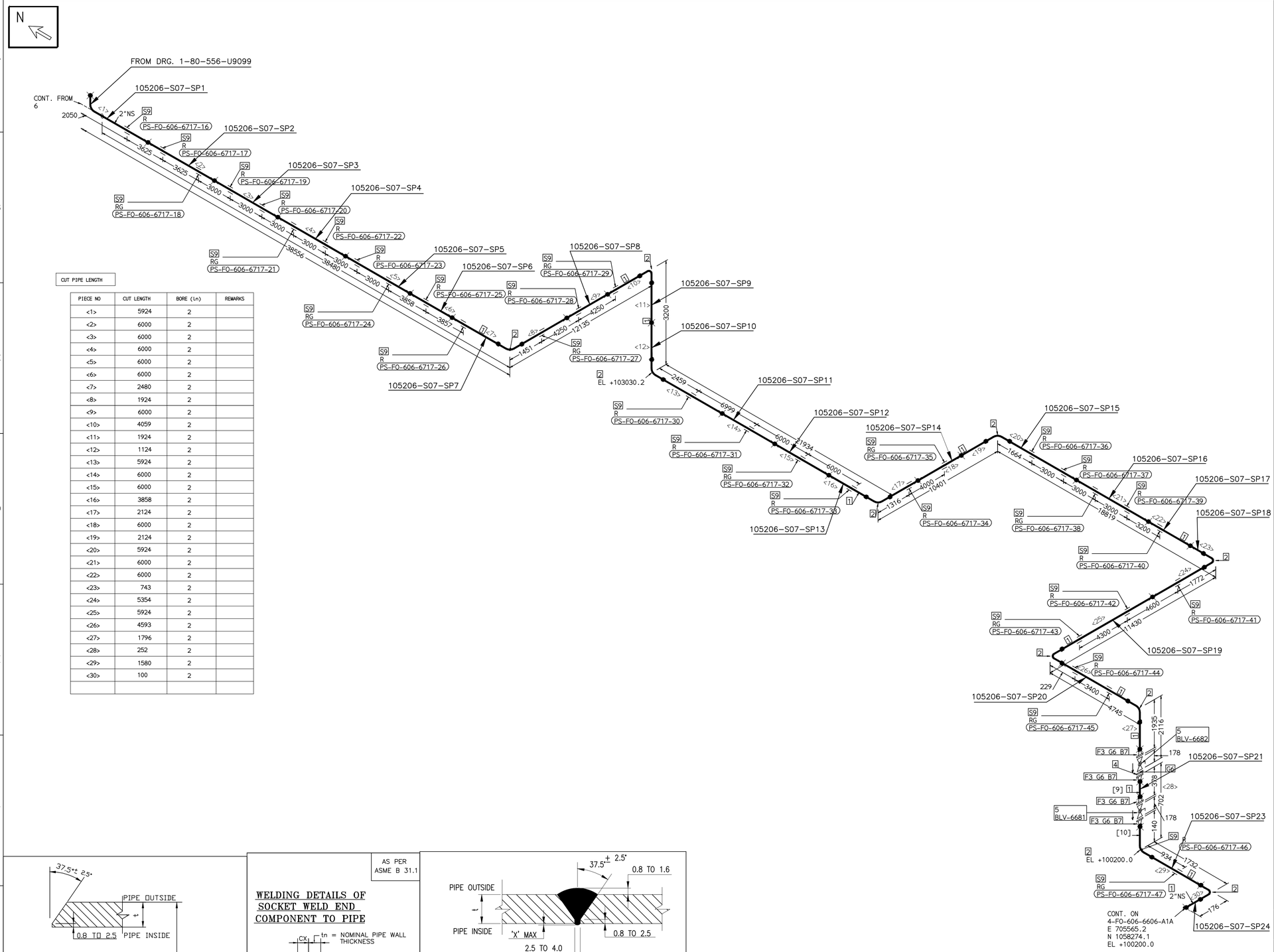
PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0
SHT. No. 6 | No. OF SHEETS: 8

DRAWING No. 1-80-557-U9099
REV 00

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

COMPUTER FILE NAME:



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	5924	2	
<2>	6000	2	
<3>	6000	2	
<4>	6000	2	
<5>	6000	2	
<6>	6000	2	
<7>	2480	2	
<8>	1924	2	
<9>	6000	2	
<10>	4059	2	
<11>	1924	2	
<12>	1124	2	
<13>	5924	2	
<14>	6000	2	
<15>	6000	2	
<16>	3858	2	
<17>	2124	2	
<18>	6000	2	
<19>	2124	2	
<20>	5924	2	
<21>	6000	2	
<22>	6000	2	
<23>	743	2	
<24>	5354	2	
<25>	5924	2	
<26>	4593	2	
<27>	1796	2	
<28>	252	2	
<29>	1580	2	
<30>	100	2	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		123.8M	7.48	PY9752097154
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		10	1.02	PY9752101194
3	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	4	2.67	PY9752085210
4	FIG 8 BLANK ASME B16.48 CL150 FF (B16.5)	A105	2		CL150	1	0.68	PY9752
5	BALL VALVE FB HO AMSE B16.10 CL150 RF (B16.5)	A216GRWCB	2		CL150	2	14.2	

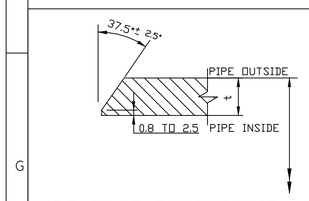
ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
6	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	5	0.11	PY9752078052
7	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	4	0.2	PY9752070078
8	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	12	0.2	PY9752070078
9	PIPE REST		2			32	0	

[9] [10]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

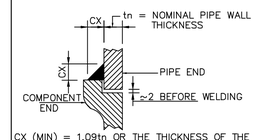


PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE SOCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD.	TARAKESH K	-SD-	27.05.19
		SCALE: NIS	

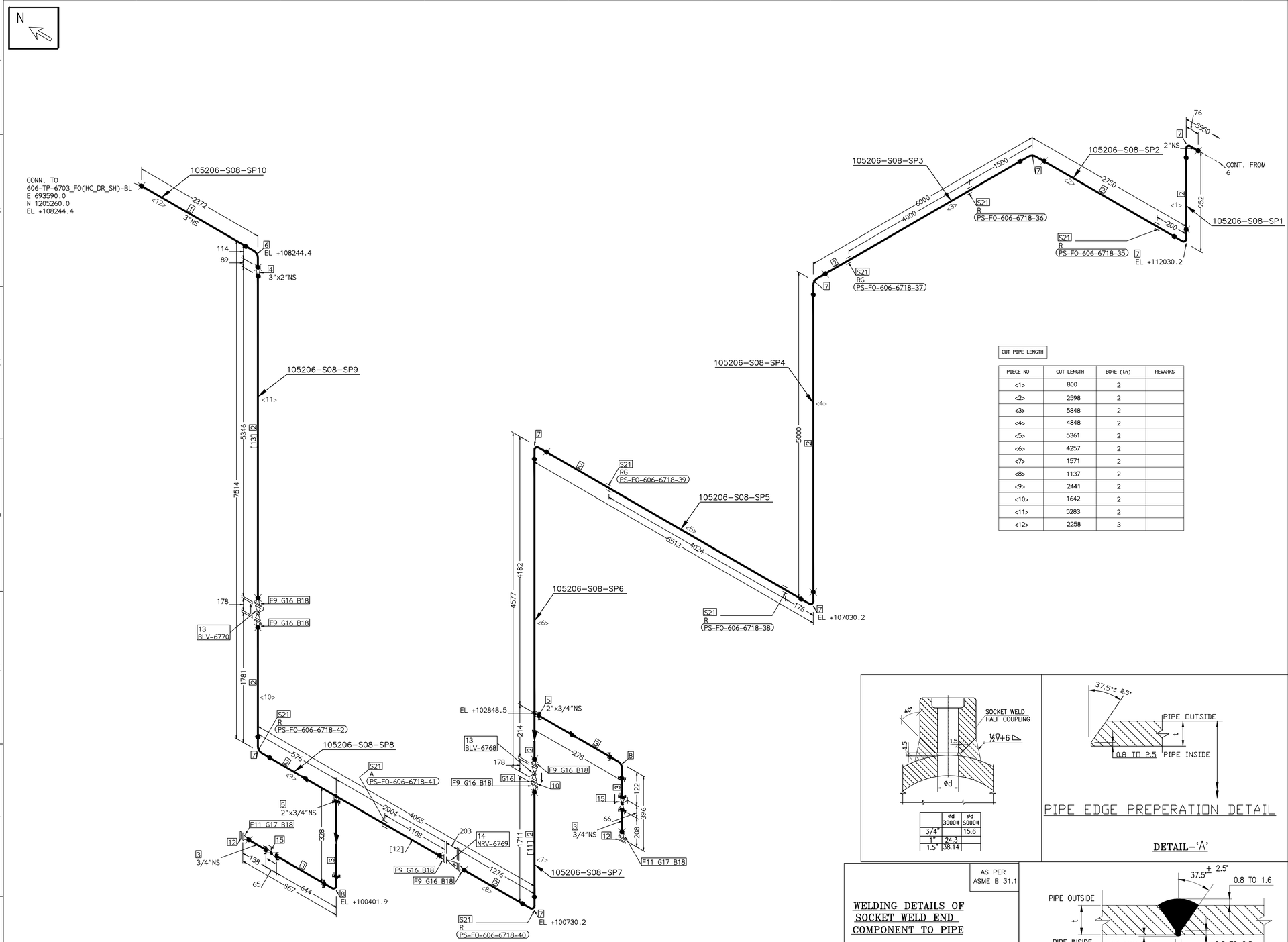
TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 7

PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0
SHT. No. 7 | No. OF SHEETS: 8
DRAWING No. 1-80-557-U9100
REV 00

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

COMPUTER FILE NAME:



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	800	2	
<2>	2598	2	
<3>	5848	2	
<4>	4848	2	
<5>	5361	2	
<6>	4257	2	
<7>	1571	2	
<8>	1137	2	
<9>	2441	2	
<10>	1642	2	
<11>	5283	2	
<12>	2258	3	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	3	STD		2.3M	11.29	PY9752097073
2	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		35.8M	7.48	PY9752097154
3	PIPE SMLS ASME B36.10 PE	A106GRB	3/4	S160		1.5M	2.9	PY9752097294
4	RDCR CONC ASME B16.9 BW	A234GRWPB	3 x 2	STDXXS		1	1	PY9752103308
5	HALF COUPLING ASME B16.11 CL6000 SW	A105	2 x 3/4		CL6000	2	0.29	PY9752093078
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	3	STD		1	2.3	PY9752101070
7	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		8	1.02	PY9752101194
8	ELBOW 90 DEG LR ASME B16.11 CL6000 SW	A105	3/4		CL6000	2	0.67	PY9752110070
9	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	6	2.67	PY9752085210
10	FIG 8 BLANK ASME B16.48 CL150 FF (B16.5)	A105	2		CL150	1	0.68	PY9752
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3/4	S160	CL300	2	1.34	PY9752086209
12	FLANGE BLIND ASME B16.5 CL300 RF	A105	3/4		CL300	2	1.4	PY9752090028
13	BALL VALVE FB HO AMSE B16.10 CL150 RF (B16.5)	A216GRWCB	2		CL150	2	14.2	
14	SWING CHECK VALVE ASME B16.10 CL150 RF(B16.5)	A216GRWCB	2		CL150	1	16.79	
15	GLOBE VALVE HO CL800 SW	A105	3/4		CL800	2	2	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
16	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	7	0.11	PY9752078052
17	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	3/4		CL300	2	0.04	PY9752079024
18	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL150	4	0.2	PY9752070078
19	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL150	20	0.2	PY9752070078
20	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL300	8	0.2	PY9752070078
21	PIPE REST		2			8	0	

[11] [12] [13]

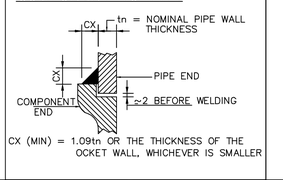
	ød 3000#	ød 6000#
3/4"		15.6
1"	24.3	
1.5"	38.14	

PIPE EDGE PREPERATION DETAIL

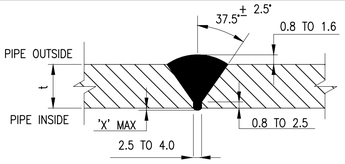
DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER



TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6716A-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6716B-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6718-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6728-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"
2-FO-606-6717-A1A	6.5	40.0	19.0	65.0	28.5	NA	NA	A1A-HPV	2"

LEGEND:-

SUPPORT LOCATION
DIRECTION OF FLOW
DIRECTION OF SLOPE
WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
SHOP WELD.(BUTT WELD)
FIELD WELD.(BUTT WELD)
SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	27.05.19
CHKD.	A VENKATA RAO	-SD-	27.05.19
APPRD	TARAKESH K	-SD-	27.05.19

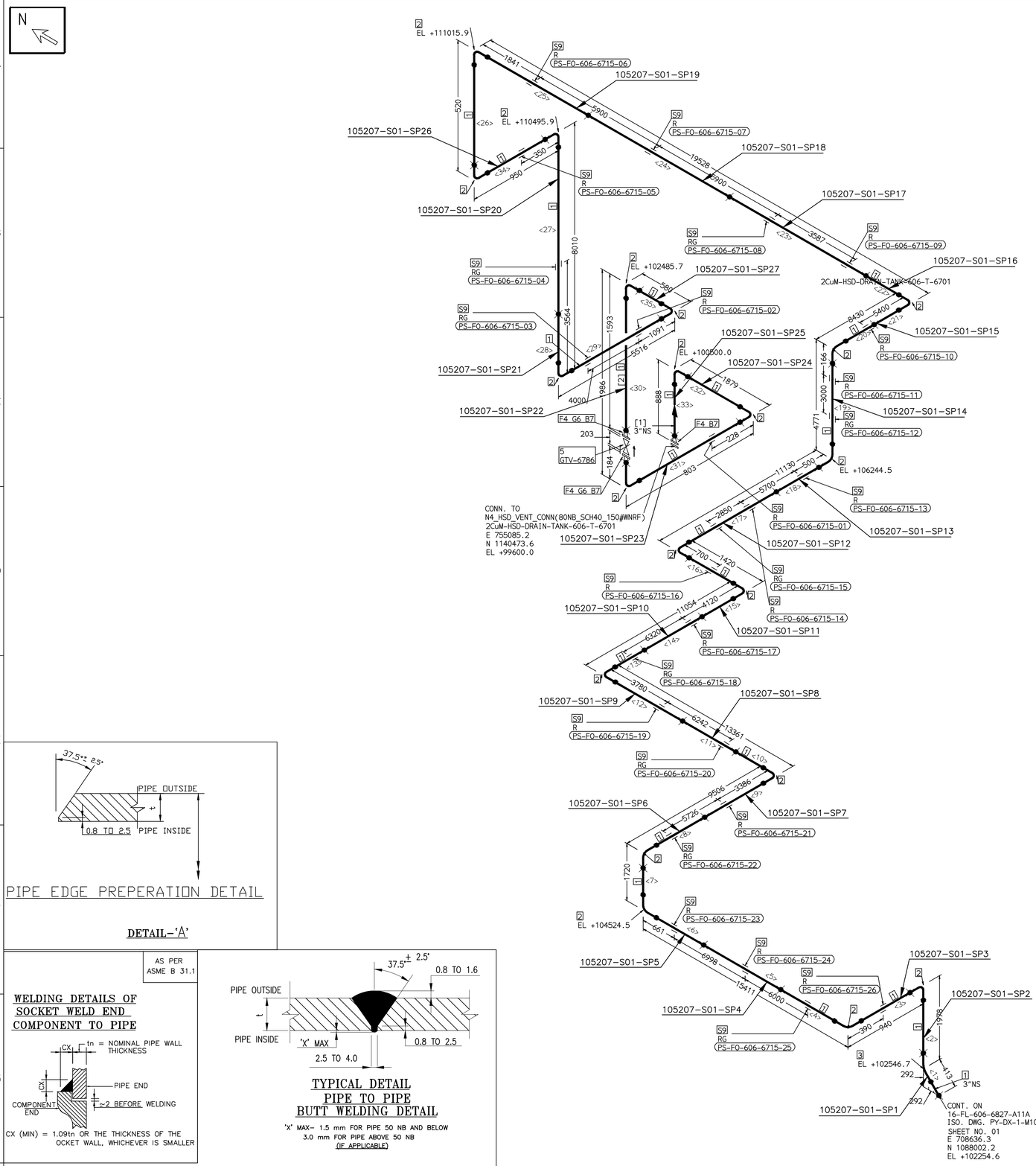
SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FORWARDING SYSTEM FOR GT&HRSG FROM SUBMERSIBLE PUMP OF HSD TANK-SHT 8

PE & SD DRAWING No.
PY-DX-1-M104-1052-06-REV0
SHT. No. 8 | No. OF SHEETS: 8

DRAWING No. 1-80-557-U9101
REV 00

COMPUTER FILE NAME:



PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE

CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL
PIPE TO PIPE
BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	362	3	
<2>	1813	3	
<3>	712	3	
<4>	5886	3	
<5>	6000	3	
<6>	3297	3	
<7>	1492	3	
<8>	4886	3	
<9>	4392	3	
<10>	1886	3	
<11>	6000	3	
<12>	5247	3	
<13>	1886	3	
<14>	6000	3	
<15>	2940	3	
<16>	1192	3	
<17>	5886	3	
<18>	5130	3	
<19>	4543	3	
<20>	5886	3	
<21>	2316	3	
<22>	1414	3	
<23>	6000	3	
<24>	6000	3	
<25>	5886	3	
<26>	292	3	
<27>	5886	3	
<28>	1896	3	
<29>	5288	3	
<30>	1409	3	
<31>	575	3	
<32>	1651	3	
<33>	704	3	
<34>	722	3	
<35>	352	3	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	3	STD		115.8M	11.29	PY9752097073
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	3	STD		20	2.3	PY9752101070
3	ELBOW LR 45 DEG ASME B16.9 BW	A234GRWPB	3	STD		1	1.15	PY9752112021
4	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	3	STD	CL150	3	4.97	PY9752085075
5	GATE VALVE HO ASME B16.10 CL150 RF(16.5)	A216GRWCB	3		CL150	1	29.94	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
6	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	3		CL150	2	0.19	PY9752078079
7	110 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	4	0.21	PY9752
8	110 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	8	0.21	PY9752
9	PIPE REST		3			26	0	

[1] [2]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
3-F0-606-6715-A11A	3.8	42.0	15.0	65.0	22.5	NA	NA	A11A-HPV	3"

LEGEND:-

SUPPORT LOCATION
DIRECTION OF FLOW
DIRECTION OF SLOPE
WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
SHOP WELD.(BUTT WELD)
FIELD WELD.(BUTT WELD)
SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHEL BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD.	TARAKESH K	-SD-	31.05.19

SCALE: NTS

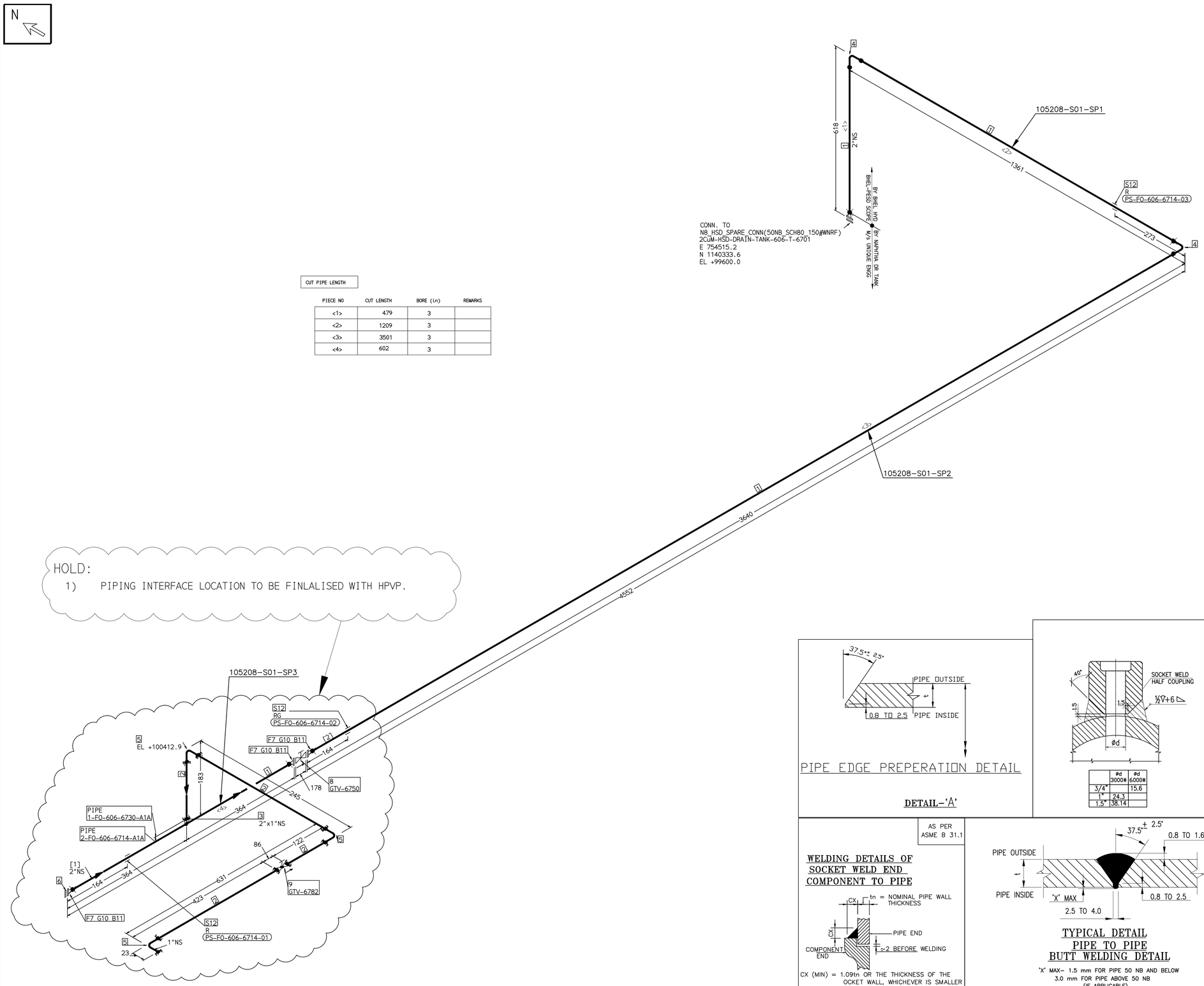
TITLE:
ISOMETRIC FOR VENT LINE FROM HSD DRAIN TANK TO COMM. FLARE HDR.

PE & SD DRAWING No.
PY-DX-1-M104-1052-07-REV0
SHT. No. 1 | No. OF SHEETS: 1

DRAWING No.
1-80-557-U9102

REV
00

COMPUTER FILE NAME:



CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	479	3	
<2>	1209	3	
<3>	3501	3	
<4>	602	3	

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		5.8M	7.48	PY9752097154
2	PIPE SMLS ASME B36.10 PE	A106GRB	1	XS		0.8M	3.24	PY9752097030
3	HALF COUPLING ASME B16.11 CL3000 SW	A105	2 x 1		CL3000	1	0.34	PY9752093035
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		2	1.02	PY9752101194
5	ELBOW 90 DEG LR ASME B16.11 CL3000 SW	A105	1		CL3000	3	0.49	PY9752110037
6	FLANGE BLIND ASME B16.5 CL150 RF	A105	2		CL150	1	2.3	PY9752089054
7	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	3	2.67	PY9752085210
8	GATE VALVE HO ASME B16.10 CL150 RF(16.5)	A216GRWCB	2		CL150	1	14.69	
9	GLOBE VALVE HO CL800 SW	A105	1		CL800	1	3.5	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
10	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	3	0.11	PY9752078052
11	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL150	12	0.2	PY9752070078
12	PIPE REST		2			3	0	

[1] [2]

PIPE EDGE PREPERATION DETAIL

DETAIL-'A'

	Ød 3000#	Ød 6000#
3/4"		15.6
1"	24.3	
1.5"	38.14	

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE

CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER

TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-F0-606-6714-A1A	3.8	42.0	15.0	65.0	22.5	NA	NA	A1A-HPV	2"
1-F0-606-6730-A1A	3.8	42.0	15.0	65.0	22.5	NA	NA	A1A-HPV	1

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD.	TARAKESH K	-SD-	31.05.19

SCALE: NTS

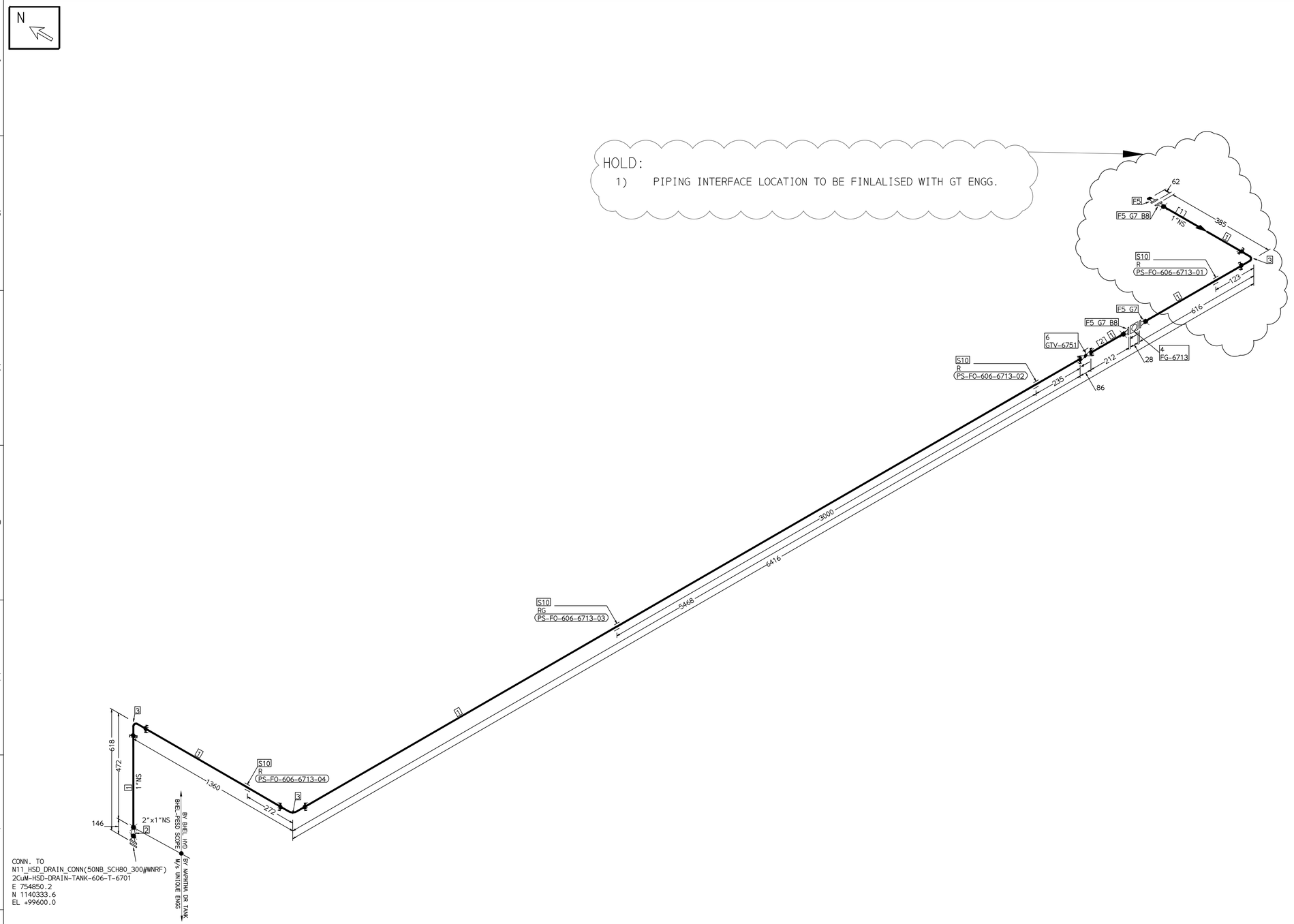
TITLE:
ISOMETRIC FOR HSD DRAIN LINE FROM VARIOUS AREAS TO HSD DRAIN TANK - SHT 1

PE & SD DRAWING No.
PY-DX-1-M104-1052-08-REV0

SHT. No. 1 | No. OF SHEETS: 2

DRAWING No. 1-80-557-U9103 | REV 00

COMPUTER FILE NAME:



FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	
1	PIPE SMLS ASME B36.10 PE	A106GRB	1	XS		8.2M	3.24	PY9752097030
2	RDCR CONC ASME B16.9 BW	A234GRWPB	2 x 1	XSXXS		1	0.57	PY9752103324
3	ELBOW 90 DEG LR ASME B16.11 CL3000 SW	A105	1		CL3000	3	0.49	PY9752110037
4	FLOW GLASS RING WAFER CL300 RF (B16.5)	PMMA	1		CL300	1	0.09	
5	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	1	XS	CL300	4	1.71	PY9752086039
6	GLOBE VALVE HO CL800 SW	A105	1		CL800	1	3.5	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	
7	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	1		CL300	3	0.05	PY9752079032
8	80 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL300	4	0.2	PY9752
9	80 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL300	4	0.2	PY9752
10	PIPE REST		1			4	0	

[1] [2]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_HSD FORWARD-GT&HRSG	:PY-DP-1-M104-1052-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01
03.GAD-2 CU.M HSD DR TANK	:UEEPL-HSD-204180303

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-6713-A1A	3.8	42.0	15.0	65.0	22.5	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

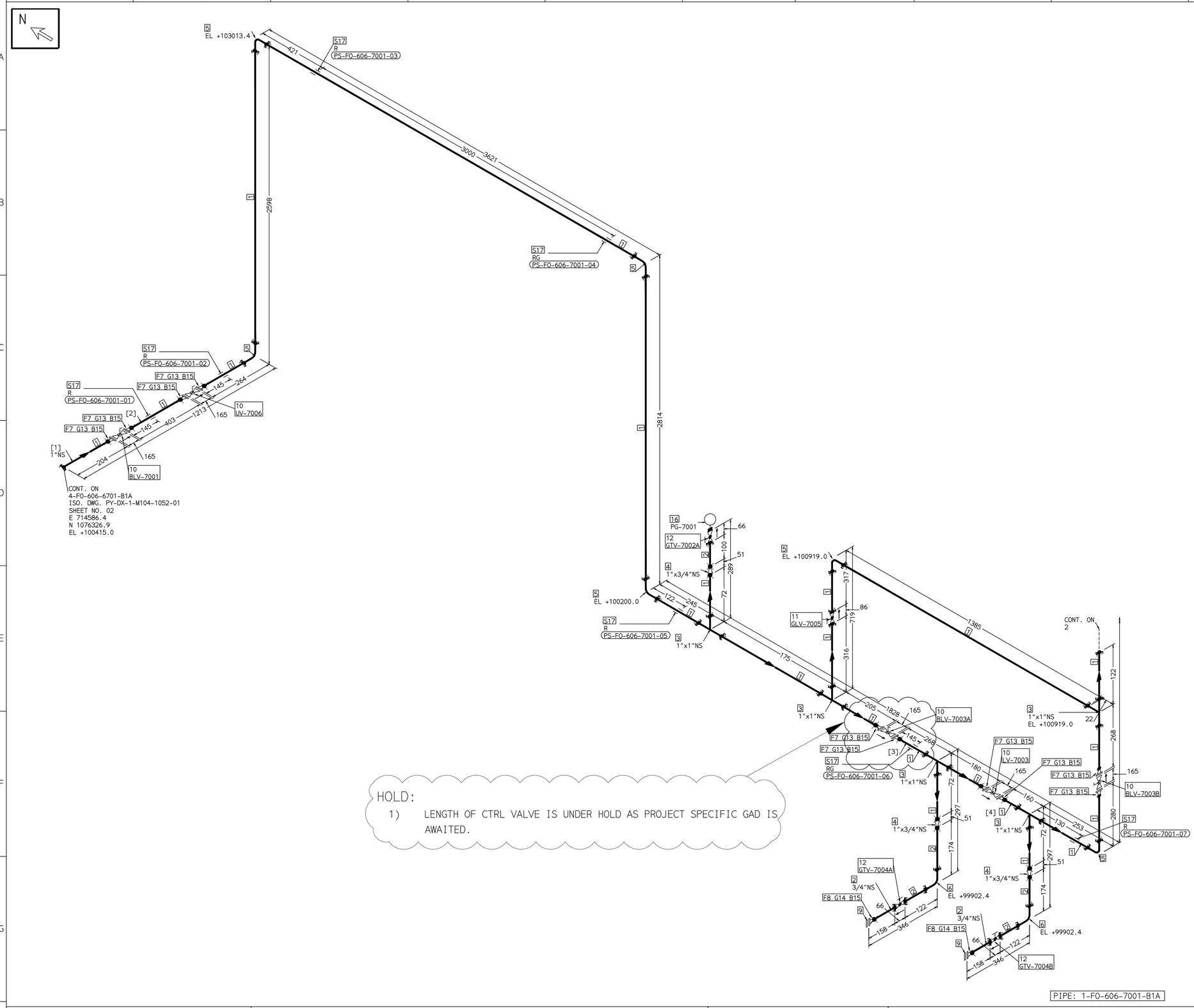
BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD.	TARAKESH K	-SD-	31.05.19

SCALE: NTS

TITLE:
ISOMETRIC FOR HSD DRAIN LINE FROM VARIOUS AREAS TO HSD DRAIN TANK - SHT 2

PE & SD DRAWING No.
PY-DX-1-M104-1052-08-REV0
SHT. No. 2 | No. OF SHEETS: 2
DRAWING No. 1-80-557-U9104
REV 00



HOLD:

1) LENGTH OF CTRL VALVE IS UNDER HOLD AS PROJECT SPECIFIC GAD IS AWAITED.

PIPE: 1-F0-606-7001-B1A

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	
1	PIPE SMLS ASME B36.10 PE	A106GRB	1	XS		13.1M	3.24	PY9752097030
2	PIPE SMLS ASME B36.10 PE	A106GRB	3/4	S160		0.9M	2.9	PY9752097294
3	TEE STRT ASME B16.11 CL3000 SW	A105	1 x 1		CL3000	5	0.57	PY9752111033
4	RDCR CONC ASME B16.9 BW	A234GRWPB	1 x 3/4	XSXS160		3	0.16	PY9752103677
5	ELBOW 90 DEG LR ASME B16.11 CL3000 SW	A105	1		CL3000	6	0.49	PY9752110037
6	ELBOW 90 DEG LR ASME B16.11 CL6000 SW	A105	3/4		CL6000	2	0.67	PY9752110070
7	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	1	XS	CL300	10	1.71	PY9752086039
8	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3/4	S160	CL300	2	1.34	PY9752086209
9	FLANGE BLIND ASME B16.5 CL300 RF	A105	3/4		CL300	2	1.4	PY9752090028
10	BALL VALVE FB HO AMSE B16.10 CL300 RF (B16.5)	A216GRWCB	1		CL300	5	9.16	
11	GLOBE VALVE HO CL800 SW	A105	1		CL800	1	3.5	
12	GLOBE VALVE HO CL800 SW	A105	3/4		CL800	3	2	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	
13	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	1		CL300	10	0.05	PY9752079032
14	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	3/4		CL300	2	0.04	PY9752079024
15	80 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	5/8		CL300	48	0.2	PY9752
16	PRESSURE GAUGE SW PG-7001		3/4			1	0	
17	PIPE REST		1			7	0	

[1] [2] [3] [4]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_NAPHTHA FORW-GT&HRSG	:PY-DP-1-M104-1051-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
1-F0-606-7001-B1A	14.0	42.0	26.3	65.0	39.45	NA	NA	B1A-HPV	1"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :
- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD.	TARAKESH K	-SD-	31.05.19

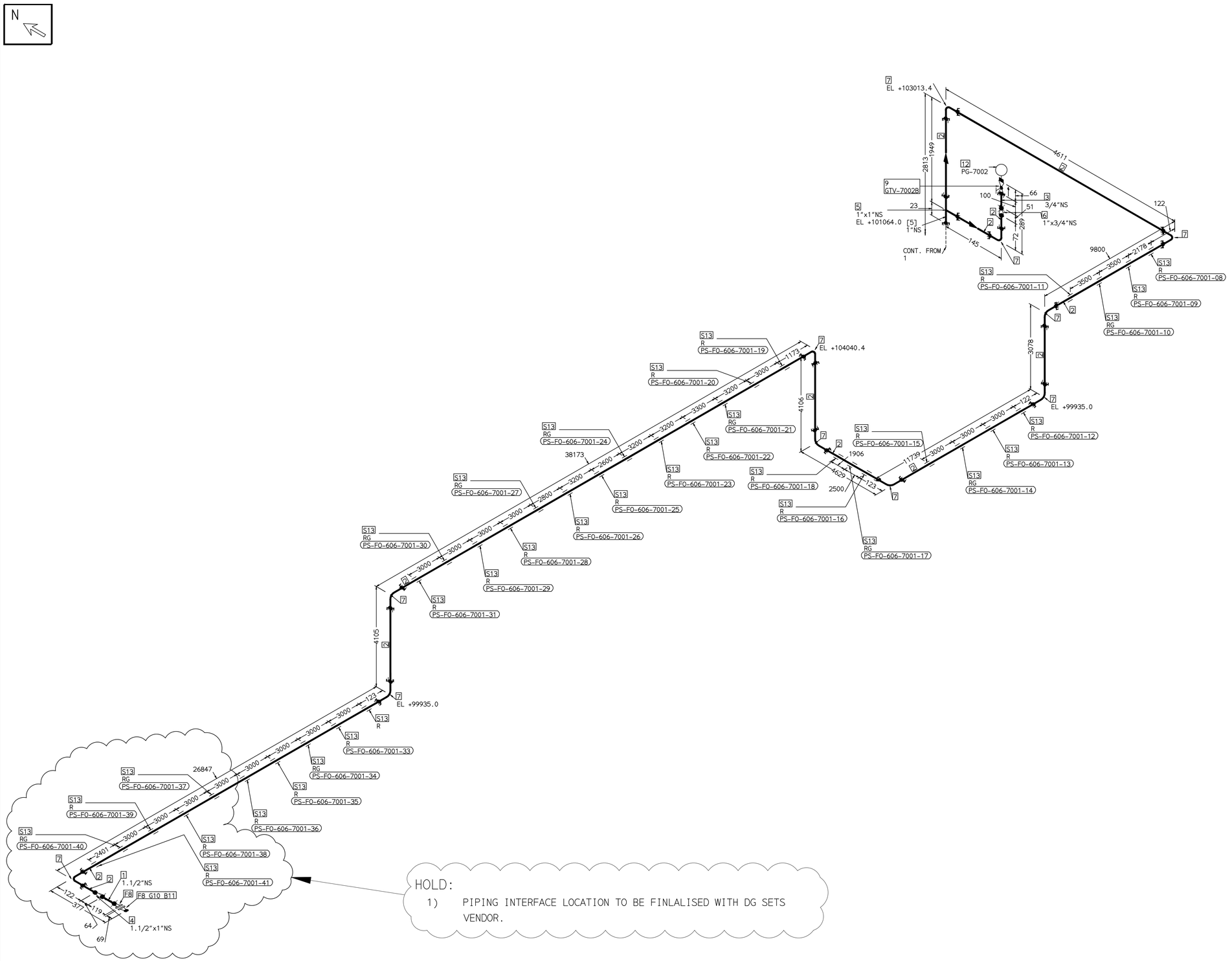
SCALE: NTS

TITLE:
ISOMETRIC FOR HSD FROM D/S OF CPP B/L TO FO DAY TANK - SHT 1

PE & SD DRAWING No.
PY-DX-1-M104-1052-09-REV0
SHT. No. 1 | No. OF SHEETS: 2
DRAWING No. 1-80-557-U9105
REV 00

COMPUTER FILE NAME:

COMPUTER FILE NAME:



HOLD:

1) PIPING INTERFACE LOCATION TO BE FINLALISED WITH DG SETS VENDOR.

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	1.1/2	XS		0.1M	5.41	PY9752097049
2	PIPE SMLS ASME B36.10 PE	A106GRB	1	XS		108.9M	3.24	PY9752097030
3	PIPE SMLS ASME B36.10 PE	A106GRB	3/4	S160		0.1M	2.9	PY9752097294
4	RDCR CONC ASME B16.9 BW	A234GRWPB	1.1/2 x 1	XSXXS		1	0.35	PY9752103057
5	TEE STRT ASME B16.11 CL3000 SW	A105	1 x 1		CL3000	1	0.57	PY9752111033
6	RDCR CONC ASME B16.9 BW	A234GRWPB	1 x 3/4	XSXS160		1	0.16	PY9752103677
7	ELBOW 90 DEG LR ASME B16.11 CL3000 SW	A105	1		CL3000	11	0.49	PY9752110037
8	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	1.1/2	XS	CL300	2	3.06	PY9752086047
9	GLOBE VALVE HO CL800 SW	A105	3/4		CL800	1	2	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
10	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS316+GRAPH	1.1/2		CL300	1	0.08	PY9752079040
11	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	3/4		CL300	4	0.37	PY9752070221
12	PRESSURE GAUGE SW PG-7002		3/4			1	0	
13	PIPE REST		1			34	0	

[5]

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No. 7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_NAPHTHA FORW-GT&HRSG	:PY-DP-1-M104-1051-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
1-FO-606-7001-B1A	14.0	42.0	26.3	65.0	39.45	NA	NA	B1A-HPV	1"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LTD
PROJECT ENGINEERING & SYSTEMS DIVISION
R.C.PURAM, HYDERABAD-502032.
PE&SD LAYOUTS & PIPING ENGINEERING

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD	TARAKESH K	-SD-	31.05.19

SCALE: NTS

TITLE: ISOMETRIC FOR HSD FROM D/S OF CPP B/L TO FO DAY TANK - SHT 2

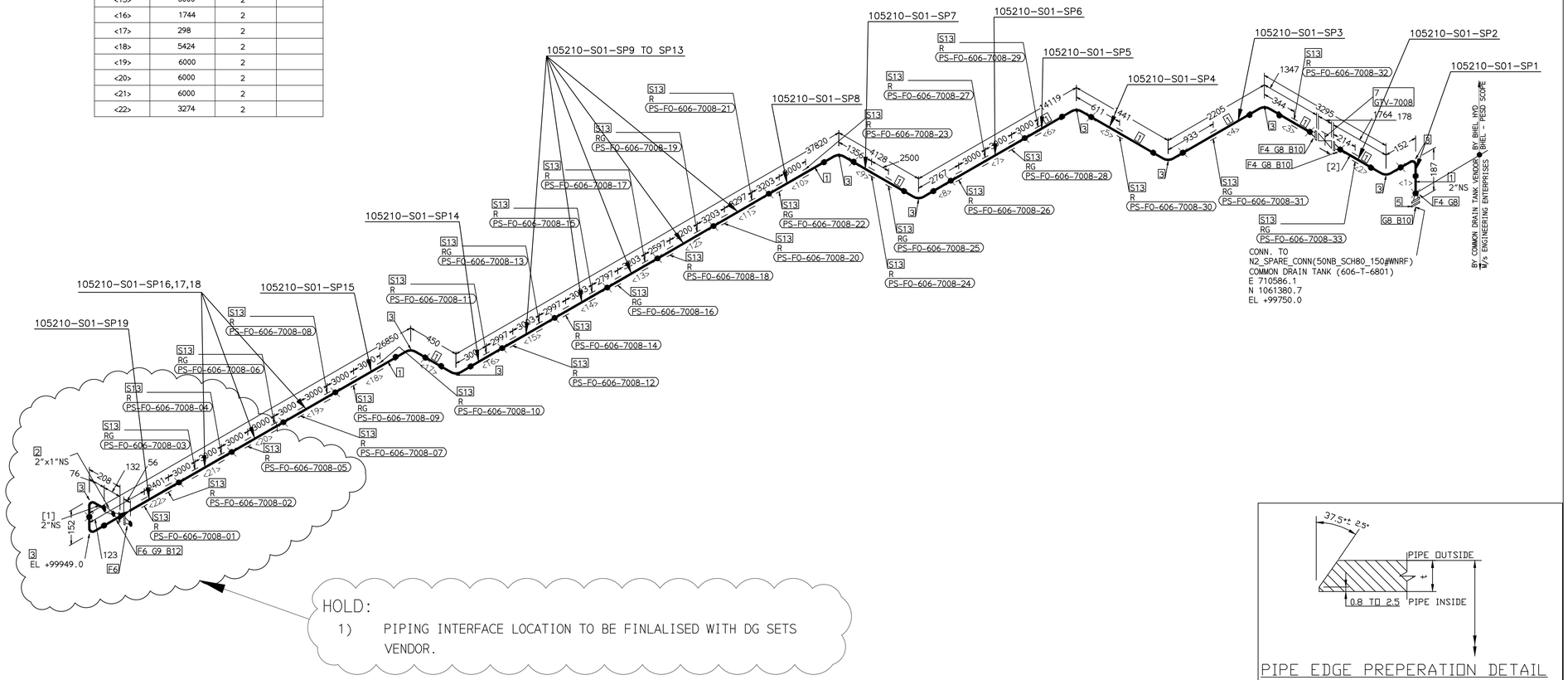
PE & SD DRAWING No. PY-DX-1-M104-1052-09-REV0
SHT. No. 2 | No. OF SHEETS: 2
DRAWING No. 1-80-557-U9106 | REV 00

COMPUTER FILE NAME:

N

CUT PIPE LENGTH

PIECE NO	CUT LENGTH	BORE (In)	REMARKS
<1>	48	2	
<2>	1625	2	
<3>	1208	2	
<4>	2053	2	
<5>	1289	2	
<6>	5924	2	
<7>	6000	2	
<8>	2043	2	
<9>	3976	2	
<10>	5924	2	
<11>	6000	2	
<12>	6000	2	
<13>	6000	2	
<14>	6000	2	
<15>	6000	2	
<16>	1744	2	
<17>	298	2	
<18>	5424	2	
<19>	6000	2	
<20>	6000	2	
<21>	6000	2	
<22>	3274	2	



HOLD:

1) PIPING INTERFACE LOCATION TO BE FINLALISED WITH DG SETS VENDOR.

FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
1	PIPE SMLS ASME B36.10 PE	A106GRB	2	XS		88.9M	7.48	PY9752097154
2	RDCR CONC ASME B16.9 BW	A234GRWPB	2 x 1	XSXXS		1	0.57	PY9752103324
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	XS		11	1.02	PY9752101194
4	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	2	XS	CL150	3	2.67	PY9752085210
5	FIG 8 BLANK ASME B16.48 CL150 FF (B16.5)	A105	2		CL150	1	0.68	PY9752
6	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	1	XS	CL150	2	1.11	PY9752085032
7	GATE VALVE HO ASME B16.10 CL150 RF(16.5)	A216GRWCB	2		CL150	1	14.69	

ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCH	RATING	QTY	UNITWT (Kg)	MATERIAL CODE
8	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	2		CL150	4	0.11	PY9752078052
9	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL150 RF	SS316+GRAPH	1		CL150	1	0.05	PY9752078036
10	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	4	0.2	PY9752070078
11	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	5/8		CL150	8	0.2	PY9752070078
12	70 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A19 4GR2H	1/2		CL150	4	0.1	PY9752
13	PIPE REST		2			33	0	

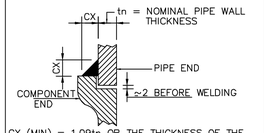
[1] [2]

PIPE EDGE PREPERATION DETAIL

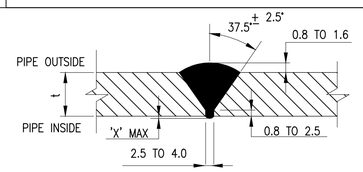
DETAIL-'A'

AS PER ASME B 31.1

WELDING DETAILS OF SOCKET WELD END COMPONENT TO PIPE



CX (MIN) = 1.09tn OR THE THICKNESS OF THE OCKET WALL, WHICHEVER IS SMALLER



TYPICAL DETAIL PIPE TO PIPE BUTT WELDING DETAIL

'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

GENERAL NOTES:-

1. ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
3. PIPES CONNECTED TO EQUIPMENTS/VALVES SHOULD BE EDGE PREPARED TO MATCH THE CORRESPONDING NOZZLE OF EQUIPMENT/VALVE.
4. DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
5. REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

CUSTOMER No.7887

CLIENT:	HINDUSTAN PETROLEUM CORPORATION LIMITED VISAKH REFINERY, VISHAKHAPATNAM
PROJECT:	75 MW CAPTIVE POWER PLANT (CPP) PACKAGE (1xFr6Fa GTG+1x185 TPH HRSG+1x15 MW BPTG) FOR "VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"
CONSULTANT:	ENGINEERS INDIA LIMITED (EIL), NEW DELHI EIL JOB NO : B016
CLIENT:	PROJECT ENGINEERING & SYSTEMS DIVISION R.C. PURAM, HYDRABAD-502032

REFERENCE DRAWINGS:-

01.P&IDs_NAPHTHA FORW-GT&HRSG	:PY-DP-1-M104-1051-01
02.GCS AREA LAYOUT	:PY-LE-1-M104-2014-01

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
2-FO-606-7008-A1A	14.0	42.0	26.3	65.0	39.45	NA	NA	A1A-HPV	2"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL- DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

LEGENDS FOR WELD JOINTS :

- SHOP WELD.(BUTT WELD)
- FIELD WELD.(BUTT WELD)
- SOCKET WELD

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES AND VESSELS PLANT
VISAKHAPATNAM -530012

	NAME	SIGN	DATE
DRN.	MUNAYYA K	-SD-	31.05.19
CHKD.	A VENKATA RAO	-SD-	31.05.19
APPRD.	TARAKESH K	-SD-	31.05.19

SCALE: NTS

TITLE:
ISOMETRIC FOR HSD DRAIN LINE FROM FO DAY TANK TO CDT

PE & SD DRAWING No.
PY-DX-1-M104-1052-10-REV0
SHT. No. 1 | No. OF SHEETS: 1
DRAWING No. 1-80-557-U9107 | REV 00