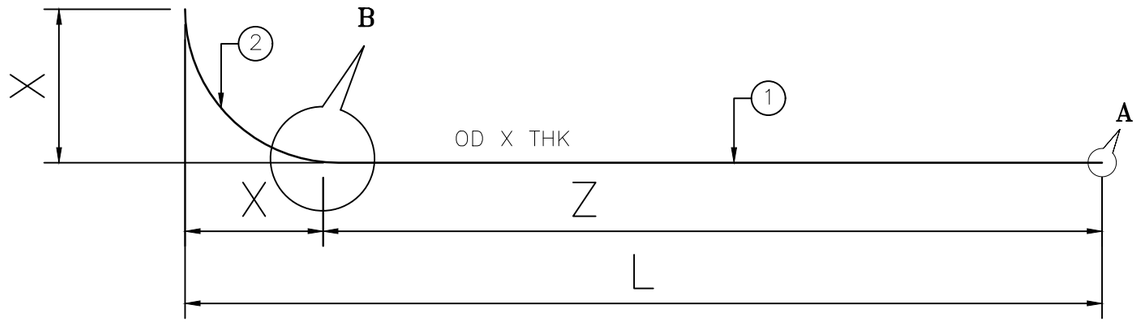
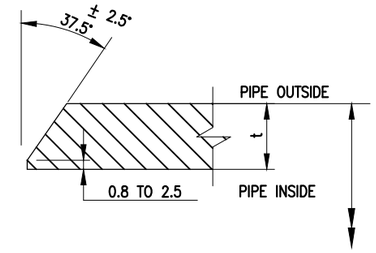
DRG. NO. 3-80-552-U9095



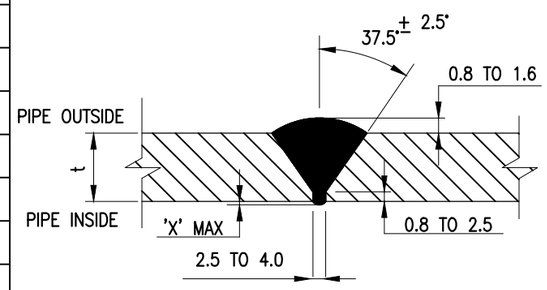
PIPE ASSEMBLY-1

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)-1	L(MM)	X(MM)	MOC(ELBOW)-2	Z(MM)	PIPE WEIGHT	ELBOW WEIGHT	TOTAL WEIGHT (kgs)	MATERIAL CODE-1	MATERIAL CODE-2
PY-DX-1-M104-1066-01 (01 OF 04)	01	106601-S01-SP1	PA-1	323.8X9.53	A 106GR.B	2372	457	A234GRWRB	1915	141.48	55.68	197.16	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	02	106601-S01-SP3	PA-1	323.8X9.53	A 106GR.B	1194	457	A234GRWRB	737	54.44	55.68	110.12	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	03	106601-S01-SP6	PA-1	323.8X9.53	A 106GR.B	1216	457	A234GRWRB	759	56.07	55.68	111.75	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	04	106601-S01-SP8	PA-1	323.8X9.53	A 106GR.B	2078	457	A234GRWRB	1621	119.75	55.68	175.43	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	05	106601-S01-SP17	PA-1	323.8X9.53	A 106GR.B	4287	457	A234GRWRB	3830	284.29	55.68	339.97	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	06	106601-S01-SP18	PA-1	323.8X9.53	A 106GR.B	4172	457	A234GRWRB	3715	274.46	55.68	330.14	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	07	106601-S01-SP25	PA-1	323.8X9.53	A 106GR.B	5944	457	A234GRWRB	5487	406.41	55.68	462.09	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	08	106601-S01-SP28	PA-1	323.8X9.53	A 106GR.B	4243	457	A234GRWRB	3786	279.70	55.68	335.38	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	09	106601-S01-SP29	PA-1	323.8X9.53	A 106GR.B	2752	457	A234GRWRB	2295	169.55	55.68	225.23	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	10	106601-S01-SP31	PA-1	323.8X9.53	A 106GR.B	1842	457	A234GRWRB	1385	102.32	55.68	158.00	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (01 OF 04)	11	106601-S01-SP32	PA-1	323.8X9.53	A 106GR.B	2005	457	A234GRWRB	1548	114.36	55.68	170.04	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (02 OF 04)	**12**	**106601-S02-SP3**	**PA-1**	**323.8X9.53**	**A 106GR.B**	**585**	**457**	**A234GRWRB**	128	**9.46**	**55.68**	**65.14**	**PY9752097138**	**PY9752101135**
PY-DX-1-M104-1066-01 (02 OF 04)	13	106601-S02-SP4	PA-1	323.8X9.53	A 106GR.B	1425	457	A234GRWRB	968	71.51	55.68	127.19	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (02 OF 04)	14	106601-S02-SP5	PA-1	323.8X9.53	A 106GR.B	1511	457	A234GRWRB	1054	77.86	55.68	133.54	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (02 OF 04)	15	106601-S02-SP6	PA-1	323.8X9.53	A 106GR.B	1628	457	A234GRWRB	1171	86.51	55.68	142.19	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (02 OF 04)	16	106601-S02-SP8	PA-1	323.8X9.53	A 106GR.B	1307	457	A234GRWRB	850	62.79	55.68	118.47	PY9752097138	PY9752101135
PY-DX-1-M104-1066-01 (04 OF 04)	17	106601-S04-SP1	PA-1	323.8X9.53	A 106GR.B	1505	457	A234GRWRB	1048	77.86	55.68	133.54	PY9752097138	PY9752101135



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



DETAIL-'B'
PIPE TO ELBOW
BUTT WELDING DETAIL

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

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-01 (01 OF 04 , 02 OF 04 & 04 OF 04)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS,
20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

REFINERY GAS SYSTEM

CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

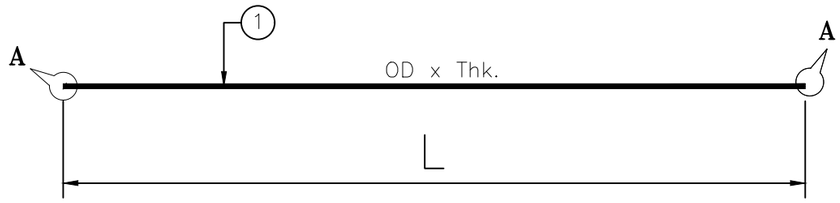
TITLE: **PIPE ASSEMBLY-1**

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. 3-80-552-U9095

REV. 00

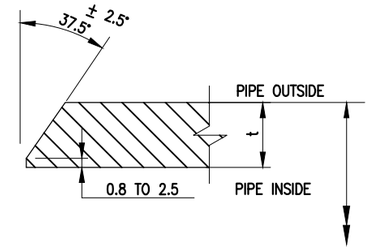
DRG. NO. 3-80-552-U9096



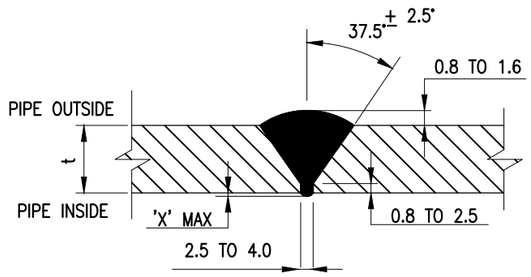
PIPE ASSEMBLY-2

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC	L(MM)	PIPE WEIGHT	MATERIAL CODE
PY-DX-1-M104-1066-01 (01 OF 04)	01	106601-S01-SP2	PA-2	323.8X9.53	A 106GR.B	4983	368.14	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	02	106601-S01-SP4	PA-2	323.8X9.53	A 106GR.B	1819	134.38	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	03	106601-S01-SP7	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	04	106601-S01-SP9	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	05	106601-S01-SP10	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	06	106601-S01-SP11	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	07	106601-S01-SP12	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	08	106601-S01-SP13	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	09	106601-S01-SP14	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	10	106601-S01-SP15	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	11	106601-S01-SP16	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	12	106601-S01-SP19	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	13	106601-S01-SP20	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	14	106601-S01-SP21	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	15	106601-S01-SP22	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	16	106601-S01-SP23	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	17	106601-S01-SP24	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	18	106601-S01-SP26	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	19	106601-S01-SP27	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (01 OF 04)	20	106601-S01-SP30	PA-2	323.8X9.53	A 106GR.B	6000	443.28	PY9752097138
PY-DX-1-M104-1066-01 (02 OF 04)	21	106601-S02-SP7	PA-2	323.8X9.53	A 106GR.B	544	40.19	PY9752097138
PY-DX-1-M104-1066-01 (02 OF 04)	22	106601-S02-SP9	PA-2	323.8X9.53	A 106GR.B	1171	86.51	PY9752097138



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-01 (01 OF 04 & 02 OF 04)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
I COAT OF F-9 @ 65-75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

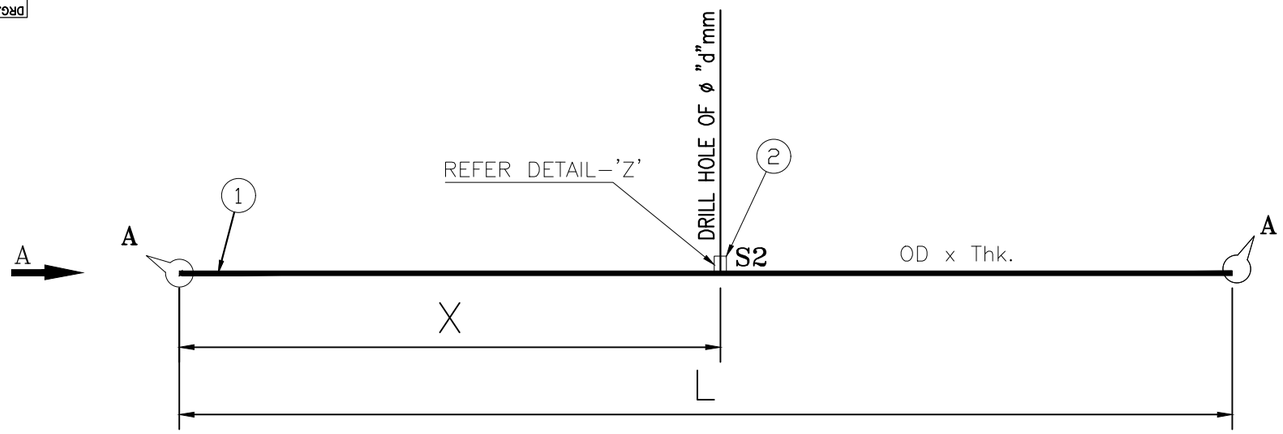
ALL DIMENSIONS ARE IN MILLIMETRES

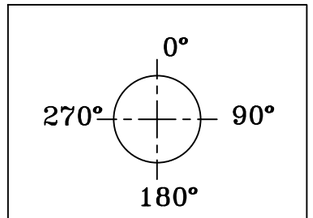
SCALE NTS

TITLE: **PIPE ASSEMBLY-2**

DRG No. 3-80-552-U9096 REV. 00

DRG. NO. 3-80-552-U9097



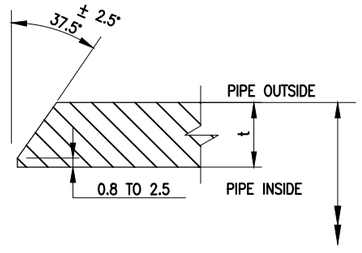


VIEW-A
ORIENTATION OF STUB

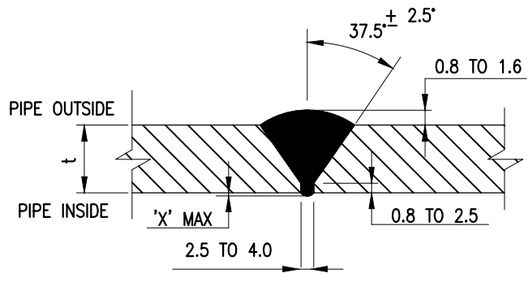
PIPE ASSEMBLY-3

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)-1	L(MM)	X(MM)	PIPE WEIGHT	TOTAL WEIGHT	STUB MOC-2	STUB ORIENTATION (DEG)	MATERIAL CODE-1	MATERIAL CODE-2
PY-DX-1-M104-1066-01 (01 OF 04)	01	106601-SO1-SP5	PA-3	323.8X9.53	A 106GR.B	401	251	29.62	29.91	2) HALF COUPLING A105 3/4" CL6000 SW	STUB-2:180°	PY9752097138	PY9752093078
PY-DX-1-M104-1066-01 (02 OF 04)	02	106601-SO2-SP1	PA-3	323.8X9.53	A 106GR.B	1781	1426	131.58	131.87	2) HALF COUPLING A105 3/4" CL6000 SW	STUB-2:0°	PY9752097138	PY9752093078

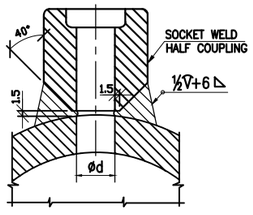


PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)



	ød 3000#	ød 6000#
3/4"		15.6

HALF-COUPLING
DETAIL-'Z'

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM

CUSTOMER No. 7887

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-01 (01 OF 04 & 02 OF 04)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75µ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

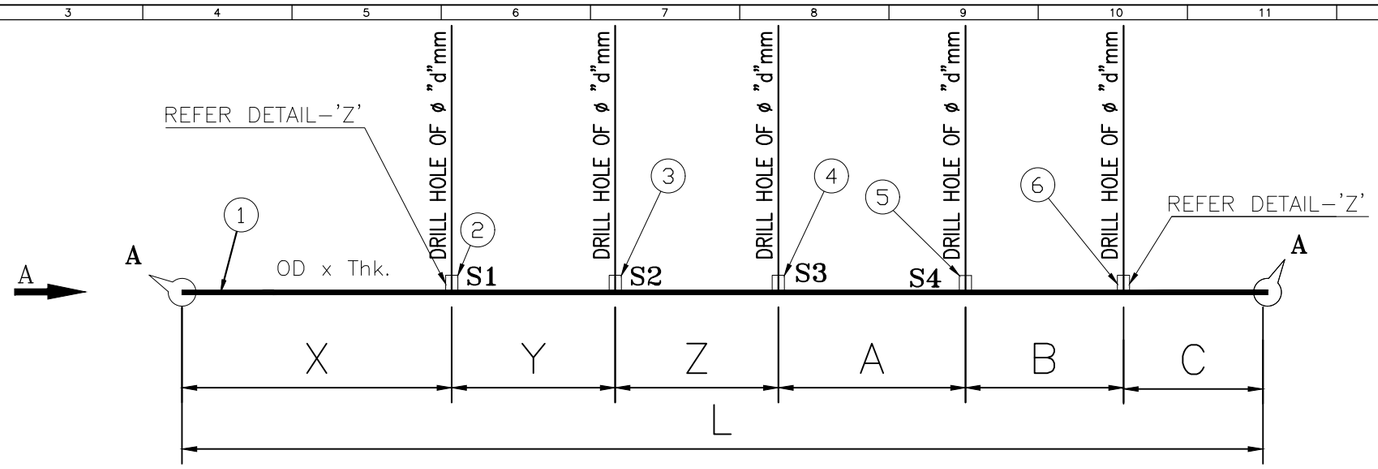
TITLE: PIPE ASSEMBLY-3

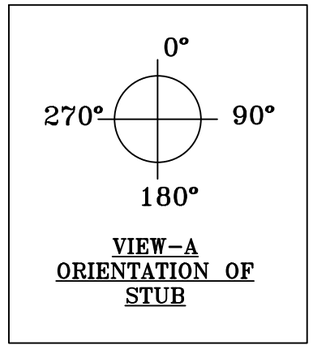
ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. 3-80-552-U9097

REV. 00

DRG. NO. 3-80-552-U9098



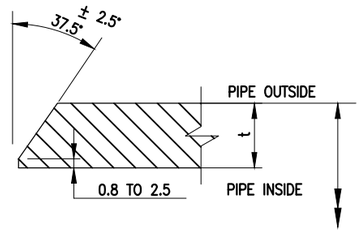


VIEW–A
ORIENTATION OF
STUB

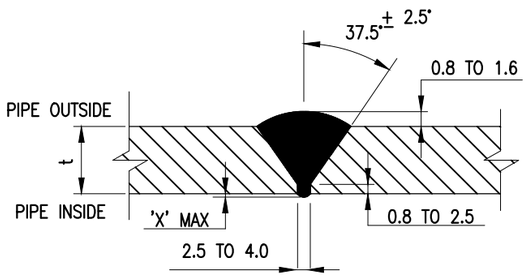
VARIANT TABLE:–

PIPE ASSEMBLY–4

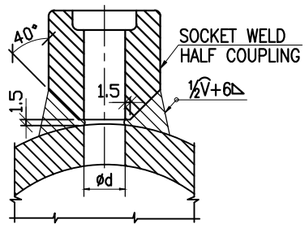
ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)–1	L(MM)	X(MM)	Y(MM)	Z(MM)	A(MM)	B(MM)	C(MM)	PIPE WEIGHT	TOTAL WEIGHT	STUB MOC–2	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	MATERIAL CODE–1	MATERIAL CODE–2
PY–DX–1–M104–1066–01 (02 OF 04)	01	106601–S02–SP2	PA–4	323.8X9.53	A 106GR.B	1755	304	300	300	300	300	251	129.66	131.67	2) HALF COUPLING A105 3/4" CL6000 SW 3) HALF COUPLING A105 3/4" CL6000 SW 4) HALF COUPLING A105 3/4" CL6000 SW 5) HALF COUPLING A105 1.1/2" CL3000 SW 6) HALF COUPLING A105 1.1/2" CL3000 SW	STUB–2:0°	STUB–3:0°	STUB–4:0°	STUB–5:0°	STUB–6:0°	PY9752097138	2) PY9752093078 3) PY9752093078 4) PY9752093078 5) PY9752093043 6) PY9752093043
PY–DX–1–M104–1066–01 (04 OF 04)	02	106601–S04–SP2	PA–4	323.8X9.53	A 106GR.B	1257	601	356	–	–	–	–	92.86	94.00	2) HALF COUPLING A105 1" CL3000 SW 3) HALF COUPLING A105 1" CL3000 SW	STUB–2:0°	STUB–3: 180°	–	–	–	PY9752097138	2) PY9752093035 3) PY9752093035



PIPE EDGE PREPARATION DETAIL
DETAIL–'A'
(AS PER ASME B16.25)



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)



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

HALF–COUPLING
DETAIL–'Z'

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY–DX–1–M104–1066–01 (02 OF 04 & 04 OF 04)
02) WPS SHALL BE AS PER GT57124 : REV.–03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON–IBR
07) SURFACE PREPARATION & PRIMER: SSPC–SP–10
1 COAT OF F–9 @ 65–75µ DFT/COAT.
REFER PAINTING SCHEDULE: PY–AQ–3–M104–2001–01; REV–00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT
RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM–530012.

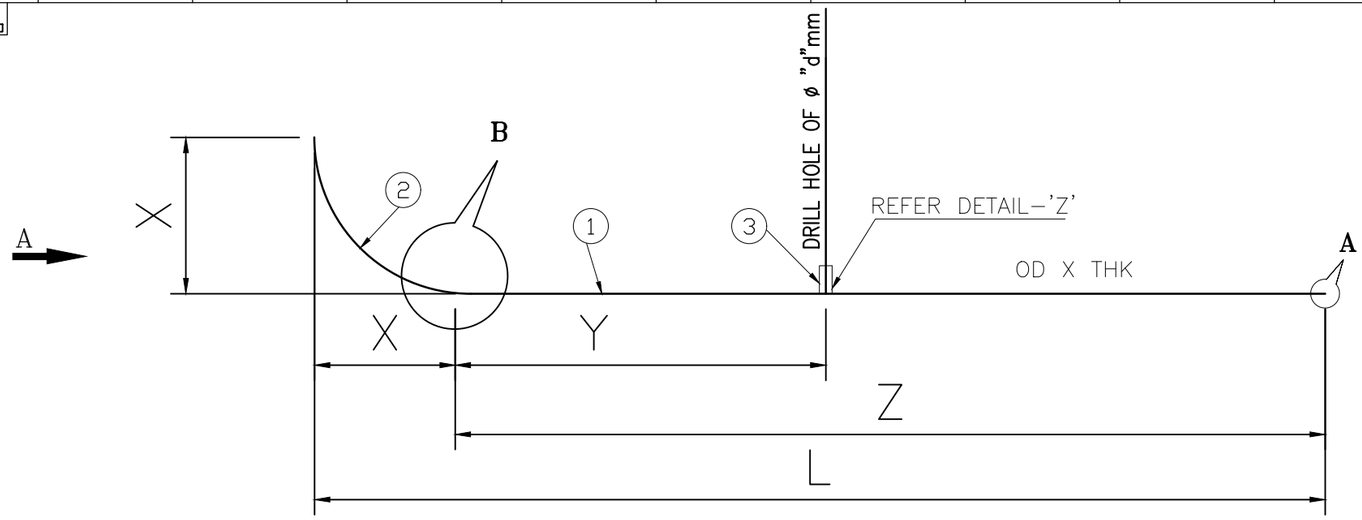
DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

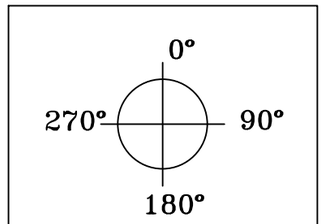
TITLE: PIPE ASSEMBLY–4

ALL DIMENSIONS ARE IN MILLIMETRES | SCALE NTS

DRG No. 3–80–552–U9098 | REV. 00

DRG. NO. 3-80-552-U9099



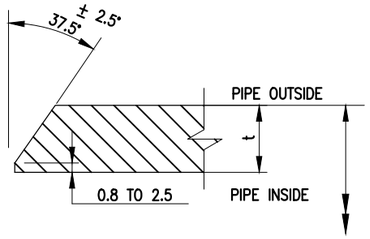


VIEW-A
ORIENTATION OF STUB

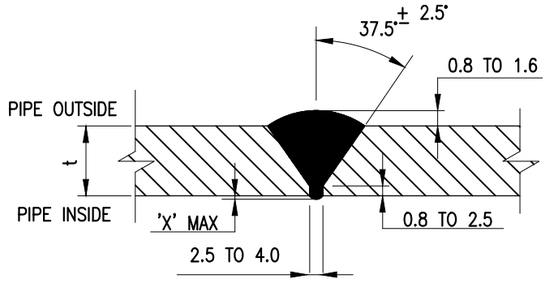
PIPE ASSEMBLY-5

VARIANT TABLE:-

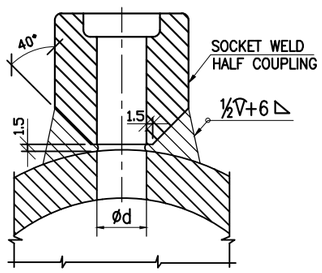
ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	PIPE MOC-1	L(MM)	X(MM)	Y(MM)	Z(MM)	PIPE WEIGHT	ELBOW WEIGHT	TOTALL (kgs)	ELBOW MOC-2	STUB MOC-3	STUB ORIENTATION (DEG)	ELBOW ORIENTATION (DEG)	MATERIAL CODE-1	MATERIAL CODE-2	MATERIAL CODE-3
PY-DX-1-M104-1066-01 (03 OF 04)	01	106601-SO3-SP1	PA-5	323.8X9.53	A 106GR.B	757	457	100	300	22.16	55.68	78.13	A234GRWRB	3) HALF COUPLING A105 3/4" CL6000SW	STUB-3:180°	ELBOW:-0°	PY9752097138	PY9752101135	PY9752093078
PY-DX-1-M104-1066-01 (03 OF 04)	02	106601-SO3-SP2	PA-5	323.8X9.53	A 106GR.B	757	457	100	300	22.16	55.68	78.13	A234GRWRB	3) HALF COUPLING A105 3/4" CL6000SW	STUB-3:180°	ELBOW:-0°	PY9752097138	PY9752101135	PY9752093078



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



DETAIL-'B'
PIPE TO ELBOW
BUTT WELDING DETAIL
'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)



	ød 3000#	ød 6000#
3/4"		15.6

HALF-COUPLING
DETAIL-'Z'

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-01 (03 OF 04)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75µ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM

CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

ALL DIMENSIONS ARE IN MILLIMETRES

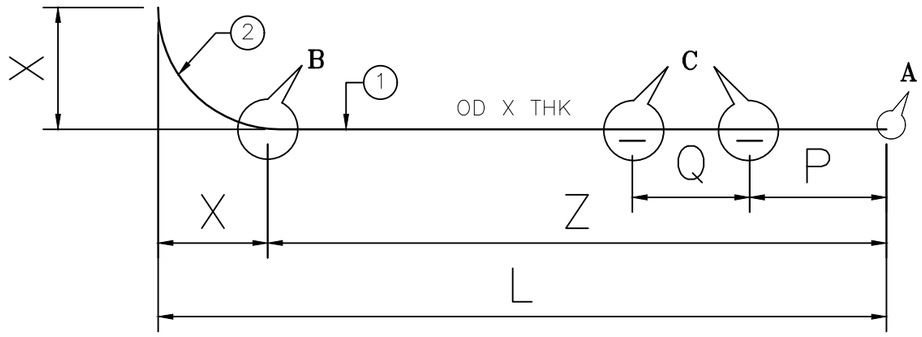
SCALE NTS

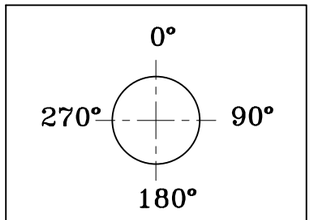
TITLE: PIPE ASSEMBLY-5

DRG No. 3-80-552-U9099

REV. 00

DRG. No. 3-80-552-U9100



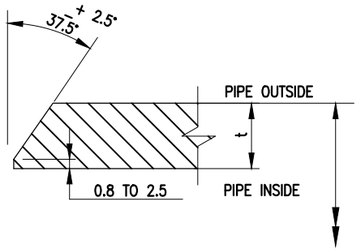


VIEW–A
ORIENTATION OF STUB

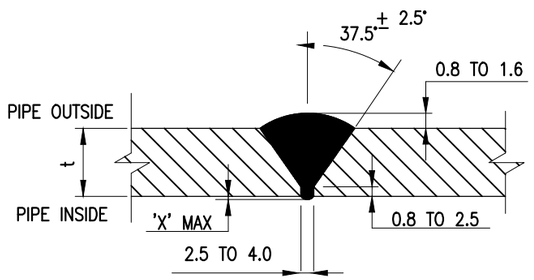
PIPE ASSEMBLY–1

VARIANT TABLE:–

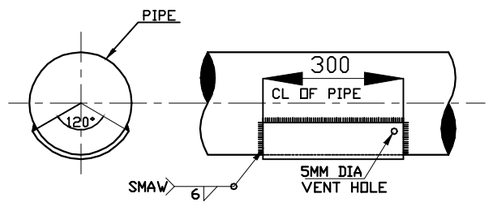
ISOMETRIC NUMBER	SL No.	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)–1	L(MM)	X(MM)	P(MM)	Q(MM)	MOC(ELBOW)–2	Z(MM)	PIPE WEIGHT	ELBOW WEIGHT	TOTAL (kgs)	MATERIAL CODE–1	MATERIAL CODE–2	ELBOW ORIENTATION	SUPPORT PAD ORIENTATION
PY–DX–1–M104–1066–02 (REV–01) (SHEET 01 OF 01)	01	106602–S01–SP1	PA–1	323.8X9.53	A 106GR.B	1561	457	–	–	A234GRWRB	1104	81.56	55.68	137.24	PY9752097138	PY9752101135	–	–
	02	106602–S01–SP4	PA–1	323.8X9.53	A 106GR.B	880	457	–	–	A234GRWRB	423	31.69	55.68	87.37	PY9752097138	PY9752101135	–	–
	03	106602–S01–SP5	PA–1	323.8X9.53	A 106GR.B	1945	457	–	–	A234GRWRB	1488	109.93	55.68	165.61	PY9752097138	PY9752101135	–	–
	04	106602–S01–SP7	PA–1	323.8X9.53	A 106GR.B	1285	457	–	–	A234GRWRB	828	61.17	55.68	116.85	PY9752097138	PY9752101135	–	–
	05	106602–S01–SP9	PA–1	323.8X9.53	A 106GR.B	6453	457	486	4500	A234GRWRB	5996	443.28	55.68	513.74	PY9752097138	PY9752101135	270°	180°
	06	106602–S01–SP10	PA–1	323.8X9.53	A 106GR.B	3650	457	2012	–	A234GRWRB	3193	235.9	55.68	298.97	PY9752097138	PY9752101135	180°	180°



PIPE EDGE PREPARATION DETAIL
DETAIL–'A'
(AS PER ASME B16.25)



DETAIL–'B'
PIPE TO ELBOW
BUTT WELDING DETAIL
'X' MAX– 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)



SUPPORT SHOE PAD DETAIL
(SUPPORT SHOE CUT FROM MAIN PIPE)
DETAIL–'C'

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT
RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY–DX–1–M104–1066–02 (01 OF 01)
02) WPS SHALL BE AS PER GT57124 : REV.–03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON–IBR
07) SURFACE PREPARATION & PRIMER: SSPC–SP–10
1 COAT OF F–15 @ 75µ DFT/COAT.
REFER PAINTING SCHEDULE: PY–AQ–3–M104–2001–01; REV–00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

REFINERY GAS SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

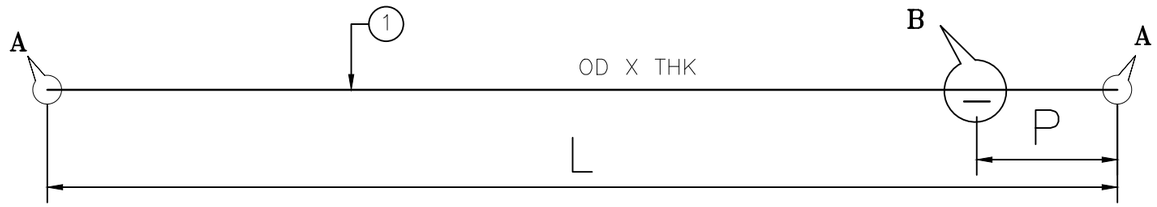
BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM–530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE NTS

TITLE: PIPE ASSEMBLY–1

DRG No. 3–80–552–U9100 | REV. 00

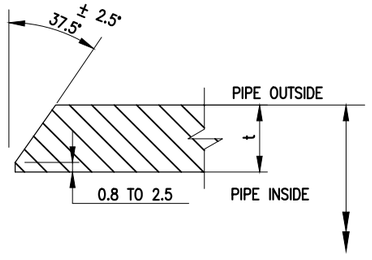
DRG. NO. 3-80-552-U9101



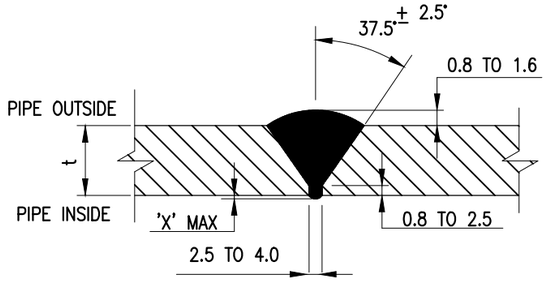
PIPE ASSEMBLY-2

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC	L(MM)	P(MM)	PIPE WEIGHT	MATERIAL CODE
PY-DX-1-M104-1066-02 (01 OF 01)	01	106602-S01-SP2	PA-2	323.8X9.53	A 106GR.B	6000	3417	450.67	PY9752097138
PY-DX-1-M104-1066-02 (01 OF 01)	02	106602-S01-SP3	PA-2	323.8X9.53	A 106GR.B	6000	4416	450.67	PY9752097138
PY-DX-1-M104-1066-02 (01 OF 01)	03	106602-S01-SP6	PA-2	323.8X9.53	A 106GR.B	5689	1753	427.69	PY9752097138
PY-DX-1-M104-1066-02 (01 OF 01)	04	106602-S01-SP8	PA-2	323.8X9.53	A 106GR.B	6000	245	450.67	PY9752097138

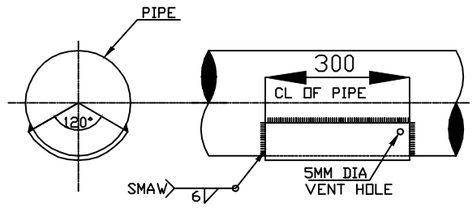


PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)



SUPPORT SHOE PAD DETAIL
(SUPPORT SHOE CUT FROM MAIN PIPE)

DETAIL-'B'

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION

DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM

CUSTOMER No. 7887

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-02 (01 OF 01)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-15 @ 75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

ALL DIMENSIONS ARE IN MILLIMETRES

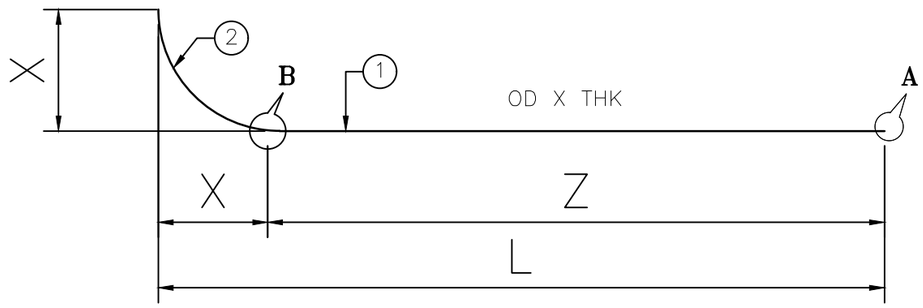
SCALE NTS

TITLE: PIPE ASSEMBLY-2

DRG No. 3-80-552-U9101

REV. 00

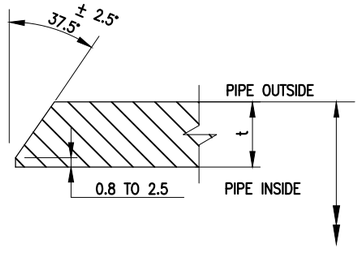
DRG. NO. 3-80-552-U9102



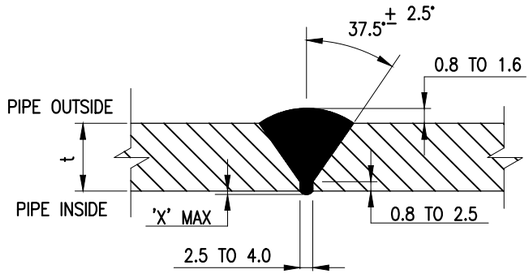
PIPE ASSEMBLY-1 FOR 106603-S01-SP1, SP4 & SP5

VARIANT TABLE:-

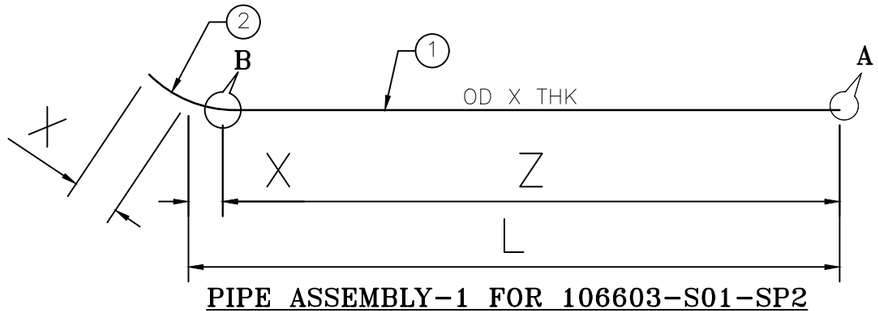
ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)-1	L(MM)	X(MM)	MOC(ELBOW)-2	Z(MM)	PIPE WEIGHT	ELBOW WEIGHT	TOTALL (kgs)	MATERIAL CODE-1	MATERIAL CODE-2	REMARKS
PY-DX-1-M104-1066-03 (01 OF 03)	01	106603-S01-SP1	PA-1	60.3X5.54	A 106GR.B	124	76	A234GRWRB	48	0.37	1.02	1.39	PY9752097154	PY9752101194	90° ELBOW
PY-DX-1-M104-1066-03 (01 OF 03)	02	106603-S01-SP2	PA-1	60.3X5.54	A 106GR.B	135	35	A234GRWRB	100	0.74	0.51	1.25	PY9752097154	PY9752112137	45° ELBOW
PY-DX-1-M104-1066-03 (01 OF 03)	03	106603-S01-SP4	PA-1	60.3X5.54	A 106GR.B	1605	76	A234GRWRB	1529	11.43	1.02	12.45	PY9752097154	PY9752101194	90° ELBOW
PY-DX-1-M104-1066-03 (01 OF 03)	04	106603-S01-SP5	PA-1	60.3X5.54	A 106GR.B	2350	76	A234GRWRB	2274	17.00	1.02	18.02	PY9752097154	PY9752101194	90° ELBOW



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



DETAIL-'B'
PIPE TO ELBOW
BUTT WELDING DETAIL
'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)



PIPE ASSEMBLY-1 FOR 106603-S01-SP2

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT
RELEASED FOR FABRICATION/ERECTION
DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-03 (01 OF 03)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

REFINERY GAS SYSTEM
CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

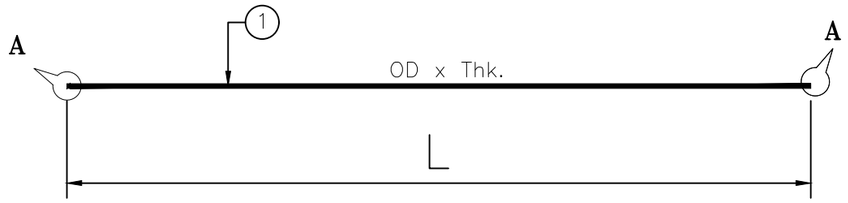
BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

TITLE: PIPE ASSEMBLY-1

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS
DRG No. 3-80-552-U9102
REV. 00

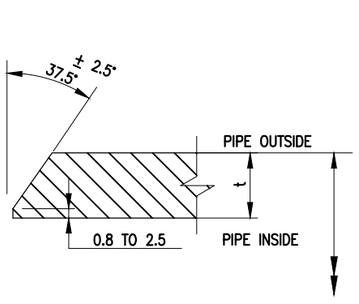
DRG. No. 3-80-552-U9103



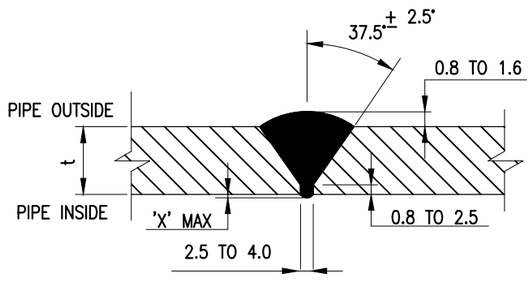
PIPE ASSEMBLY-2

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC	L(MM)	PIPE WEIGHT	MATERIAL CODE
PY-DX-1-M104-1066-03 (01 OF 03)	01	106603-S01-SP3	PA-2	60.3X5.54	A 106GR.B	1716	12.83	PY9752097154
PY-DX-1-M104-1066-03 (01 OF 03)	02	106603-S01-SP6	PA-2	60.3X5.54	A 106GR.B	5988	44.88	PY9752097154
PY-DX-1-M104-1066-03 (01 OF 03)	03	106603-S01-SP7	PA-2	60.3X5.54	A 106GR.B	6000	44.88	PY9752097154
PY-DX-1-M104-1066-03 (01 OF 03)	04	106603-S01-SP8	PA-2	60.3X5.54	A 106GR.B	6000	44.88	PY9752097154
PY-DX-1-M104-1066-03 (01 OF 03)	05	106603-S01-SP9	PA-2	60.3X5.54	A 106GR.B	6000	44.88	PY9752097154



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION

DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-03 (01 OF 03)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

REFINERY GAS SYSTEM

CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

TITLE: **PIPE ASSEMBLY-2**

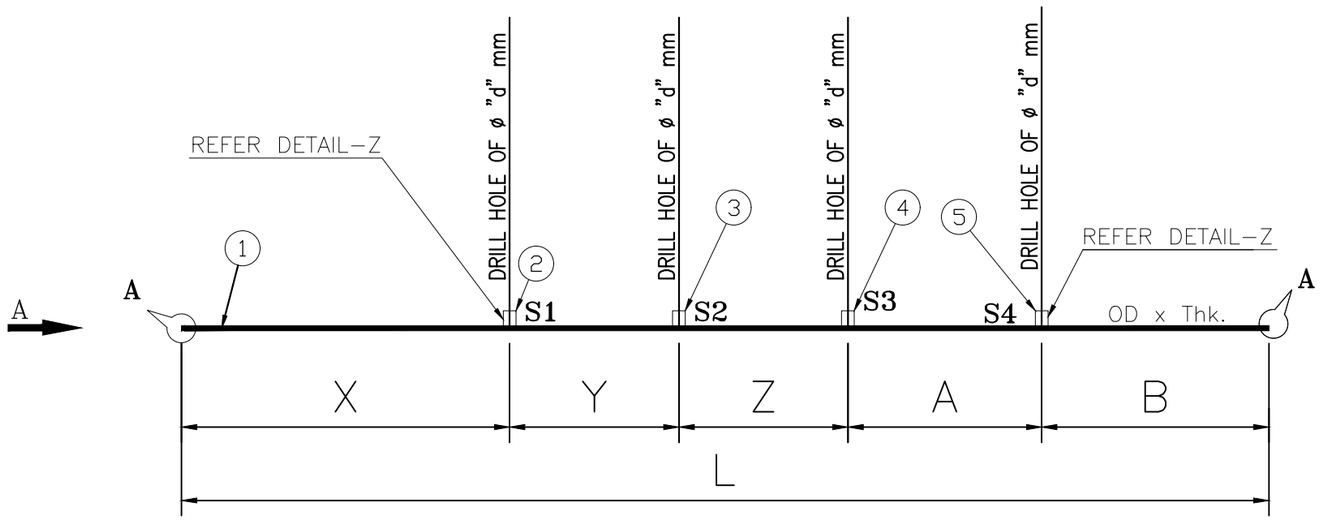
ALL DIMENSIONS ARE IN MILLIMETRES

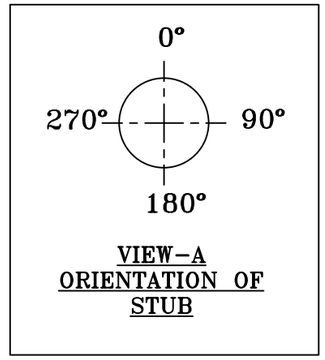
SCALE NTS

DRG No. 3-80-552-U9103

REV. 00

DRG. NO. 3-80-552-U9104



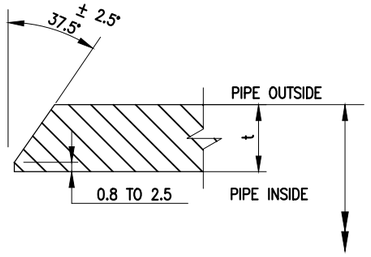


VIEW-A ORIENTATION OF STUB

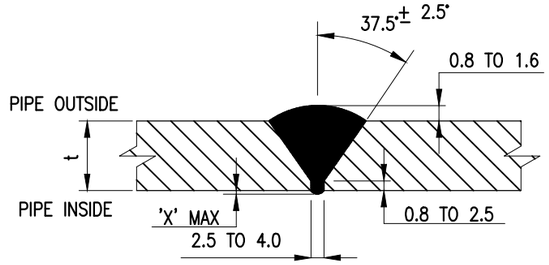
VARIANT TABLE:-

PIPE ASSEMBLY-3

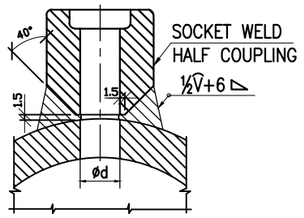
ISOMETRIC NUMBER	SL No.	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC(PIPE)-1	L(MM)	X(MM)	Y(MM)	Z(MM)	A(MM)	B(MM)	PIPE WEIGHT	STUB MOC	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	STUB ORIENTATION (DEG)	MATERIAL CODE-1	MATERIAL CODE-2,3,4,5
PY-DX-1-M104-1066-03 (01 OF 03)	01	106603-S01-SP10	PA-3	60.3X5.54	A 106GR.B	3504	101	113	150	200	2940	26.20	2) HALF COUPLING A105 3/4" CL6000 SW 3) HALF COUPLING A105 1" CL3000 SW 4) HALF COUPLING A105 3/4" CL6000 SW 5) HALF COUPLING A105 3/4" CL6000 SW	STUB-2:0°	STUB-3:0°	STUB-4:0°	STUB-5:0°	PY9752097154	2) PY9752093078 3) PY9752093035 4) PY9752093078 5) PY9752093078



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)



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

HALF-COUPLING
DETAIL-'Z'

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION

DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-03 (01 OF 03)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75µ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	DRAWN	CHECKED	APPROVED	NATURE OF REVISION / DESCRIPTION.

REFINERY GAS SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

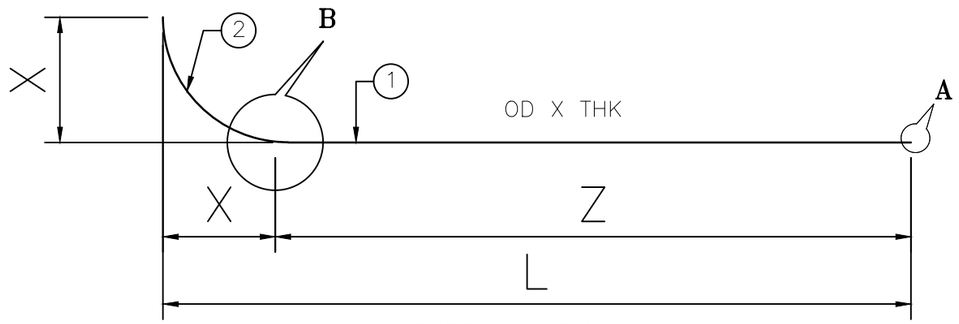
DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

TITLE: **PIPE ASSEMBLY-3**

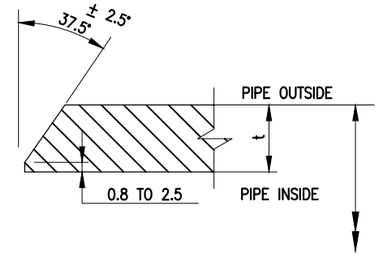
ALL DIMENSIONS ARE IN MILLIMETRES | SCALE NTS

DRG No. 3-80-552-U9104 | REV. 00

DRG. NO. 3-80-552-U9105



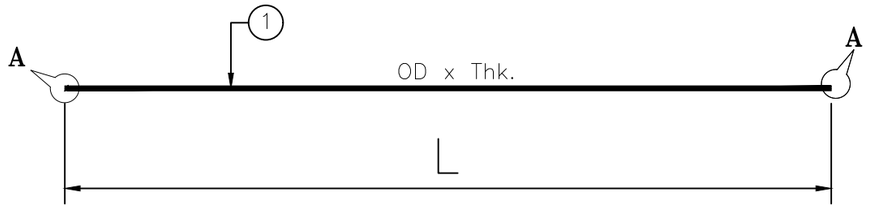
PIPE ASSEMBLY-1



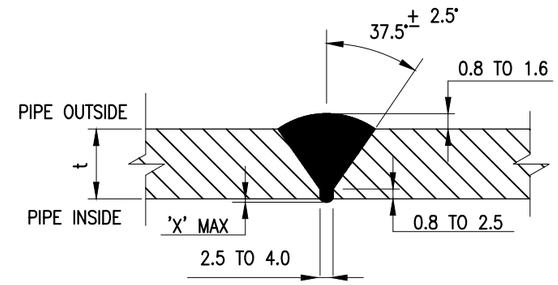
PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC (PIPE)	L(MM)	X(MM)	MOC(ELBOW)	Z(MM)	PIPE WEIGHT	ELBOW WEIGHT	TOTAL (kgs)	MATERIAL CODE-1	MATERIAL CODE-2
PY-DX-1-M104-1066-03 (03 OF 03)	1	106603-S03-SP1	PA-1	114.3X6.02	A 106GR.B	1849	152	A234GRWRB	1697	27.27	4.23	31.50	PY9752097081	PY9752101089



PIPE ASSEMBLY-2



DETAIL-'B'
PIPE TO ELBOW
BUTT WELDING DETAIL
'X' MAX- 1.5 mm FOR PIPE 50 NB AND BELOW
3.0 mm FOR PIPE ABOVE 50 NB
(IF APPLICABLE)

VARIANT TABLE:-

ISOMETRIC NUMBER	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (ODXTHK)	MOC	L(MM)	PIPE WEIGHT	MATERIAL CODE
PY-DX-1-M104-1066-03 (03 OF 03)	1	106603-S03-SP2	PA-2	114.3X6.02	A 106GR.B	1573	25.28	PY9752097081

PROJECT ENGINEERING & SYSTEMS DIVISION
LAYOUT & PIPING DEPARTMENT

RELEASED FOR FABRICATION/ERECTION

DATE 25.06.2019 SIGN: (RAGHAVENDRA SVN)

REFINERY GAS SYSTEM | CUSTOMER No. 7887

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1066-03 (03 OF 03)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT.
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

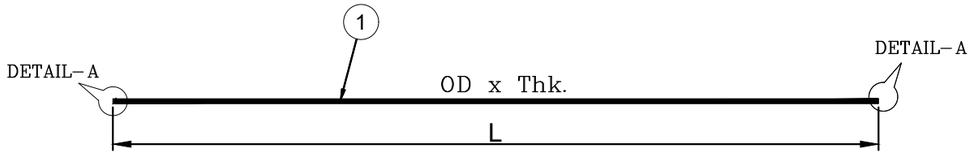
DRAWN	MUNAYYA K
CHECKED	VENKATA RAO
APPROVED	TARAKESH K
DATE	13.05.2019

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

TITLE: PIPE ASSEMBLY-1&2

DRG No. 3-80-552-U9105 REV. 00

DRG. No. 3-80-557-U9221

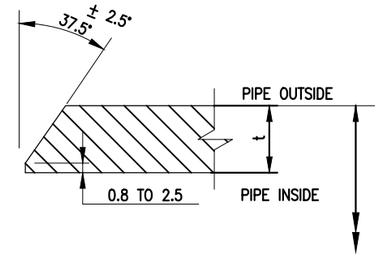


PIPE ASSEMBLY-1

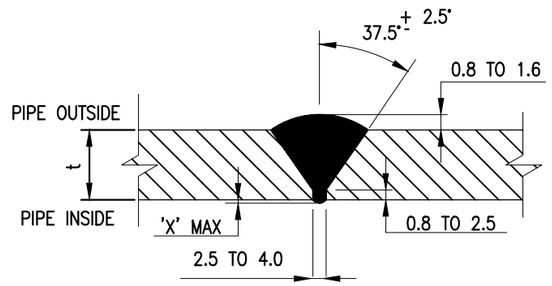
VARIANT TABLE:-

Isometric Num	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC	L (mm)	UNIT WEIGHT (kgs)	WEIGHT (kgs)	MATERIAL CODE FOR PIPE
PY-DX-1-M104-1052-06-S01 OF S08	01	105206-S01-SP5	PA1	60.3 X 5.54	A106GR.B	102	7.48	0.76	PY9752097154
PY-DX-1-M104-1052-06-S01 OF S08	02	105206-S01-SP6	PA1	60.3 X 5.54	A106GR.B	185	7.48	1.38	PY9752097154
PY-DX-1-M104-1052-06-S01 OF S08	03	105206-S01-SP8	PA1	60.3 X 5.54	A106GR.B	102	7.48	0.76	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	04	105206-S02-SP8	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	05	105206-S02-SP9	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	06	105206-S02-SP10	PA1	60.3 X 5.54	A106GR.B	4924	7.48	36.83	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	07	105206-S02-SP14	PA1	60.3 X 5.54	A106GR.B	4924	7.48	36.83	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	08	105206-S02-SP16	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	09	105206-S02-SP17	PA1	60.3 X 5.54	A106GR.B	101	7.48	0.76	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	10	105206-S02-SP21	PA1	60.3 X 5.54	A106GR.B	2294	7.48	17.16	PY9752097154
PY-DX-1-M104-1052-06-S02 OF S08	11	105206-S02-SP22	PA1	60.3 X 5.54	A106GR.B	362	7.48	2.71	PY9752097154
PY-DX-1-M104-1052-06-S03 OF S08	12	105206-S03-SP2	PA1	60.3 X 5.54	A106GR.B	3321	7.48	24.84	PY9752097154
PY-DX-1-M104-1052-06-S03 OF S08	13	105206-S03-SP4	PA1	60.3 X 5.54	A106GR.B	4700	7.48	35.16	PY9752097154
PY-DX-1-M104-1052-06-S03 OF S08	14	105206-S03-SP7	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S03 OF S08	15	105206-S03-SP8	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	16	105206-S04-SP3	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	17	105206-S04-SP4	PA1	60.3 X 5.54	A106GR.B	5000	7.48	37.40	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	18	105206-S04-SP5	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	19	105206-S04-SP6	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	20	105206-S04-SP7	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S04 OF S08	21	105206-S04-SP10	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S05 OF S08	22	105206-S05-SP1	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S05 OF S08	23	105206-S05-SP4	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S05 OF S08	24	105206-S05-SP5	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S05 OF S08	25	105206-S05-SP6	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154
PY-DX-1-M104-1052-06-S05 OF S08	26	105206-S05-SP10	PA1	60.3 X 5.54	A106GR.B	1637	7.48	12.24	PY9752097154

← UNDER HOLD



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



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)

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06-07-10 (01,02,03,04,05,06,07,08 OF 08, 01 , 01)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT + 1COAT OF P-6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

TITLE: **PIPE ASSEMBLY -1 SHEET 1**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

DRG No. **3-80-557-U9221**
REV. **00**

DRG. NO. 3-80-557-U9222

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC	L (mm)	UNIT WEIGHT (kgs)	WEIGHT (kgs)	MATERIAL CODE FOR PIPE	
PY-DX-1-M104-1052-06-S06 OF S08	27	105206-S06-SP1	PA1	60.3 X 5.54	A106GR.B	1000	7.48	7.48	PY9752097154	← UNDER HOLD
PY-DX-1-M104-1052-06-S06 OF S08	28	105206-S06-SP4	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S06 OF S08	29	105206-S06-SP5	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S06 OF S08	30	105206-S06-SP6	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S06 OF S08	31	105206-S06-SP14	PA1	60.3 X 5.54	A106GR.B	1138	7.48	8.51	PY9752097154	← UNDER HOLD
PY-DX-1-M104-1052-06-S07 OF S08	32	105206-S07-SP2	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	33	105206-S07-SP3	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	34	105206-S07-SP4	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	35	105206-S07-SP5	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	36	105206-S07-SP6	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	37	105206-S07-SP8	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	38	105206-S07-SP11	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	39	105206-S07-SP12	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	40	105206-S07-SP14	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	41	105206-S07-SP16	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	42	105206-S07-SP17	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-06-S07 OF S08	43	105206-S07-SP21	PA1	60.3 X 5.54	A106GR.B	252	7.48	1.88	PY9752097154	
PY-DX-1-M104-1052-06-S08 OF S08	44	105206-S08-SP9	PA1	60.3 X 5.54	A106GR.B	5283	7.48	39.52	PY9752097154	
PY-DX-1-M104-1052-07-S01 OF S01	45	105207-S01-SP4	PA1	88.9 X 5.49	A106GR.B	6000	11.29	67.74	PY9752097073	
PY-DX-1-M104-1052-07-S01 OF S01	46	105207-S01-SP8	PA1	88.9 X 5.49	A106GR.B	6000	11.29	67.74	PY9752097073	
PY-DX-1-M104-1052-07-S01 OF S01	47	105207-S01-SP10	PA1	88.9 X 5.49	A106GR.B	6000	11.29	67.74	PY9752097073	
PY-DX-1-M104-1052-07-S01 OF S01	48	105207-S01-SP13	PA1	88.9 X 5.49	A106GR.B	5130	11.29	57.92	PY9752097073	
PY-DX-1-M104-1052-07-S01 OF S01	49	105207-S01-SP17	PA1	88.9 X 5.49	A106GR.B	6000	11.29	67.74	PY9752097073	
PY-DX-1-M104-1052-07-S01 OF S01	50	105207-S01-SP18	PA1	88.9 X 5.49	A106GR.B	6000	11.29	67.74	PY9752097073	
PY-DX-1-M104-1052-10-S01 OF S01	51	105210-S01-SP6	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	52	105210-S01-SP9	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	53	105210-S01-SP10	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	54	105210-S01-SP11	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	55	105210-S01-SP12	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	56	105210-S01-SP13	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	57	105210-S01-SP16	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	58	105210-S01-SP17	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	
PY-DX-1-M104-1052-10-S01 OF S01	59	105210-S01-SP18	PA1	60.3 X 5.54	A106GR.B	6000	7.48	44.88	PY9752097154	

HSD SYSTEM CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

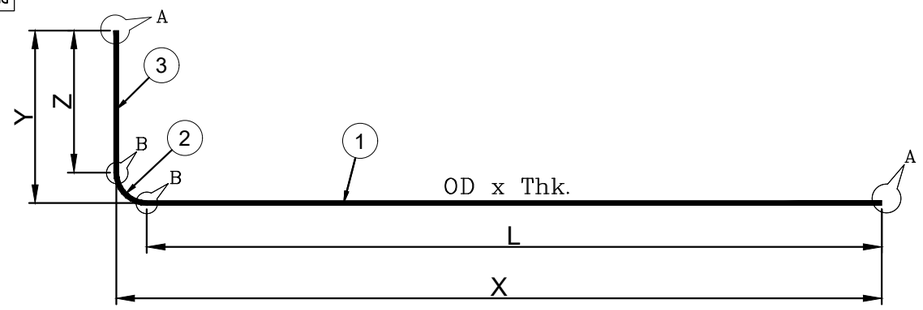
DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

TITLE: **PIPE ASSEMBLY -1 SHEET2**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE **NTS**

DRG No. **3-80-557-U9222**
REV. **00**

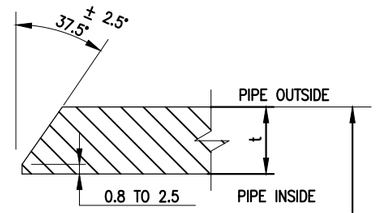
DRG. NO. 3-80-557-U9223



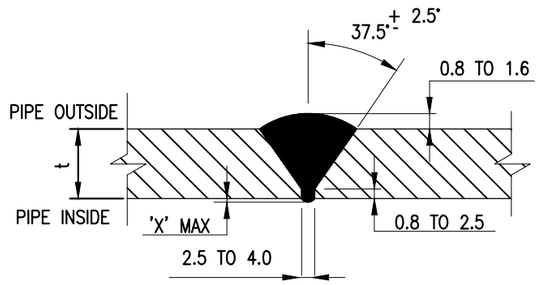
VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1,3 (PIPE)	Z (mm)	Y (mm)	L (mm)	X (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	ELBOW DESCRIPTION	MOC-2 (ELBOW)	ELBOW UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE-1,3 (PIPE)	MATERIAL CODE-2 (ELBOW)
PY-DX-1-M104-1052-06-S01 OF S08	1	105206-S01-SP7	PA1	60.3 X 5.54	A 106GR.B	210	286	919	995	7.48	8.44	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	9.46	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	2	105206-S02-SP1	PA1	60.3 X 5.54	A 106GR.B	100	176	151	227	7.48	1.88	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	2.90	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	3	105206-S02-SP2	PA1	60.3 X 5.54	A 106GR.B	1387	1463	5200	5276	7.48	49.27	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	50.29	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	4	105206-S02-SP7	PA1	60.3 X 5.54	A 106GR.B	368	444	2992	3068	7.48	25.13	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	26.15	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	5	105206-S02-SP18	PA1	60.3 X 5.54	A 106GR.B	101	177	1848	1924	7.48	14.58	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	15.60	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	6	105206-S03-SP5	PA2	60.3 X 5.54	A 106GR.B	4924	5000	418	494	7.48	39.96	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	40.98	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	7	105206-S03-SP9	PA2	60.3 X 5.54	A 106GR.B	530	606	1423	1499	7.48	14.61	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	15.63	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	8	105206-S03-SP13	PA2	60.3 X 5.54	A 106GR.B	1246	1322	3872	3948	7.48	38.28	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	39.30	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	9	105206-S03-SP18	PA2	60.3 X 5.54	A 106GR.B	101	177	248	324	7.48	2.61	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	3.63	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S04 OF S08	10	105206-S04-SP8	PA2	60.3 X 5.54	A 106GR.B	3848	3924	1860	1936	7.48	42.70	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	43.72	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S04 OF S08	11	105206-S04-SP11	PA2	60.3 X 5.54	A 106GR.B	2540	2616	518	594	7.48	22.87	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	23.89	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S05 OF S08	12	105206-S05-SP2	PA2	60.3 X 5.54	A 106GR.B	3818	3894	555	631	7.48	32.71	2"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	1.02	33.73	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S06 OF S08	13	105206-S06-SP2	PA2	60.3 X 5.54	A 106GR.B	60	136	800	876	7.48	6.43	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	7.45	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S06 OF S08	14	105206-S06-SP7	PA2	60.3 X 5.54	A 106GR.B	5767	5843	208	284	7.48	44.69	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.71	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S06 OF S08	15	105206-S06-SP10	PA2	60.3 X 5.54	A 106GR.B	4643	4719	983	1059	7.48	42.08	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	43.10	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	16	105206-S07-SP7	PA2	60.3 X 5.54	A 106GR.B	2480	2556	1924	2000	7.48	32.94	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	33.96	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	17	105206-S07-SP9	PA2	60.3 X 5.54	A 106GR.B	4059	4135	1924	2000	7.48	44.75	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.77	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	18	105206-S07-SP10	PA2	60.3 X 5.54	A 106GR.B	1124	1200	5924	6000	7.48	52.72	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	53.74	PY9752097154	PY9752101194

UNDER HOLD



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



PIPE TO PIPE/ELBOW
DETAIL-'B'
BUTT WELDING DETAIL

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

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06 (SHEET 01,02,03,04,05,06 & 07 OF 08)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT + 1COAT OF P-6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

TITLE: **PIPE ASSEMBLY -2 SHEET1**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. **3-80-557-U9223**
REV. **00**

VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC	Z (mm)	Y (mm)	L (mm)	X (mm)	UNIT WEIGHT (kgs)	WEIGHT (kgs)	ELBOW	MOC	WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE FOR PIPE	MATERIAL CODE FOR ELBOW
PY-DX-1-M104-1052-06-S07 OF S08	19	105206-S07-SP13	PA2	60.3 X 5.54	A 106GR.B	3858	3934	2124	2200	7.48	44.75	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.77	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	20	105206-S07-SP15	PA2	60.3 X 5.54	A 106GR.B	2125	2201	5924	6000	7.48	60.21	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	61.23	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	21	105206-S07-SP18	PA2	60.3 X 5.54	A 106GR.B	743	819	5354	5430	7.48	45.61	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	46.63	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	22	105206-S07-SP20	PA2	60.3 X 5.54	A 106GR.B	1796	1872	4593	4669	7.48	47.79	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	48.81	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S07 OF S08	23	105206-S08-SP7	PA2	60.3 X 5.54	A 106GR.B	1572	1648	1137	1213	7.48	20.26	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	21.28	PY9752097154	PY9752101194
PY-DX-1-M104-1052-07-S01 OF S01	24	105207-S01-SP3	PA2	88.9 X 5.49	A 106GR.B	712	826	5886	6000	11.29	74.49	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	76.79	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	25	105207-S01-SP5	PA2	88.9 X 5.49	A 106GR.B	3297	3411	1492	1606	11.29	54.07	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	56.37	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	26	105207-S01-SP7	PA2	88.9 X 5.49	A 106GR.B	4392	4506	1886	2000	11.29	70.88	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	73.18	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	27	105207-S01-SP9	PA2	88.9 X 5.49	A 106GR.B	5247	5361	1886	2000	11.29	80.53	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	82.83	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	28	105207-S01-SP11	PA2	88.9 X 5.49	A 106GR.B	2940	3054	1192	1306	11.29	46.65	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	48.95	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	29	105207-S01-SP16	PA2	88.9 X 5.49	A 106GR.B	2316	2430	1414	1528	11.29	42.11	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	44.41	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	30	105207-S01-SP19	PA2	88.9 X 5.49	A 106GR.B	5886	6000	292	406	11.29	69.75	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	72.05	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	31	105207-S01-SP21	PA2	88.9 X 5.49	A 106GR.B	1896	2010	5288	5402	11.29	81.11	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	83.41	PY9752097073	PY9752101070
PY-DX-1-M104-1052-08-S01 OF S02	32	105208-S01-SP1	PA2	60.3 X 5.54	A 106GR.B	479	555	1209	1285	7.48	12.63	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	13.65	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	33	105210-S01-SP3	PA2	60.3 X 5.54	A 106GR.B	1208	1284	2053	2129	7.48	24.39	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	25.41	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	34	105210-S01-SP7	PA2	60.3 X 5.54	A 106GR.B	2043	2119	3976	4052	7.48	45.02	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	46.04	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	35	105214-S01-SP14	PA2	60.3 X 5.54	A 106GR.B	1744	1820	298	374	7.48	15.27	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	16.29	PY9752097154	PY9752101194

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06 (SHEET 07 OF 08)
(B) PY-DX-1-M104-1052-07 & 10 (SHEET 01 OF 01)
(C) PY-DX-1-M104-1052-08 (SHEET 01 OF 02)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75µ DFT/COAT + 1COAT OF P-6 @ 40µ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

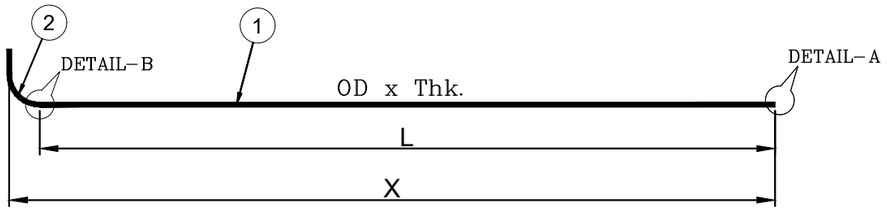
TITLE: **PIPE ASSEMBLY -2 SHEET2**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. **3-80-557-U9224**

REV. **00**

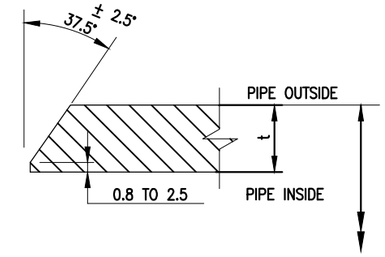
DRG. No. 3-80-557-U9225



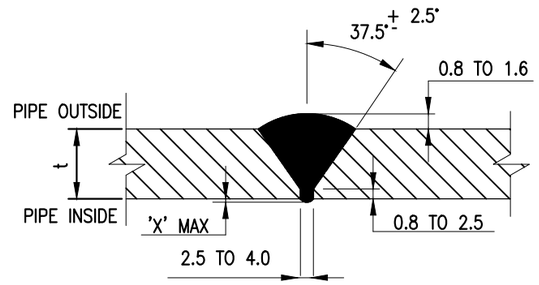
VARIANT TABLE:–

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	X (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	ELBOW DESCRIPTION	MOC-2 (ELBOW)	ELBOW UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE-1 (PIPE)	MATERIAL CODE-2 (ELBOW)
PY-DX-1-M104-1052-06-S01 OF S08	1	105206-S01-SP1	PA3	60.3 X 5.54	A 106GR.B	94	170	7.48	0.70	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.72	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S01 OF S08	2	105206-S01-SP2	PA3	60.3 X 5.54	A 106GR.B	268	344	7.48	2.00	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	3.02	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S01 OF S08	3	105206-S01-SP3	PA3	60.3 X 5.54	A 106GR.B	2350	2426	7.48	17.58	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	18.60	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S01 OF S08	4	10520-S01-SP10	PA3	60.3 X 5.54	A 106GR.B	2700	2776	7.48	20.20	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	21.22	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S01 OF S08	5	105206-S01-SP11	PA3	60.3 X 5.54	A 106GR.B	268	344	7.48	2.00	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	3.02	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S01 OF S08	6	105206-S01-SP12	PA3	60.3 X 5.54	A 106GR.B	94	170	7.48	0.70	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.72	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	7	105206-S02-SP2	PA3	60.3 X 5.54	A 106GR.B	1387	1463	7.48	10.37	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	11.39	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	8	105206-S02-SP4	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	9	105206-S02-SP5	PA3	60.3 X 5.54	A 106GR.B	1934	2010	7.48	14.47	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	15.49	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	10	105206-S02-SP6	PA3	60.3 X 5.54	A 106GR.B	398	474	7.48	2.98	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	4.00	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	11	105206-S02-SP11	PA3	60.3 X 5.54	A 106GR.B	2754	2830	7.48	20.60	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	21.62	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	12	105206-S02-SP12	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	13	105206-S02-SP13	PA3	60.3 X 5.54	A 106GR.B	4724	4800	7.48	35.34	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	36.36	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	14	105206-S02-SP19	PA3	60.3 X 5.54	A 106GR.B	4523	4599	7.48	33.83	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	34.85	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	15	105206-S02-SP20	PA3	60.3 X 5.54	A 106GR.B	4924	5000	7.48	36.83	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	37.85	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S02 OF S08	16	105206-S02-SP23	PA3	60.3 X 5.54	A 106GR.B	5644	5720	7.48	42.22	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	43.24	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	17	105206-S03-SP1	PA3	60.3 X 5.54	A 106GR.B	4924	5000	7.48	36.83	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	37.85	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S03 OF S08	18	105206-S03-SP3	PA3	60.3 X 5.54	A 106GR.B	4924	5000	7.48	36.83	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	37.85	PY9752097154	PY9752101194

UNDER HOLD



PIPE EDGE PREPARATION DETAIL
DETAIL–'A'
(AS PER ASME B16.25)



PIPE TO PIPE/ELBOW
DETAIL–'B'
BUTT WELDING DETAIL

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

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY–DX–1–M104–1052–06 (01, 02 & 03 OF 08)
02) WPS SHALL BE AS PER GT57124 : REV.–03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON–IBR
07) SURFACE PREPARATION & PRIMER: SSPC–SP–10
1 COAT OF F–9 @ 65–75μ DFT/COAT + 1COAT OF P–6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY–AQ–3–M104–2001–01; REV–00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM–530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25–05–2019

ALL DIMENSIONS ARE IN MILLIMETRES | SCALE NTS

TITLE: **PIPE ASSEMBLY –3 SHEET1**
(FOR ISO DRG NO. 1–80–557–U9094–U9107)

DRG No. **3–80–557–U9225** | REV. **00**

DRG. NO. 3-80-557-U9226

VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	X (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	ELBOW DESCRIPTION	MOC-2 (ELBOW)	ELBOW UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE-1 (PIPE)	MATERIAL CODE-2 (ELBOW)	
PY-DX-1-M104-1052-06-S03 OF S08	19	105206-S03-SP6	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	20	105206-S03-SP10	PA3	60.3 X 5.54	A 106GR.B	1614	1690	7.48	12.07	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	13.09	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	21	105206-S03-SP11	PA3	60.3 X 5.54	A 106GR.B	3618	3694	7.48	27.06	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	28.08	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	22	105206-S03-SP12	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	23	105206-S03-SP14	PA3	60.3 X 5.54	A 106GR.B	56	132	7.48	0.42	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.44	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	24	105206-S03-SP15	PA3	60.3 X 5.54	A 106GR.B	618	694	7.48	4.62	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	5.64	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	25	105206-S03-SP16	PA3	60.3 X 5.54	A 106GR.B	2022	2098	7.48	15.12	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	16.14	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	26	105206-S03-SP17	PA3	60.3 X 5.54	A 106GR.B	139	215	7.48	1.04	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	2.06	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S03 OF S08	27	105206-S03-SP19	PA3	60.3 X 5.54	A 106GR.B	100	176	7.48	0.75	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.77	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	28	105206-S04-SP1	PA3	60.3 X 5.54	A 106GR.B	4141	4217	7.48	30.97	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	31.99	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	29	105206-S04-SP2	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	30	105206-S04-SP9	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	31	105206-S04-SP12	PA3	60.3 X 5.54	A 106GR.B	1568	1644	7.48	11.73	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	12.75	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	32	105206-S04-SP13	PA3	60.3 X 5.54	A 106GR.B	905	981	7.48	6.77	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	7.79	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	33	105206-S04-SP14	PA3	60.3 X 5.54	A 106GR.B	5394	5470	7.48	40.35	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	41.37	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S04 OF S08	34	105206-S04-SP15	PA3	60.3 X 5.54	A 106GR.B	398	474	7.48	2.98	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	4.00	PY9752097154	PY9752101194	← UNDER HOLD
PY-DX-1-M104-1052-06-S05 OF S08	35	105206-S05-SP3	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S05 OF S08	36	105206-S05-SP8	PA3	60.3 X 5.54	A 106GR.B	100	176	7.48	0.75	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.77	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S06 OF S08	37	105206-S06-SP3	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S06 OF S08	38	105206-S06-SP8	PA3	60.3 X 5.54	A 106GR.B	6424	6500	7.48	48.05	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	49.07	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S06 OF S08	39	105206-S06-SP11	PA3	60.3 X 5.54	A 106GR.B	4063	4139	7.48	30.39	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	31.41	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S06 OF S08	40	105206-S06-SP12	PA3	60.3 X 5.54	A 106GR.B	2298	2374	7.48	17.19	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	18.21	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S06 OF S08	41	105206-S06-SP13	PA3	60.3 X 5.54	A 106GR.B	298	374	7.48	2.23	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	3.25	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S07 OF S08	42	105206-S07-SP1	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S07 OF S08	43	105206-S07-SP19	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S07 OF S08	44	105206-S07-SP21	PA3	60.3 X 5.54	A 106GR.B	1783	1859	7.48	13.34	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	14.36	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S07 OF S08	45	105206-S07-SP22	PA3	60.3 X 5.54	A 106GR.B	1580	1656	7.48	11.82	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	12.84	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S07 OF S08	46	105206-S07-SP23	PA3	60.3 X 5.54	A 106GR.B	100	176	7.48	0.75	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.77	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S08 OF S08	47	105206-S08-SP1	PA3	60.3 X 5.54	A 106GR.B	800	876	7.48	5.98	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	7.00	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S08 OF S08	48	105206-S08-SP2	PA3	60.3 X 5.54	A 106GR.B	2598	2674	7.48	19.43	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	20.45	PY9752097154	PY9752101194	
PY-DX-1-M104-1052-06-S08 OF S08	49	105206-S08-SP3	PA3	60.3 X 5.54	A 106GR.B	5848	5924	7.48	43.74	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	44.76	PY9752097154	PY9752101194	

HSD SYSTEM CUSTOMER No. 7887

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06 (03, 04, 05, 06, 07 & 08 OF 08)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT + 1COAT OF P-6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

TITLE: **PIPE ASSEMBLY -3 SHEET 2**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

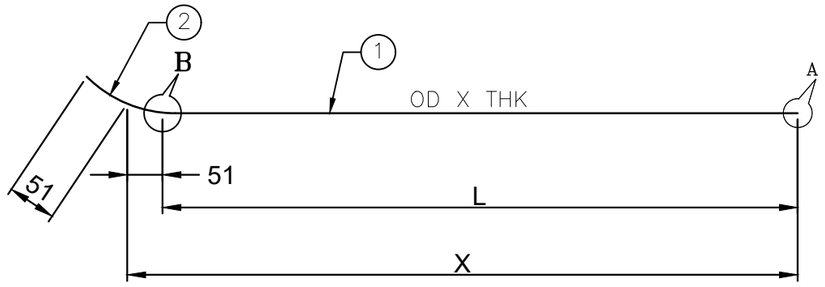
ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. **3-80-557-U9226**
REV. **00**

DRG. No. 3-80-557-U9227

VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	X (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	ELBOW DESCRIPTION	MOC-2 (ELBOW)	ELBOW UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE-1 (PIPE)	MATERIAL CODE-2 (ELBOW)
PY-DX-1-M104-1052-06-S08 OF S08	50	105206-S08-SP4	PA3	60.3 X 5.54	A 106GR.B	4848	4924	7.48	36.26	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	37.28	PY9752097154	PY9752101194
PY-DX-1-M104-1052-06-S08 OF S08	51	105206-S08-SP5	PA3	60.3 X 5.54	A 106GR.B	5361	5437	7.48	40.10	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	41.12	PY9752097154	PY9752101194
PY-DX-1-M104-1052-07-S01 OF S01	52	105207-S01-SP1	PA3	88.9 X 5.49	A 106GR.B	362	413	11.29	4.09	3"- ELBOW LR 45 DEG ASME B16.9 BW STD	A234GRWPB	1.15	5.24	PY9752097073	PY9752112021
PY-DX-1-M104-1052-07-S01 OF S01	53	105207-S01-SP2	PA3	88.9 X 5.49	A 106GR.B	1813	1927	11.29	20.47	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	22.77	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	54	105207-S01-SP6	PA3	88.9 X 5.49	A 106GR.B	4886	5000	11.29	55.16	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	57.46	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	55	105207-S01-SP12	PA3	88.9 X 5.49	A 106GR.B	5886	6000	11.29	66.45	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	68.75	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	56	105207-S01-SP14	PA3	88.9 X 5.49	A 106GR.B	4543	4657	11.29	51.29	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	53.59	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	57	105207-S01-SP15	PA3	88.9 X 5.49	A 106GR.B	5886	6000	11.29	66.45	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	68.75	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	58	105207-S01-SP20	PA3	88.9 X 5.49	A 106GR.B	5886	6000	11.29	66.45	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	68.75	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	59	105207-S01-SP22	PA3	88.9 X 5.49	A 106GR.B	1409	1523	11.29	15.91	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	18.21	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	60	105207-S01-SP23	PA3	88.9 X 5.49	A 106GR.B	575	689	11.29	6.49	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	8.79	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	61	105207-S01-SP24	PA3	88.9 X 5.49	A 106GR.B	1651	1765	11.29	18.64	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	20.94	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	62	105207-S01-SP25	PA3	88.9 X 5.49	A 106GR.B	704	818	11.29	7.95	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	10.25	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	63	105207-S01-SP26	PA3	88.9 X 5.49	A 106GR.B	722	836	11.29	8.15	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	10.45	PY9752097073	PY9752101070
PY-DX-1-M104-1052-07-S01 OF S01	64	105207-S01-SP27	PA3	88.9 X 5.49	A 106GR.B	352	466	11.29	3.97	3"- ELBOW LR 90 DEG ASME B16.9 BW STD	A234GRWPB	2.30	6.27	PY9752097073	PY9752101070
PY-DX-1-M104-1052-08-S01 OF S02	65	105208-S01-SP2	PA3	60.3 X 5.54	A 106GR.B	3501	3577	7.48	26.19	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	27.21	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	66	105210-S01-SP1	PA3	60.3 X 5.54	A 106GR.B	48	124	7.48	0.36	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	1.38	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	67	105210-S01-SP2	PA3	60.3 X 5.54	A 106GR.B	1625	1701	7.48	12.16	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	13.18	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	68	105210-S01-SP4	PA3	60.3 X 5.54	A 106GR.B	1289	1365	7.48	9.64	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	10.66	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	69	105210-S01-SP5	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	70	105210-S01-SP8	PA3	60.3 X 5.54	A 106GR.B	5924	6000	7.48	44.31	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	45.33	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	71	105210-S01-SP15	PA3	60.3 X 5.54	A 106GR.B	5424	5500	7.48	40.57	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	41.59	PY9752097154	PY9752101194
PY-DX-1-M104-1052-10-S01 OF S01	72	105210-S01-SP19	PA3	60.3 X 5.54	A 106GR.B	3274	3350	7.48	24.49	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	A234GRWPB	1.02	25.51	PY9752097154	PY9752101194



FOR SPOOL No. 105207-S01-SP1

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

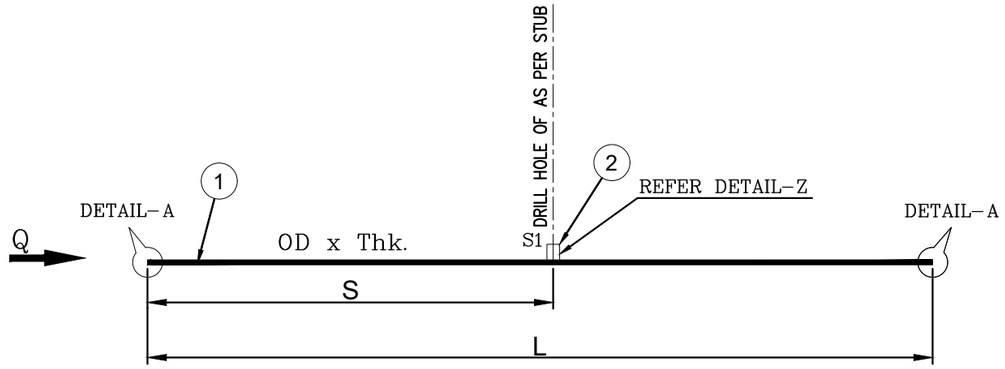
DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

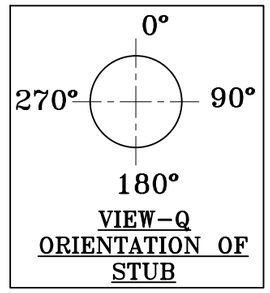
TITLE: **PIPE ASSEMBLY -3 SHEET 3**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES | SCALE NTS

DRG No. **3-80-557-U9227** | REV. **00**

DRG. No. 3-80-557-U9228

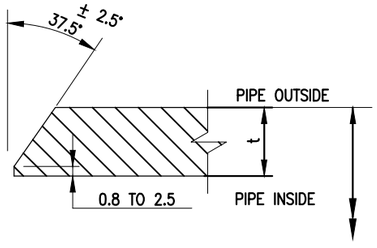




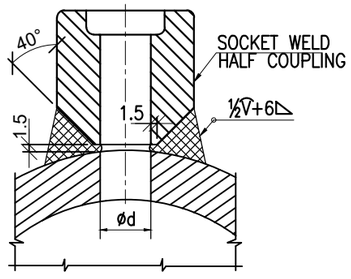
VIEW-Q
ORIENTATION OF STUB

VARIANT TABLE:-

ISOMETRIC NUMBER	SL No.	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	S (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	STUB DESCRIPTION	MOC-2 (STUB)	STUB UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	STUB ORIENTATION IN DEGREE	MATERIAL CODE-1 (PIPE)	MATERIAL CODE-2 (STUB)
PY-DX-1-M104-1052-06-S01 OF S08	1	105206-S01-SP4	PA4	60.3 X 5.54	A 106GR.B	201	100	7.48	1.503	2"x3/4" - HALF COUPLING CL6000 SW	SA105	0.29	1.79	0	PY9752097154	PY9752093078
PY-DX-1-M104-1052-06-S01 OF S08	2	105206-S01-SP9	PA4	60.3 X 5.54	A 106GR.B	201	100	7.48	1.503	2"x3/4" - HALF COUPLING CL6000 SW	SA105	0.29	1.79	0	PY9752097154	PY9752093078
PY-DX-1-M104-1052-08-S01 OF S02	3	105208-S01-SP3	PA4	60.3 X 5.54	A 106GR.B	602	301	7.48	4.503	2"x1" - HALF COUPLING CL3000 SW	SA105	0.34	4.84	0	PY9752097154	PY9752093035



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



	ød 3000#	ød 6000#
3/4"	–	15.6
1"	24.3	–

HALF-COUPLING
DETAIL-'Z'

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06-08 (01 OF 08, 01 OF 02)
01 OF 01 , 02 OF 02)
02) WPS SHALL BE AS PER GT57124 : REV.-03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON-IBR
07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT + 1COAT OF P-6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

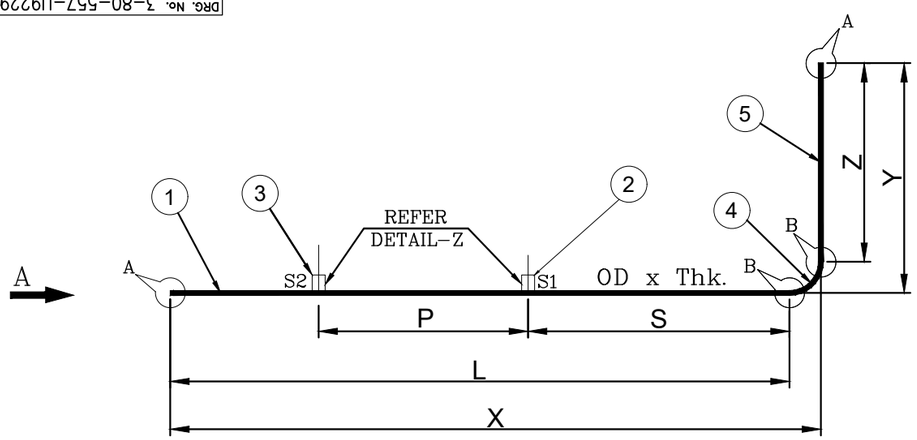
BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

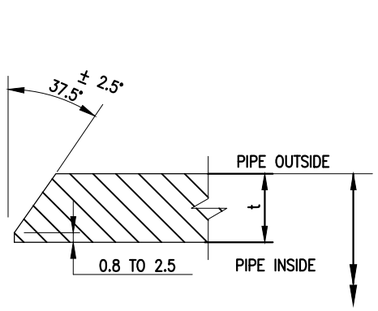
DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019
ALL DIMENSIONS ARE IN MILLIMETRES	SCALE NTS

TITLE: PIPE ASSEMBLY -4
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

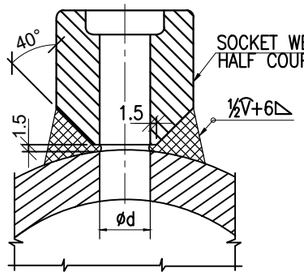
DRG No. 3-80-557-U9228 | REV. 00

DRG. No. 3-80-557-U9229



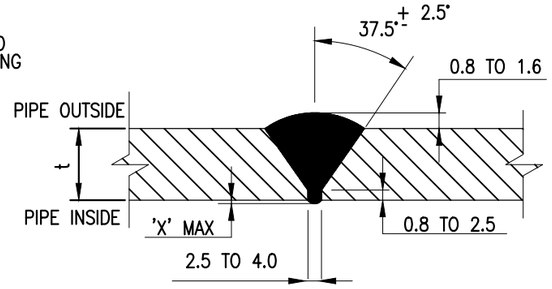


PIPE EDGE PREPARATION DETAIL–'A' (AS PER ASME B16.25)



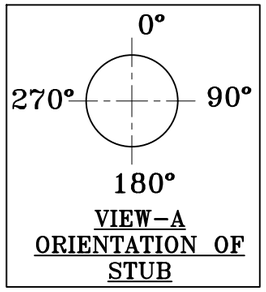
	ød 3000#	ød 6000#
3/4"	–	15.6
1"	24.3	–

HALF–COUPLING DETAIL–'Z'



PIPE TO PIPE/ELBOW DETAIL–'B' BUTT WELDING DETAIL

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



VIEW–A ORIENTATION OF STUB

VARIANT TABLE:–

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1,5 (PIPE)	L (mm)	X (mm)	S (mm)	P (mm)	Y (mm)	Z (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	STUB DESCRIPTION	MOC-2,3 (STUB)	STUB UNIT WEIGHT (kgs)	ELBOW DESCRIPTION	ELBOW ORIENTATION IN DEGREE	MOC-4 (ELBOW)	ELBOW UNIT WEIGHT (kgs)	TOTAL WEIGHT (kgs)	STUB ORANTATION DEG	MATERIAL CODE -1,5 (PIPE)	MATERIAL CODE-4 (ELBOW)	MATERIAL CODE-2,3 (STUB)	
PY-DX-1-M104-1052-06-S02 OF S08	1	105206-S02-SP15	PA5	60.3 X 5.54	A 106GR.B	4902	4978	1824	-	1394	1318	7.48	46.53	2"x1" - HALF -2 COUPLING CL3000 SW	SA105	0.34	2"- ELBOW LR 90 DEG ASME B16.9 BW	270	A234GRWPB	1.02	47.89	0	PY9752097154	PY9752101194	PY9752093035	
PY-DX-1-M104-1052-06-S05 OF S08	2	105206-S05-SP7	PA5	60.3 X 5.54	A 106GR.B	800	876	150	-	1420	1344	7.48	16.04	2"x3/4" - HALF-2 COUPLING CL6000 SW	SA105	0.29	2"- ELBOW LR 90 DEG ASME B16.9 BW XS	0	A234GRWPB	1.02	17.64	180	PY9752097154	PY9752101194	PY9752093078	UNDER HOLD
									150					2"x3/4" - HALF-3 COUPLING CL6000 SW	SA105	0.29						270			PY9752093078	
PY-DX-1-M104-1052-06-S08 OF S08	3	105206-S08-SP6	PA5	60.3 X 5.54	A 106GR.B	4257	4333	4106	-	76	-	7.48	31.84	2"x3/4" - HALF COUPLING CL6000 SW	SA105	0.29	2"- ELBOW LR 90 DEG ASME B16.9 BW	0	A234GRWPB	1.02	33.15	0	PY9752097154	PY9752101194	PY9752093078	
PY-DX-1-M104-1052-06-S08 OF S08	4	105206-S08-SP8	PA5	60.3 X 5.54	A 106GR.B	2441	2517	500	-	1718	1642	7.48	30.54	2"x3/4" - HALF COUPLING CL6000 SW	SA105	0.29	2"- ELBOW LR 90 DEG ASME B16.9 BW	0	A234GRWPB	1.02	31.85	180	PY9752097154	PY9752101194	PY9752093078	

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY–DX–1–M104–1052–06 (02,05,08 OF 08)
02) WPS SHALL BE AS PER GT57124 : REV.–03
03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.
04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.
05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.
06) NON–IBR
07) SURFACE PREPARATION & PRIMER: SSPC–SP–10
1 COAT OF F–9 @ 65–75µ DFT/COAT + 1COAT OF P–6 @ 40µ DFT/COAT
REFER PAINTING SCHEDULE: PY–AQ–3–M104–2001–01; REV–00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM–530012.

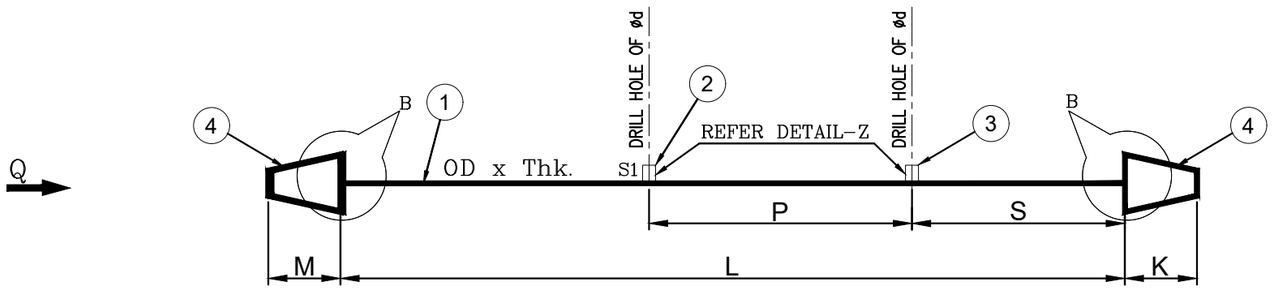
DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25–05–2019

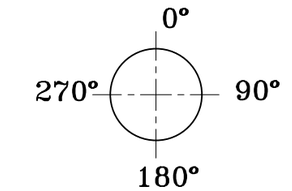
ALL DIMENSIONS ARE IN MILLIMETRES — SCALE NTS

TITLE: **PIPE ASSEMBLY –5**
(FOR ISO DRG NO. 1–80–557–U9094–U9107)

DRG No. **3–80–557–U9229** REV. **00**

DRG. No. 3-80-557-U9230

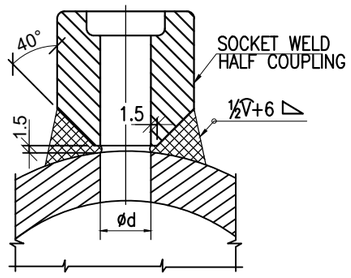




VIEW-Q
ORIENTATION OF STUB

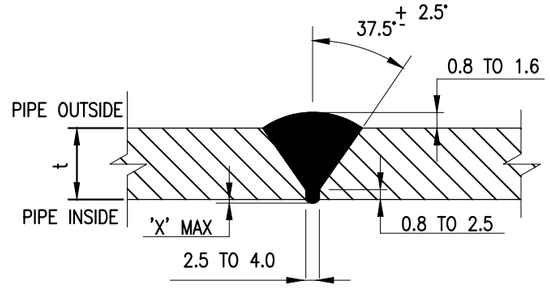
VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	S (mm)	P (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	REDUCER - 4 DESCRIPTION	MOC-4 (REDUCER)	K (mm)	M (mm)	REDUCER UNIT WEIGHT (kgs)	STUB DESCRIPTION	MOC-2,3 (STUB)	REDUCER UNITWEIGHT (kgs)	TOTAL WEIGHT (kgs)	STUB ORIENTATION IN DEGREE	MATERIAL CODE-1 (PIPE)	MATERIAL CODE-2,3 (STUB)	MATERIAL CODE-4 (REDUCER)	
PY-DX-1-M104-1052-06-S05 OF S08	01	105206-S05-SP9	PA6	114.3 X 6.02	A 106GR.B	400	100	200	16.08	6.4	4"x2"-REDUCER BW STD x XS	A234GRWPB	102	102	1.6	2) 4"x1.5" - HALF COUPLING CL3000 SW	SA105	0.57	10.772	0	PY9752097081	PY9752093043	PY9752103316	UNDER HOLD
																3) 4"x1.5" - HALF COUPLING CL3000 SW	SA105	0.57		0		PY9752093043		



	Ød 3000#	Ød 6000#
1.5"	38.14	

HALF-COUPLING
DETAIL-'Z'



PIPE TO REDUCER
DETAIL-'B'
BUTT WELDING DETAIL

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

NOTES :-

01) FOR DESIGN PARAMETERS REFER TO SYSTEM ISOMETRICS:
(A) PY-DX-1-M104-1052-06 (05 OF 08)

02) WPS SHALL BE AS PER GT57124 : REV.-03

03) HYDRO TEST SHALL BE DONE AT SITE. HOWEVER, IF THERE IS A LEAKAGE ON THE SPOOL DURING HYDRO TEST, THE SAME SHALL BE REPAIRED AT SITE.

04) THE SPOOL NO. SHALL BE PAINTED ON EACH VARIANT AS MENTIONED IN THE VARIANT TABLE.

05) 10% RADIOGRAPHIC TEST TO BE DONE FOR ALL BUTT WELDS, 20% LPI/MPI TO BE DONE FOR ALL FILLET WELDS.

06) NON-IBR

07) SURFACE PREPARATION & PRIMER: SSPC-SP-10
1 COAT OF F-9 @ 65-75μ DFT/COAT + 1COAT OF P-6 @ 40μ DFT/COAT
REFER PAINTING SCHEDULE: PY-AQ-3-M104-2001-01; REV-00

REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM | CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

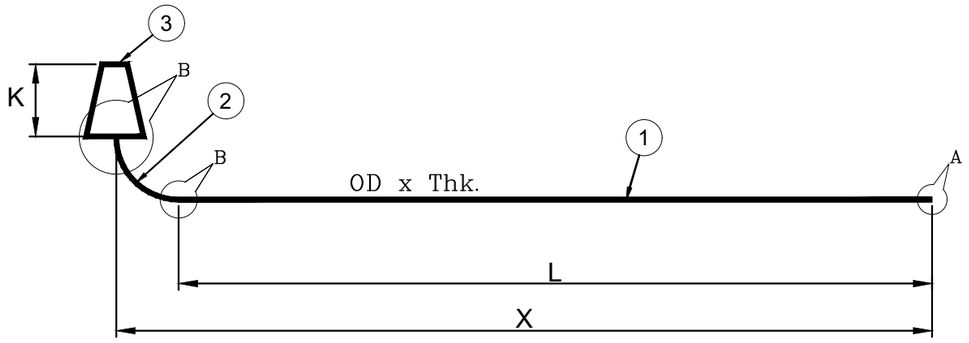
DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

TITLE: PIPE ASSEMBLY -6
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES | SCALE NTS

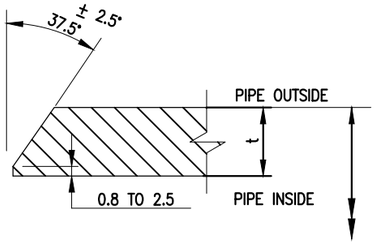
DRG No. 3-80-557-U9230 | REV. 00

DRG. NO. 3-80-557-U9231

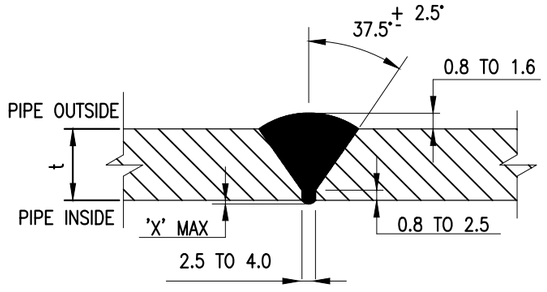


VARIANT TABLE:-

ISOMETRIC NUM	SL NO	SPOOL NUMBER	PIPE ASSEMBLY	PIPE SIZE (OD X THK)	MOC-1 (PIPE)	L (mm)	X (mm)	PIPE UNIT WEIGHT (kgs)	PIPE WEIGHT (kgs)	REDUCER DESCRIPTION	MOC-3 (REDUCER)	K (mm)	REDUCER UNIT WEIGHT (kgs)	ELBOW DESCRIPTION	MOC-2 (ELBOW)	ELBOW WEIGHT (kgs)	TOTAL WEIGHT (kgs)	MATERIAL CODE-1 (PIPE)	MATERIAL CODE -2 (ELBOW)	MATERIAL CODE-3 (REDUCER)
PY-DX-1-M104-1052-06-S08 OF S08	01	105206-S08-SP10	PA7	88.9 X 5.49	A 106GR.B	2258	2372	11.29	25.49	3"x2"-REDUCER BW STDxXS	A234GRWPB	89	1.00	3"- ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2.30	28.79	PY9752097073	PY9752101070	PY9752103308



PIPE EDGE PREPARATION DETAIL
DETAIL-'A'
(AS PER ASME B16.25)



PIPE TO ELBOW/REDUCER
DETAIL-'B'
BUTT WELDING DETAIL

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

NOTES :-

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REV.	DATE	BY	VER'D	NATURE OF REVISION / DESCRIPTION.

HSD SYSTEM CUSTOMER No. 7887

CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED
VISAKH REFINERY

PROJECT: 75 MW CAPTIVE POWER PLANT (CPP) PACKAGE
"VISAKH REFINERY MODERNIZATION PROJECT (VRMP)"

CLIENT: PROJECT ENGINEERING & SYSTEMS DIVISION
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD

BHARAT HEAVY ELECTRICALS LTD.,
HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012.

DRAWN	K MUNAYYA
CHECKED	A VENKATA RAO
APPROVED	K TARAKESH
DATE	25-05-2019

TITLE: **PIPE ASSEMBLY -7**
(FOR ISO DRG NO. 1-80-557-U9094-U9107)

ALL DIMENSIONS ARE IN MILLIMETRES
SCALE NTS

DRG No. **3-80-557-U9231**
REV. **00**