

Annexure-I

List of Mechanical Items for Standardised QAP's

Sl. No.		Description	QAP Reference
1	Pipeline	HDPE Water Pipe	Std QAP/ 23-24/ ME-01
2		HDPE Sewer Pipe	Std QAP/ 23-24/ ME-02
3		MS Pipe	Std QAP/ 23-24/ ME-03
4		DI Pipe	Std QAP/ 23-24/ ME-04
5		HDPE DWC Pipe	Std QAP/ 23-24/ ME-05
6		U-PVC	Std QAP/ 23-24/ ME-06
7		PVC-U	Std QAP/ 23-24/ ME-07
8		MDPE Pipes	Std QAP/ 23-24/ ME-08
9		GI Pipe	Std QAP/ 23-24/ ME-09
12	Fittings & Specials	Electrofusion Fittings & FTA	Std QAP/ 23-24/ ME-10
13		Electrofusion Tapping Saddle	Std QAP/ 23-24/ ME-11
14		Electrofusion Compression fittings	Std QAP/ 23-24/ ME-12
15		DI composite Saddle	Std QAP/ 23-24/ ME-13
16		Brass Ferrule	Std QAP/ 23-24/ ME-14
17		DI Pipe Fittings & Specials	Std QAP/ 23-24/ ME-15
18		uPVC SWR Fittings	Std QAP/ 23-24/ ME-16
19		uPVC Agri Fittings	Std QAP/ 23-24/ ME-17
20		PP Compression Fittings	Std QAP/ 23-24/ ME-18
21		GI Pipe Fittings	Std QAP/ 23-24/ ME-19
20	Meters	Electromagnetic Flow Meter	Std QAP/ 23-24/ ME-20
21		Bulk Flow Meter	Std QAP/ 23-24/ ME-21
22		Domestic Type Water Meter	Std QAP/ 23-24/ ME-22
23	Valves	Sluice Valve/Resilient Seated Gate Valve	Std QAP/ 23-24/ ME-23
24		Butterfly Valve	Std QAP/ 23-24/ ME-24
25		Dual Plate Check valve	Std QAP/ 23-24/ ME-25
26		Non Return Valve	Std QAP/ 23-24/ ME-26
27		Knife Gate Valve	Std QAP/ 23-24/ ME-27
28		Air Valve with Isolating Scour Valve	Std QAP/ 23-24/ ME-28
29		Scour Valve	Std QAP/ 23-24/ ME-29
30		Float Valve	Std QAP/ 23-24/ ME-30

Annexure-I

List of Mechanical Items for Standardised QAP's

Sl. No.		Description	QAP Reference
31	Pumps	Vertical Turbine Pump	Std QAP/ 23-24/ ME-31
32		Horizontal Split Casing Pump	Std QAP/ 23-24/ ME-32
33		Submersible Pumps for Tubewell	Std QAP/ 23-24/ ME-33
34		Non Clog Pumps / Submersible Pump	Std QAP/ 23-24/ ME-34
35		Sludge Pump/Volute Casing Pump	Std QAP/ 23-24/ ME-35
36		Progressive Cavity (Screw) Pump	Std QAP/ 23-24/ ME-36
37		Chemical Dosing Pump	Std QAP/ 23-24/ ME-37
38	STP/WTP	Mechanical/Manual Coarse Bar Screen	Std QAP/ 23-24/ ME-38
39		Mechanical Fine Bar Screen	Std QAP/ 23-24/ ME-39
40		Conveyor Belt	Std QAP/ 23-24/ ME-40
41		Grit Detritor (Grit Removal Mechanism)	Std QAP/ 23-24/ ME-41
42		Fine bubble Diffuser	Std QAP/ 23-24/ ME-42
43		Decnater Mechanism	Std QAP/ 23-24/ ME-43
44		Air Blower	Std QAP/ 23-24/ ME-44
45		Sluice Gate (Manual & Electrical Operated)	Std QAP/ 23-24/ ME-45
46		Volute Press / Sludge Dewatering Machine	Std QAP/ 23-24/ ME-46
47		Cetrifuge	Std QAP/ 23-24/ ME-47
48		Clarifloculator	Std QAP/ 23-24/ ME-48
49		Sludge Thickener	Std QAP/ 23-24/ ME-49
50		Agitator mixer	Std QAP/ 23-24/ ME-50
51		PE Dosing System	Std QAP/ 23-24/ ME-51
52		Chlorination system	Std QAP/ 23-24/ ME-52
53	Other Mechanical Items	CI Dismantling Joint	Std QAP/ 23-24/ ME-53
54		DI Dismantling Joint	Std QAP/ 23-24/ ME-54
55		SS Expansion Bellow	Std QAP/ 23-24/ ME-55
56		Sewer Jetting Machine (500 L & 4000 L)	Std QAP/ 23-24/ ME-56
57		EOT Crane	Std QAP/ 23-24/ ME-57
58		uPVC SWR pipe	Std QAP/ 23-24/ ME-58
59		Domestic water Meter	Std QAP/ 23-24/ ME-59

STANDARD QUALITY ASSURANCE PLAN												
Manufacturer Logo & Address		Item Description : HDPE Pipes (PE and PN rating) for Water Supply as per IS 4984 : 2021 Reaffirmed In : 2021 (With latest amendment)					Project :					
		QAP NO: Std QAP/ 23-24/ ME-01					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:					Contractor:					
Specification Details: IS 4984 : 2021 Reaffirmed In : 2021 (With latest amendment)												
Sl. No.	Component & Operations	Component / Operations	Type / Method of Check	Quantum of Check	Reference Standards	Acceptance Norms	Format of Records	Inspection			Remarks	
								M	C	TPI/Client/Consultant		
A	TEST ON RAW MATERIAL											
1	RAW MATERIAL	Base Density at 27°C	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No.5.2, Table 2 & test according to IS 7328 shall be within 930 to 960 kg/m3 @27°C	RMTC	R	R	R	Resin used to manufacture the HDPE pipes shall be 100% virgin PE Black precompunded or Compounded with master Batch or Natural Black PE Resin confirming to IS:4984, IS:7328 and ISO 4427-2007 (latest version)	
2		Melt Flow Rate	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No.5.2, Table 2 & testing according to IS 2530 shall be between 0.20 to 1.10 gm/ 10 min. at 190°C & 5 Kg Load	RMTC	R	R	R		
3		Thermal Stability (Oxidation Index Time)	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No. 5.2, Table 2 & test according to Annex B, shall be ≥ 20 min. (200°C Isothermal)	RMTC	R	R	R		
4		Carbon Black Master Batch	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No.5.3	MBTC	R	R	R		
5		Volatile Matter	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No.5.2, Table 2 & test according to Annex C, shall be ≤ 350 mg /Kg (No. of test pieces 01)	RMTC	R	R	R		
6		Water Content	Review of TC	Each Lot	IS 4984 : 2021	As per Cl. No.5.2, Table 2 & test according to Annex C, shall be ≤ 350 mg /Kg (No. of test pieces 01) If water content is more than 300mg/Kg during to be done prior use.	RMTC	R	R	R	Only applicable if the measured Volatile Content is not in confirmty with its specific requirement.	
7		Test on Carbon Black Master Batch	Review of TC	Each Lot	IS 4984 : 2021	1. Density: 1.5 to 2.0g/ml. 2. Toluene extract not more than 0.1 percent(m/m) 3. Max. Volatile matter 0.9 percent(m/m) 4. Carbon black particle size should be less than 0.025μ	RMTC	R	R	R	A test report or confirmative certificate may be obtained from the carbon black mast batch manufacturer.	
8		Antioxidant	Review of TC	Each Lot	IS 4984 : 2021	IS 4984-2016 Cl. No. 5.4 ≤ 0.3 % by mass	RMTC	R	R	R	TC shall be reviewed	
		HDPE Resin LTHS (10000 Hrs)	Review of TC	Each Grade of Raw Material	ISO : 9080	ISO : 9080	ILTR	R	R	R		
10		Rapid Crack Propagation Test	Review of TC	Each Grade of Raw Material	ISO: 13478/13477	ISO : 13478 /13477	ILTR	R	R	R		
B	TEST ON PIPES : GEOMETRIC CHARACTERISTICS OF PIPES (MEASUREMENT)											
1	Test on HDPE Pipe (Geometric Characteris	Colour & Identification Strips (Strip width)	Visual	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl. No. 6.2 & 6.2.1, Colour of pipe shall be Black with min. 3 No.s of longitudinal stripes of min. width of 3mm in Blue colour, Circumferentially distributed. These strips shall be co-extruded during pipe manufacturing and shall not preferably by more 0.2 mm in depth for wall thickness upto 10mm and 0.5mm beyond 10mm. The material of the strips shall be of same type as used in the base compound of the pipe.	Test Report	P	W	W		
2		Visual Appearance	Visual	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl. 7.1, The Internal and External surface of the pipe shall be smooth, clean and free from grooving and other defects. The ends of the Pipes shall be cleanly cut square with the axis of pipe to within the tolerance specified and free from deformity. Slight shallow longitudinal grooves or irregularities in the wall thickness shall be permissible, provided that the wall thickness remains with in the permissible limits.	Test Report	P	W	W		
3		Length	Measurement	Table 9 of IS 4984-2016	IS 4984 : 2021	As per IS:4984-2016 & customer requirement -6m/12m	Test Report	P	W	W	No Negative toleran ce is accepted	

Specification Details: IS 4984 : 2021 Reaffirmed In : 2021 (With latest amendment)											
Sl. No.	Component & Operations	Component / Operations	Type / Method of Check	Quantum of Check	Reference Standards	Acceptance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant	
4	Pipes)	Coiling	Measurement	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl. No.7.3, the pipes shall be coiled such that localized deformation, for example buckling & kinking is prevented. The Min. internal diameter of the coil shall not be less than 18 x DN, 110mm-100mtr, 90mm-150mtr, 75mm-300mtr.	Test Report	P	W	W	
5		Mean Outside Diameter	Measurement	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl no.7.4 & Table 3	Test Report	P	W	W	
6		Ovality	Measurement	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl no.7.4.1.2 & Table 3, ovality shall be measured at 300mm away from cut end. For coiled pipes & pipes having SDR≥ 21, rerounding shall be permissible before the measurement of Ovality. The Ovality shall be measured during extrusion and prior to coiling.	Test Report	P	W	W	
7		Maximum out of Squareness at pipe ends	Visual	Table 9 of IS 4984-2016	IS 4984 : 2021	Cl. No.7.1 & The ends of the pipes shall be cleanly cut square with the axis of pipe to within tolerance specified and free from deformity.	Test Report	P	W	W	
8		Wall Thickness	Measurement	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl. No.7.4 & Table 4	Test Report	P	W	W	
	TEST ON PIPES : PERFORMANCE (ACCEPTANCE TEST)										
1	Test on HDPE Pipe	Internal Pressure Creep Rupture Test of Pipe Joint (Acceptance Test)	Measurement	Table 10 of IS:4984-2016 or one sample per lot	IS 4984 : 2021	As per Cl. No.8.1.1 & Test According to Annex E. The pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test temperature of 80°C for 48 Hours @ Induced Stress of 5.7 Mpa(PE 100). One sample per lot.	Test Report	P	W	W	
2		Reversion	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.2 & Test according to Annex. F, the longitudinal reversion shall not be greater than 3%.	Test Report	P	W	W	
3		Carbon Black Content Dispersion	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.3, when tested from a composite sample of Min. three pipes in accordance with IS 2530, the Carbon black content shall be within 2.5 ± 0.5% & dispersion of Carbon black shall be satisfactory.	Test Report	P	W	W	
4		Melt Flow Rate	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.4, when tested from a composite sample of Min. three pipes in accordance with IS 2530 at 190°C with nominal Load of 5Kgf, MFR shall not deviate from MFR of the resin by more than 30%.	Test Report	P	W	W	
5		Oxidation Induction Time	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.5, The minimum oxidation induction time of the pipe when tested in accordance with the method given Annex B shall be not less than 20 minutes.	Test Report	P	W	W	
6		Density	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.7, when tested from a composite sample of min. three pipes as per IS 7328 the base density shall be between 930 to 960 Kg/m ³ .	Test Report	P	W	W	
7		Elongation at break	Measurement	Table 10 of IS:4984-2016	IS 4984 : 2021	As per Cl. No.8.9 & Test according to Annex H, the test specimens Punch / Machined from pipe samples, the Elongation at Brreak shall be ≥ 350%.	Test Report	P	W	W	
8		Marking	Visual	Table 9 of IS 4984-2016	IS 4984 : 2021	As per Cl. No.10 & 10.1.1, Each staight length / coil shall be clearly & indelible marked in while / yellow colour using ink / paint or inkjet printing or hot embossing at every one meter through the length as below: 1. Manufacturer Name / Trade Mark. 2. Outside Dia. X Nominal Wall thickness in mm. 3. Material Designation 4. Pressure Rating 5. Standard Dimension Ratio (SDR) 6. ISI Logo / BIS Standard No. 7. Lot No. / Batch No., Containing information of date of manufacture 8. Number of the IS 9. The word "WATER" 10. Project Name / Package ID 11. Date, Month & Year of Manufacturer.	Test Report	P	W	W	
D	TEST ON PIPES : PERFORMANCE (TYPE TEST)										

Specification Details: IS 4984 : 2021 Reaffirmed In : 2021 (With latest amendment)											
Sl. No.	Component & Operations	Component / Operations	Type / Method of Check	Quantum of Check	Reference Standards	Acceptance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant	
1	Test on HDPE Pipe	Internal Pressure Creep Rupture Test of Pipe	Visual	Clause 9.1 & Table-7 of IS 4984:2016	IS 4984 : 2021	As per Cl. No.8.1.1 & Test According to Annexe E, the pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test temperature 27°C for 100 Hours @ Induced Stress 10.7 MPa (PE 100)	Type Test Report	P/R	R	R	
						As per Cl. No.8.1.1 & Test According to Annexe E, the pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test temperature 80°C for 165 Hours @ Induced Stress 5.4 MPa (PE 100)		P/R	R	R	
						As per Cl. No.8.1.1 & Test According to Annexe E, the pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test temperature 80°C for 1000 Hours @ Induced Stress 5.0 MPa (PE 100)		P/R	R	R	
						As per Cl. No.8.1.1 & Test According to Annexe E, the pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test temperature 80°C for 48 Hours @ Induced Stress as per Table 5.		P/R	R	R	
2	Test on HDPE Pipe	Overall Migration	Measurement	Clause 9.1 & Table-7 of IS 4984:2016	IS 4984 : 2021	As per Cl. No.8.6, when tested from a composite sample of min. three pipes as per IS 9845, the Overall Migration of Constituents shall be not more than 10 mg/dm2.	Type Test Report	P/R	R	R	
3		Tensile Strength for Butt-Fusion	Measurement	Clause 9.1 & Table-7 of IS 4984:2016	IS 4984 : 2021	As per Cl. No.8.8 & Test according to Annex G, the test specimens Punch / Machined from Butt Fusion Sample (preferably 110mm SDR 11) shall show ductile failure. If the sample shows brittle fail the test may be considered as a failure.	Type Test Report	P/R	R	R	
4		Slow Crack Growth Rate	Measurement	Clause 9.1 & Table-7 of IS 4984:2016	IS 4984 : 2021	As per Cl. No. 8.10 & Test According to Annex E. The notched test specimens prepared from pipe size of preferably 110mm SDR 11 in accordance with Annex J shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test Temperature of 80°C for 500 Hrs @ Internal Pressure of 0.92 MPa(PE100)	Type Test Report	P/R	R	R	
1. Calibration certificate of all measuring equipment shall be provided for review. 2. If required copper wire then Copper wire of 1.2mm ± 0.2mm Dia. (Min.) shall be co-extruded along the entire length of the pipes. 3. No additions of Reworked / Recycled Material from the manufacturer's own rework material resulting from the manufacturer of pipes is permissible and the vendor is required to use only 100% virgin resin compound. 4. All coils shall be filled with air pressure declared by manufacturer fitted with nozzle at the time of dispatch to prevent local kinks. 5. Pipe manufacturer shall provide copy of bill of virgin PE with supply & TPI ensure the same. 6. For super check after supply of material at site, CMSC and PIU take random sample and get tested from external approved lab and after getting report necessary action shall be taken by PIU as per Result Legends: M- Manufacturer, TPIA- Third Part Inspection Agency R-Review, P-Perform, W-Witness, RMTC- Raw Material Test Certificate , C- Contractor											
Manufacturer / Vendor					Contractor			CONSULTANT /CLIENT / TPI			
Signature:					Signature:			Signature:			
Name:					Name:			Name:			

STANDARD QUALITY ASSURANCE PLAN

STANDARD QUALITY ASSURANCE PLAN												
 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC		Manufacturer Logo & Address		EQUIPMENT: HDPE Pipes Waste Water Network PN rating Size (DN) as per IS : 14333-2022 (with Latest Amendment)					Project :			
				QAP NO: Std QAP/ 23-24/ ME-02					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:					Contractor:			
		Specifications: IS : 14333-2022 (with Latest Amendment)										
Sl. No.	Cl. No.	Component / Operation	Method Check	Extent of Check	Ref. Standard	Acceptance Norms	Format of Record	Inspection			Remarks	
								M	C	TPI/Client/Consultant		
A	TEST ON RAW MATERIAL											
1	5.1.2	Base Density	Review of TC Density Test Apparatus	1 Sample per lot	IS : 14333-2022 IS 7328 : 1992	As per Cl. No. 5.1.2. & test according to IS 7328 shall be with in 940 to 958.4 Kg/m ³ @ 27°C	RMTC	R	R	R	Resin used to manufacture the HDPE pipes shall be 100% virgin PE Black precompounded confirming to 14333-2022 , IS :7328 and ISO : 4427-2007 (Latest Version).	
2	5.1.3	Melt Flow Rate	Review of TC (MFI Tester)	1 Sample per lot	IS : 14333-2022 IS 2530 : 1963	The MFR ofthe material shall be between 0-41 and 1-10 (both inclusive) when tested at 190°C with nominal load of 5 kgfas determined by method prescribed in 7 of IS 2530: 1963. The MFR of the material shall also be within ±20 percent of the value declared by the manufacturer	RMTC	R	R	R		
3	5.2	Anti Oxidant	Review of TC	1 Sample per lot	IS : 14333-2022	Not more then 0.3% as per CL no.5.2 of IS:14333-2022	RMTC	R	R	R		
4	5.1.4	Resin for Carbon Black Content	Review of TC (CBC Tester)	1 Sample per lot	IS : 2530	The resin shall be compounded with carbon black. The carbon black content in the material shall be within 2.5+/- 0.5% and the dispersion of carbon black shall be satisfactory.	MBTC	R	R	R		
5	Table-1	HDPE Resin LTHS (10000 Hrs.)	Review of TC	Each Grade of Raw Material	ISO : 9080	ISO : 9080	ILTR	R	R	R		
6	Table-8	Rapid Crack Propagation Test	Review of TC	Each Grade of Raw Material	ISO : 13478/13477	ISO : 13478/13478 Table -8 IS : 14333	ILTR	R	R	R		
B	TEST ON PIPES : GEOMETRIC CHARACTERISTICS OF PIPE: (Acceptance Tests shall be done as per latest amendments IS 14333)											
1	4	Colour of Pipe	Visual	As per IS : 14333 cl. No.4 Table no.7	IS : 14333-2022	Black as per IS : 14333 Clause No.4	Inspection Report	P	W	W		
2	7	Visual Appearance	Visual	As per IS : 14333 cl. No.7 Table no.7	IS : 14333-2022	The Internal and External surface of the Pipe shall be smooth, clean and free from grooving and other defects. Slight shallow longitudinal grooves or irregularities in the wall thickness shall be permissible, provided that the wall thickness remains with in the permissible limits.	Inspection Report	P	W	W		
3	6.4	Length	Measurement by Measuring Tape	As per IS : 14333 cl. No.6.4 Table no.7	IS : 14333-2022	The length of straight pipe shall be 5 m to 20 m, as agreed between the manufacturer and the purchaser. Short lengths of 3 m (minimum)- up to a maximum of 10 percent of the total supply may be permitted.	Inspection Report	P	W	W		
4	7	Maximum out of Squareness at pipe ends	Visual	As per IS : 14333 cl. No. 7 Table No.7	IS : 14333-2022	Cl. No.7 & The ends of the Pipes shall be cleanly cut square with the axis of pipe to within the tolerance specified and free from deformity.	Inspection Report	P	W	W		
5	6.1	Outside Diameter	Measurement by Pi Tape & Vernier Calliper	As per IS : 14333 cl. No. 6.1 Table No.1	IS : 14333-2022	As per Cl. No.6.1 & Table I	Inspection Report	P	W	W		
		Ovality	Measurement by Vernier Calliper		IS : 14333-2022 Cl. 6.3.2		Inspection Report	P	W	W		
6	6.2	Wall Thickness	Measurement by ball ended micrometer	As per IS : 14333 cl. No. 6.2 Table No.2	IS : 14333-2022	As per Cl. No.6.2 & Table 2 (As per latest amendment)	Inspection Report	P	W	W		
C	TEST ON PIPES : PERFORMANCE (ACCEPTANCE TEST)											

Sl. No.	Cl. No.	Component / Operation	Method Check	Extent of Check	Ref. Standard	Acceptance Norms	Format of Record	Inspection			Remarks
								M	C	TPI/Client/Consultant	
1	8.1 Table 3	Internal Pressure Creep Rupture Test of Pipe Joint (Acceptance Test)	Visual	Table 3 of IS:14333	IS : 14333-2022	Test According to Annex B. The pipe under test shall not show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test Temperature of 80°C for 48 Hours. Induced Stress of 5.7 Mpa (PE100).	Inspection Report	P	W	W	
2	8.2	Reversion	Measurement by Hot sir oven	IS:14333, Annex C	IS : 14333-2022	As per Cl No. 8.2 & Test according to Annex C, the Longitudinal reversion shall not be greater than 3%.	Inspection Report	P	W	W	
3	8.5	Carbon Black Content & Dispersion	Measurement (CBC Tester and Hot plate Microscope)	IS:14333	IS : 14333-2022	As per Cl No.8.5, when tested from a composite sample of Min. three pipes in accordance with IS 2530, the Carbon Black content shall be with in 2.5+/- 0.5% & the dispersion of Carbon black shall be Satisfactory.	Inspection Report	P	W	W	
4	8.4	Melt Flow Rate	Measurement (MFI Tester)	IS:14333	IS : 14333-2022	As per Cl. No.8.4, when tested from a composite sample of Min. three pipes as per IS 2530 at 190oC with nominal Load of 5 Kg. MFR shall be between 0.2gm/10 min. to 1.1 gm/ 10 minute and also not deviate from the MFR of the resin by more than 30%.	Inspection Report	P	W	W	
5	8.3	Density	Measurement (Density Test Apparatus)	IS:14333	IS : 14333-2022, IS 7328	As per Cl. No.8.3, when tested from a composite sample of Min. three pipes as per IS 7328 the Base Density of pipe shall be between 940 to 958.4 Kg/m ³ .	Inspection Report	P	W	W	
6	9.1	Internal Pressure Creep Rupture Test of Pipe Joint (Type Test)	Visual	IS:14333, Annex B	IS : 14333-2022	Test According to Annex B. The pipe under test shall now show no signs of localized swelling, leakage or weeping and shall not burst when tested at Test Temperature of 80°C for 165 Hours. Induced Stress of 5.5 Mpa (PE100).	Inspection Report	P	W	W	
7	10	Marking	Visual	IS:14333	IS : 14333-2022	As per Cl. No.10, each straight length of pipe / coil shall be clearly & indelibly marked in White /Yellow Colour using ink/paint or inkjet printing or hot embossing and for coils both ends and every meter throughout the Length as below. 1. Manufacturer Name / Trade Mark. 2. Designation of pipe with PN rating (DN & PE also). 3. Lot No. / Batch No. and as per IS : 14333. 4. Project ID and Package name. 5. Month & Year of Manufacturing	Inspection Report	P	W	W	

NOTES:

- Calibration certificate of all measuring equipment shall be provided for review.
- All pipes of same size and pressure rating in single consignment shall constitute one lot.
- All coils shall be filled with air pressure declared by manufacturer fitted with nozzle at the time of dispatch to prevent local kinks
- No addition of Reworked / Recycled Material from the Manufacture's own network material from the manufacture of pipes is permissible and the vendor is required to use only 100% virgin resin compound.
- Pipe manufacturer shall provide copy of bill of virgin PE with supply & third party inspection agency ensure the same at the time of inspection.
- For super check after supply of material at site, CMSC and PIU take random sample and get tested from external approved lab and after getting report necessary action shall be taken by PIU as per Result

Note:IS : 14333-2022 (with Latest Amendment) above QAP is under Review, before final submission will be incorporating the current latest amendment.

LEGENDS:		
RMTC - RAW MATERIAL TEST CERTIFICATE	M-MANUFACTURER	P-PERFORM
ILTR- INDEPENDENT LAB TEST REPORT	C- CONTRACTOR	R- REVIEW
MBTC - CARBON BLACK MASTER BATCH TEST CERTIFICATE	W- WITNESS	

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : MS Pipe (OD and Thickness) as per IS 13589 : 2018	Project :
		QAP NO: Std QAP/ 23-24/ ME-03	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Sl. No.	Description	Ref. Spec.	Procedure Test Frequency	Acceptance Criteria	Documented By	Inspection			Remarks
						M	C	TPI/Client/Consultant	
1.0	Raw Material Inspection								
1.1	HR Coils	IS 2062 / ISI10748	Each Coil	As per IS 2062 Grade E250BR / IS 10748 Gr.3	Raw Material Test	H	R	R	
2.0	Pipe Manufacturing Process (HSAW Process)			As per Approved Procedures	Mill Report				
3.0	Qualifications								
3.1	WPS & PQR (GMAW, SAW & SMAW)	IS 7307:1974 / ASME SEC IX	Once per project (already qualified)	As per IS 7307:1974 ASME Sec. IX WPS & PQR to provide separately for approval. (Previously qualified WPS & PQR shall be submitted for review)	WPS & PQR	H	R	R	
3.2	Welder & Welding Operator Qualification (SMAW, SAW & GMAW)	IS 7307:1974 / ASME SEC IX	All welder / welding operator involved (already qualified)	As per IS 7307:1974 ASME Sec. IX (Previously qualified WPS & PQR shall be submitted for review) Welder operator list with their credential to provide for separate approval.	WPQR	H	R	R	
4.0	Welding								
4.1	Track Weld- GMAW, auto & manual if required for repair	IS 3589 (7.3)	Each pipe	As per the WSP / PQR	Mill Report & WPS/PQR	H	R	R	
4.2	Automatic SAW (Internal & External)	IS 13589 : 2018 & IS 4353	Each pipe	As per the WSP / PQR	Mill Report & WPS/PQR	H	R/W	R/W	
4.4	Skelp End Welds	IS 3589	Each skelp end welded pipe	As per the WSP / PQR	-	H	R	R	
4.5	Visual Inspection (Preliminary)	IS 3589	Each pipe	Each pipe after completion of welded shall be inspected visually from inside & outside.	-	H	R	R	
4.6	RTR (Digital Radiography) Testing / X-Ray film method	CS (6.11.38)	15%	As per cust. Spec. (As per API 1104 or IS 10234). Digital recording /films to be submitted to contractor along with inspection reports.	RTR Test Report	H	R/W	R/W	
5.0	Hydrostatic Test	IS 3589 cl- 10	Each pipe	Pipe shall be hold for at least 5 seconds at a test pressure as per IS 3589.	Hydro Test Report	H	W	W	
6.0	Manual Ultrasonic Test of Weld	IS 4260	Each pipe 10% of Total Weld Length	10% of total weld length of each pipe shall be done using manual ultrasonic testing. DP test shall be done on selected pipe if required.	Ultrasonic Test Report	H	W	W	
7.0	Manual Ultrasonic Test of Weld								
7.1	Outside Diameter	IS 3589 (12.3.1) Table-6	Each pipe	Tolerance shall be $\pm 0.75\%$ of specified outside diameter for ERW & SAW Pipes.	Visual & Dimensional Inspection Report	H	W	W	
7.2	Ovality	IS 3589 (12.3.3)	Each pipe end	Shall not exceed 1% of specified outside diameter	Visual & Dimensional Inspection Report	H	W	R/W	
7.3	Straightness	IS 3589 (12.5)	Each pipe	The deviation from the straight line shall not exceed 0.2% of pipe length.	Visual & Dimensional Inspection Report	H	W	R/W	
7.4	Wall Thickness along pipe circumference of pipe end measured by Ultrasonic Thickness Gauge.	IS 3589 (12.3.2) & CS (6.11.44)	Each pipe	Thickness tolerance shall be(+)20% and (-)0%. No negative tolerance on pipe wall thickness.	Visual & Dimensional Inspection Report	H	W	R/W	
7.5	Pipe Length	IS 3589 (12.4)	Each pipe	Pipe shall be manufactured with a double random length of 10.0 meters to 12.5 meters.	Visual & Dimensional Inspection Report	H	W	R/W	
7.6	Pipe Ends	IS 3589 (17.1)	Each pipe end	Bevel angle 30° (+5°, -0°) & root face 1.6mm $\pm$ 0.8mm	Visual & Dimensional Inspection Report	H	R/W	R/W	
7.7	Dimesnions & Mass per meter of Pipes	IS 3589 (11.1.1) & 12.1 Table 5 11.1.1	Each pipe	M= (D-T)xTx0.0246615. The tolerance on mass per cart load of 10 tonnes or above shall be $\pm 7.5\%$ on the nominal theoretical mass of the tubes.	Visual & Dimensional Inspection Report	H	R/W	R/W	
8.0	Repair Procedure	IS 3589	Each pipe repair to respective pipe	As per WPS / PQR	WPS/PQR	H	R	R	
9.0	Chemical & Mechanical Properties								
9.1	Chemical Analysis (Product)	Clause No.8.2 & Table 2 & 3 of IS 3589	1 Sample / Heat	Clause No.8.2 & Table 2 & 3 of IS 3589-2001	Chemical Test Reports	H	R	R	
9.2	Tensile Test (Base)	IS 3589(9.1)	1 Sample / 100 Pipes as per IS 4711	YS = 235 Mpa Min., UTS = 410Mpa Min., %EL = 18% min. on 5.65 $\sqrt{S_0}$	Test Report	H	W	W	

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : MS Pipe (OD and Thickness) as per IS 13589 : 2018	Project :
		QAP NO: Std QAP/ 23-24/ ME-03	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Sl. No.	Description	Ref. Spec.	Procedure Test Frequency	Acceptance Criteria	Documented By	Inspection			Remarks
						M	C	TPI/Client/Consultant	
9.3	Guided Bend Test (Root & Face)	IS 3589(9.3)	One root & one face bend / 100 pipes as per IS 4711	As per clause no.9.3.2 & 9.3.3 of IS 3589 : 2001	Test Report	H	W	W	
10.0	Marking (Paint stenciled at a distance of min. 6" from one end).	IS 3589(18) & as per agreement clause	One end of each pipe from inside	Confirming to IS 3589 : 2001 & BIS mark, <i>Manufacturer Logo & Client details with package/project</i> . Pipe size, Pipe grade, Pipe No., Heat No., length, weight, acceptance no. , date of manufacturing etc. In addition pipe no. shall be stamped at one end using regular punches on bevel face.	-	H	R/W	R/W	
11.0	Test Report & Certification	IS 3589		Mill Test Certificate	Mill Test Certificate		R	R	

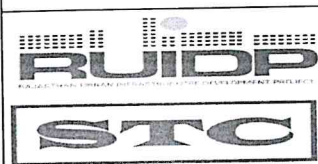
Notes

1. Calibration certificate of all measuring equipment shall be provided for review.
2. Each pipe shall be hydraulically tested before the pipe is coated, wrapped and lined.

Legends:- M- Manufacturer, C- Contractor H- Hold, R-Review, M: Random Monitoring, R/W : Random Witness, CS : Cust. Spec., PO- Purchase Order, WPS : Welding Procedure Specification, PQR : Procedure Qualification Records

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN



Manufacturer Logo & Address

Item Description : CENTRIFUGALLY CAST(SPUN) DUCTILE IRON PIPES - SOCKET & SPIGOT JOINT

Project :

QAP NO: Std QAP/ 23-24/ ME-04

Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

REV.NO: 00

Consultant: SHAH TECHNICAL CONSULTANT (STC)

DATE:

Contractor:

Specification Details: IS 8329:2020 WITH LATEST AMENDMENT

Sl. No.	Inspection Item	Inspection Method	Checks	Reference Standard :IS 8329 : 2000 Reaffirmed In : 2020			Inspection / Test				
				Reference Clause		Acceptance Criteria	Manufacturer		By External Agency / TPIA		
							Type	Frequency	Type	Frequency	
1	Visual Inspection for Surface Quality	Visual	External appearance Internal socket appearance	As per Clause 7.2, 10 & 11	Pipes shall be sound and free surface or other defects. Small surface imperfections which do not affect pipes serviceability shall not be rejected on that account alone.		P	100%	W	General Examination of the batch as per IS : 8329	
2	External Diameter (DE)	Go and No Go Gauge	Spigot DE Check	As per Clause 15.1.1 Table 7	Within the specified limits as per standard	P	Each Pipe 2 / size / batch	W	Witness of the batch as per Sampling plan IS: 11606 : 1986		
Circumferential / Pie Tape		Lot Size							No. of Samples		
Pistol Caliper											
3	Wall Thickness (t _e)	Ultrasonic Thickness gauge	Wall thickness check	As per Clause 4.3, 13.3, 15.4 & Table 2	Within the specified limits as per standard		P	2 / size / batch	W	1-50	8
4	Straightness	Thread and nut arrangement with vernier caliper	Straightness of total length of pipe	As per Clause 15.6	The maximum deviation from a straight line in mm shall not be greater than 1.25 times of the length in meters of the pipe.		P	2/size/batch	W	51-100	13
5	Length	Measuring Tape	Length after heat treatment	As per Clause 13.1, 15.5	+ / - 100 mm on the length of pipe.		P	2/size/batch	W	101-150	20
6	Ovality	Go and No Go Gauge / Vernier Caliper	Spigot	As per Clause 15.1.3, 15.3	Go & No Go Gauge pass & Tolerance on Ovality DN 80 to 200 - Within the tolerance on DE DN 250 to 600 - 1% max DN 700 to 1200 - 2 % max		P	100%	W	151-300	32
7	Mechanical Properties	Universal Testing Machine	Tensile Strength	As per Clause 10.1, 10.3	Minimum 420 Mpa		P	As per IS : 8329 : 2020 standard	W	Witness as per IS : 8329 Clause 9.2	
			% of Elongation		Minimum 10%. Centrifugally cast pipes of DN 80 to DN 1000 and having a design minimum wall thickness of 10 mm or greater, the minimum elongation after fracture shall be 7 percent. For DN 1100 to DN 1200, % of Elongation is Minimum 7%.					Size	Maximum batch size
										80 - 250	200
										300 - 600	100
										700 - 1000	60
		1100 - 1200		40							
Brinell Hardness Machine	Brinell Hardness (HBW)	As per Clause 10.2, 10.3	Not to exceed 230 HBW								
8	External Zinc Coating	Visual / mytar film	Coating appearance / Zn Mass	As per Clause 16.2, Annexure A	Mean mass not less than 130 gm / M ² with a local minimum of 110 gm / M ² .		P	1 No. Size / Shift / F. Line	R	Review of records 20% RW by Contractor	
9	Hydraulic Pressure Test	Pressure testing	Visual of pipes and testing pressure on gauges	As per Clause 4.6 & 11.1, Table 1	Work Pressure in Mpa for 10 seconds		P	100%	R	Review of control on production based on standard and quality system. RW- Contractor RW- Client / TPI	
					Size	K9					
					800 - 300	5.0					
					350 - 600	4.0					
					700 - 1000	3.2					
					1100 - 1200	2.5					
	Size	Nom	Min				Witness of the batch as per Sampling plan IS: 11606 : 1986				

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : CENTRIFUGALLY CAST(SPUN) DUCTILE IRON PIPES - SOCKET & SPIGOT JOINT	Project :	
		QAP NO: Std QAP/ 23-24/ ME-04	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)	
		DATE:	Contractor:	

Specification Details: IS 8329:2020 WITH LATEST AMENDMENT											
Sl. No.	Inspection Item	Inspection Method	Checks	Reference Standard :IS 8329 : 2000 Reaffirmed In : 2020				Inspection / Test			
				Reference Clause			Acceptance Criteria	Manufacturer		By External Agency / TPIA	
								Type	Frequency	Type	Frequency

10	Internal Cement Mortar Lining (OPC)	Visual / Digital Coatmeter / Pin & Vernier	Lining appearance of CML thickness	As per Clause 16.3 Annexure B	80 - 300	3.0	1.50	P	2 No.s / Size / Shift / F.Line	W	Lots Size	No. of Samples
					350 - 600	5.0	3.00				1 - 50	8
					700 - 1200	6.0	3.50				51 - 100	13
					Size	Min Bore Clearance					101 - 150	20
					80 - 300	DN minus 13 mm					151 - 300	32
					350 - 1200	DN minus 15 mm					Above 300	50
11	External Finishing Layer (Bituminous)	Visual Digital Coatmeter & Mylar film	Coating appearance Coating thickness	As per Clause 16.2 Annexure C, Annexure A-B	The mean dry film thickness shall not be less than 70 microns, min thickness of 50 microns allowed locally			P	1 No. Size / Shift / F. Line	R	Review of records	
12	Marking	Visual	Cast / Stamped / Painted / Stenciled	As per Clause 18, Marking to be done for Source of Manufacturer, Nominal diameter, Class reference, Year of manufacture, Non standard length of pipe, Short white line at major axis for sizes DN 700 and above. Spl Marking: <i>Client Name</i>			P <i>Client Location</i>	100%	RW	Witness of Marking on production & final lot should be marked ISI & EPDM		
13	EPDM Rubber Gasket	Pipe Tape, Vernier caliper, Shore, A hardness tester & Visual	Confirmity to the order Quantity & Marking	As per IS : 5382 / JSL Drg:	As per specification			P	2 No.s / Size / Lot	R	Review of Manufacturer's TC	
14	Third Party Inspection Making	Visual	Hard punch stamp / Sticker / Stencil mark	As per P.O	As per Purchase Order & Specification			P	100%	W	As per Inspection agency / customer requirements	
15	Works Test Certificate	Based on Production Tests	Certificate of Compliance with respect to mechanical, hydro test / dimensions / internal and external coating results.	As per Order acceptance	As per order acceptance			P	Each lot offered for inspection	R	Review of Manufacturer's Work Test Certificate	
16	Third Party Inspection Report / Joint Inspection Report (as applicable)		Based on visit by Inspection agency / customer	As per Order acceptance / P.O conditions	Records of production and inspection calibration certificates & manufacturer's test certificate			P	-	-	As per Inspection	

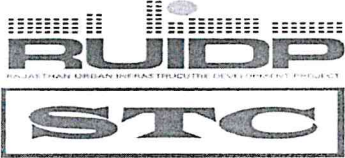
Legends:- H- Hold, R-Review, M: Random Monitoring, R/W : Random Witness, CS : Cust. Spec., PO- Purchase Order

Notes

1. Calibration certificate of all measuring equipment shall be provided for review.

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

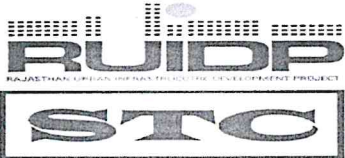
STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : HDPE DWC (Double wall Corrugated)Pipe for non pressure sewerage and drainage as per IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018				Project :			
		QAP NO: Std QAP/ 23-24/ ME-05				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
		REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
		DATE:				Contractor:			
Specification Details: IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018									
Sl. No.	Parameter to Check	Frequency of Test	Type of Test	Reference Clause	Acceptance Criteria / Norms	Type of Recoded			Remarks
						M	C	Client /TPIA/ Consultant	
1	Material charecterstics for PE Material in Granules form:-								
	Base Density	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≥ 0.930 gm/cc	P	R	R	Test Certificate of Raw Material for Review
	Melt Flow Rate (MFR)	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≤ 1.6 gm/10min at 190°C & 5 kg weight	P	R	R	
	Oxidation Induction Test (OIT) at 200° C	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≥ 20 minutes	P	R	R	
Anti Rodent	For first lot or any lot 01 sample from each consignment	---	---	Additive can be compounded in the polymer	P	R	R	Type Test record to be reviewed	
2	Material Charecterstics for PE Material:-								
	Base Density	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≥ 0.930 gm/cc	P	W	W	Test Certificate of Raw Material for Review
	Melt Flow Rate (MFR)	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≤ 1.6 gm/10min at 190°C & 5 kg weight	P	W	W	
	Oxidation Induction Test (OIT) at 200° C	01 Sample from each consignment	---	5.1 Table-1 of IS : 16098 (Part 2)	≥ 20 minutes	P	W	W	
3	Material in Solid Pipe form (HDPE) : -								
	Resistance to Internal Pressure 165 Hrs.	As per CI 10 & Table 20	Type Test	IS 16098 (Part 2) - CI 5.1 Table-2 (i) & IS : 12235 (Part 8/Sec 1)	No failure during the test	P	R	R	Type Test record to be reviewed
	Resistance to Internal Pressure 1000 Hrs.	As per CI 10 & Table 20	Type Test	IS 16098 (Part 2) - CI 5.1 Table-2 (ii) & IS : 12235 (Part 8/Sec 1)		P	R	R	Type Test record to be reviewed
4	Dimension of Pipe (CI-6.3) : -								
	Dimension of pipe such as Internal diameter , wall thickness of layers & length of Pipe , Socket & Spigot	As per CI 10 & Table 20	Acceptance	Ref CI 6.3, 7.1 of IS 16098 Part-2	As per Table-5 of IS 16098 Part-2	P	W	W	
	Length of Pipe			IS 16098 Part-2, Ref. CI. 6.3.2 Fig.2		P	W	W	
5	Physical Characteristics for Pipes : -								
	Visual Appearance	100% from Lot	Acceptance	Ref CI 7.1, IS:16098 Part-2	The structured outer layer of finished pipes and fittings shall be uniformly corrugated. The inner layer shall be smooth and plain. Both layers shall be free from any visual defects such as cracks, blisters, foreign inclusions and any other visual irregularities.Which may cause harm construction integrities, the inner surface may reflect slight shallow undulations.	P	W	W	
	Colour of Finished Pipes			Ref CI 7.1.1 Table 8 of IS:16098 Part-2	The inner layer shall be coloured throughout. The outside layer of pipes shall be black and inside layer of the shall be orange, brown or grey.	P	W	W	

STANDARD QUALITY ASSURANCE PLAN

		Manufacturer Logo & Address Item Description : HDPE DWC (Double wall Corrugated)Pipe for non pressure sewerage and drainage as per IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018 QAP NO: Std QAP/ 23-24/ ME-05 REV.NO: 00 DATE:				Project :			
						Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
						Consultant: SHAH TECHNICAL CONSULTANT (STC)			
						Contractor:			
Specification Details: IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018									
Sl. No.	Parameter to Check	Frequency of Test	Type of Test	Reference Clause	Acceptance Criteria / Norms	Type of Recoded			Remarks
						M	C	Client /TPIA/ Consultant	
6	Resistance to heating (PE) Oven test	As per CI 10 & Table 20	Acceptance	Ref Table 6 of IS:16098 Part-2 & IS 12235 (Part 6).	The pipe shall show no delamination, cracks or babbies when tested at 110 ± 2°C for 1- e ≤ 8 mm - 30 min. 2- e > 8 mm - 60 min.	P	W	W	
	Effect of heating (PE injection moulded components)	As per CI 10 & Table 20	Acceptance	Ref CI 7.3, IS:16098 Part-2	The pipe shall show no delamination, cracks or babbies when tested at 110 ± 2°C for 1- e ≤ 3 mm - 15 min. 2- 3 mm < e ≤ 10 mm - 30 min. 3- 10 mm < e ≤ 20 mm - 60 min.	P	W	W	
7	Mechanical Characteristics for Pipes (CI-8.1) : -								
	Ring Stiffness	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex C	≥ Relevant SN (KN/m2)	P	W	W	
8	Impact Test	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex C	TIR ≤ 10 percent	P	W	W	
9	Ring Flexibility 30% of dim	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex D	Deflection position of test piece. To observe, No decrease in force applied, no cracks on pipe wall, 2 layers are intact and no separation/delamination of layers, permanent buckling etc., 30 % mould split line, when applicable, at 0°, 45° and 90° from the upper plate.	P	W	W	
10	Creep Ratio	As per CI 10 & Table 20	Type Test	CI.8.1 Table-10 (iv) & (As per Annex-E of IS : 16098 (Pt-1 Pt-2)	≤ 4 at 2 year extrapolation	P	R	R	Type Test record to be reviewed
	Mechanical Characteristics for fittings (CI-8.2) : -								
11	Ring Stiffness	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex C	≥ Relevant SN (KN/m2)	P	W	W	
12	Impact Test	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex C	TIR ≤ 10 percent	P	W	W	
13	Ring Flexibility 30% of dim	As per CI 10 & Table 20	Acceptance	Ref CI-8.1.1, Table 10 of IS : 16098 Part-2, Annex D	Deflection position of test piece. To observe, No decrease in force applied, no cracks on pipe wall, 2 layers are intact and no separation/delamination of layers, permanent buckling etc., 30 % mould split line, when applicable, at 0°, 45° and 90° from the upper plate.	P	W	W	
	Performance requirement (CI- 9) : -								
14	Tightness of elastometric ring seal joint & Water tightness	As per CI 09 & Table 12	Type Test	CI.9 Table -12 (i) & (ii), (12235 (Part8 / Sec- 2 & Sec 3)	No leakage at a) Temp. 27°±2° C b) Joint Deflection for ; (i) de ≤ 315 mm = 2° (ii) 315 mm < de ≤ 630 mm = 1.5° (iii) 630 mm < de = 1° c) Water Pressure =5Kpa for 15mins & 50 Kpa for 15mins. Air Pressure = - 30Kpa	P	R	R	Type Test record to be reviewed as per addendum no.02

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : HDPE DWC (Double wall Corrugated)Pipe for non pressure sewerage and drainage as per IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018					Project :		
		QAP NO: Std QAP/ 23-24/ ME-05					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT		
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)		
		DATE:					Contractor:		
Specification Details: IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018									
Sl. No.	Parameter to Check	Frequency of Test	Type of Test	Reference Clause	Acceptance Criteria / Norms	Type of Recoded			Remarks
						M	C	Client /TPIA/ Consultant	
15	Resistance to combined temperature cycling and external loading	As per CI 09 & Table 12	Type Test	Ref Table 12 (iii) of IS:16098 Part-2, Annex G	a) Vertical deformation : $\leq 9\%$ b) Deviation from surface evenness : $\leq 3\text{mm}$ c) Radius of bottom : $\geq 80\%$ of Original d) Opening of weld line : $\leq 20\%$ of wall thickness e) Tightness at 0.35 bar / 15min. : No leakage allowed.	P	R	R	Type Test record to be reviewed
16	Joints & Elastomeric Sealing Ring	Each Lot	IS : 5382, IS 16098 (Pt-2)	CI-8.3, Type - 1, 2 & 3	ISI Mark on Rubber Ring	R	R	R	A test report or conformity certificate shall be provided of the sealing ring
17	Marking on Pipe & Fitting	Manufacturer Logo & Name Address Details, CORFIT DN/ID...,SN...HDPE IS : 16098(Pt-2), ISI, CM / L -As per CI 11.2.1 & 11.2.2 include batch no. (as per IS Code),Package Name / Project Name.							
Note: 1) Manufacturer has to calibrate above Equipment periodically and put calibration certificate for TPIA/client verification. 2) Type Test record shall be review. 3) The marking should be including with client package no. at every 10 mtr interval. 4) Rubber Ring as per IS 16098-2 Sealing ring type-2 testing report shall be provided for review at the time of inspection. Note: IS : 16098 (Part-2) : 2013 (with latest ammendment) Reaffirmed In : 2018 above QAP is under Review, before final submission will be incorporating the current latest amendment. verified by TPI agency.									
M- Manufacturer W- Witness C-Client R - Record Review TPIA - Third Party Inspection Agency P - Perform									
Manufacturer / Vendor					Contractor			CONSULTANT /CLIENT / TPI	
Signature:					Signature:			Signature:	
Name:					Name:			Name:	




Manufacturer Logo & Address

Item Description : uPVC Pipes (unplasticized Polyvinyl Chloride Pipes) as per IS:4985:2021 with latest amendment

QAP NO: Std QAP/ 23-24/ ME-06

REV.NO: 00

DATE:

Project :

Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

Consultant: SHAH TECHNICAL CONSULTANT (STC)

Contractor:

Specification Details: IS:4985-2021 with latest amendment

Sl. No.	Clause No. of IS:4985:2021	Description of Test	Test Method	Type Test /Acceptance Test	Gauges & Test Equipments	Sampling Model for Vendor/manufacturer	Sampling Model for TPI/Client	Acceptance Standard	Inspection			Remarks
									M	C	TPI/Client/ Consultant	
1	2	3	4	5	6	7	8	9	10			11
1	6.1	Composition of Material PVC Resin (a) K- value	IS 4985:2021, IS 4669	Type Test	Gas Phase (Chromatography)	Suppliers T.C	Record Review	IS 4985:2021 Clause 6.1.2	R	R	R	T.C. Record
2	6.1.1	(b) VCM Content	IS 10151	Type Test	Visco Meter	Suppliers T.C	Record Review	IS 10151 Cl.3.3.1, Annex A	R	R	R	T.C. Record
	6.1	Additives	IS 4985, IS 10148	Type Test	-	Suppliers T.C	Record Review	IS 4985:2021 Clause 6.1	R	R	R	T.C. Record
3	7.1.3	Mean Outside Diameter	IS : 12235 (Part-1)	Acceptance Test	Pipe Tape / Vernier	Annex-D Table-13 of IS 4985:2021	Table 13 of IS:4985:2021, 10 sample from each control unit	Cl-7.1.3 Table 1, Table 2 of IS:4985:2021	P	W	W	
4	7.1.3	Diameter at any Point	IS : 12235 (Part-1)	Acceptance Test	Pipe Tape / Vernier	Annex-D Table-13 of IS 4985:2021	Table 13 of IS:4985:2021, 10 sample from each control unit	Cl-7.1.3 Table 1, Table 2 of IS:4985:2021	P	W	W	
5	7.1.2	Wall Thickness	IS : 12235 (Part-1)	Acceptance Test	Dial Thickness Gauge / Micrometer / Ultrasonic thick gauge	Annex-D Table-13 of IS 4985:2021	Table 13 of IS:4985:2021, 10 sample from each control unit	Cl-7.1.2, Table 1 of IS:4985:2021	P	W	W	
6	7.1.4	Effective Length	Fig.2 (B) & 'C' of IS:4985:2021 IS:12235 (Part-1)	Acceptance Test	By Length Measuring Tape	Annex-D Table -13 of IS 4985:2021	Table 13 of IS:4985:2021, 10 sample from each control unit	Cl-7.1.4.1, of IS:4985:2021	P	W	W	
7	7.2	Socket Dimensions	Table 3, 4 & Fig. No.3, 4 & 5 IS:4985:2021 IS:12235 (Part-1)	Acceptance Test	Vernier Caliper Scale, Vernier depth gauge, Inside caliper, Micrometer	Annex-D Table -13 of IS 4985:2021	Table 13 of IS:4985:2021, 10 sample from each control unit	Cl- 7.2.1, 7.2.1.1, 7.2.1.2 Table 3,4&5 IS:4985:2021	P	W	W	
8	8	Sealing Ring	IS 5382	Type Test	Vernier Caliper Scale, radius gauge, Micrometer, Shore hardness tester	Suppliers T.C	Record Review, 10 sample from each consignment	IS 4985:2021 Clause 8	R	R	R	
9	9.1, 9.2	Pipe Ends	Fig 6 Clause 9 of IS:4985:2021	Acceptance Test	Angle Protractor	Clause 9.2 of IS:4985:2021	Table 13 of IS:4985:2021	Clause 9.1, 9.2 of IS:4985:2021	P	W	W	Chamfered at approx 15°
10	10.1	Visual Appearance	Light Grey as per Clause 10.1	-	Inside & Outside surface of pipe shall be smooth clean free from other defects	Adequate	Each pipe	Clause 10.1 & 10.1.1 of IS:4985:2021	P	W	W	
11	10.2	Opacity	Clause 10.2 IS 12235(Part 3) Max. 0.2% of Visible	Type Test	Opacity Meter, Standard sample of opacity 0.2%	Annex -D D-2.1.1 of IS 4985:2021	01 sample in three month, Record Review	Annex-D Table-13 Clause 10.2 of IS 4985:2021	R	W	W	Thinnest wall thickness shall be tested
12	10.3	Effect on Water	IS:12235 (Part-4 & 10), IS 4985	Type Test	Distilled water, Air conditioner, PH meter, Testing reagent and equipment for determination of cadmium, mercury, lead, tin and other toxic substances.	Annex-D Table -13 of IS 4985:2021	01 sample in six month, Record Review	Clause 10.3 of IS:4985:2021	R	W	W	Smallest size pipe product shall be tested
13	10.4	Reversion Test	IS:12235 (Part-5), IS 4985	Acceptance Test	Thermostatically control oil bath, Vernier Caliper, Mono-polyethylene glycol, glycol or mineral oil free from aromatic hydrocarbons, stop watch	Annex-D Table -14 of IS 4985:2021	03 sample from each control unit, Table 14 of IS:4985:2021	Clause 10.4 of IS:4985:2021	P	W	W	
14	10.5	Viscal Softening Temperature	IS:12235 (Part-2), IS 4985	Type Test	Oil heating bath equipped with means to raise temp. @ 50 ±5° C, Rod with loading plate, load and indenting tips, Micrometer dial gauge, Thermometer, VST Tester	Annex-D Table -14 of IS 4985:2021	01 sample in three month, Record Review	Clause 10.5 of IS:4985:2021	R	R	R	
15	10.6	Density	IS:12235 (Part-14), IS 4985	Acceptance Test	Balance, Thermometer, Demineralized water, Beaker, corrosion resistant wire	Annex-D Table -14 of IS 4985:2021	01 sample from each control unit, Table 14 of IS:4985:2021	Clause 10.6	P	W	W	
16	10.7	Sulphated Ash Content	Annex B of IS:4985:2021	Acceptance Test	Balance, Silica or Platinum crucible, Bunsen burner with silica triangle & tripod, muffle furnace, Desiccator	Annex-D Table -15 of IS 4985:2021	01 sample from fifth control unit, Table 15 of IS:4985:2021	Clause 10.7	P	W	W	
17	11.1	Hydraulic Characteristic (Acceptance Test) for pipe	IS:12235 (Part8/Sec 1) & Table 6&7 of IS:4985:2021	Acceptance Test	Hydrostatic pressure testing apparatus, water bath with temp control, Thermometer, End plugs	Annex-D Table -17 of IS 4985:2021	01 sample from each control unit, Table 17 of IS:4985:2021	Clause 11 of IS:4985:2021	P	W	W	27°C Temp.
18		Hydraulic Characteristic (Type Test) for pipe		Type Test		Annex-D D-2.1 of IS 4985:2021	01 sample in three month, Record Review	Clause 11.1 of IS:4985:2021	R	R	R	
19		Hydraulic Characteristic (Acceptance Test) for Integral Sealing Ring Socket		Acceptance Test		Annex-D Table -17 of IS 4985:2021	01 sample from each control unit, Table 17 of IS:4985:2021	Clause 11.1.1 of IS:4985:2021	P	W	W	
20	11.2	Resistance to External Blow 0° C	Annex C of IS 4985:2021	Acceptance Test	Falling weight testing machine from height 2 m., striker of weight 10.25, 0.50 & 1.00 Kg, digital watch, Liquid bath or freezer for conditioning of samples	Annex-D Table -16 Clause 11.2 of IS 4985:2021	Adequate piece of from each control unit, Table 16 of IS :4985:2021	Clause 11.2 of IS:4985:2021	P	W	W	
21	13.0	Marking (Acceptance Test)	Cl.13 Annex-D of IS 4985:2021	Acceptance Test	Visual	Each & Every Pipe	Each & Every Pipe	Cl. 13.1 & 13.2 of IS 4985:2021	W	W	W	Project name/package id shall be mentioned

Note:

1 All measuring instruments shall be calibrated periodically and Calibration records shall be made available for verification on request.

2 Latest revision & amendments of IS: 4985:2021 to be adopted for manufacturing & tests.

Legends:- H- Hold, R-Review, M: Random Monitoring, R/W : Random Witness, CS : Cust. Spec., PO- Purchase Order,

Manufacturer / Vendor

Contractor

CONSULTANT /CLIENT / TPI

Signature:

Signature:

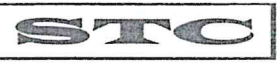
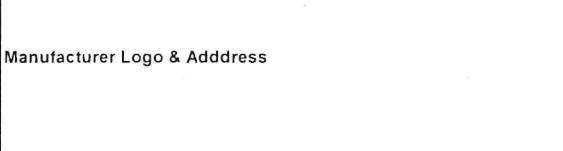
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Name:

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STANDARD QUALITY ASSURANCE PLAN

 		Item Description : Non Pressure PVC-U Pipes (Unplasticized Polyvinyl Chloride) as per IS : 15328 : 2003 with latest amendment	Project :
		QAP NO: Std QAP/ 23-24/ ME-07	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: IS : 15328 : 2003 with latest amendment

Sl. No.	Clause No. of IS:15328:2003	Description of Test	Type/Method of Test	Sampling Model/Extent of Check		Acceptance Standard	Format of Record	Inspection			Remarks
				Manufacturer	TPI/Contractor			M	C	Client/TPIA / Consultant	
(A) Sector : Raw Material											
1	-	PVC Resin	ASTM D-1243/IS: 4669	Review raw material MTC	Review RM TC	ASTM D-1243/IS: 4669	RM TC	R	R	R	
2	5.2	Titanium Dioxide	Review of TC	Each Lot/Batch of Raw Material	Each Lot/Batch of Raw Material	Min. of 0.3% of Titanium Oxide	RM TC	R	R	R	
(B) Sector : In Process Final Testing											
1	6.1.2	Wall Thickness	IS:12235 (Part 2)	10 Sample of Each Control Unit	Table 13 of IS:15328:2003	Table 2, Cl. 6.1.2 of IS:15328:2003	Inspection / Lab Reports	P	W	W	
2	6.1.1	Mean Outside Daimeter	IS:12235 (Part 1)	10 Sample of Each Control Unit	Table 13 of IS:15328:2003	Table 1, Cl. 6.1.1 of IS:15328:2003		P	W	W	
3	6.1.1	Diameter of any point	IS:12235 (Part 1)	10 Sample of Each Control Unit	Table 13 of IS:15328:2003	Table 1, Cl. 6.1.1 of IS:15328:2003		P	W	W	
4	6.1.3	Effective Length	6.1.3.1 Fig(1) of IS:15328:2003	10 Sample of Each Control Unit	Table 13 of IS:15328:2003	Fig 1, Cl. 6.1.3 of IS:15328:2003		P	W	W	
5	7.1	Visual Appearance	IS:15328:2003	Adequate	Table 13 of IS:15328:2003	Cl. 7.1 of IS:15328:2003		P	W	W	
6	7.2	Colour	IS:15328:2003	Each Pipe	Table 13 of IS:15328:2003	Cl. 7.2 of IS:15328:2003		P	W	W	
7	7.4	Longitudinal Reversion Test	IS:12235 (Part 5)	Three Sample Each Control Unit/Table 14	Table 14 of IS:15328:2003	Cl. 7.4 of IS:15328:2003 (Max.±5 %)		P	W	W	
8	7.3	Vicat Softening Temperature	IS 12235 (pt-2), Annex A of IS:15328:2003	Table 14	Table 14 of IS:15328:2003	Cl. 7.3 of IS:15328:2003 Min. 79°C		P	W	W	Min tested sample-3 no. and max-5 no.
9	8.1	Resistance to External Blow at 0°C	Annex B of IS:15328:2003	One Sample Each Control Unit/Table 15	Table 15 of IS:15328:2003	Cl. 8.1 of IS:15328:2003, Max T.I.R. 10%		P	W	W	
10	8.2	Ring Stiffness	Annex C of IS:15328:2003	One Sample Each Control Unit /Table 5	One Sample/Batch/Each Control Unit	Cl. 8.2 and Table-5 of IS:15328:2003		P	W	W	
11	8.3	Resistance to Internal Hydrostatic Pressure (Acceptance Test) for Pipe at 27 ⁰ C for 1Hr. @36 Mpa Hoop stress	IS:12235 (Part 8/Sec 1) & Table 6 of IS:15328:2003	One Sample Each Control Unit	One Sample/Batch/Each Control Unit	Cl. 8.3 & Table 6 of IS:15328:2003	Inspection Report	P	W	W	No seepage, cracking and bursting shall be shown during test
12	8.3	Resistance to Internal Hydrostatic Pressure (Type Test) for Pipe at 60 ⁰ C for 1000Hr. @10 Mpa Hoop stress	IS:12235 (Part 8/Sec 1) & Table 6 of IS:15328:2003	One Sample Each Control Unit	Record Review	Cl. 8.3 & Table 6 of IS:15328:2003	Vendor Internal Report	P	R	R	
13	10.1.1	Internal Positive Hydrostatic Pressure Test for Elastomeric Sealing Ring Joints (Acceptance test	Annex D of IS:15328:2003	One Sample after Every Tenth Control Unit	One Sample/Batch/Each Control Unit	Clause of 10.1.1 of IS:15328:2003	Vendor Internal Report	P	W	W	
14	10.1.2	Internal Negative Hydrostatic Pressure Test (Internal Vaccum) for Elastomeric Sealing Ring Joints (Type Test)	Annex E of IS:15328:2003	One Sample after Every Tenth Control Unit	One Sample/Batch/Each Control Unit	Clause of 10.1.2 of IS:15328:2003	Vendor Internal Report	P	R	R	
15	10.2.2	Internal Negative Pressure Elastomeric Ring (Internal Vaccum) (Type Test)	Annex E of IS:15328:2004	One Sample after Every Tenth Control Unit	One Sample/Batch/Each Control Unit	Clause of 10.2.2 of IS:15328:2004	Vendor Internal Report	P	R	R	
16	6.1.4	Socket Dimesion	Table 3 of IS:15328:2003	10 Sample Each Control Unit	Table 13 of IS:15328:2003	Table 4, Cl. 6.1.4 of IS:15328:2003	Inspection Report	P	W	W	
17	9.1	Elastomeric Sealing Ring	Type 1 to 6 IS:5382	Review Manufacturer T.C to Each Batch	Record Review / R	Cl. 9.1 of IS:15328:2003	Manufacturer TC	P	R	R	
18	12	Marking	IS:15328:2003 Clause 12	Each & Every Pipe	Table 13 of IS:15328:2003	Cl. 12 of IS:15328:2003	Inspection Report	P	W	W	Project name/Package ID at every 10m interval

ABBREVIATION:		P: PERFORM,	W:WITNESS,	R: REVIEW,	CONT.:CONTRACTOR,	TPI: THIRD PATY INSPECTION AGENCY
Note:						
	1) Latest Revision & Amendment of IS:15328:2003 to be adopted for Manufacturing & Test.					
	2) Review Claibration Certificate of all measuring instruments & gauge,					
Manufacturer / Vendor				Contractor		CONSULTANT /CLIENT / TPI
Signature:				Signature:		Signature:
Name:				Name:		Name:

STANDARD QUALITY ASSURANCE PLAN												
 RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  Manufacturer Logo & Address		Item Description : Medium Density Polythylene (MDPE) Pipes for Water Supply as per ISO 4427-1:2019					Project :					
		QAP NO: Std QAP/ 23-24/ ME-08					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:					Contractor:					
Specification Details: ISO-4427-1:2019 Latest Amendment												
Sl. No.	Component & Operations	Test Parameter	Type / Method of Check	Acceptance Norms	Unit	Instrument	Extent of Check	Inspection			Remarks	
								M	C	TPI/Client/Consultant		
1.0	RaW Material Certificates											
1.1	RAW MATERIAL	MRS of Raw Material (PE-80)	Review of MTC	For Each Batch RMTC as used	-	-	Should be 8MPa for PE-80 Resin	R	R	R		
1.2		MFI			-	-	0.2 to 1.4g/10mint.	R	R	R		
1.3		Density			-	-	≥ 930 Kg/m3	R	R	R		
2.0	Dimension & Visual Properties (Coil Form)											
2.1	 Dimension & Visual Properties	Visual Appearance	Visual	NA	-	-	As per ISO 4427:2019	P	W	W		
2.2		Colour of Pipe		Any shade of Blue	-	-		P	W	W		
2.3		Wall Thickness	Measurement	As per ISO 4427:2019	mm	Vernier		P	W	W		
		Outer Diameter						P	W	W		
		Ovality						P	W	W		
		Length of Pipe / Coil						As per Customer Requirement	mtr.	Metering Tape		Each Meter Marking
3.0	Performance Properties											
3.1	Final inspection	Density	Density	As per ISO 4427 / IS 4984:2019	Kg/m3	Analytical balance	≥ 930 Kg/m3	P	W	W		
3.2		Pigment Dispersion Test	Dispension Test		Visual	Microscope	Disperment - Satisfactory	P	W	W		
3.3		MFR	MFI Tester		g/10min	MFI	MFR between 0.2 to 1.4g/10min.	P	W	W		
3.4		O.I.T	Mint		Sec	OIT Tester	Not less than 20 Mint @ 200 degree temp. one sample per lot	P	W	W		
3.5		Longitudinal Reversion Test	Visual	No effect on surface	Visual	Hot Air Oven	Blister, Bubbles mpt seen on surface (110°C - 15Min.)	P	W	W		
3.6		Elongation at Break	Tensile	Not less than 350%	%	UTM with Assecories	≥ 350% one sample per size per lot	P	W	W		
3.7		Hydraulic Characteristics	Rewview	(i). 20°C Duration 100 Hrs. (ii). 80°C Duration 165 Hrs. (iii). 80°C Duration 1000 Hrs.	Mpa	Hydraulic Testing m/c with assessories	ISO 4427:2019 As per ISO 4427 Table-3 (One Sample Each Test) Per Size Per Lot	P	W	W		
Note: All Pipes of same size, Pressure rating & Material Grade Manufactured essentially under similar condition shall constitute a lot. * Any short length pipe generated (Over and Above specified tolerance) due to sudden failure, shall be supplier in Uniform length, another pipe equivalent to short length pipe will be provided. Marking: BRAND + DN_____ + PN_____ + SDR_____ + ISO 4427 PE-_____ MDPE PIPES Batch No._____ Marking shoule be including Packing No. / ID Legends: M- Manufacture, TPIA- Third Part Inspection Agency R-Review, P-Perform, W-Wilness, RMTC- Raw Material Test Certificate , C- Contractor												
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI				
Signature:				Signature:				Signature:				
Name:				Name:				Name:				

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : GI Pipe (ERW PIPES) As per IS 1239 (Part 1) : 2004 Reaffirmed In : 2019			Project :			
				QAP NO: Std QAP/ 23-24/ ME-09			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV.NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:			Contractor:			
Specification Details: AS PER IS 1239 (Part 1) : 2004 Reaffirmed In : 2019										
SL No.	COMPONENT/ OPERATION	CHARACTERISTIC - Inspection & Testing/ Type of Check	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RESULTANT INSPECTION RECORD	Inspection			REMARKS
							M	C	TPI/Client/ Consultants	
1	Raw Material	a) Chemical & Mechanical properties	Each Heat	IS:10748:2004 & Cl. No. 6.1.1 Table -1 & 7.1.1 of IS 1239(PT-I) : 2004	Chemical composition of the steel shall comply with Table 1 of IS:1239(PT-1) in Ladle Sample analysis. IS 10748 Gr.2 or Equivalent grade which is meet the chemical and Mechanical properties of IS:1239(PT-I):2004 Chemical composition (Max.%) C%-0.20, Mn%-1.30, P%-0.040, S%-0.040 Mechanical properties (Cl. 14.1) T.S. = 320 MPa Min., % of El =12% Min.(For the sizes < 25mmNB) % of El =20% Min.(For the sizes > 25mmNB)	Raw material TC/ Insp.Report	R	R	R	
		b) Dimension & Visual	Each Coil	IS 1239(PT-I):2004 & IS 10748 Gr.2	The coil should not have laminations, Scales, Slivers, Laps, Burrs, Pitting etc. and the coil edges should be free free defect. If these defect found it shall be rectified by grinding. Thickness +10%, -8% Width +20mm, -0mm	Raw material TC/ Insp.Report	M	R	R	
		c) Zinc TC for Chemical	Each Lot	IS:209 : 1992	Purity : 99.95%	Raw material TC	M	R	R	
2	In - Process Inspections	a) Dimensional								
		i) Out side dia(mm)	Once/ Hour	As per Cl. No. 8 of IS 1239(PT-I) :2004	As per Cl. No. 8 Cl. 8.8.1 & table 3 to 5 of IS 1239(PT-I) :2004	Weight & Dimension Report	M	R	R	
		ii) Wall Thickness (mm)	Once/ Hour	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)					
		iii) Length (Mtrs.)	Once/ Hour	As per Cl. No. 11 of IS 1239(PT-I) :2004	As per requirement					
		iv) Weight (Kg/m)	Once/ Hour	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)					
		v) Weld Bead height	Once/ Hour	As per Cl. No.6.5 of IS 1239(PT-I) :2004	The height of the internal weld fin shall not be greater than 60% of the specified wall thickness.					
		vi) Visual & workmanship	100%	As per Cl. No. 15 of IS 1239(PT-I) :2004	All pipes shall be clearly finished, dent free and defects.The ends of the pipe shall be free from sharp edges & burrs.The tubes shall be reasonably straight.					
		b) Hydrostatic Test	100%	As per Cl. No.13.1.1 of IS 1239(PT-I) :2004	Hydrostatic test shall be carried out at a pressure of 5 MPa and the same maintained for atleast 3 second and shall not show any leakage in the pipe.	Hydro Test Report	P	R	R	
	In - Process Inspections	c) Physical tests								
		i) Tensile & Elongation,	Once/ 4 Hour	As per Cl. No. 14.1 of IS 1239(PT-I) : 2004	T.S. = 320 MPa Min., % of El =12% Min.(For the sizes < 25mmNB) % of El =20% Min.(For the sizes > 25mmNB)	Physical Test report	M	R	R	
		ii) Bend Test (on the sizes ≤ 50mmNB)	Once/ Hour	As per Cl. No. 14.2 of IS 1239(PT-I) : 2004	When tested in accordance with IS 2329 the tubes shall be capable of withstanding the bend test without showing any signs of fracture or failure. Welded tubes shall be bent with the weld at 90° to the plane of bending. The tubes shall not be filled for this test. i) Ungalvanized tubes shall be capable of being bent cold without cracking through 180° round a former having a radius at the bottom of groove in the plane of bending, equal to at least six times the outside diameter of the tube. ii) Galvanized tubes shall be capable of being bent cold, without cracking of the steel, through 90° round a former having a radius at the bottom of the groove equal to at least eight times the outside diameter of the tubes.	Physical testing report	M	R	R	
		iii) Flattening Test (on the sizes > 50mmNB)	Once/ Hour	As per Cl. No. 14.3 of IS 1239(PT-I) : 2004	Flattening Rings not less than 40 mm in length cut from the ends of the selected tubes shall be flattened cold between parallel plates with the weld, if any at 90° (point of maximum bending) in accordance with IS 2328. No opening shall occur by fracture in the weld area until the distance between the plates is less than 75% of the original outside diameter of the tube and no cracks or breaks in the metal elsewhere than in the weld shall occur until the distance between the plates is less than 60% of the original outside diameter.	Physical testing report	M	R	R	
		d) Galvanizing Tests: Mass of Zinc Coating, Uniformity, Adhesion	Once/ 4 Hour	As per Cl. No.12 of IS 1239(PT-I):2004 & Cl.No.5 of IS:4736	Mass of zinc shall not be less than 360 g/m²	Galvanizing test Report	M	R	R	

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : GI Pipe (ERW PIPES) As per IS 1239 (Part 1) : 2004 Reaffirmed In : 2019			Project :			
				QAP NO: Std QAP/ 23-24/ ME-09			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV.NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:			Contractor:			
Specification Details: AS PER IS 1239 (Part 1) : 2004 Reaffirmed In : 2019										
Sl No.	COMPONENT/ OPERATION	CHARACTERISTIC - Inspection & Testing/ Type of Check	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RESULTANT INSPECTION RECORD	Inspection			REMARKS
							M	C	TPI/Client/ Consultants	
		e) Threading: Gauging of threads to be checked with GO-NOGO gauge	Once/ Hour	IS:1239 (I)-2004 Cl.10.1 & IS:554	IS:1239 (I)-2004 Cl.10.1 & IS:554	Log book	M	R	R	
		g) Marking & Finishing	Each Pipe	As per Cl. No. 17 of IS 1239(PT-I) :2004 & Cl.No. 4 of STI & Client Requirement	i)The Standard Mark shall be embossed at a suitable place on the outside of each tube ii) Licence number (CM/L.....) shall be marked on each tube by embossing/stencilling/transfix labels/etching. iii) In addition the following information shall be included in the durable tag (metal/plastic) attached to each bundle : a) The class of tubes/ process of manufacture (Cl. 6.3); b) Identity of the source of manufacture; c) Size; d) Batch number or Identification mark in code or otherwise to enable the date of manufacture and control unit no. to be traced back to factory records	Log book	M	R	R	
3	Final Lot Inspections	a) Dimensional								
		i) Out side dia(mm)	As per IS:4711	As per Cl. No. 8 of IS 1239(PT-I) :2004	As per Cl. No. 8 Cl. 8.8.1 & table 3 to 5 of IS 1239(PT-I) :2004	Weight & Dimension Report	-	W	W	
		ii) Wall Thickness (mm)	As per IS:4711	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)					
		iii) Length (Mtrs.)	As per IS:4711	As per Cl. No. 11 of IS 1239(PT-I) :2004	As per requirement					
		iv) Weight (Kg/m)	As per IS:4711	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)					
		v) Weld Bead height	As per IS:4711	As per Cl. No.6.5 of IS 1239(PT-I) :2004	The height of the internal weld fin shall not be greater than 60% of the specified wall thickness.					
		vi) Visual & workmanship	As per IS:4711	As per Cl. No. 15 of IS 1239(PT-I) :2004	All pipes shall be clearly finished, dent free and defects.The ends of the pipe shall be free from sharp edges & burrs.The tubes shall be reasonably straight.					
	Final Lot Inspections	b) Physical tests								
		i) Tensile & Elongation,	As per IS:4711	As per Cl. No. 14.1 of IS 1239(PT-I) : 2004	T.S. = 320 MPa Miñ., % of El =12% Min.(For the sizes < 25mmNB) % of El =20% Min.(For the sizes > 25mmNB)	Physical Test report	-	W	W	
		ii) Bend Test (on the sizes ≤ 50mmNB)	As per IS:4711	As per Cl. No. 14.2 of IS 1239(PT-I) : 2004	When tested in accordance with IS 2329 the tubes shall be capable of withstanding the bend test without showing any signs of fracture or failure. Welded tubes shall be bent with the weld at 90° to the plane of bending. The tubes shall not be filled for this test. i) Ungalvanized tubes shall be capable of being bent cold without cracking through 180° round a former having a radius at the bottom of groove in the plane of bending, equal to at least six times the outside diameter of the tube. ii) Galvanized tubes shall be capable of being bent cold, without cracking of the steel, through 90° round a former having a radius at the bottom of the groove equal to at least eight times the outside diameter of the tubes.	Physical testing report	-	W	W	
		iii) Flattening Test (on the sizes > 50mmNB)	As per IS:4711	As per Cl. No. 14.3 of IS 1239(PT-I) : 2004	Flattening Rings not less than 40 mm in length cut from the ends of the selected tubes shall be flattened cold between parallel plates with the weld, if any at 90° (point of maximum bending) in accordance with IS 2328. No opening shall occur by fracture in the weld area until the distance between the plates is less than 75% of the original outside diameter of the tube and no cracks or breaks in the metal elsewhere than in the weld shall occur until the distance between the plates is less than 60% of the original outside diameter.	Physical testing report	-	W	W	
		c) Galvanizing Tests: Mass of Zinc Coating, Uniformity, Adhesion	As per IS:4736	As per Cl. No.12 of IS 1239(PT-I):2004 & Cl.No.5 of IS:4736	Mass of zinc shall not be less than 360 g/m²	Galvanizing test Report	-	W	W	

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : GI Pipe (ERW PIPES) As per IS 1239 (Part 1) : 2004 Reaffirmed In : 2019	Project :
		QAP NO: Std QAP/ 23-24/ ME-09	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: AS PER IS 1239 (Part 1) : 2004 Reaffirmed In : 2019

SL No.	COMPONENT/ OPERATION	CHARACTERISTIC - Inspection & Testing/ Type of Check	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RESULTANT INSPECTION RECORD	Inspection			REMARKS
							M	C	TPI/Client/ Consultants	
		d) Threading: Gauging of threads to be checked with GO-NOGO gauge	As per IS:4711	IS:1239 (I)-2004 Cl.10.1 & IS:554	IS:1239 (I)-2004 Cl.10.1 & IS:554	Weight & Dimension Report	-	W	W	
4	Marking	Identification & Tracability	As per IS:4711	As per Cl. No. 17 of IS 1239(PT-I) :2004	Each tube shall be marked with manufacturer's name or trade-mark, IS No. that is, IS 1239 (Part 1) and class of tubes, that is, L, M, and H, for light, medium and heavy class. Batch No., Color coding as per class, RUIDP etc.	Weight & Dimension Report	-	W	W	
5	Protection & Packing	End Protection	As per IS:4711	As per Cl. No. 18 of IS 1239(PT-I) :2004 & Cl.No. 3 of IS 4740	(i) In the case of screwed and socketed tubes, exposed threads shall be protracted by plastic protection rings or bituminized hessian. The tubes shall be: secured in bundles. In the case of tubes with plain ends, end protection is optional . (ii) If the pipes are in beveled ends, both ends of the pipe shall be protected by high impact plastic bevel protector. (iii) Black tubes not otherwise protected shall be varnished or suitably painted externally throughout the length unless ordered unvarnished or unpainted. (iv)Where tubes are bundled for transport,all qualities of tubes shall be packed in accordance with IS 4740:- a) Primary Bundle - A bundle which is made by tying the tubes together with twin-strand mild steel wire, strong rope or steel strip. b) Master Bundle - A bundle either made up of several small bundles or with loose tubes as desired by the purchaser. Such bundle shall be tightly tied and securely knotted with two strands of steel wire or strip of sufficient width and strength, at not less than three places and up to five places equally spaced in each case.	-	-	W	W	
6	Mill Test Certificate	Heat No.Wise	100%	IS 1239(PT-I) :2004	IS 1239(PT-I) :2004	MTC	-	R	R	
7	FINAL STAMPING AND DESPATCH INSPECTION									
7.1	Final Documents	Review of Internal test reports, Calibration reports and MTC of pipes	100%	IS 1239(PT-I) :2004	IS 1239(PT-I) :2004	Internal test reports, calibration reports and MTC of pipes	-	R	R	As per Spec./ PO
7.2	Stamping of pipes by TPIA	Stamping for Identification	As per client PO	As per client PO	As per client PO	TPIA Inspection Report	-	H	H	Final stamping shall be done by client/ TPI on pipes after inspection
7.3	Issue of Inspection Release Note	Completeness	100%	TPIA Inspection Report	As per client PO / TPIA	TPIA IRN Format	-	H	H	

Abbreviations: H- HOLD W-WITNESS M- R- REVIEW

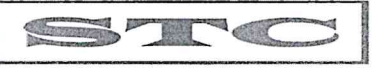
Note-

1) Review Claibration Certificate of all measuring instruments & gauge,

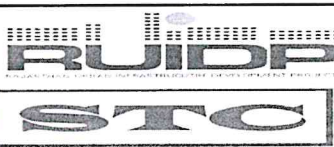
Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN											
 		Manufacturer Logo & Address	Item Description : Electrofusion Fittings				Project :				
			QAP NO: Std QAP/ 23-24/ ME-10				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
			REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
			DATE:				Contractor:				
Specification Details: EN 12201-3											
SR. NO.	DESCRIPTION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION			REMARKS
								M	C	TPI/Client/Consultants	
1	2	3	4	5	6	7	8	9			10
A	Raw Material										
1	HDPE Electrofusion Fittings	Melt / Mass Flow Rate (MFR at 5 kg 190°C)	Physical Test	01 no. from lot	ISO 1133	EN 12201-3(8.2) as per table 6	Test report	P	W	R	One time CIPET report to be provided for review
2		Oxidation Induction Time (Thermal Stability)	Physical Test	01 no. from lot	EN 728 / ISO 11357-6	EN 12201-3(8.2) as per table 6	Test report	P	W	R	
B	In Process Inspection										
3	Hydro Test	Hydrostatic Strength (80c 165h)	Visual	EN 12201-7	ISO 1167	EN12201-3(7.3) as per table 4	Test report	P	R	R	3 nos./size/batch for L&T/TPI
4		Hydrostatic Strength (20°c 100h)	Visual	EN 12201-7			Test report	P	R	R	Type Test - 3 nos./size for L&T/TPI
C	Final Inspection										
5	Workmanship of Fittings	Workmanship / Visual & Appearance	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (5.1 & 5.2)	Inspection Report	P	W	W	05 Nos./lot for L&T/TPI
6		Colour	Visual	05 nos. from lot		Black / EN 12201-3 (5.3)	Inspection Report	P	W	W	05 Nos./lot for L&T/TPI
7	Overall Size (Internal Diameter)	Dimensional	Measurement	05 nos. from lot	EN12201-3	EN 12201-3 (5.1 & 5.2)	Test report	P	W	W	05 Nos./lot for L&T/TPI
8	Test	Electrical Resistance	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (5.4) GF Specifications	Test report	P	R	R	05 Nos./lot for L&T/TPI
9		Crushing Decohesion Test	Visual	01 no. from lot	ISO 13955	Length of rupture shall be ≤ 33% in brittle failure	Test report	P	R	R	Type Test. Crushing Decohesion Test (applicable only for Electrofusion of diameter of 16 mm to 225mm)
10		Peel Decohesion Test (applicable for size DN ≥ 90 mm)	Visual	01 no. from lot	ISO 13954		Test report	P	R	R	
11	KIWA / DVGW / WRAS Certificate	Effect on Water quality	Visual	-	EN 12201-3	EN 12201-3 (11.2)	KIWA / DVGW / WRAS Certificate	P	R	R	Review of KIWA / DVGW / WRAS Certificate
12	Marking of HDPE Fittings	Marking	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (11.2)	-	P	W	W	5 nos/lot for TPI/L&T
Note: 1. All measuring instruments are calibrated periodically and calibration record can be made available for verification 2. All fittings in a consignment shall constitute a lot. 3. Thickness of electrofusion fittings will be accordingly to EN 12201-3 / GF specifcaitons 4. 100% check for marking, colour and workmanship for manufacturer.											
LEGEND M. - Manufacturer P - Perform C -Contractor R - Review TPI - Third Party Inspection Agency W - Witness											
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI			
Signature:				Signature:				Signature:			
Name:				Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : HDPE Electrofusion Fittings & Tapping Saddles	Project :								
		QAP NO: Std QAP/ 23-24/ ME-11	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT								
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)								
		DATE:	Contractor:								
Specification Details:As per EN 12201-3											
SR. NO.	DESCRIPTION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION			REMARKS
								M	C	TPI/Client/ Consultants	
1	2	3	4	5	6	7	8	9			10
A Raw Material											
1	HDPE Electrofusion Fittings	Melt / Mass Flow Rate (MFR at 5 kg 190°C)	Physical Test	01 no. from lot	ISO 1133	EN 12201-3(8.2) as per table 6	Test report	P	W	R	One time CIPET report to be provided for review
2		Oxidation Induction Time (Thermal Stability)	Physical Test	01 no. from lot	EN 728 / ISO 11357-6	EN 12201-3(8.2) as per table 6	Test report	P	W	R	
B In Process Inspection											
3	Hydro Test	Hydrostatic Strength (80c 165h)	Visual	EN 12201-7	ISO 1167	EN12201-3(7.3) as per table 4	Test report	P	R	R	3 nos/size/batch for L&T/TPI
4		Hydrostatic Strength (20°c 100h)	Visual	EN 12201-7			Test report	P	R	R	Type Test - 3 nos./size for L&T/TPI
C Final Inspection											
5	Workmanship of Fittings	Workmanship / Visual & Appearance	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (5.1 & 5.2)	Inspection Report	P	W	W	05 Nos./lot for L&T/TPI
6		Colour	Visual	05 nos. from lot		Black / EN 12201-3 (5.3)	Inspection Report	P	W	W	05 Nos./lot for L&T/TPI
7	Overall Size (Internal Diameter)	Dimensional	Measurement	05 nos. from lot	EN12201-3	EN 12201-3 (5.1 & 5.2)	Test report	P	W	W	05 Nos./lot for L&T/TPI
8	Test	Electrical Resistance	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (5.4) GF Specifications	Test report	P	R	R	05 Nos./lot for L&T/TPI
9		Crushing Decohesion Test	Visual	01 no. from lot	ISO 13955	Length of rupture shall be ≤ 33% in brittle failure	Test report	P	R	R	Type Test. Crushing Decohesion Test (applicable only for Electrofusion of diameter of 16 mm to 225mm)
10		Peel Decohesion Test (applicable for size DN ≥ 90 mm)	Visual	01 no. from lot	ISO 13954		Test report	P	R	R	
11	KIWA / DVGW / WRAS Certificate	Effect on Water quality	Visual	-	EN 12201-3	EN 12201-3 (11.2)	KIWA / DVGW / WRAS Certificate	P	R	R	Review of KIWA / DVGW / WRAS Certificate
12	Marking of HDPE Fittings	Marking	Visual	05 nos. from lot	EN 12201-3	EN 12201-3 (11.2)	-	P	W	W	5 nos/lot for TPI/L&T
Note: 1. All measuring instruments are calibrated periodically and calibration record can be made available for verification 2. All fittings in a consignment shall constitute a lot. 3. Thickness of electrofusion fittings will be accordingly to EN 12201-3 / GF specifications 4. 100% check for marking, colour and workmanship for manufacturer.											
LEGEND M - Manufacturer C - Contractor R - Review TPI - Third Party Inspection Agency W - Witness P - Perform											
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI			
Signature:				Signature:				Signature:			
Name:				Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN

	Manufacturer Logo & Address	Item Description : Compression Fittings, PN 16, PP, Black Body with Blue Nut. Size -- i) COMPRESSION FTA METAL D20X1/2" ii) COMPRESSION ELBOW D20 II) COMPRESSION COUPLER D20	Project :
		QAP NO: Std QAP/ 23-24/ ME-12	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details:

Sr. No.	Test Description	Method of check	Instrument to check	Samples to check	Ref. Standard	Acceptance Norms	Inspection			Remarks
							M	C	TPIA/Client/Consultants	
A	Raw Material									
1	Visual Appearance	Visually	--	05 Nos. from lot	ISO 17885 Cl-6.1	Fittings shall be free from moulding defects such as shrinkages, blow holes and damages. Surface shall be smooth and clean, free from scouring & Cavity	P	W	W	
B	In Process Inspection									
2	Dimensions	Dimension	GO/ NOGO Thread Gauges	05 Nos. from lot.	ISO 17885 CL-7	Only threaded outlets shall be verified with the help of thread GO/NOGO guages.	P	W	W	
3	Leaktightness under internal pressure when subjected to bending.	Hydraulic Pressure Test.	Hydraulic Pressure Testing Machine.	03 Nos. from lot	ISO 3503 ISO 17885 CL-9.3.3.7 Table-11	Must sustain Hydrostatic Pressure throughout the test period. Test Temp. -- 23±3°C Test Period -- 1 hr. Test Pressure -- 24 kg/cm² (R= 20 x Dia.)	P	W	W	Applicable only for straight fittings upto size d 63mm.
4	Resistance to pull out.	Tensile Testing Machine	Universal Tensile Testing Machine.	03 Nos. from Lot	ISO 3501 ISO 17885 CL-9.3.3.4	Pipe should not come out of fitting through out test. (23°C, 1Hr.)	P	R	R	This test is not applicable as KPSL compression fittings are non end load bearing type.
C	Final Inspection									
5	Leaktightness under internal vacuum. (Negative Pressure)	Hydraulic Pressure Test.	Hydraulic Pressure Testing Machine.	03 Nos. from Lot	ISO 3459 ISO 17885 CL-9.3.3.8 Table-12	Must sustain Hydrostatic Pressure throughout the test period. Test Temp. -- 20 ± 5°C Test Period -- 1 hr. Test Pressure -- - 0.80 kg/cm²	P	W	W	(i). Test Duration = 1 Hr. low pressure followed by 1 Hr. high pressure difference. (ii). Test Duration = (P1) = 1W±50m bar followed by (P2) = 8W±50m bar
6	Effect on Water Quality (WRAS)	1. Taste of Water. 2. Appearance of Water. 3. Growth of Micro-organisms. 4. Cyto-toxicity. 5. Extraction of Metals	--	--	ISO 17885 Cl-8.4.1 BS 6920	WRAS Approval for Testing of fitting Material by WRC-NSF, UK for the requirements of potability of water as per BS: 6920	R	R	R	This is a type test. Test certificate from WRC-NSF is available for verification.
7	Marking	Visually	--	03 No.s / Lot	ISO 17335 Table-18	Mfg. Name / Trade Mark / DN/PN, Lot No./ batch No. Material, Std. Num, Month & Year of Mfg. Package ID				

Note : All fittings of same size OR pressure rating and fabricated in a single consignment shall constitute a lot.
M-Manufacturer T-Third Party W-Witness P-Performance
R-Review of test report C-Contractor

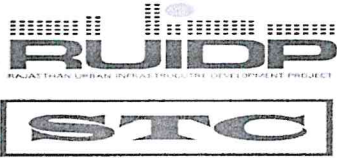
Note : 1. All measuring instruments will be calibrated periodically and calibration records will be made available to inspector Agency.
2. All samples inspected by Inspection Agency will be stamped.
3. Govt. of India have issued Trustlene Trade Mark to Kimplas piping system Ltd. Report is annexed .

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : DI Composite Saddle with Plastic Wrap/SS strap, PN 10, PE 80, Blue.. Size : 1) NB80, NB100,NB150, NB200 with outlet sizes of ½"- In Plastic Wrap 2) NB250, NB300 with outlet sizes of ½"- In SS strap					Project :			
		QAP NO: Std QAP/ 23-24/ ME-13					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)			
		DATE:					Contractor:			
Specification Details:										
Sr. No.	Test Description	Method of Check	Instrument to Check	Samples to Check	Ref. Standard	Acceptance Norms	Inspection			Remarks
							M	C	TPIA/Client/C consultants	
A	Raw Material									
1	Visual Appearance	General Characteristics	Visual Check	05 Nos. from lot	Mfg. Standard	Fittings shall be free from moulding defects such as shrinkages, blow holes and damages. Surface shall be smooth and clean free from socuring & cavity.	P	W	R	
B	In Process Inspection									
2	Dimensions	Geometrical Characteristics	Thread GO/ NOGO Gauges	05 Nos. from lot.	As per Drawing	Only threaded outlet shall be verified with the helpof thread Go/NoGo gauge.	P	W	W	
C	Final Inspection									
3	Hydrostatic Strength at 25±5°C.	Mechanical Characteristics	Hydraulic Pressure Testing Machine	01 Nos. from Lot	Mfg. Standard	Must sustain Hydrostatic Pr. for 01 hrs at 25±5°C and at 10 bar without any failure.	P	W	W	No leakage & seepage shaal be shown during testing.
Note1: 1. All Fittings of same size OR pressure rating in single consignment shall constitute a Lot. 2. All measuring instruments are calibrated periodically and calibration records can be be made available for verification on request. M - Manufacturer P - Performance T - Third Party. C - Customer R - Review of test reports W - Witness										
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI			
Signature:			Signature:				Signature:			
Name:			Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer Logo & Address		Item Description : Regulating Type Brass Ferrules Generally Comply with IS 319 Size : ½" (15mm)				Project :			
QAP NO: Std QAP/ 23-24/ ME-14				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT							
REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)							
DATE:				Contractor:							
Specification Details:											
Sr. No.	Test Description	Method	of Check	Instrument to Check	Samples to Check	Ref. Standard	Acceplance Norms	Agency			Remarks
								M	C	TPIA/Client/ Consultants	
A	Raw Material										
1	Visual Appearance-General Workmanship	Visual		--	10 Nos. from lot	As per specification/ Std.	Good Asthetic look, without casting defects, free from sand	P	W	W	Internal & External surface should be free from defect.
B	In process Inspection										
2	Coating/Plating finish etc.	Visual		--	10 Nos. from lot	As per specification/ Std.	Smooth and uniform surface Finish.	P	W	W	
3	Dimensions	Dimension		Dial Vernier / Gauge - Go/ No-Go	Min. 20 Nos. from lot	As per specification/ Std.	As per manufacturer's standard.	P	W	W	
4	Connection Threading	Thread Gauge Fitting		Go- No-Go Thread gauges	05 Nos. from lot.	As per specification/ Std. As per IS 554	Must pass gauging satisfactorily.	P	W	W	
5	Type	Visual		--	05 Nos. from lot.	As per specification/ Std.	Regulating type, without float valve.	P	W	W	
6	Material of construction for body, threaded plug and cap	Material of construction.		--	05 Nos. from lot.	As per specification/ Std. Test certificate from supplier	Brass - Chemical composition shall confirm to IS 319-Grade I/II.	P	R	R	As per IS:2692: 1989 Cl-5.1 and Table-1
C	Final Inspection										
7	Hydrostatic Pressure Test at 23°C	Hydraulic Pr. Test		Hydraulic Pressure Testing Machine.	01 No. from Lot	IS 2692 : 1989 Clause No. 10.1	Must sustain Hydrostatic Pressure throughout the test period. Test Temp. – 23±3°C Test Period -- 120 second. Test Pressure – 15 kg/cm²	P	W	W	No leakage or sweating during test
Note: 1. All articles of same size OR pressure rating in single consignment shall constitute a Lot. 2. All measuring instruments are calibrated periodically and calibration records can be made available for verification on request. 3.Regulating Type Brass Ferrules manufactured by Mukund Enterprise(JBP) & Royal brass Pro.(RBP) M - Manufacturer P - Performance T - Third Party. C - Contractor R - Review of test reports W - Witness											
Manufacturer / Vendor			Contractor					CONSULTANT /CLIENT / TPI			
Signature:			Signature:					Signature:			
Name:			Name:					Name:			

STANDARD QUALITY ASSURANCE PLAN												
	Manufacturer Logo & Address	Item Description : Ductile Iron Fittings for pressure pipes for water, gas and sewage - Specification (First Revision)					Project :					
		QAP NO: Std QAP/ 23-24/ ME-15					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:					Contractor:					
Specification Details: IS:9523 Reaffirmed In : 2020 for Ductile Iron Pipe Fittings, PN16/PN10												
Sl. No.	Components & operation	Charecterstics	Method of check	Sample size by manufacturer	Acceptance norms	Permissible value	Format of Records	Sample Size for b & C	Inspection			Remarks
									M	C	TPIA/Client/Consultants	
A Raw Material												
1	Visual Inspection for Surface Condition	Workmanship & finish	Visual	100%	IS 9523:2000 Clause: 4	-	IR	100%	P	W	W	Fitting shall be smooth and free from surface & other defects
2	Mechanical Testing	Tensile, Elongation & Hardness	By UTM & BHM	IS 9523:2000 Clause 8	IS 9523:2000 Clause: 9	T- > 420 Mpa, E- >5%, H- <250 Hrs	IR	1 test / Batch of 4 MT	P	R/W	R/W	
3	Zinc Rich Plant	Zince Mass & MTC	By weight (Myler Film)	1/ Shift	IS 9523:2000 Clause: 13 & Annex-A	> 150 g/m2	IR & MTC		P	W	W	Review of record
B Final Inspection												
4	Hydrostatic Test	No leakage / Sweaing Kept under Pr. 10 Sec.	Visual / HTPT	100%	IS 9523:2000 Clause: 10 As per Table-2	Upto DN 300 - 2.5Mpa, DN 300-600-1.6 Mpa DN 700-1000 -1.0 Mpa	IR	1 / size of total order qty.	P	W	W	Witness on finished product if required by customer
5	Cement Mortar Lining (CML)	Dry Lining Thickness / (Pin Edge)	Magnetic Measurement	5% (Min. 1/ Size / Shift)	IS 9523:2000 Clause: 13 & Annex-B Table 33	DN 80-300 - 1.5mm (Min.) DN 350-600 - 3mm (Min.) DN 700-1000 - 3.5mm (Min.)	IR	Witness as per sampling plan IS 11606 Table2	P	W	W	Shall smooth and hard enough not to flow at 65°C but not so brittle at 0°C as chippoff.
6	Bitumen Coating	Coating Thickness & MTC	Myler Film / Magnetic Measurement	1/Shift	IS 9523:2000 Clause: 13 & Annex-C	70 micron (mean)	IR & MTC		P	W	W	
7	Liquid Epoxy Coating	Coating Thickness	Myler Film / Magnetic Measurement	1/Shift	IS 9523:2000 Clause: 13 & Annex-A-B	70 micron (mean) 50 micron (min.)	IR & MTC		P	W	W	
8	FBE Coating	Coating Thickness	Magnetic Measurement	10%	EN 14901:2006	250 micron (Mean)	IR & MTC		P	W	W	
9	Dimensions	Length, Height, Angle of bend, Metal thickness, Flange dimensions	Measurement	As per internal sampling plan	IS 9523:2000 Clause: 11, 12 & 16	Table 14 & Table 15-31	IR	Witness as per sampling plan IS 11606 Table2 based on nominal dia.	P	W	W	
10	Marking	Mfg. Logo, DI, DN, PN Rating, Year of manufacture, Degree of Bends, ISI Logo with CML No.	Visual	100%	IS 9523:2000 Clause: 15 / Special Marking	Clause 15	IR	100%	P	W	W	
11	Rubber / Gasket (EPDM)	Quantity	Visual & Counting	Per Batch	IS 9523:2000 Clause: 7 & IS 5382:2018	IS 5382 Table 1	IR	1/ size	R/P	R/W	R/W	
		Hardness	Shore A	Per Batch	IS 5382:2018 Table1		IR			W	W	
12	Ovality		Measurement	1 W%	Table-13 & 13, CI-13		IR		P	W	W	
Legend P- Perform; R- Review; W-Witness; M- Manufacturer; C- Contractor; IR- Inspection Report, MTC- Materials Test Certificate												
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI					
Signature:			Signature:				Signature:					
Name:			Name:				Name:					

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : uPVC SWR Fittings Unplasticized Polyvinyl Chloride (UPVC) Injection Moulded Fittings for Soil and Waste Discharge System for Inside and Outside Buildings Including Ventilation and Rain Water System -	Project :
		QAP NO: Std QAP/ 23-24/ ME-16	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: as per IS: 14735: 1999 Reaffirmed In : 2019

Sr. No.	Clause No. of IS:14735:1999	Description of Test	Type/Method of Test	Sampling Model/Extent of Check		Acceptance Standard	Format of record	Inspection by			Remark
				Manufacturer	TPI/Cont.			M	C	TPIA/Client/Consultants	
A	Raw material										
1	6.0	Material	Review of TC	Each Lot/Batch of Raw Material	Each Lot/Batch of	RMTC	RM TC	R	R	R	
B	In Process Final Testing										
1	5.0	Colour	IS:14735: 1999	Each Fitting	One Sample/Lot	Clause of 5.0 IS:14735: 1999	Inspection Reports	P	W	W	
2	7.1 to 7.4, 8	Dimensions (Pipe, Socket & Sealing Ring)	IS:14735: 1999	10 Sample of Each Control Unit	One Sample/Lot	Cl 7.1 to 7.4 of IS:14735: 1999 Table 1-3		P	W	W	
3	10	Workmanship	IS:14735: 1999	10 Sample of Each Control Unit	One Sample/Lot	Cl 10.0 of IS:14735: 1999		P	W	W	
4	12.1	Visual Appearance	IS:14735: 1999	10 Sample of Each Control Unit	One Sample/Lot	Cl. 12.1 of IS:14735: 1999		P	W	W	
5	12.2	Stress Relief Test	IS:14735 IS:12235 (Part 6)	Three Sample Each Control Unit	One Sample/Lot	Clause of 12.2 IS:14735: 1999		P	W	W	
6	12.3	Vicat Softening Temperature	IS:6307	One Sample Once in a Three Month	Review	Clause of 12.3 IS:14735: 1999	Vendor Internal report	P	R	R	
7	12.4	Effect on Water	IS:12235(P-4) IS:12235(P-10)	One Sample Once in a Six Month	Review	Clause of 12.4 IS:14735: 1999		P	R	R	
8	13.0	Resistance to Sulphuric Acid	IS:14735 IS:12235 (Part 7)	One Sample Once in Three Month	Review	Clause of 13.0 IS:14735: 1999		P	R	R	
9	14.0	Titanium Di-oxide Content	Annex A IS:14735	One Sample Once in a Six Month	Review	Clause of 14.0 IS:14735: 1999		P	R	R	
10	15.0	Sulphated Ash Content	Annex B IS:14735	One Sample Every Fifth Control Unit	One Sample/Lot	Cl 15.0 & Annex B of IS:14735: 1999	Inspection report	P	W	W	
11	16.1	Impact Test (Drop Test)	Annex C of IS:14735	Three Sample Each Control Unit	One Sample/Lot	Clause of 16.1 IS:14735: 1999	Inspection report	P	W	W	
12	17	Water Tightness of Joint	Annex D of IS:14735	Three Sample Each Control Unit	Review	Clause of 17 IS:14735: 1999	Inspection report	P	W	W	

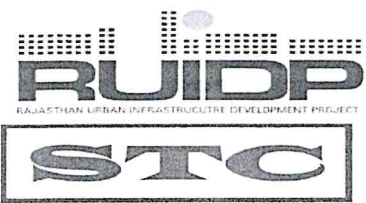
ABBREVIATION : P: PERFORM, W: WITNESS, R: REVIEW, CONT.: CONTRACTOR, TPI: THIRD PARTY INSPECTION AGENCY

Note:

- 1) Latest revision & amendment of IS: 14735: 1999 to be adopted for manufacturing & Test.
- 2) Review calibration certificate of all measuring instruments & gauge.
- 3) All fittings of same type, size and pressure class manufactured from one mix of compound from one injection-moulding machine shall constitute as a lot

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT 	Manufacturer Logo & Address	Item Description : uPVC Agri Fittings	Project :
		QAP NO: Std QAP/ 23-24/ ME-17	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: IS 7834:1987 Reaffirmed In : 2018 with latest amendment

Sl. No.	Clause No. IS:7834	Description of Test	Test Method	Sampling Model for TPIA /MFG.	Sampling Model for TPI	Acceptance Standard	Inspection by			Remarks
							M	C	TPIA/Client/Consultants	
A	Raw Material									
1	2.0	PVC Resin:	ASTDM D-1243 / IS:4669	Review RM TC	Review RM TC	ASTDM D-1243 / IS:4669	R	R	R	Test Certificate of Raw Material Manufacturer
B	In Process Final Testing									
2	---	Visual Appearance	IS: 7834:197	Adequate	Each Fittings	Appendix no.PPF/PPA-IMD/QCP/A-02	P	W	W	
3	51.1, 5.1.2	Socket Dimension	Table 1 of IS : 7834 : 1987	5 (Each Control Unit)	Table 2 of IS:7834:1987	Table 1 of IS:7834:1987	P	R	W	
4	4.0	Wall Thickness	IS: 7834:1987	5 (Each Control Unit)	Table 2 of IS:7834:1987	Minimum 3.0mm	P	R	W	
5	6.1	Stress Relief Test (SRT)	IS: 7834:1987	5 (Each Control Unit)	Table 2 of IS:7834:1987	6.1.1 of IS:7834:1987	P	R	W	
6	6.4	Short Term Hydraulic Test	IS: 7834:1987	3 (Each Control Unit)	Table 2 of IS:7834:1987	6.4 of IS:7834:1987	P	R	W	
7	6.2	Opacity	IS: 7834:1987	3 (Once in three months)	Table 2 of IS:7834:1987	6.2 of IS:7834:1987	P	R	R	
8	6.3	Effect on Water Test	IS: 7834:1987	3 (Once in Six months)	Table 2 of IS:7834:1987	6.3 of IS:7834:1987	P	R	R	
9	8.0	Marking	IS: 7834:1987	Adequate	Each Fittings	8.1 of IS:7834:1987	P	W	W	

- Note:
- 1

Lot / Control Unit- Same size and class production run in similar condition on same machine constitute a lot.
- 2

Manufacturer has to calibrate above Equipment periodically and put calibration certificate for TPIA verification.

Note: IS 7834:1987 Reaffirmed In : 2018 with latest amendment above QAP is under Review, before final submission will be incorporating the current latest amendment.

Marking Details:

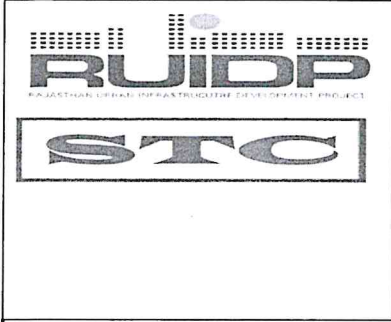
- 1

As per BIS :-

Legends:- TPIA- Third Party Inspection Agency W- Witness C-Client/Contractor R -Review of Internal Test Report P-Perform

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN



Manufacturer Logo & Address

Item Description :PP Compression Fittings PN 16,Polypropylene, Blue & Black 1. PP Compression Female Thread Adaptor (FTA) with SS 304 Metal Insert -Size as per 2. PP Compression Female Equal Elbow(without insert)3. PP Compression Male Thread Adaptor (MTA) with SS 304 Metal Insert- 4. PP Compression Female Thread Off Side Elbow(FTO) with SS 304 Metal Insert 5. PP Compression MaleThread Offside (MTO) with SS 304 Metal Insert

QAP NO: Std QAP/ 23-24/ ME-18

REV.NO: 00

DATE: _____

Project :

Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

Consultant: SHAH TECHNICAL CONSULTANT (STC)

Contractor:

Specification Details:	
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Sl. No.	Test Description	Method of Check	Instrument to Check	Sample toCheck	Ref. Standard	Acceptance Norms	Agency			Remarks
							M	C	TPIA/Client/Consultants	
1	General characteristics	Visually	---	05 No.s from Lot	ISO 17885 Cl-6	Fittings shall be free from Moulding defects such as shrinkages, blow holes and damages. Surface shall be smooth, cleanfree fromsocring and cavity.	P	W	W	
2	Marking	Cl. 10 Table-18	Visual Check	05 No.s from Lot	ISO 17885 As per Table-18	Manufacturer's Name, Size, Material Grade, Pressure Rating.	P	W	W	
3	Dimensions (W,P,I,SS)	Dimesnion	Go / NoGo Thread Gauges	05 No.s from Lot	ISO 17885 Cl.7	Threaded outlets shall be chekced with Go / NoGo Threads shall pass the test.	P	W	W	Threads shall comply to Clause 6.4 of ISO 17885:2019
4	Leak tightness under Internal Pressure (W,P,I,SS)	Hydraulic Pressure Test	Hydraulic Pressure Testing Machine	02 No.s from Lot	ISO 3503 ISO17885 Cl.8.2.2	Must sustain Hydrostatic Pressure throughout the test period. Test temp. 26±3°C Test period - 1 hrs Test pressure - 9Kg/cm²	P	W	W	Applicable only for straight fittings. No leakage during either test period.
5	Resistance to pull out at 23°C (W,P,I,SS)	Tensile Testing Machine	Universal Tensile Testing Machine	01 No.s from Lot	ISO 3501 ISO 17885 Cl.8.2.2	Pipe should not come out of fitting throughout test.	P	R	R	Applicable only for end load bearing compression fittings
6	Effect on Water Quality (WRAS)	Visual 1. Test of Water 2. Appearance of Water 3. Growth of Micro Organism 4. Extraction of metals 5. Cyto - Toxicity	---	---	BS 6920	WQC Test Report for Testing of fitting Material's requirements ofpotability of Water asper BS:6920	P	R	R	
7	Material of Construction for female insert	ISO 17885:2000 Clause 9.3.3.2	RMTC from Vendor / Supplier / Manufacturer	01 No.s from Lot		Female insert shall be of SS 304	P	R	R	
8	Raw Material	Review of RMTCISO 17885:2015		Once Per Batch	ISO 17885:2015	As per Clause 5.1, 5.2,5.3 of ISO 17885:2015	R	R	R	
9	Resitance to Internal Pressure	ISO 17885:2000 Clause 9.3.3.1	Hydrostatic Pressure	01 No.s from Lot	ISO 3458	Fitting body shall be tested as per ISO 1167	R	R	R	
10	Long term Pressure test for leak tightness for assebmly joints	ISO 17885:2005 Clause 9.3.3.2	Hydrostatic Pressure Test	Once Per Material Type	ISO-3458 ISO-1169-1 ISO-1167-4	The assembly shall confirm to be the performance requirement in table9.	R	R	R	

Note:

- | | |
|---|---|
| 1 | All measuring instruments are calibrated periodically and colibration records can be made available for verification. |
| 2 | All same inspected by inspection agency will be stamped. |
| 3 | Considered and followed offer Quantity as a Single lot and Acceptance Norms. |
| 4 | Dimesional tolerance accoridng to manufacturer Standard Mold Tol.±10M.M. |

Legends:- TPIA- Third Party Inspection Agency W- Witness C-Client/Contractor R -Review of Internal Test Report P-Perform						
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Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : GI Elbow & Socket	Project :
		QAP NO: Std QAP/ 23-24/ ME-19	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: IS 1879 Reaffirmed In : 2020 (with latest ammendment)

SR. N.	Test by Organisation	Criteria/ Methodology/ Specifications	Acceptance Norm.	Sample Size	Ref. Standard	Format of Records	Inspection By			Remarks
							M	C	TPI/Client/ Consultants	
A	Raw Material & in process inspection									
1	Visual & Appearance	Visual	Good asthetic look without casting defects	10 Nos. from lot	As per Approved Standard drawing	-----	P	RW	R	
2	Connecting Threads	Thread Gauge	Must pass Gauging Satisfactory	10 Nos. from lot	As per Approved Standard drawing	Inspectio n Report	P	RW	R	
3	Dimensions	Vernier Caliper	As per Approved Standard drawing	10 Nos. from lot	As per Approved Standard drawing	Inspectio n Report	P	RW	R	
4	Galvanizing. (Mass of Zinc Coating & Uniformity)	Measurement	As per IS 4759 : 1996	01 No. from lot	IS 4759 : 1996 IS 2633 : 1972 IS 2629 : 1985 (As per application of the Codes)	MTC/ NABL Lab Report	P	R	R	Review of test report
5	Material Of Construction of Body	MTC/ NABL Lab Report	As per IS: 14329 Grade BM-300	01 No. Per heat/lot	As per Approved Standard drawing	-----	P	R	R	Review of test report
C	Final Inspection									
6	Hydrostatic Pressure Test	HPT Machine	No leakage during test period at 21 bar for 120 seconds.	10 No. from lot	As per Approved Standard drawing	Inspectio n Report	P	RW	W	
7	Marking	Visual	As per Approved Standard drawing	10 Nos. from lot	As per Approved Standard drawing	-----	P	RW	W	

Notes :- 1. All fittings of same size & same pressure rating in a consignment shall constitute a lot.

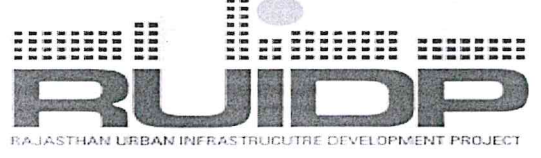
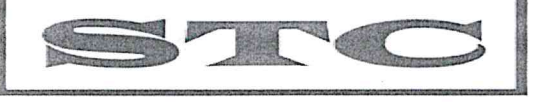
2. All measuring equipment calibration records shall be submitted for review for contractor.

Note: As per IS 1879 Reaffirmed In : 2020 (with latest ammendment) above QAP is under Review, before final submission will be incorporating the current latest amendment.

Legend :- M: Manufacturer, C: Contractor, TPI: Third Party, P: Perform, W: Witness, R: Review document, MTC: Material Test Certificate.

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description :Electromagnetic Flow Meter – Measurement of conductive liquid flow in closed conduits – Method using electromagnetic flow meters	Project :
		QAP NO: Std QAP/ 23-24/ ME-20	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: BS EN ISO 6817

Sl. No.	Component / Operation	Characteristic Check	Type of Check	Extent of Check	Tested at	Reference Document	Inspection			Remarks
							M	C	TPIA/Client/ Consultant	
1	Raw Material/ Brought out items									
1.1	Housing and enclosure (Castings)	Dimensions, finish, visual defects	Measurement and Visual	As per sampling plan	In-house	Drawings	P	R	R	
1.2	Electrodes	Material composition	Confirm	100%	From external sources	Drawings	P	R	R	
2	In process Inspection/Assembly									
2.1	Electrode Assembly	Leakage (By Hydro Static Test)	Hydrotest	100%	In-house	AIS	P	R	R	
2.2	Coil Assembly	Megger test and Coil Resistance	Electrical measurement	100%	In-house	AIS	P	R	R	
2.3	Primary Head	Functional Performance	Calibration	100%	In-house	AIS / SIR / ISO 17025	P	R	R	
2.4	Electronics Assembly	Assembly, Functionality Performance	Visual and electrical	100%	In-house	MPP, Product specifications	P	R	R	
3	Final Inspection/End Product									
3.1	Final Assembly	Dimensions, Finish	Visual & Dimensional	10%	In-house	Drawings	P	W	W	
3.2	Magnetic Flow meter	Accuracy	3 Point Water Calibration	10%	In-house	AIS / SIR / ISO 17025	P	W	W	
3.3		Pressure	Hydro test (1.5 times design pressure)	10%	In-house	AIS	P	W	W	

Notes:

- I Only 10% of the total ordered quantities or 1 No. of each size which ever is lesser; will be offered for water calibration & pressure test while inspection.
- II One reading at 30%, 60%, 90% for water calibration of Rig capacity.
- III For sizes above 300 mm the hydrostatic pressure test will be offered only for the electrode portion of the meters.

Legends:

P- Perform	1- Manufacturer	MPP - Manufacturing Practices and Procedures
W- Witness	2- Contractor	AIS - Assembly Instruction Sheet
R- Review		SIR - Self Inspection Report

MFR- Manufacturer, Cust- Customer, TPIA- Third Party Inspection Agency, OA- Order Acknowledgment Copy

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN													
 		Manufacturer Logo & Address		Item Description : Bulk Flow Meter (Woltman type Water Meter)					Project :				
				QAP NO: Std QAP/ 23-24/ ME-21					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
				REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)				
				DATE:					Contractor:				
Specification Details: ISO:4064-1:2005 (E) (latest edition), BS 5728 and IS: 2373.													
Sl. No.	Component / Material	Characteristic Check	Category	Type Of Check	Quantum of Check by Manufacturer	Quantum of Check by TPI / Client	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
										M	C	TPIA/Client/Consultant	
A Raw material/ Brought out items													
1	Visual Inspection	The Totalizer register in symbol m3 on dial.	Major	Visual	100%	One number per lot	As per ISO 4064	ISO 4064	-	P	W	W	
		Register Consist row of minimum of 5 line measuring 99999 m3											
		Body Color Blue (Min. 50 Microns)											
2	Housing	End to End/Mechanical Properties	Major	Dimension	Sampling Plan	One number per lot	As per ISO 4064	As per ISO 4065	Compliance Report	P	R	R	
B In process and Final Testing													
3	Pressure Tightness Test	Hydrostatic Pressure Test	Critical	Pressure Gauge and leak Tightness	100%	One number per size	Pressure - '1.5 X PN Rating for 15 minute	No Visible leakage	Hydro Cum Calibration Test Certificate	P	W	W	
4	Metering Accuracy	Flow Test - Qmin, Qt & Qn	Critical	Measurement	100%	5% of the Total PO Qty	GAD / ISO 4064	GAD / ISO 4064		P	W	W	
5	Marking	Detail of the meter	Major	Visual	100%	One number per size	As per Approved Drawing	As per Approved Drawing	---	P	W	W	
Note-													
1	The meters will be tamper proof and hermetically sealed as per IS 779.												
2	Meter body and cover will be epoxy powder coated for protection from any environment												
3	The meter parts coming in contact with water will not create to hazards and corrosion proof to withstand up to 2 ppm of residual chlorine in water.												
4	The meters will be designed to withstand accidental reversal of flow without causing any deterioration / damage to the water meters.												
5	Review of life cycle test report (endurance) certificate & IP-68 protection certificate during inspection.												
6	All measuring and test equipment will be calibrated periodically and reviewed during inspection.												
7	Few random sample (maximum 2 nos per size) as per code of water meters shall be sent to the FCRI (Fluid Control Research Institute, Palakkad, India) for testing of the water meter and issuance of test certificates for acceptance. In case of rejection of the sample water meter of a particular size, the entire lot of water meter of that size will be subject to rejection."												
8	Cast Iron strainer with stainless steel strainer element at inlet of same size.												
9	Review Documents will be available at the time of inspection for verification.												
10	All Ordered unit can be checked for physical Conformance.												
11	The water meter shall be 50 mm to 300 mm nominal diameter Class B Bulk Water meters as per ISO:4064-1:2005 (E) (latest edition), BS 5728 and IS: 2373. The water meter will be used for measurement of cold, chlorinated water supplied to domestic / non-domestic consumers. The water meters will be manufactured in accordance with ISO-4064, BS 5728 and relevant IS standards (IS2373) latest revision and specifications stipulated herein.												
12	Pressure test At 1.5 X PN Duration 15 Minutes.												
Legends: M : Manufacturer; C : Contractor; P : Perform; W : Witness; R : Review;													
Manufacturer / Vendor			Contractor					CONSULTANT /CLIENT / TPI					
Signature:			Signature:					Signature:					
Name:			Name:					Name:					

STANDARD QUALITY ASSURANCE PLAN

	Manufacturer Logo & Address	Item Description : Domestic Type Water Meter (Multijet)	Project :
		QAP NO: Std QAP/ 23-24/ ME-22	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Specification Details: ISO 4064

Sl. No.	Component Material	Characteristic Check	Category	Type Of Check	Quantum of Check by Manufacturer	Quantum of Check by TPI/Client	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
										M	C	TPIA/Client/Consultant	
A	Raw Material/ Brought out items												
1	Visual Inspection	The totalizer register in symbol m3 on dial.	Major	Visual	100%	One number per size	As per ISO 4064	As per GAD / ISO 4064	-	P	W	W	
		Rotational Movement of the pointer (Clockwise)											
		Register Consist row of minimum of 4 line measuring 9999 m3											
		Direction of water Flow Show on the body											
		Body Color Blue											
B	In process & Final Testing												
2	Housing	End to End/Housing	Major	Dimension	Sampling Plan	One number per size	As per GAD	As per GAD/ISO 4064	Compliance Report				
3	Pressure Tightness Test	Hydrostatic Pressure Test	Critical	Pressure Gauge and leak tightness	100%	2% of the PO Qty	Pressure - '1,6 X PN	No Visible leakage	Hydro Cum Calibration Test Certificate	P	R	R	
4	Loss of Pressure	Pressure Loss at Qmax	Critical	Pressure Gauges	100%	One number per size	Less than 1 bar	GAD/ISO 4064		P	W	W	
5	Metering Accuracy	Flow Test - Qt & Qn	Critical	Measurement	100%	2% of the PO Qty	GAD/ISO 4064	GAD/ISO 4064		P	W	W	
6	Marking	Detail of the meter 1. Direction of Flow on sides of body 2. Trade Mark &Manufacturer name 3. Q3 4. Serial No & Year of Mfg. 5. ISO 4064 Class B 6. Nominal size 7. RUIDP	Major	Visual	100%	One number per size	As per Approved Drawing	As per Approved Drawing		P	W	W	

Legends: M : Manufacturer; C : Contractor; P : Perform; W : Witness; R : Review;

Note:

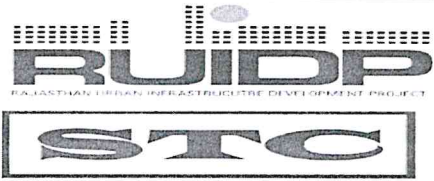
- Review Documents will be available at the time of inspection for verification.
- All Ordered unit can be checked for physical Conformance.
- Pressure Tightness Test -1.6 X PN at 15 Minutes.

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN													
 	Manufacturer Logo & Address	Item Description : Ductile Iron D/F Resilient Seated Gate Valve (Sluice Valve), Non-Rising Stem with manually and electrical Actuator operated					Project :						
		QAP NO: Std QAP/ 23-24/ ME-23					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)						
		DATE:					Contractor:						
Specification Details: As per DIN3202 F4 / IS 14846:2000 / EN558:2008, flange drilling as per IS 9523:2000 (Table-4)													
Sl. No.	Item/Components/ Process Stage	Characteristics Checked	Category	Type/Method of Check	Extent of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks	
									M	C	TPI/Client/Consultant		
1.	Raw Materials												
1.1	Body, Bonnet, Wedge, Hand Wheel	Tensile Strength, Elongation & Hardness	Major	Mechanical Test	One Per Heat	DIN1693 GGG40/ IS:1865 Gr. 400-15	DIN1693 GGG40/ IS:1865 Gr. 400-15	In House Lab Test Report	W	R	R	Product Test Certificate shall be submitted by vendor to contractor or TPI for Review	
1.2	Stem/Spindle	Tensile Strength, Elongation & Hardness	Major	Mechanical Test	One Per Lot	IS:6603 Gr. 12Cr13/22Cr13/ AISI-420	IS:6603 Gr. 2Cr13/22Cr13/ AISI-420	In House Lab Test Report	W	R	R		
		Major Chemical Composition	Major	Chemical Analysis	One Per Lot	IS:6603 Gr. 12Cr13/22Cr13/ AISI-420	IS:6603 Gr. 12Cr13/22Cr13/ AISI-420	In House Lab Test Report	W	R	R		
1.3	Lining of Wedge	Physical Properties	Major	Shore Hardness	One Per Lot	EPDM RUBBER (WRAS approved)	EPDM RUBBER (WRAS approved)	In House Lab Test Report	W	R	R		
1.4	Wedge Nut (Stem Nut)	Mechanical	Major	Mechanical Test	One Per Heat/Per Batch	IS:6912 Leaded Brass	IS:6912 Leaded Brass	In House Lab Test Report	W	R	R		
		Major Chemical Composition	Major	Chemical Analysis	One Per Heat/Per Batch	IS:6912 Leaded Brass	IS:6912 Leaded Brass	In House Lab Test Report	W	R	R		
1.5	'O' Ring (3 'O' Ring)	Physical Properties	Major	Shore Hardness	One Per lot	NBR	NBR	In House Lab Test Report	W	R	R		
2.	In Process Inspection												
2.1	Machining, Facing, Assembling, Finishing & Hydro Test	Dimension	Major	Measurement	100%	DIN3202 F4/ IS 14846:2000/ EN558:2008 (Face to face)	DIN3202 F4/ IS 14846:2000/ EN558:2008 (Face to face)	Insp. Report	W	R	R		
		Surface defects	Major	Visual	100%	-	Free from Surface Defects	-	W	R	R		
		Leakage	Major	Hydro Test at required Pressure	100%	IS 14846:2000/As per Drawing	Body - 1.5 X PN-5min, Seat - 1.1 X PN-2min	Insp. Report	W	R	R		
2.2	Flange Drilling	Dimension	Major	Measurement	100%	IS 9523:2000 (Table-4)	IS 9523:2000 (Table-4)	Insp. Report	W	R	R		
3.	Final Inspection												
3.1	Visual Workmanship	Appearance	Major	Visual	10% (max)	-	Free from Surface Defects	Insp. Report	P	W	W		
3.2	Dimensional Check	Dimension	Major	Measurement	10% (max)	DIN3202 F4/ IS 14846:2000/ EN558:2008 (Face to face) & IS:9523 (Drilling)/As per Drawing	DIN3202 F4/ IS 14846:2000/ EN558:2008 (Face to face) & IS:9523 (Drilling)/As per Drawing	Insp. Report	P	W	W		
3.3	Valve Operation (Open/Close)	Operation	Major	Visual	10% (max)	-	Smooth Operation	Insp. Report	P	W	W		
3.4	Hydraulic Test	Leakage test	Major	Hydro Test at required Pressure	10% (max)	IS 14846:2000/As per Drawing	Body - 1.5 X PN-5min, Seat - 1.0 X PN-2min	Insp. Report	P	W	W	will not show any sign of leakage &	
3.5	Painting	Visual & DFT	Major	Measurement	100%	IS 14846:2000	As per Approved Drawing	Painting Compliance Report	P	R	W	DFT Min.250 Microns	
3.6	Marking	Visual & Identification	Major	Visual	100%	IS 14846:2000	As per Approved Drawing	Insp. Report	P	R	W	IS code, Mfg. name, PN, DN, RUIDP	
NOTE: 1) Materials offered in painted condition for final inspection. 2) WRAS certificate of Lining of Wedge shall be provided for review at the time of inspection.													
Legends: M : Manufacturer; C : Contractor; P : Perform; W : Witness; R : Review;													
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI					
Signature:				Signature:				Signature:					
Name:				Name:				Name:					

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : DOUBLE ECENTRIC BUTTERFLY VALVE		Project :						
				QAP NO: Std QAP/ 23-24/ ME-24		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
				REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)						
				DATE:		Contractor:						
Specification Details: DEBFV Gear Box & Electrical Actuator operated												
Sl. No.	Test Descriptions	Characteristic / Specification	Category	Extent of Check	Acceptance Criteria	Format of Records	Activity Scope			Notes/ Remarks		
							M	C	TPI/Client/ Consultants			
1. RAW MATERIAL												
1.1-Castings- Body												
a.	Mechanical Properties	Ductile Iron	Critical	1/ Heat	Approved GA Drawings	Test Certificate	P	R	R			
b.	Body & Disc	Physical Properties		1 / Lot	As per Approved Drawings / DIN 1693; BS 970; ASTM A 351	Material Test Certificate						
c.	Seat	Chemical Properties										
d.	Disc Seal	Physical Properties										
e.	Shaft & Retainer	Physical & Chemical Properties										
1.2 ALL Parts MOC as per GA Drawing)												
a.	Material of Construction of all parts	As per GAD	Major	100%	Approved GA Drawings / Manufacturing Drawings	Daily Product Test Certificate	P	R	R	Product Test Certificate shall be submitted by vendor to Customer or TPI for Review		
2. Coating												
a.	Color & DFT	Epoxy Coating			Approved GA Drawings	Product Test Certificate	P	R	R	NSF/WRAS Approved FBE Coating (Blue)- Min.250 Microns		
3. FINAL INSPECTION												
a.	Functional Test	Valve Operation	Major	Internal-100% External Sampling - 10%	Approved GA Drawings / IS 3905 Cl. 17.2, 17.3, 17.4, 17.5	Hydro test Certificate Product Test Certificate & Witness Report	P	W	W	Fully Open & Close 2 times		
b.	Shell Test	1.5 xPN Rating								Approved GA Drawings / Flange Drilling Standard (IS-1538; BS EN 1092-2)	Dimensional Report	Will not show any sign og leakage & seepage
c.	Seat Test	1.1x PN Rating										
d.	Disc Strength	1.5 xPN Rating										
e.	Dimensional Inspection	Dimensional Checking & Overall Assembly		100\$	Ref code,Logo,DN,PN, RUIDP	Paint Compliance Report	P	W	W			
f.	Visual Inspection	Surface Defects										
g.	Operation Test Under No Load											
h.	Marking & Packing	GA Drawing										
Note:												
1	Valves will be offered in un-painted / primer painted condition for Hydro Testing.											
2	Following internal inspection & quality control, measures will be carried out and test certificates shall be submitted to contractor / client / TPIA at the time of Inspection for Review: a. Magnetic particle tests on body and disc. b. Ultrasonic Test on shafts. c. Overload torques test carried out on the gear box of valves. The test is carried out by applying 1.5 times the rated torque.											
3	Compliance certificate for gear box and final inspection. Test certificate for actuator shall be submitted to contractor / client / TPIA for Review.											
4	Finishing test certificate and painting are done after final inspection and painting compliance will be submitted thereafter.											
Legends: M : Manufacturer; C : Contractor; P : Perform; W : Witness; R : Review;												
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI				
Signature:				Signature:				Signature:				
Name:				Name:				Name:				

STANDARD QUALITY ASSURANCE PLAN											
 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC	Manufacturer Logo & Address	Item Description : Dual Plate Check Valve					Project :				
		QAP NO: Std QAP/ 23-24/ ME-25					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)				
		DATE:					Contractor:				
Specification Details: API 594 and API 598											
Sl. No.	Component/ Operation	Characteristic Check	Type Of Check	Quantum Of Check	Reference Documents	Acceptance Norm	Format Of Record	Inspection			Remarks
								M	C	TPI/Client/ Consultant	
A). RAW MATERIAL TEST:											
a)	Body & Plate, Seat, Seal, Hinge Pin, Spring and other parts.	Mechanical & chemical properties	Mechanical, Critical	One per Heat/ Lot	DIN 1693 Gr. GGG 40/ IS:1865 Gr.400/15, ASTM A 216;	DIN 1693 Gr. GGG 40/ IS:1865 Gr.400/15, ASTM A 216;	Mechanical Test Certificate	P	R	R	
B). IN -PROCESS INSPECTION:											
a)	{After machining,assembling,finishing}	Surface defect, Dimensional	Visual, Major	100%	Mfg. Std.	Mfg. Std.	Daily Production report	P	R	R	
C). FINAL INSPECTION:											
a)	Visual	Surface defect	Visual	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	
b)	Dimensional Check	Overall dimension	Measurement	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	
c)	Operational Test (open to close & vice versa)	Workmanship/ Operation	Visual	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	
d)	Hydro - Test	Body test pressure (1.5xPN rating for 5 minutes)	Visual	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	No leakage & seepage show during inspection
		Seat test pressure 1.1xPN rating for 3 minutes	Visual	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	
e)	Painting & Packing	Liquid epoxy minimum DFT 250 microns	Measurement	100%	As per API 594 & drawing	As per API 594 & drawing	Inspn.Report	P	W	RW	
Note-											
1	All test certificates and records will be shown to inspection authority at the time of final inspection & verification										
2	Face to Face Dimension: IS:14846 (PD).										
3	Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.										
4	All Test should be carried out with calibrated Testing Equipments.										
5	Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition										
6	Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue										
LEGEND :R - review,RW-random witness,W-witness,P-Perform , M- Manufacturer, C- Contractor											
Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI				
Signature:			Signature:				Signature:				
Name:			Name:				Name:				

STANDARD QUALITY ASSURANCE PLAN											
	Manufacturer Logo & Address	Item Description : Non Return Valve (Check Valve)						Project :			
		QAP NO: Std QAP/ 23-24/ ME-26						Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
		REV.NO: 00						Consultant: SHAH TECHNICAL CONSULTANT (STC)			
		DATE:						Contractor:			
Specification Details: IS 5312.											
SL. No	Component/ Operation	Characteristic Check	Type Of Check	Quantum Of Check	Reference Documents	Acceptance Norm	Format Of Record	Inspection			Remarks
								M	C	TPI/Client/ Consultant	
A). RAW MATERIAL TEST:											
a)	Body, Door, Hinge Pin, Door face & Body seat ring & other parts	Mechanical & chemical properties	Mechanical, Critical	One per Heat/ Lot	As per approved drawing / IS: 210; IS:318; AISI	As per approved drawing/ IS: 210; IS:318; AISI	Mechanical Test Certificate	P	R	R	
B). IN -PROCESS INSPECTION:											
a)	(After machining,assembling,finishing)	Surface defect, Dimensional	Visual, Major	100%	Mfg. Std.	Mfg. Std.	Daily Production report	P	R	R	
C). FINAL INSPECTION:											
a)	Visual	Surface defect	Visual	100%	As per approved drawing / IS: 5312	As per approved drawing/ IS: 5312	Inspn.Report	P	W	RW	
b)	Dimensional Check	Overall dimension	Measurement	100%	As per approved drawing / IS: 1538	As per approved drawing/ IS: 1538	Inspn.Report	P	W	RW	
d)	Hydro - Test	Body test pressure (1.5xPN rating for 5 minutes)	Visual	100%	As per approved drawing / IS: 5312 Part 1 CI-8	As per approved drawing/ IS: 5312 Part 1 CI-8	Inspn.Report	P	W	RW	No leakage & seepage show during inspection
		Seat test pressure 1.1xPN rating for 3 minutes	Visual	100%							
e)	Painting & Packing	Liquid epoxy minimum DFT 250 microns	Measurement	100%	As per approved drawing/ IS: 5312	As per approved drawing/ IS: 5312	Inspn.Report	P	W	RW	
Note- 1 All test certificates and records will be shown to inspection authority at the time of final inspection & verification 2 Face to Face Dimension: IS:1538 (PD). 3 Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg. 4 All Test should be carried out with calibrated Testing Euipments. 5 Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition 6 Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue LEGEND :R - review,RW-ramdom witness,W-witness,P-Perform , M- Manufacturer, C- Contractor Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI				
Signature:			Signature:				Signature:				
Name:			Name:				Name:				

STANDARD QUALITY ASSURANCE PLAN

 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC	Manufacturer Logo & Address	Item Description : Knife Gate Valve (Manual & Motorized)	Project :	
		QAP NO: Std QAP/ 23-24/ ME-27	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)	
		DATE:	Contractor:	

Specification Details:						
Sl. No.	Examination / Process	Test Procedure/ Standard	Inspection			Remarks
			M	C	TPI/Client/Consultant	
1	Raw Material					
1.1	Body, Bonnet, Plate, Stem and other parts	DI GGG40/EN 12266-1	P	R	R	
2	Final Inspection					
2.1	Inspection of the main- and Installation Dimensions & Visual Inspection	As Per Approved Drawing/EN 12266-1	W	Visual -100%	W	
2.2	Material certificate for following components: Body & Bonnet - Chemical & Mechanical Properties, Lining-EPDM -WRAS Certificate	As Per Approved Drawing/EN 12266-1	W	R	R	
2.3	Visual Inspection of the coating - DFT Measurement: (Internal and External With Epoxy Powder Coating)	As per Approved Drawing DFT>250 micron	W	W	W	
2.4	Inspection of the valve marking (Ref code, Manufacturer name, DN, PN,RUIDP)	EN 12266-1	W	W	W	
2.5	Inspection of Cleanliness before Shipment.		W	-	-	
2.6	Packing inspection.		W	-	-	
2.7	Preparation of documentation.		W	-	-	
3	Tests to be Conducted on Final Coated & Assembled Valve,					
3.1	Strength test of the body with water (1.5 X PN rating)	EN 12266-1	W	R	W	
3.2	Leakage test from inside to outside with water (1.5 X PN rating) for Assembled Parts	EN 12266-1	W	R	W	
3.3	Leakage test on the seat in both sides (1.1 X PN rating)	EN 12266-1	W	R	W	
3.4	Functional Test of the Valve without pressure. (Fully open to close & vice-versa)..	EN 12266-1 / Approved Drawings	W	W	W	

Note

- 1 Drilling standard shall be as per EN-1092-2
- 2 All test certificates and records will be shown to inspection authority at the time of final inspection & verification
- 3 Face to Face Dimension.
- 4 Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.
- 5 All Test should be carried out with calibrated Testing Equipments.
- 6 Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition
- 7 Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue

LEGEND :R - review,RW-ranandom witness,W-witness,P-Perform , M- Manufacturer, C- Contractor

Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

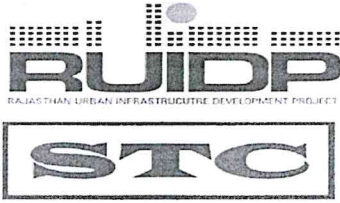
STANDARD QUALITY ASSURANCE PLAN

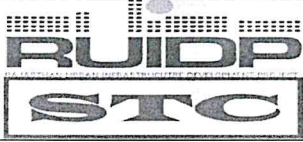
 	Manufacturer Logo & Address	Item Description : Air Valve with Isolating Scour Valve	Project :								
		QAP NO: Std QAP/ 23-24/ ME-28	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT								
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)								
		DATE:	Contractor:								
Specification Details:											
Sr. No.	Item Name	Material	Characteristic Checked	Method Of Checking	Checking Frequency	Acceptance Norm	Format of Record	Inspection			Remarks
								M	C	TPI/Client/ Consultant	
A	Raw Material										
1	Body, Bonnet	Ductile Iron (GGG50/EN-GJS-500-7)	Chemical & mechanical properties	Foundry Mill Certificate Review	1 Per Lot	EN1563 / Is1865	Material Certificate	P	R	R	MTC FOR Verification only
2	WEDGE			Supplier Rubber Specification	1 Per Lot	EN1563 / Is1865	Material Certificate	P	R	R	
	Wedge Lining	EPDM			1 Per Lot	Manufacturer Standard/ WRAS	Material Certificate	P	R	R	
3	Stem	Stainless Steel SS EN10088-1; (W1.4021) /ASTM A276-420		Foundry Mill Certificate Review	1 Per Lot	EN10888-3/ IS6603	Material Certificate	P	R	R	
4	Air Valve Internals	SS304I		1 Per Lot	EN10888-3	Material Certificate	P	R	R		
B	In Process Inspection										
1	Stem	Stainless Steel SS EN10088-1; (W1.4021) /ASTM A276-420	Ndl - Uul For Size > 50mm	UT Test	100%	ASTM A388	UT Report	P	R	R	
2	Body, Bonnet	Ductile Iron (GGG50/EN-GJS-500-7)	Dimension Checked	Measurement	Sampling plan Is 2500 part 1:20002 /ISO 2859-1	Manufacturer Drawing	Assembly QA Report	P	R	R	
3	Lining	EPDM	Hardness Checking	Measurement		Manufacturer Standard	Assembly QA Report	P	R	R	
4	Hand wheel/ Stem Cap	Cast iron	Functional Test During Assembly	Physical Operating	One per Model	Manufacturer Standard	Assembly QA Report	P	R	R	
C	Final inspection										
1	Valves Assembled	Visual and Dimensional	Visual & dimension Checked	Measurement	Sampling plan Is 2500 part 1:20002 /ISO 2859-1	Approved Drawing	Final inspection record (GA dimension)	P	W	W	100% Visual, 10% dimension contractor / TPI per size
		Functional/Operational	Functional Test During Assembly (Open and Close & vice versa)	Operation	100%	Smooth Operation	Pressure Test Report	P	W	W	100% manufacturer, 10% TPI
		Seat Test	Hydrostatic Test After assembly (Post blasting, Coating & Painting)	Testing at 1.1 XPN	100%	BS 5183/EN 1074-1 & 2/EN 12266-1 / as per IS14845 & IS14846	Pressure Test Report	P	W	W	100% manufacturer, 10% TPI per size, Test Pressure PN10-15/ kg / cm2, PN16-17.6Kg/cm2
		Body Test		Testing at 1.5 XPN	100%		Pressure Test Report	P	W	W	100% manufacturer, 10% TPI per size, Test Pressure PN10-15/ kg / cm2, PN16-24Kg/cm2
		Low Pressure Test		100%	Pressure Test Report		P	W	W	100% manufacturer, 10% TPI per size, Test Pressure PN10-0.5kg /cm2 - 1min	
			Painting & Marking	Visual & Measuring	DFT (250 micron) & Visual, Marking-Ref code, Manufacturer name, PN, DN, RUIDP)	100%	Approved Drawing / Client Specification	Final inspection record & Paint MTC	P	W	W
Note											
1	Drilling standard shall be as per EN-1092-2										
2	All test certificates and records will be shown to inspection authority at the time of final inspection & verification										
3	Face to Face Dimension.										
4	Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.										
5	All Test should be carried out with calibrated Testing Equipments.										
6	Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition										
7	Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue										
LEGEND :R - review,RW-randdom witness,W-witness,P-Perform , M- Manufacturer, C- Contractor											
Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN											
Manufacturer Logo & Address		Item Description : Scour Valve				Project :					
		QAP NO: Std QAP/ 23-24/ ME-29				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:				Contractor:					
Specification Details:											
Sl. NO.	Item Name	Material	Characteristic Check	Method of Checking	Checking Frequency	Acceptance Norm	Format of Record	Inspection			Remarks
								M	C	TPI/Client/Consultant	
A - Raw Material											
1	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN1563/ IS1865	Material test certificate	P	R	R	MTC for Verification only
2	Wedge	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN1563/ IS1865	Material test certificate	P	R	R	
	Wedge Lining	AVKVIPL/qo/1617/00077 Rev.01	Chemical & Mechanical properties	Supplier Rubber Specification	1 Per lot	Manufacturer Standard / WRAS	Material test certificate	P	R	R	
3	Stem	Stainless steel , SSEN10088-1; (W1.4021)ASTM A276-420	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN 10888-3 / IS6603	Material test certificate	P	R	R	
B - Inprocess Inspection											
1	Stem	NDT	UT- for size >= 50mm	Ultrasonic test procedure	100%	AS perASTM A 388	UT Report	P	W	R	
2	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Dimension checked	Measurement	Sampling Plan IS 2500 part 1:2000 /ISO 2859-1	Manufacturer Drawing	Assembly QA report	P	W	R	
3	Wedge & Seat Lining	EPDM	Hardness checking	Measurement		Manufacturer standard	Assembly QA report	P	W	R	
4	Handwheel / Stem Cap	Cast Iron	Functional Test during assembly	Physical operation	One per model	Manufacturer Standard	Assembly QA report	P	W	R	
C - Final Inspection											
1		Visual & Dimensional	visual & Dimension checked	Measurement	Sampling Plan IS 2500 part 1:2000 /ISO 2859-1	Approved Drawing	Final inspection record (GA dimention	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Functional & Operational	Functional Test during assembly (Open and close & vice versa)	Operation	100%	Smooth Operation	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Seat Test	Hydrostatic Test after assembly (Post blasting, Coasting & Painting)	Testing at 1.1*XPN rating	100%	BS 5163/ EN 1074-1& 2/EN 12266-1 /as per IS14846	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per sizeTest perssure-PN1.0 -11 kg/ cm2,PN1.6-17.6kg/cm2
		Body Test		Testing at 1.5*XPN Rating	100%	BS 5163/ EN 1074-1& 2/EN 12266-1 /as per IS14846	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per sizeTest perssure-PN1.0- 15 kg/cm2,PN 1.6-24kg/cm2
		Painting & Marking	Visual & Measurement	visual & DFT	100%	As per approved drawing/Specification	Final inspection record & paint MTC	P	W	W	DFT >250 micron, Marking-Ref code, Manufacturer name, PN, DN, RUIDP
Notes											
1	EPDM Rubber & paint are food grade materal.										
2	Drilling standard shall be as per EN-1092-2										
3	All test certificates and records will be shown to inspection authority at the time of final inspection & verification										
4	Face to Face Dimension.										
5	Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.										
6	All Test should be carried out with calibrated Testing Eeuipments.										
7	Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition										
8	Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue										
LEGEND :R - review,RW-ramdom witness,W-witness,P-Perform , M- Manufacturer, C- Contractor											
Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer Logo & Address Item Description : Scour Valve QAP NO: Std QAP/ 23-24/ ME-29 REV.NO: 00 DATE:					Project :				
							Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
							Consultant: SHAH TECHNICAL CONSULTANT (STC)				
							Contractor:				
Specification Details:											
Sl. NO.	Item Name	Material	Characteristic Check	Method of Checking	Checking Frequency	Acceptance Norm	Format of Record	Inspection			Remarks
								M	C	TPI/Client/Consultant	
A - Raw Material											
1	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	IS1865	Material test certificate	P	R	R	MTC for Verification only
2	Wedge	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	IS1865	Material test certificate	P	R	R	
	Wedge Lining	AVKVIPL/qa/1617/00077 Rev.01	Chemical & Mechanical properties	Supplier Rubber Specification	1 Per lot	Manufacturer Standard / WRAS	Material test certificate	P	R	R	
3	Stem	Stainless steel , SSEN10088-1; (W1.4021)ASTM A276-420	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	IS6603	Material test certificate	P	R	R	
B - In process Inspection											
1	Stem	NDT	UT- for size >= 50mm	Ultrasonic test procedure	100%	AS perASTM A 388	UT Report	P	W	R	
2	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Dimension checked	Measurement	Sampling Plan IS 2500 part 1:2000 /	Manufacturer Drawing	Assembly QA report	P	W	R	
3	Wedge & Seat Lining	EPDM	Hardness checking	Measurement		Manufacturer standard	Assembly QA report	P	W	R	
4	Hand wheel / Stem Cap	Cast Iron	Functional Test during assembly	Physical operation	One per model	Manufacturer Standard	Assembly QA report	P	W	R	
C - Final Inspection											
1	Final Inspection	Visual & Dimensional	visual & Dimension checked	Measurement	Sampling Plan IS 2500 part 1:2000	Approved Drawing	Final inspection record (GA dimension)	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Functional & Operational	Functional Test during assembly (Open and close & vice versa)	Operation	100%	Smooth Operation	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Seat Test	Hydrostatic Test after assembly (Post blasting, Coasting & Painting)	Testing at 1.1*XPN rating	100%	As per IS14846	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size Test pressure- PN1.0-11 kg/ cm2,PN1.6-17.6kg/cm2
		Body Test		Testing at 1.5*XPN Rating	100%	As per IS14846	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size Test pressure- PN1.0- 15 kg/cm2,PN 1.6-24kg/cm2
		Painting & Marking	Visual & Measurement	visual & DFT	100%	As per approved drawing/Specification	Final inspection record & paint MTC	P	W	W	DFT >250 micron, Marking-Ref code, Manufacturer name, PN, DN, RUIDP
Notes											
1	EPDM Rubber & paint are food grade material.										
2	Drilling standard shall be as per EN-1092-2										
3	All test certificates and records will be shown to inspection authority at the time of final inspection & verification										
4	Face to Face Dimension.										
5	Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.										
6	All Test should be carried out with calibrated Testing Equipments.										
7	Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition										
8	Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue										
LEGEND :R - review,RW-random witness,W-witness,P-Perform , M- Manufacturer, C- Contractor											
Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN											
Manufacturer Logo & Address		Item Description : Scour Valve				Project :					
		QAP NO: Std QAP/ 23-24/ ME-29				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:				Contractor:					
Specification Details:											
Sl. NO.	Item Name	Material	Characteristic Check	Method of Checking	Checking Frequency	Acceptance Norm	Format of Record	Inspection			Remarks
								M	C	TPI/Client/Consultant	
A - Raw Material											
1	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN1563	Material test certificate	P	R	R	MTC for Verification only
2	Wedge	Ductile Iron (GGG80/EN-GJS-500-7)	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN1563	Material test certificate	P	R	R	
	Wedge Lining	AVKVIPL/qa/1617/00077 Rev.01	Chemical & Mechanical properties	Supplier Rubber Specification	1 Per lot	Manufacturer Standard / WRAS	Material test certificate	P	R	R	
3	Stem	Stainless steel , SSEN10088-1; (W1,4021)ASTM A276-420	Chemical & Mechanical properties	Foundry mill certificate review	1 Per lot	EN 10888-3 / IS6603	Material test certificate	P	R	R	
B - In process Inspection											
1	Stem	NDT	UT- for size >= 50mm	Ultrasonic test procedure	100%	AS perASTM A 388	UT Report	P	W	R	
2	Body, Bonnet	Ductile Iron (GGG80/EN-GJS-500-7)	Dimension checked	Measurement	Sampling Plan ISO 2859-1	Manufacturer Drawing	Assembly QA report	P	W	R	
3	Wedge & Seat Lining	EPDM	Hardness checking	Measurement		Manufacturer standard	Assembly QA report	P	W	R	
4	Hand wheel / Stem Cap	Cast Iron	Functional Test during assembly	Physical operation	One per model	Manufacturer Standard	Assembly QA report	P	W	R	
C - Final Inspection											
1		Visual & Dimensional	visual & Dimension checked	Measurement	Sampling Plan ISO 2859-1	Approved Drawing	Final inspection record (GA dimension)	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Functional & Operational	Functional Test during assembly (Open and close & vice versa)	Operation	100%	Smooth Operation	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size
		Seat Test	Hydrostatic Test after assembly (Post blasting, Coasting & Painting)	Testing at 1.1*XPN rating	100%	BS 5163/ EN 1074-1& 2/EN 12266-1	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size Test pressure- PN1.0 -11 kg/ cm2,PN1.6-17.6kg/cm2
		Body Test		Testing at 1.5*XPN Rating	100%	BS 5163/ EN 1074-1& 2/EN 12266-1	Pressure test report	P	W	W	100% manufacturer, 10% TOI / L&T per size Test pressure- PN1.0- 15 kg/cm2,PN 1.6-24kg/cm2
		Painting & Marking	Visual & Measurement	visual & DFT	100%	As per approved drawing/Specification	Final inspection record & paint MTC	P	W	W	DFT >250 micron, Marking-Ref code, Manufacturer name, PN, DN, RUIDP
Notes											
1	EPDM Rubber & paint are food grade material.										
2	Drilling standard shall be as per EN-1092-2										
3	All test certificates and records will be shown to inspection authority at the time of final inspection & verification										
4	Face to Face Dimension.										
5	Flanges drilled to:- Flat faced and drilled to IS:1 538, Table-4&6/as per Drg.										
6	All Test should be carried out with calibrated Testing Equipments.										
7	Painting should be done before assembly of valves and hydro-test should be carried out on Valves in painted condition										
8	Valves should be painted with Powder Epoxy Coating both inside & outside surfaces, Shade-"Blue										
LEGEND :R - review,RW-ramdom witness-witness,P-Perform , M- Manufacturer, C- Contractor											
Sampling to be done @10% at the time of final Inspection & testing by Inspection Agency											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer Logo & Address		Item Description : Cast Iron Flanged End Right Angle Equilibrium Ball Float Valve				Project :			
				QAP NO: Std QAP/ 23-24/ ME-30				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:				Contractor:			
Specification Details:											
Sl. No.	Components	Characteristic of Check	Category	Type of Check	Extended of Check	Reference Doc	Acceptance Norm	Format of Record	Inspection		
									M	C	TPI/Client/Consultant
A Raw Material											
1	Cast Iron: Body, Cover, Disc, Guide, Gland Etc.	Physical Properties	Major	UTS, Hardness	One per Heat / Charge	C.I IS:210 Gr. Fg.200	C.I IS:210 Gr. Fg.200	Materials Test Report	P	R	R
		Surface		Visual	100%	No Harmful Defects	No Harmful Defects		P	R	R
2	Stainless Steel Spindle	Physical Properties	Major	UTS, % of Elongation	One per Heat	SS AISI 410	SS AISI 410	Materials Test Report	P	R	R
		Chemical Composition		Major Element					P	R	R
3	Leaded Tin Bronze: Seat Ring, Pilot Valve	Chemical Composition	Major	Major Element	One per Heat	Leaded Tin Bronze IS:318 LTD-2	Leaded Tin Bronze IS:318 LTD-2	Materials Test Report	P	R	R
4	Brass: Leaver for Auxiliary Float Valve, Body Liner	Chemical Composition	Major	Major Element	One Per Lot / Batch	Brass BS 2874 Gr. CZ 114 / App. Drwg.	Brass BS 2874 Gr. CZ 114 / App. Drwg.	Materials Test Report	P	R	R
5	Bolts & Nuts	Surface Defects	Major	Visual	100%	No Defects	No Defects	---	P	R	R
B In Process Inspection :											
6	All Components	Surface Defects	Major	Visual	100%	No Defects	No Defects	Internal Inspection Report	P	W	R
		Dimensional		Measurement		App. Drawing	App. Drawing		P	W	R
7	Assembly	Over all Dimension	Major	Measurement	100%	App. Drawing	App. Drawing	Internal Inspection Report	P	W	R
		Performance		Operation(3 times)		Relevant Specification	Smooth Operation		P	W	R
8	Internal Testing	Leakage Test	Critical	Hydrostatic Pressure test Body: 5 minutes, Seat- 2 minutes	100%	App. Drawing	No Leakage	Internal Inspection Report	P	W	R
C Final Inspection											
9	Final Inspection	Surface Defects & Appearance	Major	Visual	100%	App. Drawing	No Harmful Defects	Joint Inspection Report	P	W	W
		Dimensional & Operational		Measurement & Operational	100%		App. Drawing		P	W	W
		Leakage Test	Critical	Hydrostatic Test Body & Seat			No Leakage		P	W	W
10	Painting & Marking	Appearance & Identification	Major	Appearance, Visual	100%	As per Specification	Painting & Marking as per Spec.	Internal Report	P	W	W
Note: 1 Manufacture's raw material test certificate will be reviewed by the Client / TPIA and dimensions check & Hydro test will be done by the TPIA as per the ordering specification 2 After final inspection client / client's inspector will issue inspection clearance certificate and release the material for painting											
LEGEND :R - review,RW-ranandom witness, W-witness,P-Perform , M- Manufacturer, C- Contractor											
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI			
Signature:				Signature:				Signature:			
Name:				Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN										
		Item Description : Vertical Turbine Pump QAP NO: Std QAP/ 23-24/ ME-31 REV.NO: 00 DATE:					Project :			
							Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
							Consultant: SHAH TECHNICAL CONSULTANT (STC)			
							Contractor:			
Specification Details: IS 1710 (1989): Pumps - Vertical Turbine Mixed and Axial Flow, for Clear Cold Water										
S.No	Components	Characteristics	Type of Check	Quantum of Check	Reference Standard	Acceptance Standard	Record Format	Inspection		
								M	C	TPI/Client/Consultant
1	RAW MATERIAL/RECEIVING INSPECTION-									
1.1	Casing/Diffuser	Mechanical & Chemical Properties	Mechanical analysis	1/Heat	2-2.5% Ni, Cl, IS:210 Gr FG 260	Test parameter as per IS:210 & IS:3896 (Part-1)-1978	Material Test Certificate	V	R	R
1.2	Impeller & Impeller Ring		Mechanical & chemical analysis	1/Heat	SS (CF8M)/316	ASTM A 743 Gr. CF8M & CA6NM	Material Test Certificate	V	R	R
1.3	Pump Shaft		Mechanical & chemical analysis	1/Heat	SS (CF8M)/316	ASTM A 743 Gr. CF8M	Material Test Certificate	V	R	R
1.4	Line shaft & sleeve		Mechanical & chemical analysis	1/Heat	SS 410	ASTM A 276 SS 410	Material Test Certificate	V	R	R
1.5	Casing Ring		Mechanical & chemical analysis	1/Heat	SS 410	ASTM A 276 SS 410	Material Test Certificate	V	R	R
1.6	Shafts	Internal defects	UT on shaft dia.	100%	ASTM A388-2010; Note-8		Inspection Report	P	R	R
2	IN PROCESS INSPECTION-									
2.1	Impeller, Shaft, Shaft sleeve, & Wear ring	Surface defects	DPT on machined surface	100%	ASTM E165-2002; Note 9		Inspection Report	P	R	R
2.2	Casing/Diffuser	Soundness	Hydrostatic test	100% by manufacturer, 1/lot by TPI	1.5x Shut off head/2x duty point head, whichever is higher for 30 min. duration	IS 5120, Approved procedure, No leakage	Inspection Report	P	W	W
2.3	Impeller	At operating speed	Dynamic Balancing	100%	ISO 1940 Part-I 2003 GR 6.3		Inspection Report	P	R	R
3	FINAL INSPECTION									
3.1	Performance test VT pump at reduced length	Performance test with Job motor at rated speed. Testing upto 120% of flow will be covered.	Q vs H; Q vsP, Q vs efficiency, Noise level, Vibration, Temp. rise Bearing	100%	Drawing/Datasheet/Specification/IS9137 class -C/Approved procedure vibration limits as per HIS <85 dB at 1.86 m distance & height 1.5 m., Temp- not above 30 degree from ambient temp.		Performance Test sheet with curve	P	W	W
			Strip test	Only in case of abnormal noise during performance test, No undue wear & tear		Inspection Report	P	W	W	
3.2	Dye penetrant test for casing	Surface discontinuities	DP test	Random Sampling (5Nos)	Test as per ASME SEC. V	As per ASME Section VIII, DIV V requirements	Manufacturer's test report	P	W	W
3.3	Visual & Overall Dimensions	Dimensions	Dimension	100%	Approved Drawing, Approved datasheets & Specifications		Inspection Report	P	W	W
3.4	Painting & packing	Shade & DFT	Visual & measure	100%	Approved Drawing, Approved datasheets & Specifications		Paint report & Batch certificate	P	W	W
3.5	Marking	Visual	Visual	100%	As per Specification/Manufacturer name, duty point, RUIDP		-	P	W	W
LEGEND: M-Manufacturer, P-Performer, V-Verification, Ve-Vendor, W-Witness DOCUMENTS: Job Card, Final Inspection Report, Material test certificates, Pump Test cum Warranty Certificate REMARKS: 1 Hydro pressure test for casing : Water having chlorine less than 50ppm shall be used for testing. 2 Dye penetrant test for casing : The Halogen free dye, developer and cleaner shall be used for DP test. DP test procedure shall be sent for review and approval. If any of the sample fails to qualify all components shall be subjected to test.										
Notes										
1	Material Specification will be as per latest documents submitted by the contractor.									
2	In case of narrow width impellers single plane balancing will be done.									
3	During shop testing, maximum flow shall be governed by system resistance of measuring circuit.									
4	All cast Iron Castings shall be painted with one coat of red oxide primer after shot blasting at foundries to prevent formation of rust ect.									
5	Acceptance Norms of UT- minimum height of back well echo is 80% of FSH and maximum height of defect echo is 20% when set to 100% in a sound area.									
6	Acceptance Norms of DP - No Linear and rounded indications more than 3 mm dia.									
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI		
Signature:				Signature:				Signature:		
Name:				Name:				Name:		

STANDARD QUALITY ASSURANCE PLAN										
		Manufacturer Logo & Address	Item Description : Horizontal Split Casing Pump					Project :		
			QAP NO: Std QAP/ 23-24/ ME-32					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT		
			REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)		
			DATE:					Contractor:		
S.No	Components	Characteristics	Type of Check	Quantum of Check	Reference Standard	Acceptance Standard	Record Format	Inspection		
								M	C	TPI/Client/Consultant
1	RAW MATERIAL/RECEIVING INSPECTION-									
1.1	Casing	Mechanical & Chemical Properties	Mechanical analysis	1/Heat	2-2.5% Ni, Cl, IS:210 Gr FG 260	Test parameter as per IS:210 & IS: 3896 (Part-1)-1978	Material Test Certificate	V	R	R
1.2	Impeller & Impeller Ring		Mechanical & chemical analysis	1/Heat	SS (CF8M)/316	ASTM A 743 Gr. CF8M & CA6NM	Material Test Certificate	V	R	R
1.3	Neck Ring		Mechanical & chemical analysis	1/Heat	SS (CF8M)/316	ASTM A 743 Gr. CF8M	Material Test Certificate	V	R	R
1.4	Shaft & sleeve		Mechanical & chemical analysis	1/Heat	SS 410	ASTM A 276 SS 410	Material Test Certificate	V	R	R
1.6	Shafts	Internal defects	UT on shaft dia.	100%	ASTM A388-2010; Note-8		Inspection Report	P	R	R
2	IN PROCESS INSPECTION-									
2.1	Impeller, Shaft, Shaft sleeve, & Wear ring	Surface defects	DP on machined surface	100%	ASTM E165-2002: Note 9		Inspection Report	P	R	R
2.2	Casing/Diffuser	Soundness	Hydrostatic test	100% by manufacturer, 1/lot by TPI	1.5x Shut off head/2x duty point head, whichever is higher for 30 min. duration	IS 5120, Approved procedure	Inspection Report	P	W	W
2.3	Impeller	At operating speed	Dynamic Balancing	100%	ISO 1940 Part-I 2003 GR 6.3		Inspection Report	P	R	R
3	FINAL INSPECTION									
3.1	Performance test	Performance test with job motor at rated speed. Testing upto 120% of flow will be covered.	Q vs H; Q vs P, Q vs efficiency, Noise level, Vibration, Temp. rise Bearing, NPSHR Test @ duty point	100%	Drawing/Datasheet/Specification/IS9137 class -C/Approved procedure vibration limits as per HIS <85 dB at 1.86 m distance & height 1.5 m., Temp- not above 30 degree from ambient temp.		Performance Test sheet with curve	P	W	W
			Strip test	Only in case of abnormal noise during performance test, No undue wear & tear		Inspection Report	P	W	W	
3.2	Dye penetrant test for casing	Surface discontinuities	DP test	Random Sampling (5Nos)	Test as per ASME SEC. V	As per ASME Section VIII, DIV V requirements	Manufacturer's test report	P	W	W
3.3	Visual & Overall Dimensions	Dimensions	Dimensional	100%	Approved Drawing, Approved datasheets & Specifications		Inspection Report	P	W	W
3.4	Painting & packing	Shade & DFT		100%	Approved Drawing, Approved datasheets & Specifications		Paint report & Batch certificate	P	W	W
3.5	Marking	Visual		100%	As per Specification/Manufacturer name, duty point, RUIDP		-	P	W	W
LEGEND: M-Manufacturer, C- Contractor, P-Performer, V-Verification, Ve-Vendor, W-Witness DOCUMENTS: Job Card, Final Inspection Report, Material test certificates, Pump Test cum Warranty Certificate REMARKS: 1 Hydro pressure test for casing : Water having chlorine less than 50ppm shall be used for testing. 2 Dye penetrant test for casing : The Halogen free dye, developer and cleaner shall be used for DP test. DP test procedure shall be sent for review and approval. If any of the sample fails to qualify all components shall be subjected to test.										
Notes										
1	Material Specification will be as per latest documents submitted by the contractor.									
2	In case of narrow width impellers single plane balancing will be done.									
3	During shop testing , maximum flow shall be governed by system resistance of measuring circuit.									
4	All cast Iron Castings shall be painted with one coat of red oxide primer after shot blasting at foundries to prevent formation of rust ect.									
5	Acceptance Norms of UT- minimum height of back well echo is 80% of FSH and maximum height of defect echo is 20% when set to 100% in a sound area.									
6	Acceptance Norms of DP - No Linear and rounded indications more than 3 mm dia.									
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI			
Signature:			Signature:				Signature:			
Name:			Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN												
		Manufacturer Logo & Address		Item Description : Submersible Pumps for Tubewell				Project :				
				QAP NO: Std QAP/ 23-24/ ME-33				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
				REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)				
				DATE:				Contractor:				
Sl. No.	Components	Characteristics	Class of Check	Type of Check	Quantum of Check	Reference Standard	Acceptance Standard	Format of Record	M	C	TPI/Client/Consultants	Remarks
A Raw Material/Receiving Inspection												
1	Motor Body	Physical & Chemical properties	Major	Physical & Chemical properties	One Sample /Heat / Size	CF8M (SS-316)	ASTM A 743 Gr. CF8M & CA6NM	Lab. Test Reports / Material Test Cert.	P	R	R	
2	Impeller					CF8M (SS-316)	ASTM A 743 Gr. CF8M & CA6NM		P	R	R	
3	Pump Shaft					SS-AISI-410	ASTM A 479-10a		P	R	R	
4	Bowl (Pump Casing)					C.I FG:260 As per IS:210	C.I FG:260 As per IS:210		P	R	R	
5	Motor Shaft					SS-AISI-410	ASTM A 479-10a		P	R	R	
6	Bearing Housing (U/L)					2-2.5% Ni, CI , IS:210 Gr FG 260	Test parameter as per IS:210 & IS: 3896 (Part-1)-1978		P	R	R	
7	Bearing bush					LTB-4 Gr-4	As per IS:318		P	R	R	
8	Thrust Bearing					Thrust bearing assembly + Teflon Thrust Plate					P	R
B Inprocess Inspection												
1	Genral Assembly Drawing	Dimension	Major	Measurement	100%	Approved drawing/Specification		Inspect. Report	P	R	R	
2	Impeller / Rotor	Balancing	Major	Dynamic Balancing	100%	As per IS:11726(Part-1) 2002 & ISO 11723 (part 1)		Inspect. Report	P	R	R	
3	Pump Casing	Hydrostatic Test	Major	Physical	100%	1.5x Shut off head/2x duty point head, whichever is higher for 30 min. duration	IS 8034-2002, Approved procedure	Inspect. Report	P	W	W	
C Final Inspection												
1	Visual & Dimension	Visual & measurement	Major		100% by manufacturer and 100% visual & 10% dimensions per type/size for TPI	Approved drawing/Datasheet/Specification		Visual & dimensional report for all pump	P	W	W	
2	Performance test with job motor	Performance test for pressure, capacity, noise, vibration, stroke, power & gland leakage	Critical	Q vs H; Q vsP, Q vs efficiency @ duty point	100% by manufacturer	Drawing/Datasheet/Specification/IS9137 class -C/Approved procedure vibration limits as per HIS <85 dB at 1.86 m distance & hieght 1.5 m., Temp- not above 30 degree from ambient temp.		Performance Test sheet with curve	P	W	W	
3	Strip Test	Surface discontinuities	Major	DP test	Random Sampling (5Nos)	IS:8034-2002	Rubbing & Wearing Ring Clearance	Inspect. Report	P	W	W	
4	Electric Motor	HV, IR, No load & Routine test	Major	Review of manufacturer test certificate	100% by manufacturer	Approved drawing/Datasheet/Specification		Manufacturer routine test certificate for all pumps	P	W	W	
5	Painting & Marking	Visual & DFT measurement	Major (DFT >250 micron)	Identification	100% by manufacturer	Good paint finish & free from defects/ Approved drawing / datasheets	As per IS:8034-2018	Inspect. Report	P	W	W	
Legend: M-Manufacturer, C- Contractor ,P-Performer, V-Verification, Ve-Vendor, W-Witness Note: 1. Motor Rotor & Impellwer are Balanced in-house Dynamic Balancing Machine on Machine its own service speed, then Internal Test Reports should be verified. 2. Bearing vibration, Noise / DB level, Brg. Temperature Rise are not measurable because this is submersible motor(at the time it is submerged condition & its bearing are Thrust Bearing, its water lubricant, wet type motor. 3												
Manufacturer / Vendor				Contractor				CONSULTANT /CLIENT / TPI				
Signature:				Signature:				Signature:				
Name:				Name:				Name:				

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address	Item Description : Non Clog Pumps / Submersible Pump				Project :			
			QAP NO: Std QAP/ 23-24/ ME-34				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
			REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
			DATE:				Contractor:			

Sl. No.	Components / Operations	Characteristic	Class of Check	Type of Check	Quantum of Check	Reference Standard	Acceptance Standard	Format of Records	Inspection			Remarks	
									M	C	Client / TPI / Consultant		
A	Raw Material Inspection												
1	Motor body, Bearing housing, Oil chamber, Top cover, Suction Bell (Spiral Plate)	Chemical & Physical Properties	Critical	Chemical & Physical Properties one sample per heat	1 sample per Heat	2-2.5% Ni, Cl , IS:210 Gr FG 260	Test parameter as per IS:210 & IS: 3896 (Part-1)-1978	MTC	P	R	R		
2	Impeller					SS (CF8M)/316	ASTM A 743 Gr. CF8M & CA6NM	MTC	P	R	R		
3	Pump Shaft/Motor shaft					SS (CF8M)/316	ASTM A 743 Gr. CF8M & CA6NM	MTC	P	R	R		
4	Pump Casing					2-2.5% Ni, Cl , IS:210 Gr FG 260	Test parameter as per IS:210 & IS: 3896 (Part-1)-1978	MTC	P	R	R		
5	mechanical Seal					Compliance certificate	MTR		Mfg Test Cert.	P	R	R	
6	Cable					Routine test certificate	As per IS: 694		Mfg Test Cert.	P	R	R	
B	In Process Inspection												
1	Visual & Dimension	Free from Physical defect	Major	Physical Analysis	100%	Approved Drawing/ Datasheet/Specification	As per IS-210 - 1993	Inspection report	P	R	R		
2	Impeller/Rotor	Balancing	Major	Dynamic Balancing	100%	SS (CF8M)/316	IS: 11723 (part-1)2002	Inspection report	P	R	R		
3	Pump Casing	Hydrostatic Test	Major	Physical Analysis	100%	1.5x Shut off head/2x duty point head, whichever is higher for 30 min. duration	IS 8034-2002, Approved procedure	Mfg Test Cert.	P	W	W		
C	Final Inspection												
1	Routine Test	H.V. Test	Critical	Practical	100%	As per IS: 12615-2011 cl-19.2/19.3/19.4/19.5/19.9/19.10 Note-1) For clause No. 19, 13 test we will provide NABL Lab test report of same product of higher rate for review. 2. Clause No. 19, 16 are not possible for our products. 3. IS:12615-2011 are not apply for motors completely integrated into the machine for expanle pumps, Compressors.	Inspection report / Mfg. Test Certificate	P	W	W			
I.R. Test													
Winding Resistant test													
No load test													
Reduce voltage running up test													
No load RPM measurement (clockwise/anticlockwise)													
4.1	Insulation Resistance Test	Electrical	Major	1. Merger Test	100%	IS -325; Year 1996, Reaffirmed:2002	I.R	P	W	W			
2. H V Test													
3. Phase Resistance with cable													
4.2	Performance Test with Job motor	Performance test for pressure, capacity, noise, vibration, power & gland leakage	Major	Measuyrement of Q v/s H, Q v/s Power & Q v/s Efficiency	100% by Pump Manufacturer	IS -5120: Year 1997/ IS 9137 Year 1997	I.R	P	W	W			
5	Painting												

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : Non Clog Pumps / Submersible Pump			Project :		
				QAP NO: Std QAP/ 23-24/ ME-35			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT		
				REV.NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)		
				DATE:			Contractor:		

Sr. NO.	Component	Characteristic Check	Type Of Check	Quantum of check	Reference Standard	Acceptance Standard	Format of Record	Inspection		
								M	C	TPI/Client/ Consultants
A	RAW MATERIAL/RECEIVING INSPECTION									
1	Casing	Mech. & Chem. Properties	Mech. & Chem. Analysis	one sample / Heat/size	2-2.5% Ni, Cl , IS:210 Gr FG 260	Test parameter as per IS:210 & IS: 3896 (Part-1)-1978	MTC	P	R	R
2	Impeller & Wear Ring				SS (CF8M)/316	ASTM A 743 Gr. CF8M & CA6NM	MTC	P	R	R
3	Shaft & Sleeve				SS (CF8M)/316	ASTM A 743 Gr. CF8M	MTC	P	R	R
4	Shafts	Internal Defects	UT on shaft Dia	100%	SS 410	ASTM A 276 SS 410	Inspectin Report	P	R	R
B	IN PROCESS INSPECTION									
5	Impeller ,Shaft & Shaft Sleeve	Surface Defects	DP Test on machined Surface	100%	ASTM E165-20222; Note - 9		Inspectin Report	P	R	R
6	Casing	Soundness	Hydrostatic Test	100%	1.5 x shut off head/ 2 x Duty point head wichever is higher for 30 min. (Duration)	IS 5120, Approved procedure, No leakage	Inspectin Report	P	W	W
7	Impeller	Balancing	Dynamic balancing	100%	ISO 1940 Part -1 2003 GR 6.3		Inspectin Report	P	R	R
C	FINAL INSPECTION									
8	Performace test with job motor	Hydraulic test	Q Vs H; Q Vs P QVs Efficiency vibration,Noise Level & Rise in Brg Temp	100%	Drawing/Datasheet/Specification/IS9137 class -C/Approved procedure vibration limits as per HIS <85 dB at 1.86 m distance & height 1.5 m., Temp- not above 30 degree from ambient temp.		Performance test Sheet with curve	P	W	W
			Stip Test	Random sample	Only in case of abnormal noise performance test	No undue wear & tear	Inspectin Report	P	W	W
9	Visual & Overall Dimensions	Dimensions	Dimension	100%	Approved Drawing, Approved datasheets & Specifications		Inspection Report	P	W	W
10	Painting & packing	Shade & DFT	Visual & measure	100%	Approved Drawing, Approved datasheets & Specifications		Paint report & Batch certificate	P	W	W
11	Marking	Visual	Visual	100%	As per Specification/Manufacturer name, duty point, RUIDP		-	P	W	W
Legend: M-Manufacturer, C- Contractor ,P-Performer, V-Verification, Ve-Vendor, W-Witness										
Notes										
1	Material Specification will be as per latest documents submitted by the company.									
2	In case of narrow width impellers single plane balancing will be done.									
3	Measurement of Noise & Vibrration at ship for referance only , same guaranteed at site.									
4	During shop testing , maximum flow shall be governed by system resistance of measuring circuit.									
5	All cast Iron Castings shall be painted with one coat of red oxide primer after shot blasting at foundries to prevent formation of rust ect.									
6	Acceptance Norms of UT- minimum height of back well echo is 80% of FSH and maximum height of defect echo is 20% when set to 100% in a sound area.									
7	Acceptance Norms of DP - No Linear and rounded indications more than 3 mm dia.									
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI			
Signature:			Signature:				Signature:			
Name:			Name:				Name:			

STANDARD QUALITY ASSURANCE PLAN

	Manufacturer Logo & Address	Item Description : Progressive Cavity (Screw) Pump	Project :
		QAP NO: Std QAP/ 23-24/ ME-36	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Sl. No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Reference Standard	Acceptance Standard	Format of Records	Inspection		
									M	C	TPI/Client/Consultants

Raw Materials Inspection

1	Bearing Housing, Pump Housing, End Cover, Shuffing Box, Gland & Bearing Cover	Physical, Chemical & Mechanical Properties	Major	Physical & Chemical Test	One sample / Heat /Size	As per approved Data sheet/Drawing / specification	Material test certificate	P	R	R
2	Rotor, Shaft & Connecting Rod	Chemical Properties & Internal defect	Major	Physical & Chemical UT Test	100%	As per approved Data sheet/Drawing / specification		P	R	R

Work in Progress Inspection

1	All components	Workmanship, Dimesnion & Finish	Major	Visual measurement	100%	As per approved Data sheet/Drawing / specification		WIP Inspecon reports	P	R	R
2	Pump Housing & End Cover	Leak tightness	Critical	Hydrostatic Test	100%	1.5 x shut off head/ 2 x Duty point head wichever is higher for 30 min. (Duration)	No leakage	Hydrostatic test report	P	W	W
3	Cleanliness	Visual	Major	Visual	100%	---	---		P	R	R

Final Inspection

1	Performance test with job motor	Overall dimension & orientation	Major	Visual measurement	100%	As per approved Data sheet/Drawing / specification		Dimensional report	P	W	W
		Mechanical run / Performance with water duration 2 hrs.	Critical	a. Discharge vs Head b. Discharge vs power c. Discharge vs Efficiency	100%	Curves / Data Sheet	Quality Plan Testing	Pump performance test report	P	W	W
		Leakage	Critical	Visual	100%	No leakage			P	W	W
		Vibration	Minor	Measurement	100%	≤ 4.5 mm /sec			P	W	W
		Temperature Raise	Minor	Measurement	100%	Not more than 30 °C above ambient temp.			P	W	W
		Noise Level Test	Critical	Measurement	100%	≤ 80 dB max.			P	W	W
		Strip Test	Minor	Visual	100%	Only in case of abnormal noise performance test	No undue wear & tear	---	P	W	W
2	Painting & Packing	Surface preparation workmanship, finish & DFT	Minor	Visual / DFT Measurement	100%	Approved Painting Specifications	As per approved Data sheet/Drawing / specification	Painting batch certificate & painting report	P	W	W

Legend: M-Manufacturer, C- Contractor ,P-Performer, V-Verification, Ve-Vendor, W-Witness

Manufacturer / Vendor		Contractor		CONSULTANT /CLIENT / TPI	
Signature:		Signature:		Signature:	
Name:		Name:		Name:	

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address	Item Description : Chemical Dosing Pump (Diaphragm pumps)				Project :			
			QAP NO: Std QAP/ 23-24/ ME-37				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
			REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)			
			DATE:				Contractor:			

Sl. No.	Component/Operation	Characteristic	Type / Method of Check	Class	Extent of Check	Reference Standard	Acceptance Standard	Format of Record	Agency			Remark
									M	C	TPIA/Client/Consultant	
1	2	3	4	5	6	7	8	9	10			11
Dosing Pumps : API 675 Standard												
A Raw Material												
1	Raw Material (Wetted Parts: Liquid Head, NRV, & Diaphragm)	Chemical / Physical Properties	Chemical and Mechanical Test	Major	One sample /Heat/Size	Approved Datasheet/Drawing/Specification	NABL Lab test reports / MTC /COC	R	R	R	Note: Pump Mfg. COC Report for PP / PTFE / Rubber / Plastic / Non Metallic	
2	Dimensions	Dimensions	Visual / Measurement	Major	100%	Approved Datasheet/Drawing/Specification	IR	P	R	R		
B In process & Final Testing												
3	Performance of Pump with Job Motors	Performance test for pressure, capacity, noise, Vibration, stroke, power, etc.	At Stoke 100%, 75% , 50% , 25 % , 10% & (Vice Versa)	Critical	100%	Approved Datasheet/Drawing/Specification	As per API675	IR	P	W	W	Note: 1) Pump Performance & Hydrotest one pump per model to be witnessed by TPI / Client. 2) Hydro test hold time : 30minutes
			a) Rated Capacity									
b) Linearity ±3%												
c) Repeatability ±3%												
		d) Steady state accuracy ±1%										
		No Leackage & No Pressure drop	Hydro test		100%	1.5 x shut off head/ 2 x Duty point head wichever is higher for 30 min. (Duration)	No leakage & as per API 675	IR	P	W	W	
4	Motors	Manufacturers Test Certificate	Motor routine test, HP/ RPM	Major	100%	Approved Datasheet/Drawing/Specification	RTC	R	R	R		
5	Documentation	Internal Pump Performance Trial Report	Review of Documents	Major	100%	Final Documentation	Approved Datasheet/Drawing/Specification	IR	P	R	R	
		Internal Hydro test Report										
6	Painting	Surface Preparation	Visual & DFT (250 micron)	Major	100%	Painting Specification	Approved Datasheet/Drawing/Specification/ API 675	IR	P	W	W	
7	Marking	Visual	Visual	Major	100%	Duty point, Logo, RUIDP	Approved Datasheet/Drawing/Specification/ API 675	-	P	W	W	

Note:
 1) Lab testing of materials shallbe NABL accredited lab only.
 2) Reference documents : Approved drawing , datasheet.
 3) For Non Metallic material & MS material of construction Test Certificate is not applicable.
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, RTC- Routing Test Certificate

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Mechanical Coarse Bar Screen	Project :
		QAP NO: Std QAP/ 23-24/ ME-38	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

SL. NO.	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION			REMARKS	
									M	C	TPIA/CLIENT/CONSULTANT		
A	RAW MATERIALS												
1	SS-316 SHEET (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	CHEM	MTC	P	R	R	
3	SS-316 PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	CHEM	MTC	P	R	R	
6	SS-316 ROUND (DIA)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	CHEM	MTC	P	R	R	
7	SS-316 PIPE (NB)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	CHEM	MTC	P	R	R	
B	BOUGHT OUT ITEMS												
1	DRIVE MOTOR	HP/RPM	MAJOR	VISUAL	100%	APPD.DRG	APPD.DRG	TC	MTC	P	R	R	
2	GEAR BOX	GEAR RATIO	MAJOR	VISUAL	100%	APPD.DRG	APPD.DRG	TC	MTC	P	R	R	
C	INPROCESS INSPECTION												
1	WELDING	WELDING ABILITY	MAJOR	WPS/PQ R/WPQ	100%	ASME-IX	ASME-IX	WPS	PQR/WPQ	P	R	R	
2B	D P TEST	DPT ON WELDING SURFACES FOR WELDING DEFECTS	MAJOR	DP TEST	RANDOM	ASME-SEC V ARTICLE 6	ASME-SEC VIII DIV I	INSP	REPORT	P	R	R	
D	FINAL INSPECTION & TESTING												
3A	DIMENSIONAL	OVER ALL DIMENSIONS	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
3B	DRY RUN ON NO LOAD	VISUAL	MAJOR	VISUAL	ONE PER LOT	APPD.DRG/DAT ASHEET	APPD.DRG/DAT ASHEET	INSP	REPORT	P	W	W	
3C	VISUAL	VISUAL	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report,

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN													
 	Manufacturer Logo & Address	Item Description : Mechanical Fine Bar Screen					Project :						
		QAP NO: Std QAP/ 23-24/ ME-39					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)						
		DATE:					Contractor:						
S.NO.	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
										M	C	TPIA/Client/Consultant	
A	RAW MATERIALS												
1	CS PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-2062	AS PER IS-2062	MECHANICAL & CHEMICAL	MTC	P	R	R	
2	SS-316 SHEET (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	MECHANICAL & CHEMICAL	MTC	P	R	R	
3	SS-316 PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	MECHANICAL & CHEMICAL	MTC	P	R	R	
4	SS-316 ROUND (DIA)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	MECHANICAL & CHEMICAL	MTC	P	R	R	
B	BOUGHT OUT ITEMS												
1	DRIVE MOTOR	HP/RPM	MAJOR	VISUAL	100%	APPD.DRG	APPD.DRG	TC	MTC	P	R	R	
C	FINAL INSPECTION & TESTING												
1	VISUAL & DIMENSIONAL	OVER ALL DIMENSIONS	MAJOR	VISUAL	ONE PER LOT/HEAT	APPD.DRG	APPD.DRG	INSPECTION	REPORT	P	W	W	
2	DRY RUN ON NO LOAD	VISUAL	MAJOR	VISUAL	ONE PER LOT/HEAT	APPD.DRG	APPD.DRG	INSPECTION	REPORT	P	W	W	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report,													
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI						
Signature:			Signature:				Signature:						
Name:			Name:				Name:						

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Conveyor Belt					Project :						
		QAP NO: Std QAP/ 23-24/ ME-40					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)						
		DATE:					Contractor:						
S.NO.	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	Inspection			REMARKS	
									M	C	TPIA/Client/Consultant		
A	RAW MATERIALS												
1	CS PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-2062	AS PER IS-2062	CHEM	MTC	P	R	R	
2	CS PIPE (NB)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-1239	AS PER IS-1239	CHEM	MTC	P	R	R	
3	CS ISMC (DIMENSIONS)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-2062	AS PER IS-2062	CHEM	MTC	P	R	R	
B	BOUGHT OUT ITEMS												
1	DRIVE MOTOR	HP/RPM	MAJOR	VISUAL	100%	APPD.DRG	APPD.DRG	MTC	MTC	P	R	R	
2	BELT	THICKNESS & WIDTH	MAJOR	MTC	100%	APPD.DRG	APPD.DRG	MTC	MTC	P	R	R	
C	FINAL INSPECTION & TESTING												
1	VISUAL	VISUAL	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
2	DIMENSIONAL	OVER ALL DIMENSIONS	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
Legend: M - Manufacturer (Short form), C - Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report,													
Manufacturer / Vendor			Contractor				CONSULTANT /CLIENT / TPI						
Signature:			Signature:				Signature:						
Name:			Name:				Name:						

STANDARD QUALITY ASSURANCE PLAN													
 RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT 		Manufacturer Logo & Address		Item Description : Grit Detritor (Grit Removal Mechanism)			Project :						
				QAP NO: Std QAP/ 23-24/ ME-41			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
				REV.NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)						
				DATE:			Contractor:						
S.NO.	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		INSPECTION			REMARKS
										M	C	TPI/Client/Consultants	
1A	RAW MATERIALS												
1	C.S. PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-2062	AS PER IS-2062	MECHANICAL & CHEMICAL	MTC	P	R	R	
2	SS-304/SS 316 PLATE (THICK)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	MECHANICAL & CHEMICAL	MTC	P	R	R	
3	SS-304/SS316 PIPE (NB)	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	AS PER IS-6911	AS PER IS-6911	MECHANICAL & CHEMICAL	MTC	P	R	R	
4	CI DRIVE HEAD	MECH. & CHEM.COMPOSITION	MAJOR	MTC	ONE PER LOT/HEAT	CI-260	CI-260	MECHANICAL & CHEMICAL	MTC	P	R	R	
1B	BOUGHT OUT ITEMS												
1	DRIVE MOTOR	HP/RPM	MAJOR	VISUAL	100%	APPD.DRG/DATA SHEET	APPD.DRG/DATA SHEET	TC	MTC	P	R	R	
2	GEAR BOX	GEAR RATIO	MAJOR	VISUAL	100%	APPD.DRG/DATA SHEET	APPD.DRG/DATA SHEET	TC	MTC	P	R	R	
2	INPROCESS INSPECTION												
1	WELDING	WELDING ABILITY	MAJOR	WPS/PQR/WPQ	100%	ASME-IX	ASME-IX	WPS	PQR/WPQ	P	R	R	
2	D P TEST	DPT ON WELDING SURFACES FOR WELDING DEFECTS	MAJOR	DP TEST	RANDOM	ASME-SEC V ARTICLE 6	ASME-SEC VIII DIV I	INSP	REPORT	P	R	R	
3	FINAL INSPECTION & TESTING												
1	DIMENSIONAL	OVER ALL DIMENSIONS	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
2	DRY RUN ON NO LOAD	VISUAL	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
3	PAINTING	DFT	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
4	SCREW SPEED	RPM	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
5	VISUAL	VISUAL	MAJOR	VISUAL	ONE PER LOT	APPD.DRG	APPD.DRG	INSP	REPORT	P	W	W	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report,													
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI							
Signature:			Signature:			Signature:							
Name:			Name:			Name:							

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Fine bubble Diffuser mechanism	Project :
		QAP NO: Std QAP/ 23-24/ ME-42	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

SL. NO.	COMPONENTS	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION			REMARKS
								M	C	TPI/Client/Consultants	
A	MATERIAL CHECK	a) Material of construction of Lateral piping	MTC of material	Random	As per calculation/ Diffuser Data Sheet/specification	SS 304/SS 316	Material Test Certificate	P	R	R	
		b) Material of construction of Diffuser Membrane	Document Review	Random	As per calculation/ Diffuser Data Sheet/specification	Polyurethane	Material Test Certificate	P	R	R	
B	DIMENSIONAL CHECK	a) Spacing of Holes on Lateral piping for Diffusers	Dimension	Random	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	Certificate TPIR	P	R	W	
		b) Diameter of Diffuser	Dimension	Random	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
		c) Length of Diffuser	Dimension	Random	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
C	VISUAL CHECK	a) Membrane perforation on top only	Observations	Random	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
		b) Clamps at both ends of Diffusers	Observations	Random	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
		c) No. of Diffusers	Measure	100%	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
		d) Spare diffuser membranes	Measure	100%	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	
		e) Welding	Physical Check	100%	As per calculation/ Diffuser Data Sheet/specification	As per calculation/ Diffuser Data Sheet	TP IR	P	R	W	

Notes:

- 1) Test Certificate for Lateral Piping shall be provided by Pipe Supplier
- 2) Compliance Certificate for Diffuser Membrane shall be provided by manufacturer

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN			
	Manufacturer Logo & Address	Item Description : Decnater Mechanism	Project :
		QAP NO: Std QAP/ 23-24/ ME-43	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

SL. NO.	COMPONENTS	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION			REMARKS
								M	C	TPI/Client/Consultants	
A	MATERIAL CHECK	a) Material of construction	Documentary Evidence	Weir Box,Down Comer, Down Comer, Main Shaft, Connecting Rod, Driver Lever Arm, Scum Float,	As pwer Decanter G.A. Drg/Datasheet/Specification	SS316	MTC / Lab report	P	R	R	
B	DIMENSIONAL CHECK	a) Thickness of Downcomers	Dimension	Random		T1 + 0.56 mm / - 0.31 mm	THIRD PARTY INSPECTION REPORT	P	W	W	
		b) OD of Downcomer	Dimension	Random		OD1 + 2.38 mm / - 0.79 mm.		P	W	W	
		c) Centre to Centre distance between Downcomers	Dimension	Random		L1+/-2 mm		P	W	W	
		d) Weir Box Length	Dimension	Random		L2 +/-7 mm		P	W	W	
		e) Outer Diameter of Main Shaft	Dimension	Random		OD2 + 3.18 mm / - 0.79 mm.		P	W	W	
		f) Thickness of Main Shaft	Dimension	Random		T2 + 1.35 mm / - 0.75 mm.		P	W	W	
C		a) Nò. of Downcomers	Visual	Random		As per datasheet	P	W	W		
	VISUAL CHECK	b) Finish	Visual	Random		Uniform Smooth Finished Surface on all parts	P	W	W		

Notes:

- 1) All components of Decanter of \$5316.
- 2) Decanter flow (Design flow) = Average flow + Recycle flow

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform, R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR - Third Party Inspection report

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 Manufacturer Logo & Address 	Item Description : Centrifugal Air Blower	Project :
	QAP NO: Std QAP/ 23-24/ ME-44	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
	REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
	DATE:	Contractor:

Sl. No.	Components	Characteristic of Test	Class	Type of check	Quantum Check	Applicable Spec. or Procedure	Reporting Format	Format of record	Participation By			Remarks
									M	C	TPI/Client/Consultant	
1	2	3			4	5	6		7			8
1	Raw Material											
a	Blower - Casing	Physical, Chemical, Dimensional & Surface defects	Major	MTC	100%	As per Approved Drg. & Datasheet	IS-210 Gr.FG-260 & IS: 1865: 1991, Grade 500/7 As per Approved Drg. & Datasheet	MTC	P	R	RW	MTC to be submitted for review
b	Rotor Lobe End- Covers	Physical, Chemical, Dimensional & Surface defects	Major	MTC	100%	IS-210 Gr.FG-260 As per Approved Drg. & Datasheet	Manufacturer Test Certificates	MTC	P	R	R	MTC to be submitted for review
c	Gears	a). Chemical & Physical properties. b). Hardness test of finished gear.	Major	MTC	100%	815M17/EN-353 of BS-970 Hardness 54-60 HRC As per Approved Drg. & Datasheet	Lab test reports	MTC	P	R	R	Lab test reports to be submitted
d	Steel rounds / Shaft	a). Chemical & Physical properties. UT ≥ 50mm Shaft Dia.	Major	MTC	100%	EN-8/080M40 of BS-970 As per Approved Drg. & Datasheet A 388	Internal test report	MTC	P	R	R	Lab test reports to be submitted
e	Motor	KW/RPM	Major	MTC	One per Lot	As per Datasheet	As per Datasheet	MC	P	R	R	
2	In Process Inspection:											
a	Rotor Assembly	Dynamic balancing & Dimensional	Major	MTC	100%	ISO-1940, Gr.6.3	Internal test report	Dimensional record format & Rotor's dynamic Balancing Report	P	W	RW	Inspection Report
b	Casing	Hydro test	Major	MTC	100%	2.5 Kg/Cm2 'g' for 30 min.	Internal test report		P	W	RW	Inspection Report
3	Performance Tests											
a	Performance Test with mechanical run test	Performance test with a) Air delivery (FAD), b) Head (Diff pressure) c) Power consumption d) Temp. rise. e) Noise level, f) vibration g) RPM	Major	As per given specification	Per Lot/Per Heat	As per GA Drawing & Datasheet/ Specification	BS-1571, Part-II & Approved drawings / documents	Performance Test Certificate	P	W	W	Test Report of blower shall submit for review

STANDARD QUALITY ASSURANCE PLAN

 Manufacturer Logo & Address 	Item Description : Centrifugal Air Blower	Project :
	QAP NO: Std QAP/ 23-24/ ME-44	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
	REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
	DATE:	Contractor:

Sl. No.	Components	Characteristic of Test	Class	Type of check	Quantum Check	Applicable Spec. or Procedure	Reporting Format	Format of record	Participation By			Remarks
									M	C	TPI/Client/Consultant	
1	2	3			4	5	6		7			8
4	Final Inspection	Dimensions & Visual inspection- Capacity, Pressure, Power consumption, Noise, Vibration & Temp. rise	Major	As per given specification	Per Lot/Per Heat	As per GA Drawing & Datasheet	BS-1571, Part-II & Approved drawings / documents	Performance Test Certificate	P	W	W	Inspection Report W' one no blower and rest reports shall submit for review
a	Base Frame	Visual Inspection & Measurement	Major	Measurement	100%	As per GA Drawing & Datasheet	Internal test report	MTC	P	R	RW	Inspection Report
b	Painting	a) Paint quality b) DFT Check	Major	Visual Inspection & DFT	100%	As per GA Drawing & Datasheet	As per specification	Painting compliance report	P	R	RW	Painting Inspection report & Batch certificate

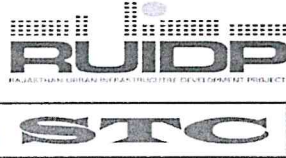
Legend: P- Perform, R- Review, W- Witness, H- Hold, RW- Review & Witness

- Notes:**
- 1 Acceptance norms for all the activities shall be as per PO/ Standards referred therein/Job Specification / Approved documents.
 - 2 Noise & Vibration check only for record purpose & guarantee figger at site.
 - 3 Motor routine test certificate to be submitted by Manufacturer for contractor review.
 - 4 If shaft dia. Is more than 40 mm than UT required

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Sluice Gate (Manual & Electrical Operated)	Project :
		QAP NO: Std QAP/ 23-24/ ME-45	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Sl. No.	Component/ Operation	Characteristic checked	Method of check	Extent of check	Reference document / Acceptance norm	Format or record	Inspection			Remarks
							M	C	TPI/Client/ Consultants	
A.	Raw material									
1	Frame, Slide, Stem/spindle	Chemical & Mechanical properties	Vendor TC review	Thickness of sheet & dia of stem	As per approved Drawings/data sheet & specification & IS - - -	Mill / NABL Lab Test certificate	P	R	R	
2	Gate Frame, Shutter & Wall Thimble	Tensile Strength	Physical	One Per Heat / Melt	As per approved Drawings/data sheet & specification & IS - - -	Test Report / Manufacturer Test Certificate / Pneumatic Cylinder / Actuator T.C	R	R	R	
3	Stem	Chemical Composition & Tensile Strength, Yeild Strength, Elongation	Chemical & Physical	One / Heat / Size			R	R	R	
4	Seat Facing	Chemical Composition	Chemical				R	R	R	
5	Rubber Seal	Polymer Identification	Physical				R	R	R	
6	Electric Actuator	Physical		100%			R	R	R	
B.	In-Process Inspection									
1	Frame	Dimension	Measurement	Sampling Plan	As per approved Drawings/ datasheet & specification/IS- - - -	In-Process inspection record	P	R	R	
2	Slide	Dimension	Measurement	100%	As per approved Drawings/ datasheet & specification/IS- - - -	In-Process inspection record	P	R	R	
3	Actuator if applicable	Functional test during assembly/KW & Torque	Supplier TC	100%	As per approved Drawings/ datasheet & specification/IS- - - -	Vendor Test certificate	P	R	R	
C.	Final inspection									
1	Assembled gate with accessories	Visual & Dimension	Measurement	100%	Approved drawing	Final inspection record	P	W	W	
		Functional Test*	Operation	100%	Smooth operation	Final inspection record	P	W	W	
		Seat Test*	Compression of seal against the Slide.	100%	Average allowed limit 0.05mm.	Final Inspection Record	P	W	W	
2	Seat Clearance	Gap between Sealing face	Measurement	100%	As per IS : 13349	Mfg. Inspection Report	P	W	W	
3	Movement	Movement of shutter between guide	Visual	100%			P	W	W	
4	Leakage	Leakage through seat	Measurement	100%	Approved G.A Drawing / As per IS : 13349		P	W	W	
5	Hydrostatic Body Test	Leakage through metal / deformation	Visual	100%			P	W	W	
6	Surface Preparation & Painting	Surface Finish & DFT	Visual & Measurement	100%	Please refere Note 5		P	W	W	

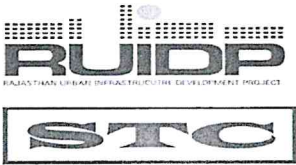
Note:

- | | |
|---|--|
| 1 | 100% visual inspection shall be offered by manufacturer for contractor / client / TPI during inspection. |
| 2 | We confirm that opening time of all sluice gate is less than 5 min & closing time of all sluice gates is less than 5 min. We have also mentioned actual time for opening in electric actuator data sheet of corresponding gates. |
| 3 | Painting details.
a. Paint for gate assembly:- Total painting thickness inclusive of Priming 450 Microns (High build epoxy polyamide paint-Epilux-78 HBTL of Beger Make).
b. Paint for headstock paillar:- Total dry film thickness inclusive of priming 150 Microns (Grey epoxy paint). |

Legend: M - Manufacturer (Short form), C - Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report

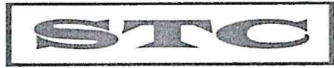
Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

	Manufacturer Logo & Address	Item Description : Volute Press / Sludge Dewatering Machine					Project :					
		QAP NO: Std QAP/ 23-24/ ME-46					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)					
		DATE:					Contractor:					

S. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION			REMARKS
									M	C	TPI/Client/Consultant	
A	RAW MATERIAL											
1	S.S.-304/ SS 316 SHEETS OF DIFFRENT THICKNESS IN MM	CHEMICAL COMP.	MAJOR	CHEMICAL COMPOSITION	ONE/LOT	IS-6911	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	Only Chemical Composition will be tested
3	S.S.-304/ SS 316 PLATE OF DIFFRENT THICKNESS IN MM	CHEMICAL COMP.	MAJOR	CHEMICAL COMPOSITION	ONE/LOT	IS-6911	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
8	SS-304/ SS 316 PIPE OF DIFFERENT NB	CHEMICAL COMP.	MAJOR	CHEMICAL COMPOSITION	ONE/LOT	IS-6911	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
9	S.S.-420 ROUND	CHEMICAL COMP.	MAJOR	CHEMICAL COMPOSITION	ONE/LOT	IS-6911	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
11	S.S.-304/ SS 316 ANGLE	CHEMICAL COMP.	MAJOR	CHEMICAL COMPOSITION	ONE/LOT	IS-6911	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
B	BOUGHT OUT ITEMS											
1	MOTOR	HP/RPM	MAJOR	VISUAL/REVIEW	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
2	GEAR BOX	GEAR RATIO	MAJOR	VISUAL/REVIEW	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	MTC	P	R	R	
C	IN PROCESS CONTROL/STAGE INSPECTION											
1	DIMENSIONS	OVERALL DIMENSIONS	MAJOR	VISUAL	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	INSP. REPORT	P	W	W	
2	WATER FILL TEST	LEAKAGE TESTING	MAJOR	VISUAL	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	INSP. REPORT	P	W	W	
D	FINAL INSPECTION											
1	DIMENSIONS	OVERALL DIMENSIONS	MAJOR	VISUAL	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	INSP. REPORT	P	W	W	
2	VISUAL CHECK	VISUAL	MAJOR	VISUAL	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	INSP. REPORT	P	W	W	
3	DRY RUN ,NOISE LEVEL, VIBRATION, BEARING TEMP RISE	PRACTICAL TEST	MAJOR	VISUAL	100%	AS PER APPD GA DRG/DATASHEET	AS PER APPD GA DRG/DATASHEET	INSP. REPORT	P	W	W	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report												
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI						
Signature:			Signature:			Signature:						
Name:			Name:			Name:						

STANDARD QUALITY ASSURANCE PLAN

 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC		Manufacturer Logo & Address		Item Description : Centrifuge (Sludge Dewatering Machine)		Project :	
				QAP NO: Std QAP/ 23-24/ ME-47		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
				REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)	
				DATE:		Contractor:	

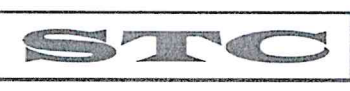
SI No.	Component / Operation	Type / Method of check	Reference Documents	Acceptance Criteria	Format of Record	Inspection			Remarks
						M	C	TPI/Client/Consultant	
1.0	Raw Material/ Procurement Check								
1.1	Raw Material for main components (Bowl , Scroll & Housing)	Physical/Chemical Properties	Approved Data sheet / Approved Drawings./Specification	Approved Data sheet / Approved Drawings./Specification	Material Test Certificate	P	R	R	
1.2	Major Bought out items: a) Centrifuge Motor b) Cyclo Gear Box	Visual/Verification	Test reports as per Approved Data sheet / Approved Drawings./Specification a) Routine Motor Test Report b) Standard Warranty Certificate of Cyclo Gear box spare parts.	Test reports as per Approved Data sheet / Approved Drawings./Specification	Material Test Certificate	P	R	R	
2.0	In Process Inspection								
2.1	Welding Procedure	WPQ/WPS/PQR	ASME – IX	ASME – IX	Format of IS / ASME – IX	P	R	R	WPS/PQR/WPQ submitted
2.2	Procedure Qualification and Weld Soundness	a) UT of shaft diameter greater than 50mm b) RT	ASME –V and VIII	ASME –V and VIII	Test Report and Certificates	P	R	R	IR to be Submitted
2.3	Bowl Assembly	Dynamic Balancing concentricity	ISO 1940 / 1 – 2003	ISO 1940 / 1 – 2003	Material Test Certificate	P	R	R	TC to be Submitted
2.4	Scroll Assembly	Dynamic Balancing concentricity	ISO 1940 / 1 – 2003	ISO 1940 / 1 – 2003	Material Test Certificate	P	R	R	TC to be Submitted
3.0	Final Inspection								
3.1	Centrifuge Assembly	Visual / Overall Dimensional check	As per Approved G.A Drawing/Datasheet & Specification	As per Approved G.A Drawing/Datasheet & Specification	Inspection Report	P	W	W	Report to be Submitted
3.2	Functional Test on No-Load condition	a) Vibration level. b) Noise level c) Main Bearing Temperature at Pillow block d) Bowl Speed	ISO 10816-3 (max 4.5 mm/sec) 85 - 88 dB at 1m (Max.) (DE & NDE) (Reverberant - Field) Main Bearing Temp at Pillow Block (max 95 deg C) Approved Technical Data sheet/GA drawing	ISO 10816-3 88 dB at 1m Max 95 Deg C Technical Data sheet/GA Drawing	Inspection report	P	W	W	Report to be Submitted
4.0	Surface Preparation and Painting (DFT) Measurement	Visual/ DFT Measurement of finished coat.	As per Paint Specification in Technical Data sheet & Specification	As per Paint Specification in Technical Data sheet & Specification	Inspection Report	P	W	W	Test Report to be submitted
5.0	Final documents	Verification	Complete Inspection Report along with Test Certificates	Complete Inspection Report with Test Certificates	Complete Inspection document	P	W	W	To be cleared for Dispatch
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report									
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI			
Signature:			Signature:			Signature:			
Name:			Name:			Name:			

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : Clariflocculator Mechanism		Project :			
				QAP NO: Std QAP/ 23-24/ ME-48		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
				REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)			
				DATE:		Contractor:			

Sl. No.	Component & Operation	Characteristics Checked	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
							M	C	TPI/Client/Consultant	
1	Raw Material & Brough Out Items									
1.1	All structural material channels, angles, plated, rods, pipes etc.	Mechanical & Chemical Properties	1/size or lot	As per Approved Drawing, Datasheet & Specification.	As per Approved Drawing, Datasheet & Specification.	Material test report	HP	R	R	For critical components
1.2	Components of CPB assy. & SRT assy.	Mechanical & Chemical Properties	1/size or lot			Material test report	HP	R	R	For critical components
1.3	Neoprene rubber strips for scrapper	Physical Properties	1/lot			Manufactuer TCs	R	R	R	
1.4	FRP items (if any)	Physical Properties	1/lot			Manufactuer TCs	R	R	R	
1.5	Slip ring collector	Visual & Dimesnional	100%			Manufactuer TCs	R	R	R	
1.6	Peripheral & Flocculator Drive	Gear ratio, Make, Model No.	100%			Material test report	R	R	R	
1.7	Motor	Capacity, RPM	100%			Routine test certificate	R	R	R	
2	In Process inspection									
2.1	Stage inspection of critical parts	Visual & Dimensional	100%	As per Approved Drawing, Datasheet & Specification.	As per Approved Drawing, Datasheet & Specification.	Inspection Report	W	RW	RW	
2.2	FRP Lining (If applicable)	Visual, Thickness & Spart test	100%			Thickness & spart test report	W	RW	RW	
2.3	Peripheral Drive with trailing unit & Flocculator Drive unit	Fitment & Alignment	100%			Inspection Report	W	RW	RW	
3	Final Inspection									
3.1	Assembly of matching components	Visual & Dimensional	100%	As per Approved Drawing, Datasheet & Specification.	As per Approved Drawing, Datasheet & Specification.	Inspection Report	W	RW	RW	Necessary sub assy. Can be shown as applicable
3.2	Peripheral Drive & Flocculator Drive no load mechanical run test	Speed	100%	As per Approved Drawing, Datasheet & Specification.	As per Approved Drawing, Datasheet & Specification.	Inspection Report	W	RW	RW	
		Oil Leakage in Gear box	100%	As per Approved Drawing, Datasheet & Specification.	No leakage	Inspection Report	W	RW	RW	
4	Painting									
4.2	Thickness	DFT	100%	Approved Drawing, Specification, PO	Approved Drawing, Specification, PO	Inspection Report	W	RW	RW	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, TPIR- Third Party Inspection report										
Note- 1- Performamnce test will be done at site after assembled										
Manufacturer / Vendor				Contractor			CONSULTANT /CLIENT / TPI			
Signature:				Signature:			Signature:			
Name:				Name:			Name:			

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Sludge Thickner	Project :
		QAP NO: Std QAP/ 23-24/ ME-49	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

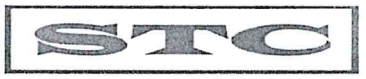
Sl. No.	Component & Operation	Characteristics Checked	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection Scope			Remarks
							M	C	TPI/Client/Consultant	
1	Raw Material & Brough Out Items									
1.1	All structural material channerls, angles, plates, rods, pipes etc.	Physical & Chemical Properties	1/lot	As per approved Drawing/Datassheet & Specification	As per approved Drawing/Datassheet & Specification	Manufacturer TCs	P	R	R	For critical components
1.2	Neoprene Rubber strips for scrapper	Physical Properties	1 Sample			Manufacturer TCs	P	R	R	
1.3	Drive head, Geared motor	Gear ratio, Make, Model No.	100%			Manufacturer TCs	P	R	R	As applicable
1.4	Motor	Capacity, RPM	100%			Routine test certificate	P	R	R	
2	In Process									
2.1	Stage inspection of critical parts	Visual & Dimensional	100%	As per approved Drawing/Datassheet & Specification	As per approved Drawing/Datassheet & Specification	Inspection report	P	W	RW	
2.2	Drive head, Geared motor	Fitment & Alignment	100%			Inspection report	P	W	RW	
3	Final Inspection									
3.1	Assembly of matching components	Visual & Dimensional Alignment	100%	As per approved Drawing/Datassheet & Specification	As per approved Drawing/Datassheet & Specification	Inspection report	P	W	RW	Necessary sub assy. Can be shown as applicable
3.2	Drive head, Geared motor no load mechanical run test	Speed	100%			Inspection report	P	W	RW	
		Oil Leakage in Gear box	100%		No leakage	Inspection report	P	W	RW	
4	Painting									
4.2	Thickness	DFT	100%	Approved Drawing, Specification, PO	Approved Drawing, Specification, PO	Inspection report	P	W	RW	

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report

Note- 1- Performamnce test will be done at site after assembled

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

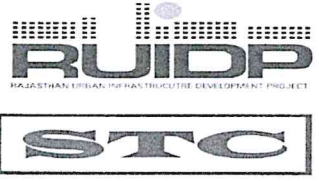
 		Manufacturer Logo & Address		Item Description : Agitator Mechanism / Mixer		Project :				
				QAP NO: Std QAP/ 23-24/ ME-50		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT				
				REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)				
				DATE:		Contractor:				
Specification Details: Lime Slurry Prep Tank Mixer / Alum Mixer / DWPE Mixer / Flash Mixer / Tichened Sludge Tank Mixer / Polyectolyte Tank Mixer										
Sl. No.	Component & Operation	Characteristics Checked	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
							M	C	TPI/Client/Consultant	
1	Raw Material & Brough Out Items									
1.1	Shaft & Impellar	Mechanical & Chemical Properties	1/size or lot	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	Mill TCs or Check test report	P	R	R	
1.2	Surface Defects	Visual	100%	No pittings / Corrosion	Damaged part not to be used	Inspection Report	P	R	R	
1.3	Internal Defects	UT	100%	ASTM A 388	As per STD	UT Report	P	R	R	For size >50mm
1.4	Gear Box	Gear ratio, Make, Model No.	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	Manufactuer TCs	P	R	R	
1.5	Motor	HP, RPM	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	Routine test Certificate	P	R	R	
2	In Process									
2.1	Shaft & Impellar	Visual & Dimensional	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	IIR	P	R	R	
2.2	Machining Components and Welding	DP Test	100%	ASTM E 165	No linear and rounded indications	DP Report	P	R	R	Dyanmic balancing for RPM ≥200
2.3	Impellar	Static / Dynamic Balancing	100%	ISO 1940	ISO 1940	IIR	P	W	R	
3	Final Inspection									
3.1	Final Assembly	Visual & Dimensional Alignment	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	IIR	P	W	W	
3.2	Performance Test in air	Current, Noise, RPM, Temp. rise, Shaft runout, Vibration	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	IIR	P	W	W	
4	Painting									
4.2	Thickness	DFT	100%	As per approved Drawing/Datasheet & Specification	As per approved Drawing/Datasheet & Specification	IIR	P	R	R	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report										
Manufacturer / Vendor				Contractor			CONSULTANT /CLIENT / TPI			
Signature:				Signature:			Signature:			
Name:				Name:			Name:			

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address		Item Description : Polyelectrolyte Dosing System		Project :	
				QAP NO: Std QAP/ 23-24/ ME-51		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
				REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)	
				DATE:		Contractor:	

Sl. No.	Components / Operation	Characteristic Checked	Type / Method of Check	Class of Check	Extent of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection By			Remarks
									M	C	TPI/Client/Consultant	
Pumps: Dosing Pump												
1	Material & Testing	MOC, Model, Capacity & Rated Flow at Discharge Pressure	TC Review	Major	100%	As per approved Drawing, Datasheets & specification		Pump Performance	P	R	R	
	Piping & Hydrostatic Test	No Leakage / Pressure Drop	Hydro Testing only for Discharge Piping at 1.5 X Discharge Pressure at Pump for 30 Mins.	Major	100%	As per approved Drawing, Datasheets & specification		Inspection Report	P	W	W	
Pressure Relief Valve, Dampener & Strainers:												
2	Material & Testing	MOC, Leakage, Set Pressure (as applicable)	Manufacturer compliance certificate	Major	100%	As per approved Drawing, Datasheets & specification		Manufacturer compliance certificate	P	W	W	
3	In Process	Model, Range, MOC	Motor Test Certificate	Major	100%	Approved Datasheets		Manufacture's Routine TC	P	R	R	
4	Agitator:											
	Material & Testing	Model, Range, MOC	Manufacturer compliance certificate	Major	100%	As per approved Drawing, Datasheets & specification	As per approved Drawing, Datasheets & specification	Manufacturer compliance certificate	P	R	R	
Tanks:												
5	Material & Testing	MOC, Volume, Leakage (Water Fill)	Manufacturer compliance certificate	Major	100%	Approved Drawings	Approved Drawings	Manufacturer compliance certificate	P	R	R	
	Water Fill Test	No Leakage	Water Filling & Holding for 90 Mins.	Major	100%	Approved Drawings	Approved Drawings	Inspection Report	P	W	W	
Piping, Fittings & Flanges, Valves (Wetted Parts):												
6	Material & Testing	MOC, Size, Schedule, Class	Manufacturer compliance certificate	Major	100%	As per approved Drawing, Datasheets & specification	As per approved Drawing, Datasheets & specification	Manufacturer compliance certificate	P	R	R	
	Piping Hydro Static Test	No Leakage, Pressure Drop	Hydro Testing only for Discharge Piping at 1.5 X Discharge Pressure at Pump for 30 Mins.	Major	100%	As per approved Drawing, Datasheets & specification	As per approved Drawing, Datasheets & specification	Inspection Report	P	W	W	
Instruments- Level Gauge, Level Switch & Pressure Gauge(If Any)												
7	In Process	Model, Range, MOC, CC-Distance, End Connection	Manufacturer compliance certificate	Major	100%	Approved Datasheets	Approved Datasheets	Manufacturer compliance certificate	P	R	R	
SKID												
8	In Process	Dimension	Measurement	Major	100%	Approved Drawings	Approved Drawings	Inspection Report	P	W	W	
9	Final Inspection											
9.1	Complete SKIP Final Assembly	Dimension, Workmanship	Visual Measurement	Major	100%	As per approved Drawing, Datasheets & specification	As per approved Drawing, Datasheets & specification	Inspection Report	P	W	W	
		Foundation Holes, Piping Layout										
		Nozzle Orientation, Terminal Points of Tank & Skid										
		Painted Skid DFT Checking										
9.2	Trial Run	Pumps on System	Current measurement, flow at working pressure, noise and vibration			As per approved Drawing, Datasheets & specification	As per approved Drawing, Datasheets & specification	Trial Run Report	P	W	W	
Note: 1. For Plastic, Glass, Ceramic and M.S Material of Construction Test Certificate is not applicable. 2. This QAP also applicable to all items like Agitator etc. separately.												
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report												
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI						
Signature:			Signature:			Signature:						
Name:			Name:			Name:						

STANDARD QUALITY ASSURANCE PLAN

			Item Description : Chlorination System	Project :						
			QAP NO: Std QAP/ 23-24/ ME-52	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
			REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)						
			DATE:	Contractor:						
Sl. No.	Component & Operation	Characteristics	Type / Method of Check	Quantum of Check	Reference Document / Acceptance	Format of Record	Inspection By			Remarks
							M	C	TPI/Client/Consultant	
1.0	Chlorinator including Ejector & Vacuum Regulator	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Chlorine dosing rate checking at the time of commissioning
		2. Functional performance flow rate checking	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	R	W	
1.1	Ejector	Capacity - (To be mentioned)	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
1.2	Vacuum Regulator	Capacity - (To be mentioned)	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
		Operator vacuum (To be mentioned) of water		100%			P	W	W	
1.3	Vacuum Chlorinator	Capacity - (To be mentioned) for pre-chlorination	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	R	
		Capacity - 4 (To be mentioned) for post-chlorination					P	W	R	
		Turn down ratio: (To be mentioned) (Manual)					P	W	R	
		Turn down ratio: (To be mentioned) (Auto)					P	W	R	
2.0	Residual Chlorine Analyzer	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Checking at the time of commissioning
		2. Functional performance Measuring range: 0-10 ppm	Document review & performance			Manufacture TC	P	W	R	
3.0	Gas Detection System	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Leak detection and alarm generation checking at the time of commissioning
		2. Functional performance Range: (To be mentioned) ppm Sensitivity- (To be mentioned) ppm	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	R	
4.0	Evaporator	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Running trial for 60 minute at the time of commissioning
		2. Functional performance Capacity - (To be mentioned)	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
5.0	Auto Change Over Device	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Auto change over operation checking at the time of commissioning
		2. Functional performance Change over at ≤ 1 bar	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
6.0	Booster Pump	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	As per approved Datasheet & specification	Manufacture TC	P	R	R	Running trial for 60 minute at the time of commissioning
		2. Functional performance	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
	Capacity- Pre-Chlorination	(To be mentioned)	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
	Capacity- Post-Chlorination	(To be mentioned)	Document review & performance	100%	As per approved Datasheet & specification	Manufacture TC	P	W	W	
7.0	Casulce Recirculation Pump	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	R	R	Running trial for 60 minute at the time of commissioning
		2. Functional performance Capacity - (To be mentioned)	Document review & performance	100%	Datasheet / Catalogue	Manufacture TC	P	W	W	
8.0	Dynamometer	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
9.0	Electrical Hoist	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
10.0	Cuastic Tank Agitator	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
11.0	Chlorine Tonner	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Explosive Certificate	Manufacture TC	P	W	R	
12.0	Caustic Tank	Dimension	Visual	100%	Drg. / Datasheet	Manufacture TC	P	R	R	
		Leak test		100%	Dra. / Datasheet	Manufacture TC	P	W	R	

STANDARD QUALITY ASSURANCE PLAN

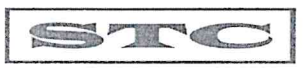
		Item Description : Chlorination System	Project :							
		QAP NO: Std QAP/ 23-24/ ME-52	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT							
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)							
		DATE:	Contractor:							

Sl. No.	Component & Operation	Characteristics	Type / Metod of Check	Quantum of Check	Reference Document / Acceptance	Format of Record	Inspection By			Remarks
							M	C	TPI/Client/Consultant	
13.0	Aeration Tower	Dimension	Visual	100%	Drg. / Datasheet	Manufacture TC	P	R	R	
		Leak test		100%	Drg. / Datasheet	Manufacture TC	P	W	R	
14.0	Air Blower & Motor	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Approved Datasheet / Catalogue	Manufacture TC	P	R	R	Running trial for 60 minute at the time of commissioning
		2. Functional performance Motor - (To be mentioned)	Document review & performance	100%	Approved Datasheet / Catalogue	Manufacture TC	P	W	W	
15.0	Pressure Gauge	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
16.0	Pressure Switch	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
17.0	Vaccum Switch	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
18.0	Level Sensor	1. Finishing Unit / Sl. No. / Labelling	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
19.0	Valves & Strainer	Visual / Dimension	Measurement	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
20.0	PVC & HDPE Pipes	Visual / Dimension	Measurement	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
21.0	MCC	Visual / Dimension	Visual	100%	Drg. / Datasheet	Manufacture TC	P	W	R	
22.0	Cables & Wires	Visual	Visual	100%	Datasheet / Catalogue	Manufacture TC	P	W	R	
23.0	Accessories	Visual	Visual	100%	Approved Datasheet / Catalogue	IR	P	W	R	

Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : CI Dismantling Joint	Project :	
		QAP NO: Std QAP/ 23-24/ ME-53	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)	
		DATE:	Contractor:	

Sl. No	Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant Client	
RAW MATERIAL											
1	Raw Material (Compression Flange, Barrel & Spigot)	Tensile & Hardness, Visual and Dimensinal	Mechanical Foundry TC Review Dimensional	1/ Heat	Gray Cast Iron IS:210/1993 FG-260	IS:210/1993 FG-260 Approved Drawing & IS1538:1993	Foundry TC	P	R	R	
2	Sealing Ring & Gasket	Mechanical & Hardness	Mechanical Properties Certificate Review Visual & Diamentional	As per Appendix D-1, Table 3 of IS:5382/1985	Rubber SBR/ EPDM IS:5382/1985	Rubber SBR/EPDM IS:5382/1985 & approved drawing	MTC	P	R	R	
3	Stud & Nut Bolt (Galv.) Electroplated	Mechanical	Mech. Properties Certificate Review Visual & Diamentional	10 Sample per lot	Carbon Steel IS : 1363 and 1367 Cl. 4.0, Cl. 4.6	Carbon Steel IS : 1363 and 1367 Cl. 4.0, Cl. 4.6 and Approved Drawings	MTC	P	R	R	
INTERNAL INSPECTION AND TESTING IN PROCESS											
1	manufacturing Machining, Finishing, Fitting & Assembling	Visual & Dimensional, Surface Defect	Measurement, Visual	100% by Manufacturer	As per approved drawing Free from surface defect	As per IS:1538/1993 & Approved drawing	Insp. Report (Internal)	P	R	R	
2	Hydro Test	Leakage Test	Hydrostatic Test	100% by Manufacturer	As per IS:1538/1993 clause-9.1 table-1	As per IS:1538/1993 clause-9.1 table-1	Insp. Report (Internal)	P	W	R	
3	Flange Drilling Dimensions	Dimensions	Major	Measurement	IS 1538 : 1993 Table 6 IS : 6392 : 1971	IS 1538 : 1993 Table 6 IS : 6392 : 1971	Insp. Report (Internal)	P	W	R	
FINAL INSPECTION											
1	Workmanship	Acceptance	Visual	Visual 100% by Manufacturer	Free from Surface defect	Free from Surface defect	Insp. Report	P	W	R/W	
2	Dimensional check	Dimensional	Measurement	Randomly selected sample by IA Max.10%	Approved drawing	Approved drawing	Insp. Report	P	W	R/W	
3	Hydro Test	Leakage	Complete Assembly	Randomly selected sample by IA Max.10%	As per IS:1538/1993 clause-9.1 table-1	As per IS:1538/1993 clause-9.1 table-1	Insp. Report	P	W	R/W	
4	Movement Test (Axial)	Axial Movement	Performance	100% by Manufacturer & 10% by Client/ TPI	As per approved drawing and specification	As per approved drawing and specification	Insp. Report	P	W	R/W	
5	Marking & Coating	Apperance & Identification	Apperance & Visual	100% by Manufacturer & 10% by Client/ TPI	Marking & Coating as per IS 1538/1993 and Approved drawing	Marking & Coating as per IS 1538/1993 and Approved drawing	Insp. Report	P	W	R/W	It shall be internally and externally coated with hot applied (dip) bituminous paint.
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report											
Note-	It may be got tested from the reputed institutions/Organization as approved by the Employers representative and from the NABL accredited laboratories after reaching at site for supercheck.										
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : DI Dismantling Joint	Project :									
		QAP NO: Std QAP/ 23-24/ ME-54	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT									
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)									
		DATE:	Contractor:									

Sl. No.	Component/ Operation	Characteristics	Type of Checking	Class	Quantum of Check	Reference Documents	Acceptance documents	Format of Records	Inspection			Remarks
									M	C	TPI/Client/ Consultant	
1.0	Raw Material											
1.1	Flange, Straight Sleeve, End Flange Assembly	Surface defect Chemical Analysis & Mechanical Properties	Visual, Chemical & Mechanical Test	Major	1 sample per lot	Approved Drawing/Datasheet/Specification	Approved Drawing/Datasheet/Specification	Inspection report	P	R	R	
1.2	Sealing Ring & Gasket	Mechanical & Hardness	Mechanical Properties Certificate Review Visual & Dimensional	Major	As per Appendix D-1, Table 3 of IS:5382/1985	Rubber SBR/ EPDM IS:5382/1985	Rubber SBR/EPDM IS:5382/1985	MTC	P	R	R	
1.3	Stud & Nut Bolt (Galv.) Electroplated	Mechanical	Mech. Properties Certificate Review Visual & Dimensional	Major	10 Sample per lot	Carbon Steel IS : 1363 and 1367 Cl. 4.0, Cl. 4.6	Carbon Steel IS : 1363 and 1367 Cl. 4.0, Cl. 4.6 and Approved Drawings	MTC	P	R	R	
2.0	In Process Inspection											
2.1	Marking, Cutting & Machining	Measurement	Dimensional	Major	100%	Approved Drawing/Datasheet/Specification		Inspection report	P	R	R	
2.2	Fabrication before Welding	Edge preparation and fit-up checking	Visual & Dimensional	Major	100%				P	R	R	
2.3	Welding	WPS, PQR	Tensile and Bend Test	Major	Sample Test	ASME Sec-IX	ASME Sec-IX	Test Certificate	P	R	R	
2.4	After Welding	Soundness of Weld Joints	Visual & DP Test	Major	At random on pressure part	As per standard practise		Inspection report	P	R	R	
3.0	Final Assembly											
3.1	Assembly Parts	Measurement	Dimensional	Major	100%	Approved Drawing/Datasheet/Specification		Inspection report	P	W	R/W	Dismantling clearance 50mm(may be checked 1 No. per size)
3.2	Hydrastatic Testing	Hydraulically	Hydro Testing	Major	100%				P	W	R/W	10% of each size
3.3	Painting	Proper Surface cleaning & Painting	Visual	Major	100%	Food Grade Epoxy Paint	Standard Practice	Inspection report	P	W	R/W	It shall be internally and externally coated with hot applied (dip) bituminous paint.

#Material T.C. will be submitted for review and verification only.
Note : This document is full and final document for the scope of inspection and testing purpose. Drawing and Technical specification to be referred for Dimesnions & Data's only.It may be got tested from the reputed institutions/Organization as approved by the Employers representative and from the NABL accredited laboratories after reaching at site for supercheck.
Abbreviation: 1- Customer / Inspection Agency; 2 - Manufacturer; IA - Inspection Agency; IR- Inspection Report; P- Performer; V- Verfication, W- Witness.

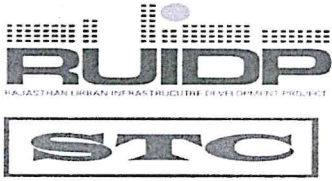
Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 		Manufacturer Logo & Address	Item Description : SS Expansion Bellows		Project :					
			QAP NO: Std QAP/ 23-24/ ME-55		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
			REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)					
			DATE:		Contractor:					

Sl. No.	Component & Operation	Characteristics	Type of Check	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant	
1	2	3	4	5	6	7	8	9			10
A Raw Material											
1	Flanges & Lugs	Physical Properties	Tensile,Strength, yield Stress, % of Elongation & Bend test	2 / Heat / Size	IS:2062 -2011	IS:2062-2011 Gr.E250 BR / approved Drawing & Datasheet	Manufacturers TC	P	R	R	
		Chemical Composition	Chemical Ananlysis	1 / Heat / Size				P	R	R	
2	Bellows & inner Sleeves	Physical Properties	Tensile,Strength, yield Stress,% of Elongation & Bend test	1 / Heat / Size	As per approved Drawing & specification	P		R	R		
		Chemical Composition	Chemical Ananlysis	1 / Heat / Size		P		R	R		
3	Tie Rod & Nut	Physical Properties	Tensile,Strength, % of, Elongation , Hardness & yield test	1 / Heat / Size		P		R	R		
B In Process Inspection											
4	Welders Qualification	WPS,PQR & WPQ	Document verification	100%	ASME Sec. IX -2013/ IS 7307		WPS, PQR & WPQ	P	R	R	
5	Welding	Surface defects	Dye Penetration Test	100%	ASME 165-2002	no liner & rounded indication, no surface defects	DP Report	P	R	R	
C Final Inspection											
6	Assembly	Overall Assembly	Visual	100%	As per approved Drawing & specification		Inspection Report	P	W	R/W	
		Dimensional for Flanges	Measurement		IS:1538-1993	IS:1538-1993 / Approved Drawing		P	W	R/W	
		Surface defects	Dye Penetration Test		ASME 165-2002	no liner & rounded indication, no surface defects		P	W	R/W	
		Bellow	Hydro Pressure Test		1.5 times of design pressure	No leakage		P	W	R/W	
		Movement Test	Axial (Elongation/Compression)Lat eral (Movement) & Angular (Movement)		As per approved Drawing & specification	As per approved Drawing & specification		P	W	R/W	
7	Surface preparation & Painting	Surface Finish	Visual & measurement			As per approved Drawing & specification	As per approved Drawing & specification	Inspection Report/ paint MTC	P	W	R/W
#Material T.C. will be submitted for review and verification only. Note : This document is full and final document for the scope of inspection and testing purpose. Drawing and Technical specification to be referred for Dimesnions & Data's only. Abbreviation: 1- Customer / Inspection Agency; 2 - Manufacturer; IA - Inspection Agency; IR- Inspection Report; P- Performer; V- Verification, W- Witness.											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Sewer Jetting Machine (500 L)	Project :
		QAP NO: Std QAP/ 23-24/ ME-56	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

Sr. no.	Description	Characteristics / Type Of Check	Extent of Check	Reference	Acceptance Document	Format of Record	Inspection		
							M	C	TPI/Client/Consultant
1	Vehicle Chassis	1.5 Ton/ Make name (BS-VI Chasis)	100%	Vehicle Documents	Vehicle Documents	Chassis Specification	P	R	W
2	Material of Tank	HDPE (500 Ltr)	100%	Approved Drawing / Specification	Approved Drawing / Specification	TC / LAB Certificate	P	R	R
4	Jetting Pump	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	W
5		Duty point							
6	Jetting Hose	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
7		¼ " x 40 Mtr							
8	Washing Hose	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
9		¼ " x 20 Mtr							
10	Engine	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	W
11		Duty point							
12	Jetting Machine Performance	Pressure Test (150 bar), washing function, sprinkling operation, visual & dimensions	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	W
13	Paint	Epoxy Paint	100%			Internal Report	P	R	R

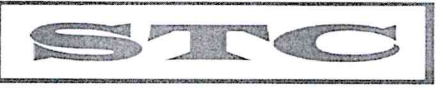
#Material T.C. will be submitted for review and verification only.

Note : Pre delivery inspection of complete machine as per testing procedure shall be witnessed by client/TPI. This document is full and final document for the scope of inspection and testing purpose. Drawing and Technical specification to be referred for Dimensions & Data's only.

Abbreviation: 1- Customer / Inspection Agency; 2 - Manufacturer; IA - Inspection Agency; IR- Inspection Report; P- Performer; V- Verification, W- Witness.

Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC	Manufacturer Logo & Address	Item Description : Sewer Jetting Machine (4000 L)	Project :	
		QAP NO: Std QAP/ 23-24/ ME-56	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)	
		DATE:	Contractor:	

Sr. no.	Description	Characteristics / Type Of Check	Extent of Check	Reference	Acceptance Document	Format of Record	Inspection		
							M	C	TPI/Client/Consultant
1	Vehicle Chassis	7 Tonner BS-VI Chasis	100%	Vehicle Documents	Vehicle Documents	Chassis Specification	P	R	R
2	Material of Tank	Shell 5mm thick, Dish end 8 mm thick	100%	MFG Drawing / Specification	Mild Steel IS 2062	TC / LAB Certificate	P	R	R
3	Tank fabrication	2000 L Water Tank 2000 L Sludge Tank 4000 L Total Tank capacity	100%	MFG Drawing / Specification	Mild Steel IS 2062	TC / LAB Certificate	P	R	R
4	Jetting Pump	Make name Duty point, power, rpm	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
5	Jetting Hose	Make name sizes	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
6	Washing Hose	Make name sizes	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
7	Hydraulic Pump	Make name Duty point, power, rpm	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
8	Hydro Motor	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	W
9	Control Valve	Make name	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
10	Vacuum Pump	Make, Power, RPM, Flow, Vacuum 93 %	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
11	Suction Hose	Make name & sizes	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
12	Vacuum pressure Relief Valve	Make name & sizes	100%	Tech Specification	TC / Tech Specs / COC	TC / Tech Specs / COC	P	R	R
13	Hydraulic Cylinder	Make name & sizes	100%	As per Drawing	As per Drawing	TC / Tech Specs / COC	P	R	R
14	Vacuum test	Check vacuum inside the tank-500mm of HG	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	W
15	Vacuum pump Pressure Test	Check Gauge pressure (0.5 bar)	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	W
16	Jetting Machine Performance	Pressure test	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	W
17	Hydraulic function	Check Hydraulic tank tipping and rear door open-close	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	W
18	Painting - DFT 250Micron Min.	Check Epoxy Primer & Paint	100%	Tech Specification	TC / Tech Specs / COC	Internal Report	P	R	R

Abbreviations- TC- Technical certificate, P-Perform, R-Review, W- Wittness, COC-Certificate of compliance

Note	Pre delivery inspection of complete machine as per testing procedure shall be witnessed by client/TPI.
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Manufacturer / Vendor	Contractor	CONSULTANT /CLIENT / TPI
Signature:	Signature:	Signature:
Name:	Name:	Name:

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : EOT Crane (Lifting arrangement)					Project :			
		QAP NO: Std QAP/ 23-24/ ME-57					Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT			
		REV.NO: 00					Consultant: SHAH TECHNICAL CONSULTANT (STC)			
		DATE:					Contractor:			

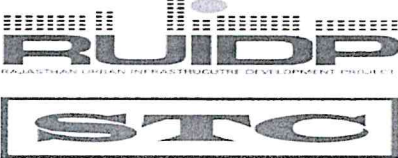
Sl. No.	Component & Operation	Characteritics	Type of Check	Quantum of Check	Reference Document	Acceotance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant	
A. Raw Material											
1	Girder plate, End carriage plate, Hoist Body & CT Plate	Visual	Visual	100%	Approved Drawing/Specification		MTC / Lab TC	P	R	R	
		Dimension	Measurement	100%				P	R	R	
		Chemical composition mechanical properties	Chemical analysis & Tensile, Yeild, Elongation, Bend Test	One / Heat / Size	IS 2062-2011 / Approved Drawing / Datasheet/ Technical Specification	P		R	R		
2	Seamless pipe for rope drum	Chemical composition mechanical properties	Chemical analysis & Tensile, Yeild, Elongation	One / Heat / Size	ASTM 106 Fr. B / Approved Drawing / Datasheet/ Technical Specification	P		R	R		
3	Wheel material for cross travel & long travel	Chemical & Mechanical	Lab Test	One / Heat / Size	EN-9 / Approved Drawing / Datasheet/ Technical Specification	P		R	R		
		Hardness	Report	100%	IS 3177 / IS 3938 / Approved Drawing / Datasheet/ Technical Specification	P		R	R		
4	Gears (EN-9), Pinion (EN-9) CT & LT Wheel (EN-9), Shaft (EN-9)	Chemical & Mechanical	Chemical analysis & Tensile, Yeild, Elongation	One / Heat / Size	EN-9 / EN-24 / Approved Drawing / Datasheet/ Technical Specification	P	R	R			
		Hardness	Report	100%	IS 3177 / IS 3938 / Approved Drawing / Datasheet/ Technical Specification	Test Report	P	R	R		
		UT for ≥ 50mm Dia. (Gear, Pinion & Shaft)	UT	100%	ASTM A 368-2010	Min. height of back wall echo is 80% of FSH & Max. height of defect echo is 20% when set to 100% in a sound area	UT Report	P	R	R	
5	Shaft Material	Chemical & Mechanical	Chemical analysis & Tensile, Yeild, Elongation	One / Heat / Size	EN-9 / Approved Drawing / Datasheet/ Technical Specification	MTC / Lab TC	P	R	R		
B. Brought Out Items											
1	Motors	RTC/ Operational & Functional Test	RTC	100%	IS -12615 /IEC-60034-1/ Approved Drawing / Datasheet/ Technical Specification	RTC	P	R	R		
2	Bearings	Verification of make & model no.	Compliance	100%	Approved Drawing / Datasheet/ Technical Specification	Compliance	P	R	R		
3	Coupling	Chemical & Mechanical	Chemical analysis & Tensile, Yeild, Elongation	One / Heat / Size	EN-8 / Approved Drawing / Datasheet/ Technical Specification	MTC / Lab TC	P	R	R		
4	Brakes	Operational & Functional	MTC	100%	Approved Drawing / Datasheet/ Technical Specification	MTC	R	R	R		
5	Wire Rope	Visual, Dimension	MTC	100%	IS -2266 / Approved Drawing / Datasheet/ Technical Specification	MTC	R	R	R		
6	Bearing Housing	Chemical & Mechanical	Chemical analysis & Tensile, Yeild, Elongation	One / Heat / Size	EN-8 / Approved Drawing / Datasheet/ Technical Specification	MTC / Lab TC	P	R	R		
7	Pendent & Control	Operational & Functional	Test Report	100%	Approved Drawing / Datasheet/ Technical Specification	Test Report	P	R	R		
8	Cables	Type, Rating & Routing Test	MTC	100%		MTC	P	R	R		
9	Fasteners	Verification of grade & size	Visual	100%		MTC	P	R	R		
10	Hook	Visual & Co-relation with roof load test	Chemical analysis & proof load	One / Heat / Size	IS 15560/ Apprd drawing/datasheet/Tech specification		MTC	P	R	R	
		Inter flaw	UT on shank portion	100%	ASTM A 388:2010	Min. height of back wall echo is 80% of FSH & Max. height of defect echo is 20% when set to 100% in a sound area	UT Report	P	R	R	
C. Fabricated Components											
1	Weld joint fit-up, Machining of shaft, pinion, gears etc	Edge prepration, surface finish & Dimensional	Visual & measurement	100%	Approved Drawing / Datasheet/ Technical Specification		IR	P	R	R	
2	Butt weld	Weld control	WPS, PQR, WPQ	100%	ASME sec IX		WPS, PQR, WPQ	P	R	R	

Sl. No.	Component & Operation	Characteritics	Type of Check	Quantum of Check	Reference Document	Acceotance Norms	Format of Records	Inspection			Remarks
								M	C	TPI/Client/Consultant	
4	Fabricated components	surface finish & Dimensional	Visual & measurement	100%	Approved Drawing / Datasheet/ Technical Specification		IR	P	R	R	
D. Final Inspection											
1	Electric control Panel	Operational & Functional	Operation	100 % for manufacturer & 10 % for TPI/Client	Approved Drawing / Datasheet/ Technical Specification		IR	P	R	W	
2	Visual & Dimensional	Overall dimensions	Visual & Dimensions	100 % for manufacturer & 10 % for TPI/Client	Approved Drawing / Datasheet/ Technical Specification		IR	P	R	W	
3	Crane Assembly & Testing at works	Workmanship, Orientation, Dimesional Check, Load test at 100% SW, Over load test at 125% of SWL(Operation only), Speed test at 100% SWL, CT Run test at 100% SWL, current measurement test at 100% SWL, & L.T idle run test & noise level & oil leakage check	Operation & Dimension	100 % for manufacturer & 10 % for TPI/Client	IS -3177, IS 807 / IS 3938/ Approved Drawing / Datasheet/ Technical Specification		IR	P	W	W	
4	Painting & Surface Preperation	Finish, colour, shade & DFT (min-250)	DFT & Visual	Random	Approved Drawing / Datasheet/ Technical Specification		Painting report & MTC	P	W	RW	
Legend: M - Manufacturer (Short form), C- Consultant CL - Client, TPI- Third Party Inspection Agency, P - Perform , R- Review, COC -Certificate of Compliance, W -Witness IR - Inspection Report, RW- Random wiitness											
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI					
Signature:			Signature:			Signature:					
Name:			Name:			Name:					

			QUALITY ASSURANCE PLAN							Date:		
			Item Description : u-PVC SWR Pipes (IS:13592-2013) (Types/Class/DN)					QAP No. :		Client:		
								Rev. No.:		PO No:		
								Rev. Date:		Contractor:		
			Specification Details: IS : 13592 : 2013 with latest amendment									
Sl. No.	Clause No. of IS:13592:2013	Description of Test	Test Equipment	Type/Method of Test	Sampling Model/Extent of Check		Acceptance Standard	Format of Record	Inspection			Remarks
					Manufacturer	TPI/Contractor			M	C	Client/TPIA / Consultant	
(A) Sector : Raw Material												
1	6.3	PVC Resin (K value)	Viscometer, Gas Phase (Chromatography)	Type Test	one sample per lot		Clause No. 6 Material 6.1, 6.2, & 6.3	RM TC	R	R	R	The composition shall be based on PVC resin having a K-value of 64 or greater when tested in accordance with IS 4669
2	6	Materials	Mechanical and chemical properties	Cl. 6.1 to 6.3 of IS 13592	one sample per lot				R	R	R	
3	-	Monomer Content (VCM Content)	Viscometer	Type Test	Review Raw material Mfg.T/C for each pipe		As per 3.3.1 of IS 10151	RM TC	R	R	R	
(B) Sector : In Process Final Testing												
1	7 & 7.1	Mean Outside Diameter	Vernier Calipers or outside caliper Pi Tape or flexible Tape	IS:12235 (Part 1)	10 Sample of Each Control Unit	Table 13 of IS:13592:2013	Table 1, Cl. 7 of IS:13592:2013	Internal Report	P	RW	RW	
2		Diameter of any point		IS:12235 (Part 1)				Internal Report	P	RW	RW	
3	7.1	Wall Thickness	Dial Gauge , Micrometer & Ultrasonic gauge	IS:12235 (Part 1)				Internal Report	P	RW	RW	
4	5	Colour	Visual appearance	IS:13592:2013	Each Pipe	Table 13 of IS:13592:2013	Cl. 7.2 of IS:13592:2013	Internal Report	P	RW	RW	Surface colour of the pipes shall be dark shade of grey
5	7.1	Wall Thickness	Dial Gauge , Micrometer & Ultrasonic gauge	IS:12235 (Part 1)	10 Sample of Each Control Unit	Table 13 of IS:13592:2013	Table 2, Cl. 6.1.2 of IS:13592:2013	Internal Report	P	RW	RW	
6	7.2	Length of pipe	Measuring Tape	Fig. 1 IS 13592:2013	10 Sample of Each Control Unit		Clause No.7.2 of IS 13592:20133	Internal Report	P	RW	RW	
7	7.3	Dimension of Socket	Vernier Caliper or Vernier depth gauge , Inside Caliper , Micrometer	IS 13592 IS 12235 (Part 1)			Clause No.7.3 of IS 13592:20133	Inspection / Lab Reports	P	RW	RW	
8	8.1	Visual appearance & Pipe Ends	Angle Protractor	IS:13592:2013	Each Pipe		Clause No.8.1 of IS 13592:20133	Inspection / Lab Reports	P	W	W	
9	8.2	Reversion Test	Thermostatically Control oil bath , Mono-polyethylene glycol, glycerol or mineral oil free from aromatic hydrocarbons , Vernier Calipers , Stop watch	IS:12235 (Part 5)	Three Sample Each Control Unit/Table 14	Table 14 of IS:13592:2013	Cl. 7.4 of IS:13592:2013 (Max.±5 %)	Inspection / Lab Reports	P	W	W	
10	8.3	Stress Relief Test	Circulating Hot Air Oven with digital temperature controller & indicator, Vernier Caliper, Stop watch	IS 13592	3 per lot		IS 12235 (pat 6) , Cl. 8.3 of IS:13592:2013 (Max.±5 %)	Inspection / Lab Reports	P	W	W	
11	8.4	Vicat Softening Temperature	Oil heating Bath equipped with means to raise the temperature at uniform rate of 50 ± 5° C/hr with suitable stirrer, Rod with loading plate, loads and indenting tips, Micrometer dial gauge , Thermometer or temperature measuring equipment	IS 12235 (pt-2), Annex A of IS:13592:2013	01 per Lot in every six months		IS 12235 (pat 2), Cl. 7.3 of IS:13592:2013 Min. 79°C	Inspection / Lab Reports	P	R	R	Min tested sample-3 no. and max-5 no. When determined in accordance with IS 12235 (Part 2), the vicat softening temperature of the specimen shall not be less than 79°C.
12	8.5	Effect of Sunlight	Measuring Tape , Vernier caliper , Thick Paper , Thermometer, Weatherometer of equivalent exposure	IS 13592 IS 12235 (Part 13)	02 per Lot in Once in six month		IS 12235 (pat 13),Cl. 8.5 of IS:13592:2013	Inspection / Lab Reports	P	R	R	

Sl. No.	Clause No. of IS:13592:2013	Description of Test	Test Equipment	Type/Method of Test	Sampling Model/Extent of Check		Acceptance Standard	Format of Record	Inspection			Remarks
					Manufacturer	TPI/Contractor			M	C	Client/TPIA / Consultant	
13	9	Resistance to Sulphuric Acid	Muffle Furnace, Weighing balance, Silica crucible, Sulphuric Acid, Desiccators, Pipette, Drying agent, Bunsen Burner, Triangle, Tripod device	IS 13592 IS 12235 (Part 7)	One Sample per Lot in once in Six Month		Cl. 9 of IS:13592:2013	Inspection / Lab Reports	P	R	R	
(C')'.Final Inspection:												
1	10.1	Resistance to external blows at 0°C (Impact Test)	Falling Weight testing machine from height 2000 mm, Striker of weight 0.25, 0.50 & 1.00 kg, Digital watch, Liquid bath or freezer for conditioning of samples	IS 13592 Annex-A IS 12235 (Part 9)	Adequate pieces Each control unit	IS 12235 (Part 9)	Cl. 10.1 and Annex-A of IS:13592:2013, IS 12235 (Part 9)	Inspection / Lab Reports	P	W	W	
2	10.2	Tensile strength	Digital Tensile Testing machine, Dumb bell Die along with Hydraulic jack, Vernier Caliper, Micrometer Ball ended, Air Conditioner	IS 13592 IS 12235 (Part 13)	03 No.s samples in each control unit	IS 12235 (Part 13)	Cl. 10.2 of IS:13592:2013, IS 12235 (pat 13)	Inspection / Lab Reports	P	W	W	The tensile strength at break shall not be less than 45 MPa.
3	10.3	Axial shrinkage (For Type B pipes only)	Water bath with Thermostatically controlled with stirrer and digital temperature controller, Vernier Caliper, Steel Scale, Stop watch, Thermometer	IS 13592 Annex –B	03 No.s samples in each control unit	IS 13592 Annex –B	Cl. 10.3 of IS:13592:2013	Inspection / Lab Reports	P	W	W	The axial shrinkage shall not exceed 2 percent when determined in accordance with Annex B.
4	11	Water tightness of joints	Hydrostatic pressure testing apparatus with pressuring unit and multiple outlets , Water bath with temperature control, Thermometer, End plugs	IS 13592	03 No.s samples in each control unit	IS 14182.	Cl. 11 of IS:13592:2013	Inspection / Lab Reports	P	W	W	Shall not shown any leakage, seepage
5	12	Resistance to dichloromethane at specified temperature	Dichloromethane test apparatus (Bath) thermostatically controlled digital temperature indicator. Dichloromethane, Analytical grade	IS 13592 IS 12235 (Part 11)	03 No.s samples in each control unit	IS 12235 (Part 11)	Cl. 12 of IS:13592:2013, IS 12235 (pat 11),	Inspection / Lab Reports	P	W	W	
6	12	Marking	Visual	IS:13592:2013 Clause 12	Each & Every Pipe	Table 13 of IS:13592:2013	Cl. 12 of IS:13592:2013	Inspection Report	P	W	W	Project name/Package ID
ABBREVIATION: P: PERFORM, W:WITNESS, R: REVIEW, CONT.:CONTRACTOR, TPI: THIRD PATY INSPECTION AGENCY												
Note:												
1 uPVC SWR Pipes confirming to IS:13592:2013 shall be used only for soil & waste discharge systems inside & outside building from House Service Connections to insepction chamber & ventilations and rain water systems.												
2 In case of failure of sample in tests other than those mentioned at clause 8.4, 8.5 and 9, twice the number of samples shall be tested from same control unit and the control unit shall be accepted if retested samples pass.												
3 MTC is permitted to a NABL approved accredited laboratory.												
4 For Vicat softening temperature , Effect of sunlight and Resistance to sulphuric acid - Additional test shall be carried out whenever new size is manufactured or there is change in composition/method of manufacture.												
5 For materials - No further testing is required if accompanied with the Test Certificate.												
Scheme of Insepction And Testing - Annex C												
1 LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification												
1.1 The manufacturer shall prepare a calibration plan for the test equipment.												
2 TEST RECORDS – The manufacturer shall maintain test records for the tests carried outto establish conformity.												
3 LABELLING AND MARKING – As per the requirements of IS 13592: 2013.												
4 CONTROL UNIT – Pipes of same size and type extruded from same compound undersimilar conditions from same machine in eight hours shall constitute a control unit.												
5 LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.												
5.1 All the production which conforms to the Indian Standard and covered by the license should be marked with Standard Mark												
6 REJECTIONS – Disposal of non-conforming product shall be done in such a way so as toensure that there is no violation of provisions of BIS Act, 2016.												
Manufacturer					Contractor				Consultant / Client / TPI			

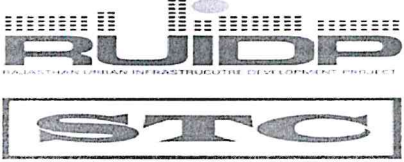
STANDARD QUALITY ASSURANCE PLAN

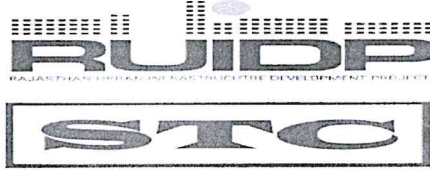
	Manufacturer Logo & Address	Item Description : EOT Crane (Lifting arrangement)	Project :
		QAP NO: Std QAP/ 23-24/ ME-58	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)
		DATE:	Contractor:

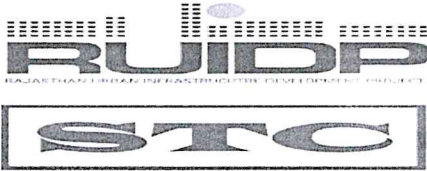
Sr. No.	Component & Operation	Characteristics	Type of Check	Quatum of check	Reference Document	Acceptance Norms	Inspection			Remarks
							Manu	Client	TPI/Client/Consultant	
1	2	3	4	5	6	7				
A.Raw Material										
1	Cement SRC	Fineness	MTC	One per each consignment	IS 12330&IS: 4031	Saccific surface shall not be less 225 M2/KG	R	R	R	
		Standard Consistency	MTC	One per each consignment	IS 12330&IS: 4031		R	R	R	
		Setting time (Initial& Final)	MTC	One per each consignment	IS 12330&IS: 4031	Initial setting time shall be not less than 30 min. Final setting time shall be not more than 600 max	R	R	R	
		Compressive Strength	MTC	One per each consignment	IS 12330&IS: 4031	3 days (72+/-1 hr)= min 10n/mm2 , days(168+/-2hr)=min 16N/mm2 , days (672+/-4 hr)=min 33 N/mm2	R	R	R	MTC showing 28 days under testing shall be accepted only if it is passed in 7 days
		Soundness	MTC	One per each consignment	IS 12330&IS: 4031	Cement shall not have expansion more than 10mm & 0.82	R	R	R	
2	Coarse Aggregates	Sieve Analysis	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 383-2016	Table 7 (IS:383-2016)	P	R	R	
		Specific gravity	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 383-2016	2.1 to 3.2(Table 3,IS :383-2016)	P	R	R	
		Water absorption	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 383-2016	less than 5%(Table 3,IS :383-2016)	P	R	R	
3	Fine Aggregates	Sieve Analysis	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 383-2016	Table 9(IS:383-2016)	P	R	R	
		Specific gravity	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 2386-1963(Part-III)	2.1 to 3.2(Table 3,IS :383-2016)	P	R	R	
		Bulk density	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 2386-1963(Part-III)		P	R	R	
		Deleterious Material	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 383-2016	(Table 2,IS :383-2016)	P	R	R	
		Silt and clay	Lab test	Once per source per year or for every 500 cum, whichever is earlier	IS : 458-2003	not more than 3%	P	R	R	
4	Rubber Ring	Dimensions	Measurement	Once per Batch	IS: 5382-2018	CL. 3.6(IS:5382-2018) & ISI mark "SEWER" it should be mentioned	R	R	R	
		Physical Test	MTC	Once per Batch	IS: 5382-2018	CL. 3.7(IS:5382-2018)	R	R	R	
B.Reinforcement										
5	Physical & Mechanical property	Dimensions	MTC	Once per Batch	IS:432-1982(Part-II)& IS: 1786	Clause 5&6	R	R	R	
		Ultimate tensile stress	MTC	Once per Batch	IS:432-1982(Part-II)& IS: 1786	More than 570 N/SQMM	R	R	R	
		0.2% proof stress	MTC	Once per Batch	IS:432-1982(Part-II)& IS: 1786	More than 480 N/SQMM	R	R	R	
		Elongation	MTC	Once per Batch	IS:432-1982(Part-II)& IS: 1786	More than 7.5%	R	R	R	
		Reverse bend test	MTC	Once per Batch	IS:432-1982(Part-II)& IS: 1786	CL.8.3 (IS :432-1982 Part-II)	R	R	R	
6	Water	Physical and mechanical properties	Lab test report	Once per source	IS : 3025	CL.5.4(IS:456-2000)	P	R	R	
7	Admistures if used	Physical and mechanical properties	MTC	Once per source	IS : 9103-1999	Table 1&2(IS:9103-1999)	R	R	R	
C.PROCESS CONTROL										
8	Concrete Mix	Design (Mix Aggregate Size 20mm)	Visual	Once per source/per year	IS : 458-2021 Table 8	Min. Compressive strength 35N/SQMM	P	R	R	
		Design (Mix Aggregate Size 20mm)	Visual	Once per source/per year	IS : 458-2021 Table 8	Min. Compressive strength 35N/SQMM	P	R	R	
		Compressive Strength	Compressive Strength of cube	6 cube per day	IS : 458-2021 Table 8	35N/SQMM at 28 days	P	RW	RW	
	Reinforcement	Weight	Measurement	Each cage before casting	IS : 458-2021 Table 8	CL. 6.2 IS : 458-2021	P	R	R	
	Dimensions	Pipe Dia & Thickness	Measurement	one pipe per day	IS : 458-2021 Table 8	Table 15B	P	RW	RW	
	Curing	Proper Curing	Visual	each pipe	IS : 458-2021 Table 8	CL. 7.4 IS : 458-2021	P	RW	RW	
D.FINAL INSPECTON & TESTING:										
9	Final Cured pipe	Workmanship & Finish	Visual	100%	IS : 458-2021	CL.9 IS : 458-2021	P	W	W	
		Dimension test	Measurement	IS : 458-2021 Table 23	IS : 458-2021	Table 15B	P	W	W	
		Three edge bearing test	Strenth Test	IS : 458-2021 Table 23	IS : 458-2021	Table 8	P	W	W	
		Hydrostatic Test	Pressure Test	IS : 458-2021 Table 23	IS : 458-2021	As per latest IS code	P	W	W	
		Permeability Test	Cup & Tube	IS : 458-2021 Table 23	IS : 458-2021	As per latest IS code	P	R	R	
		Ultimate Load Test	Strenth Test	IS : 458-2021 Table 23	IS : 458-2021	Table 8	P	W	W	
		Marking	Visual	IS : 458-2021 Table 23	IS : 458-2021	CL.12 IS : 458-2021	P	W	W	
E.SAMPLING & SEALING:										
10	Stenciling Stamp	Legibility Stamp	Visual	100%		ISI Mark	P	W	W	
		Marking	Visual	100%	Employer's Spec./IS:458	Project Town CL.12 of IS : 458-2021 Identification mak of Client (RUIDP)	P	W	W	

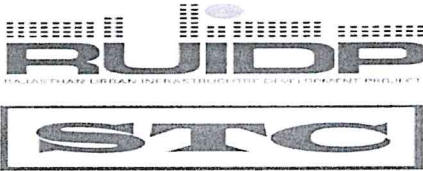
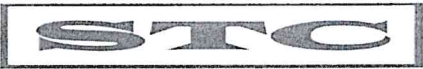
LEGENDS:
M-MANUFACTURER C- CONTRACTOR TPI- THIRD PARTY INSPECTION P-PERFORM R- REVIEW W- WITNESS R/W-RANDOM WITNESS
*Refer latest revisions of IS code for

Note: 1. Copies of material report shall be given to inspection authority (IA) for scrutiny be fore commencement of inspection.
2. All measuring INSTRUMENTS AND TESTING EQUIPEPMTS. Calibrated periodically shall be submitted to IA on inspection time.
3. We hereby deciare that we abide by this quality assurance pan and follow the same in all stages of production.

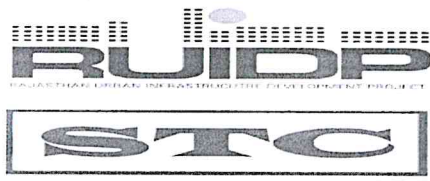
STANDARD QUALITY ASSURANCE PLAN									
 		Manufacturer Logo & Address	Item Description : EOT Crane (Lifting arrangement)				Project :		
			QAP NO: Std QAP/ 23-24/ ME-58				Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT		
			REV.NO: 00				Consultant: SHAH TECHNICAL CONSULTANT (STC)		
			DATE:				Contractor:		
Sr. No.	Component & Operation	Characteristics	Type of Check	Quatum of check	Reference Document	Acceptance Norms	Inspection		Remarks
							Manufacturer	Client	TPI/Client/
4. Before despatch of items at casting yard same can be checked at random to confirm all QAP Requirements. 5. Manufacture shall provide all test certificates & internal & external test veports with supply as per QAP,									
Manufacturer / Vendor			Contractor			CONSULTANT /CLIENT / TPI			
Signature:			Signature:			Signature:			
Name:			Name:			Name:			

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer Logo & Address	Item Description : EOT Crane (Lifting arrangement)		Project :						
			QAP NO: Std QAP/ 23-24/ ME-58		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
			REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)						
			DATE:		Contractor:						
Sl. No.	Component Material	Characteristic Check	Type Of Check	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
								M	C	TPIA/Client/Consultant	
	Brass Body	Chemical Properties	Visual	---	Grade DCB2 of IS:1264:1989	Grade DCB2 of IS:1264:1989	Raw Material Test Certificate	P	R	R	
	Cap / Cover /Covering	Chemical Properties / Physical Properties	Visual	---	Acetol Polymer	IS : 2267	Raw Material Test Certificate	P	R	R	
	Registration Box	Chemical Properties / Physical Properties	Visual	---	Plastic	IS : 2267	Raw Material Test Certificate	P	R	R	
	Strainer	Density & Melt Flow Rate (Index)	Visual	---	IS : 7328:1992	IS : 7328 : 1992	Raw Material Test Certificate	P	R	R	
	SS Material for Impeller Shaft	Chemical Properties / Physical Properties	Visual	---	07Cr 18Ni9 as per IS: 6603:2001	IS: 6603:2001	Raw Material Test Certificate	P	R	R	
	Measuring Chamber / Counter / Dial Plate	Chemical Properties / Physical Properties	Visual	---	Acetol Polymer	IS: 2267	Raw Material Test Certificate	P	R	R	
2	Water Meter (Final Insepctions)	The totalizer shall register in Cubic Meters as well as Kilo Litre unit Marking must be available on dial for Kilo Liter identification.	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Rotational Movement of the pointer or circular scales shall be clock wise.	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Sub Multiples of Kilo Lit- another 5 digit (2 Digit + 1 Pointer) must be in Red Colour & shall register flow in Lit's	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Embossing / Engracing on Meter Body : Direction of Water flow (Show on both side of the body or on one side only provide the direction of flow arrow will be easily visible)	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Marking on the Dial / Cap: 1. Class B & Qm Nominal Flow Rate & Size 2. Multiject / Model- MJ 3. ISI marked & Qn flow marking - CE Approval mark 4. Make / Brand 5. SN and Year of Manufacturing marked on the Cap Cover	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Totalizer must have IP68 Protection	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Body colour must be blue and meter will be provided with copper wire	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Accuracy Test at Qmin., Qt & Qmax	Functional	As per sampling plan IS : 779:1994	As per IS : 779:1994 / 6784	The maximum permissible error in the-metering accuracy, when determining as per IS 6784: 1984 shall be as under: a) :In the lower region of flow, ± 5% Qmin (inclusive) to Qt (exclusive) b) In the upper region of flow, ± 2% ;Qt (inclusive) to Qmax (inclusive) NOW - Value of Qmin, Qt and Qmax for the three classes of water meters are given in Table 3.	Inspection Report	P	W	W	
							Inspection Report	P	W	W	
							Inspection Report	P	W	W	
		Check for Static Pressure Test (Pressure tightness)	Functional	As per sampling plan IS : 779:1994	As per IS : 779:1994 / 4064	1.6 Mpa for 15 min & No leakage	Inspection Report	P	W	W	

STANDARD QUALITY ASSURANCE PLAN											
		Manufacturer Logo & Address	Item Description : EOT Crane (Lifting arrangement)		Project :						
			QAP NO: Std QAP/ 23-24/ ME-58		Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT						
			REV.NO: 00		Consultant: SHAH TECHNICAL CONSULTANT (STC)						
			DATE:		Contractor:						
Sl. No.	Component Material	Characteristic Check	Type Of Check	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
								M	C	TPIA/Client/Consultant	
3	Performance Testing & Production Routine Tests				As per IS : 779:1994 / 4064	0 Mpa for 1.0 min & No leakage	Inspection Report	P	W	W	
		Pressure Tightness	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	A meter shall be-able to withstand constantly without defects in its functioning, leakage, seepage through the walls or penuanent deformation, the continuous water pressures of(i) 1.6 MPa for 15 minutes, and (ii) 2 MPa for 1 minute, when tested in accordance with IS 6784 : 1984.					
		Pressure loss at Qn	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Loss of pressure through the meter when determined in accordance with IS 6784 : 1984 shall not exceed 0.025 MPa at the nominal flow rate Qn' and 0.1 MPa at the maximum flow rate, Qmax' NOW - Nominal flow rate Qnshall be taken as per Table 2 and maximum flow rate Qmax as twice the nominal flow rate.	Inspection Report	P	W	W	
		Pressure loss at Qmax.	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064		Inspection Report	P	W	W	
		Meter must be tested for minimum starting flow	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Max. permissible error at Qstart = Qmin. < ± 5%	Inspection Report	P	W	W	
		Dimension	Measurement	As per IS Standard	As per IS : 779:1994 / 4064	As per IS : 779:1994	Inspection Report	P	W	W	
		Temperature Suitability	Functional	As per IS Standard	As per IS : 779:1994 / 4064	This test shall be carried out in accordance with IS -6784 : 1984.	Inspection Report	P	W	W	
4	Water Meter Packing & Dispatch	Packing of Meter	Visual	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Along with Nut & Nipple Test Certificate & Should be proper	Packing List	P	R	R	
Legends: M : Manufacturer; C : Contractor; P : Perform; W : Witness; R : Review; Note 1 Review Documents will be available at the time of inspection for verification. 2 All Ordered unit can be checked for physical Conformance. 3 Pressure Tightness Test -1.6 X PN at 2 Minutes.											
Manufacturer			Contractor			Customer / TPIA					

STANDARD QUALITY ASSURANCE PLAN											
 RUIDP RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT  STC		Manufacturer Logo & Address	Item Description : Domestic Water Meter Multi Jet Class B			Project :					
			QAP NO: Std QAP/ 23-24/ ME-59			Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT					
			REV.NO: 00			Consultant: SHAH TECHNICAL CONSULTANT (STC)					
			DATE:			Contractor:					
Specification Details: IS 779 : 1994 Reaffirmed In : 2020											
Sl. No.	Component Material	Characteristic Check	Type Of Check	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Remarks
								M	C	TPIA/Client/C onsultant	
	Brass Body	Chemical Properties	Visual	---	Grade DCB2 of IS:1264:1989	Grade DCB2 of IS:1264:1989	Raw Material Test Certificate	P	R	R	
	Cap / Cover /Covering	Chemical Properties / Physical Properties	Visual	---	Acetol Polymer	IS : 2267	Raw Material Test Certificate	P	R	R	
	Registration Box	Chemical Properties / Physical Properties	Visual	---	Plastic	IS : 2267	Raw Material Test Certificate	P	R	R	
	Strainer	Density & Melt Flow Rate (Index)	Visual	---	IS : 7328:1992	IS : 7328 : 1992	Raw Material Test Certificate	P	R	R	
	SS Material for Impeller Shaft	Chemical Properties / Physical Properties	Visual	---	07Cr 18Ni9 as per IS: 6603:2001	IS: 6603:2001	Raw Material Test Certificate	P	R	R	
	Measuring Chamber / Counter / Dial Plate	Chemical Properties / Physical Properties	Visual	---	Acetol Polymer	IS: 2267	Raw Material Test Certificate	P	R	R	
2	Water Meter (Final Inseptions)	The totalizer shall register in Cubic Meters as well as Kilo Litre unit Marking must be available on dial for Kilo Litre identification.	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Rotational Movement of the pointer or circular scales shall be clock wise.	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Sub Multiples of Kilo Lit- another 5 digit (2 Digit + 1 Pointer) must be in Red Colour & shall register flow in Lit's	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Embossing / Engracing on Meter Body : Direction of Water flow (Show on both side of the body or on one side only provide the direction of flow arrow will be easily visible)	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Marking on the Dial / Cap: 1. Class B & Qm Nominal Flow Rate & Size 2. Multiject / Model- MJ 3. ISI marked & Qn flow marking - CE Approval mark 4. Make / Brand 5. SN and Year of Manufacturing marked on the Cap Cover	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Totalizer must have IP68 Protection	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Body colour must be blue and meter will be provided with copper wire	Visual	100%	As per IS : 779:1994 / 4064	As per IS : 779:1994 & Control document / format	Inspection Report	P	W	W	
		Accuracy Test at Qmin., Qt & Qmax	Functional	As per sampling plan IS : 779:1994	As per IS : 779:1994 / 6784	The maximum permissible error in the-metering accuracy, when determining as per IS 6784: 1984 shall be as under: a) :In the lower region of flow, $\pm 5\%$ Qrnin (inclusive) to Qt (exclusive) b) In the upper region of flow, $\pm 2\%$;Qt (inclusive) to Qmax (inclusive) NOW - Value of Qmin, Qt and Qmax for the three classes of water meters are given in Table 3.	Inspection Report	P	W	W	
							Inspection Report	P	W	W	
							Inspection Report	P	W	W	
			Check for Static Pressure Test (Pressure tightness)	Functional	As per sampling plan IS : 779:1994	As per IS : 779:1994 / 4064	1.6 Mpa for 15 min & No leakage	Inspection Report	P	W	W

STANDARD QUALITY ASSURANCE PLAN

 	Manufacturer Logo & Address	Item Description : Domestic Water Meter Multi Jet Class B	Project :	
		QAP NO: Std QAP/ 23-24/ ME-59	Client: RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT	
		REV.NO: 00	Consultant: SHAH TECHNICAL CONSULTANT (STC)	
		DATE:	Contractor:	

Specification Details: IS 779 : 1994 Reaffirmed In : 2020

Sl. No.	Component Material	Characteristic Check	Type Of Check	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Inspection			Re marks
								M	C	TPIA/Client/C onsultant	
3	Performance Testing & Production Routine Tests				As per IS : 779:1994 / 4064	0 Mpa for 1.0 min & No leakage	Inspection Report	P	W	W	
		Pressure Tightness	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	A meter shall be-able to withstand constantly without defects in its functioning, leakage, seepage through the walls or penuanent deformation, the continuous water pressures of(i) 1.6 MPa for 15 minutes, and (ii) 2 MPa for 1 minute, when tested in accordance with IS 6784 : 1984.					
		Pressure loss at Qn	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Loss ofpressure through the meter when determined in accordance with IS 6784 : 1984 shall not exceed 0.025 MPa at the nominal flow rate Qn' and 0.1 MPa at the maximum flow rate, Qmax' NOW - Nominal flow rate Qnshall be taken as per Table 2 and maximum flow rate Qmax as twice the nominal flow rate.	Inspection Report	P	W	W	
		Pressure loss at Qmax.	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064		Inspection Report	P	W	W	
		Meter must be tested for minimum starting flow	Functional	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Max. permissible error at Qstart = Qmin. < ± 5%	Inspection Report	P	W	W	
		Dimension	Measurement	As per IS Standard	As per IS : 779:1994 / 4064	As per IS : 779:1994	Inspection Report	P	W	W	
		Temperature Suitability	Functional	As per IS Standard	As per IS : 779:1994 / 4064	This test shall be carried out in accordance with IS -6784 : 1984.	Inspection Report	P	W	W	
4	Water Meter Packing & Dispatch	Packing of Meter	Visual	As per Sampling Plan IS:779:1994	As per IS : 779:1994 / 4064	Along with Nut & Nipple Test Certificate & Should be proper	Packing List	P	R	R	

Legends: **M** : Manufacturer; **C** : Contractor; **P** : Perform; **W** : Witness; **R** : Review;

Note

- 1 Review Documents will be available at the time of inspection for verification.
- 2 All Ordered unit can be checked for physical Conformance.
- 3 Pressure Tightness Test -1.6 X PN at 2 Minutes.

Manufacturer	Contractor	Customer / TPIA
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