

Inspection and Testing Plan for Building and General Infrastructures (Civil and Mechanical Items)

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Sr. No.	Type of Material	Parameters	Relevant code or standard	Norms	Frequency of Test	Sampling Point	Action when Non-Confirming	Reports required	Responsibility			If not satisfied with reports
									Contractor	PMC	Client	
1	OPC Cement (IS 12269)	Chemical Test:										
		1) Insoluble Residue (% by Mass)	ASTM C114 - 11b (1999)	2% Maxi.	Every Batch	Site	Change concrete mix ratio/ Use in enabling work/ Return to vendor	MTC	P	R	R	External Lab
		2) Mananesia (% by Mass)	ASTM C114 - 11b L1999)	6% Maxi.								
		3) Sulphuric anhydride (% by mass)	ASTM C114 - 11b (1999)	3% Maxi,								
		4) Total Loss of Ignition(%)	ASTM C114 - 11b (1999)	5% Maxi								
		5) Chloride(%)	ASTM C114 - 11b (1999)	0.05 Maxi.								
		6) % Lime to Silica	ASTM C114 - 11 b (1999)	0 8-1 02								
		7) % Alumina to Iron oxide	ASTM C114 - 11 b (1999)	0.66 mini.								
		Physical Test:										
		1) Standard Consistency	IS 12269 (2013) & IS 4031-Part 4 (2009)		Up to 50 MT - 1 Tests Up to 100 MT - 2 Tests Up to 200 MT - 3 Tests Up to 300 MT - 4 Tests Up to 500 MT - 5 Tests Up to 800 MT - 6 Tests Up to 1300 MT - 7 Tests Tests For larger consignment 8 Tests	Site	Change concrete mix ratio/ Use in enabling work/ Return to vendor	MTC/Test Report	P	W	R	External Lab/Site Labs & when required
		2) Initial setting Time	IS 12269 (2013) & IS 4031-Part 4 (2009)	300 min. Mini.								
		3) Final Setting Time	IS 12269 (2013) & IS 4031-Part 4 (2009)	600 Min Maxi								
		4) Compressive Strength										
		a. 72 +/- 1 Hour	IS 12269 (2013) & IS 4031-Part 6 (2009)	27 N/mm ²								
b. 168 +/- 2 Hours	IS 12269 (2013) & IS 4031-Part 6 (2009)	37 N/mm ²										
c. 672 +/- 4 Hours	IS 12269 (2013) & IS 4031-Part 6 (2009)	53 N/mm ²										
S) Fineness m ² /Kq	IS 12269 (2013) & IS 4031-Part 4 (2009)	225 Mini.										
6) Soundness by Le-chat	IS 12269 (2013) & IS 4031-Part 4 (2009)	10 mm Maxi.										
2	HYSD (TMT) Bars Fe 500 or 500D	Chemical Test:										
		1) Carbon	IS 1786 (2008)	0.25% Max.	Each Heat	Site	Return to vendor	MTC/Test Report	P	W	R	External Lab
		2) Sulphur	IS 1786 (2008)	0.04% Max.								
		3) Phosphorous	IS 1786 (2008)	0.04 % Max								
		4) Sulphur and Phosphorus (Combined)	IS 1786 (2008)	0.075 % Max.								
		Physical Test:										
		1) 0.2 % Proof Stress	IS 1786 (2008), IS 1608 (2005)	500 N/mm ²	Each Heat/Site	Site	Return to vendor	MTC/Test Report	P	W	R	External Lab
		2) Ultimate Tensile Stress	IS 1786 (2008), IS 1608 (2005)	565 N/mm ²								
		3) Elongation	IS 1786 (2008), IS 1608 (2005)	14.50 or 16 % Mini. For the Respective grades								
		4) Bend Test	IS 1786 (2008) IS 1608 (2005)	No Cracks								
5) Nominal Mass	IS 1786 (2008) IS 1608 (2005)	Tab. 2 of IS 1786										

3	Coarse	1) Specific Gravity	IS 2386-Part 3 (1963, 1997)	2.6 Mini	once per source	Site	Return to vendor or use after regradation or for other enabling works.	Test Report	P	W	R	External Lab	
		2) DLBD											
		3) Water absorption	IS 2386-Part 3 (1963, 1997)	2.0% Maxi.	once per source								
		4) Aggregate impact value	IS 2386-Part 4 (1963, 1997)	45 % Maxi									
		5) Flakiness index	IS 2386-Part 1 (1963, 1997)	35% Maximum	once per source								
		6) Sieve Analysis	IS 383 (1970, 1997)	T-2 of IS 383/Mix design	once per source								
		7) Moisture Content											
4	Fine Aggregate	1) Sieve analysis & Fitness Modules	IS 383 (1970,1997)	Mix Design	once per source	site	Use after	Test Repos	P	W	R	External Site Lab	
		2) Moisture Content											Adjust W/C Ratio
		3) Specific Gravity	IS 2386- Part-3 (1963,1997)	2.6 mini.	Once per Source								Change source
		4) Water absorption	IS 2386-Part 3 (1963,1997)	2 % Maxi.	Twice in a Month								
		5) Silt Content by Volume	IS 2386-Part 2 (1963,1998)	8.5% Maxi.	Daily								Reuse after washing
		6) Chlorides	IS 2386-Part 2 (1963,1998)	500 mg/l maxi.	Once per Source								Change source
		7) Sulphates	IS 2386-Part 2 (1963,1998)	400 mg/l maxi.									
5	Water	1) pH	IS 3025 (1964,2005)	Not less than 6	Quarterly	Source at site	Retest/Change the source	Test Report	Responsibility			External Lab	
		2) Organic Impurities	IS 3025 (1964,2005)	200 mg/l Maxi.					P	R	R		
		3) Inorganic Impurities	IS 3025 (1964,2005)	300 mg/l Maxi.									
		4) Sulphates	IS 3025 (1964,2005)	400 mg/l Maxi.									
		5) chloride (%)	IS 3025 (1964,2005)	500 mg/l Maxi. For RCC and 2000 mg/l for PCC									
		6) Suspended Particles	IS 3025 (1964,2005)	2000 mg/l Maxi									
		7) Hardness	IS 3025 (1964,2005)	Max. 300 mg/l									
		8) Turbidity	IS 3025 (1964,2005)	Max. 5 NTU									
6	Bentonite	1) pH	IS 2911 Annex D (2010)	9-10.5	Every Batch	site	Retes/ Return to vendor	MTC/ Test Report	P	W	R	External Lab	
		2) Liquid Limit	IS 2911 Annex D (2010)	400% mini.									
		3) Viscosity	IS 2911 Annex D (2010)	30-60 sec									
		4) Density	IS 2911 Annex D (2010)	1.03-1.10 g/ml									
7	Concrete Admixture	1) pH	IS 9103 (1999)	7 to 8	Every Batch	Site	Retest/ Return to vender	MTC/Test Report	P	W	R	Manufacturer's Lab /External Lab	
		2) Sp. Gravity	IS 9103 (1999)	0.2(+/-) of declared value									
		3) Dry material content	IS 9103 (1999)	Within 3% of MTC									
		4) Ash Content	IS 9103 (1999)	Within 1% of value of MTC									
		5) Chlorides ion Content	IS 9103 (1999)	With n 10 % of value of MTC or 0 2% which ever is greater									

8	Concrete	1) Slump Test	IS 456 (2000) & IS 1199 (1959,1999)	100-150mm for R/wall, 80-120mm for Raft Anchor slab, 50-100 for C C Block & PCC	2 test per Transit mixer (one at Batcning Plant and one at pouring point)	Batcning Plant & Pouring Point	Wait (When slump is more) & Redose up to required limit (when slump is less) up to required slump. Or use in enabling works.	Test Reports	P	W	R	Plant and site
		2) Compressive strength test		As per table No. 1of Gen Speci Section IV of MoRTH	Table 02 of IS 456	Pouring Point	Acceptance Criteria / Non-Destructive Test / Destructive test.	Test Reports				site/ Batching Plant / Site lab
		a. 7 days	IS 516 (1959,1999), IS 456 (2000), IS 1199 (1959,1999)									
		b. 28 days	IS 516 (1959,1999), IS 456 (2000), IS 1199 (1959,1999)									
		3) Flexural Test	IS 516 (1959,1999), IS 456 (2000), IS 1199 (1959,1999)	1. Mean strength for any group of 4 Consecutive test result exceed the specified characteristic Strength by at least 0.3 Mpa. 2. The strength determined from any result is not less than the specified Characteristic strength less 3 mpa	Twice in a month	Batching Plant/ Pouring Point	Acceptance Criteria	Test Reports				External Lab
9	Soil	1) Sieve Analysis	IS 2720-Part 4 (1985,1995)	100 % Passing on 75 mm	Once per Source	Site	Reesorch or change the Source	Test Report	P	W	R	External Lab/ Site Lab
		2) cohesion Coefficient @	IS 272a-Part 13 (1986)	0	Once per Source							External Lab
		3) Angle of internal Friction (fy)	IS 2720-Part 13 (1986)	Mini. 30 Degree	Once per Source							External Lab/ Site Lab
		4) MDD/OMC	IS 2720-Part 7 & 8 (1980,1997)	Mini. 1.75 g/cc	Once for every change of Source							Site
		5)Field Density/MoistureContent	IS 2720-Part28(1974,1995)	95 % of MDD & +1/-2 of OMC	1 test per 1000 Sqm.							External Lab/ Site Lab
		6) Relative Density	IS 2720-Part 14(1983,1995)	Max & Min Density	Once for every change of Source							Site
		7) Densitv Index	IS 2720-Part 14 (1983,1995)	Mini 0.7	1 test per 1000 Sqm.							External Lab/ Site Lab
10	Caibraion of Batching plant	1) Aggregates	IS 4926 (2003)	Specification as per IS 4926	Every 3 months	Site	Re-calibration / Repair	Test Report	P	W	R	Site Plant/ External Plant
		2) Cement and water	IS 4926 (2003)	Specification as per IS 4926	Every month							
		3) Admixture	IS 4926 (2003)	Specification as per IS 4926	Every month							
11	Rcc NP-2/3/4 Hume pipe	1) 3 edge bearing Test	IS 458 (2003)	as per IS 458 Table no. 3	Every Lot	Factory	Resampling/ Retesting/ Change the Lot	Manufacturin gTest Report	Responsibility			Manufacture's Lab
		2) Physical (Dimension)	IS 458 (2003)	as per IS 458 Cl. 7.2								
		3) Hydrostatic Test	IS 458 (2003)& IS 3597 (1998,2003)	as per IS 3597 cl. 7.2.6								
12	Cl Pipes	1) Physical Testing for Tensile Strength	IS 1536 (2001), 1537 (1993), IS 7181 (1986)	Specification as per IS 1536, 1537, 7181	Every Lot	Factory	Resampling/ Retesting/ Change the Lot	Manufacturin gTest Report	P	W	R	Manufacture's Lab
		2) Hydrostatic Test	IS 1536 (2001), 1537 (1993), IS 7181 (1986)	Specification as per IS 1536, 1537, 7181								
		3) Physical Parameters Checking (Dimensions, Appearance, Ovality)	IS 1536 (2001), 1537 (1993), IS 7181 (1986)	Specification as per IS 1536, 1537, 7181								
		4) Test for Coating	IS 1536 (2001), 1537 (1993), IS7181 (1986)	Specification as per IS 1536,1537, 7181								

13	PVC Water Stopper	1) Dimension	As per Tender Specs.	As per Tender Specs.	Every Lot	Factory/Site	Resampling/ Retesting/ Change the Lot	MTC/Test Report	P	W	R	Factory/ External Lab					
		2) Visual Apperance															
		3) Tensile Strength															
		4) Ultimatte elongtion															
		5) Tear Resistance															
		6) Stiffness in Flexure															
		7) Accelerated Extraction															
		a. Tensile Strength															
		b. Ultimate elongation															
8) Effect of alkali																	
9) Cold bend Test																	
14	Bricks	1) Dimension	IS 3495 (1992), 1077 (1992)	As per IS 3495 & 1077	1 Test per 50000 Bricks	Site	Resampling/ Retesting/ Change the Lot	Test Report	P	W	R	External Lab					
		2) Water Absorption															
		3) Compressive Strength															
		4) Efflorescence															
15	Cement Mortar	Compressive Strength	IS 2250 (1981)	As per IS 2250	Once a day	Site	Acceptance Criteria	Physical acceptance/ Test Report	P	W	R	External Lab/ Site Lab					
16	Glaze tiles/ Vitrified/ Mosaic tiles/ Chequered tiles/Terrazo	1) Flexture Strength	IS 777(1988), IS 1237 (1980), 13630 (2006), 15622(2006) and as per tender spesification	As per IS 777(1988),IS 1237 (1980), 13630 (2006), 15622(2006) and tender spesification	1 Test per 1000 Sqm.	Site	Resampling/ Retesting/ Change the Lot	MTC/Test Report	P	W	R	External Lab					
		2) Specific Gravity															
		3) Water Absorption															
		4) Absorption Resistance															
17	Kota Stone/ Granite	1) Flexture Strength	IS 1121, 1122, 1124 (1974), 1123(1975)	As per IS 1121, 1122, 1124 (1974), 1123(1975)	1 Test per 1000 Sqm.	Site	Resampling/ Retesting/ Change the Lot	Test Report	P	W	R	External Lab					
		2) Specific Gravity															
		3) Water Absorption															
		4) Absorption Resistance															
18	PVC Sheet	Physical and Chemical Parameters	IS 3462 (1986) and IS 3461 (1980)	As per IS 3462 (1986) and IS 3461(1980)	Every Lot	Site	Resampling/ Retesting/ Change the Lot	Test Report	P	W	R	External Lab					
19	Structural Steel	Physical /Mechanical /Chemical Test	IS 2062,1161, 1239, 4923	As per relevent Code	Every Cast	Site	Resampling/ Retesting/ Change the Lot	Test Report	P	W	R	External Lab					
20	Wooden Work_ Wooden Frame (Timber)	Physical Parameters	IS 4021(1995), IS 287 (1993,1998), IS 710 (2010)	As per relevent Code	Every Lot	Site	Resampling/ Retesting/ Change the Lot	MTC/Test Report	P	W	R	External Lab					
21	Wooden Work _Flush Door shutter	Physical Parameters	IS 2202 Part I (1999) & Part- II (1983)	As per relevent Code	Every Lot	Site	Resampling/ Retesting/ Change the Lot	Physical/Tes t Report	P	W	R	External Lab					
22	Wooden Work_Transperent glass,Wired & figured glass	Physical Parameters	IS 2835(1983), IS 5437(1994)	As per relevent Code	As per tender spesification/Relevant Code	Return to vendor or use after	Resampling/ Retesting/ Change the Lot	MTC/Test Report	P	W	R	External Lab					
23	Steel Doors and Windows	Physical Parameters	IS 7452(1990),IS 5437(1994), IS 1038(1983-1996), IS 1361 (1978,2001), IS 4351(2003), IS 6248(1979)	As per relevent Code	As per tender spesification/Relevant Code								MTC/Test Report	P	W	R	External Lab
24	Filler and Joint Sealing Compound	Physical and ChemicalParameters	IS 1838 Part-I (1983), IS 702(1988,1993), IS 3384(1986)	As per relevent Code	As per tender spesification/Relevant Code								Resampling/ Retesting/ Change the Lot	MTC/Test Report	P	W	R
25	Aluminium Doors, Windows,Ventilators & Partitions	Physical Parameter	IS:733 (1983), IS 1948(1961), IS 1949(1961)	As per Relevent Code	As per tender spesification/Relevant Code	site	Resampling/ Retesing Change tbe Lot	MTC	Responsibility			External Lab					
									P	W	R						

26	Painting for Concrete, Masonary and Plastered surface	Physical and Chemical Parameter	IS:428(2000), IS:5410(1992), IS:5411, IS:9862 (1981), IS:712 (1984), IS:2395 (1994)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
27	Acrylic Paint	Physical and Chemical Parameter		As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
28	Painting & Polishing of Wood Work	Physical and Chemical Parameter	IS: 3536(1999), IS:110, IS:337(1975),IS:340, IS:2932(2003)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
29	Painting of Steel Work	Physical and Chemical Parameter	IS:2074(1992), IS:2932(2003), IS:2339 (1963), IS:1477 (pa rt-2) (1971, (1995)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
30	PVC Pipe	Physical and Chemical Parameter	IS 4984-(1995), IS: 4985-1988(2000)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	W	R	External Lab
31	GI Pipe	Physical and Chemical Parameter	IS: 1239 Part-1 (2004)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	W	R	External Lab
32	Glazzed Stoneware Pipes	Physical and Chemical Parameter	IS: 651(2007), IS:4127(1983)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	W	R	External Lab
33	Taps	Physical Parameter	IS: 781(1984)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
34	Sanitary Ware	Physical Parameter	IS:2556 (partV), IS:1795(1982), IS:651(2007), IS:2556 (Part III) (2004)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
35	Cast iron Gullies	Physical Parameter	IS:3989(1984)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	R	R	External Lab
36	Welding	Physical and Chemical Parameter	IS: 817(1966), IS:7310(part 1)(1974) and IS:7318(part 1)(1974),IS 7215(1974)	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampiing/ Reascng Change ee Lai	Test Report	P	W	R	External Lab
37	Sluice Valve	Physical Parameter	IS 1446(2000) and As per Tender Specifications	As per Relevent Code	As per tender spesification/Relevent Code	site	Resampling/ Retesiing Change tbe Lot	MTC	P	W	R	External Lab

Legends: P- Perform, W- Witness, R- Review, H- Holdpoint

- Note :- 1) The tests not specified in the specification to check whether any work has defect or not, the same shall be conducted and submitted.
2) The test to be conducted as and when required by client/consultant (in-house and externally) shall be carried out at contractor's cost.
3) If necessary further item can be added/deleted later on for quality Assurance of the work. Any of the equipments contractor's site lab shall be calibrated in our witness.

SIGN & STAMP - CONTRACTOR	SIGN & STAMP - PMC	SIGN & STAMP - CLIENT
		