PART III(NORMS OF CEMENT CONSUMPTION)
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GENERAL

For calculating the requirements of cement in various items of work the following standards will be adopted.

For items not covered in this standard, CPWD standards shall be followed or calculated as per uses/requirement in absence of standard norms. If the actual consumption of cement exceed the quantities given in the subsequent pages , no additional payment will be made for the extra quantities of cement consumed . The wastage as per standard practice shall also be considered by the bidder which quoting cost for civil work.

Sl.No.	Description of Item		Cement Requirement
MASONRY WORK	**1 quintal=100kg**		
1.	Random rubble masonry with	CM 1:4	1.255 quintals per cum
2.	Random rubble masonry with	CM 1:6	0.825 quintal per cum
3.	Coursed rubble masonry in	CM 1:6	0.75 quintal per cum
4.	Brick work in	CM 1:4	0.950 quintal per cum of BW
5.	Brick work in	CM 1:6	0.625 quintal per cum of BW
6.	Half brick work in	CM 1:3	1.43 quintals per 10 sqm of area
7.	Half brick work in	CM 1:4	1.06 quintals per 10 sqm of area
8.	75mm thick brick in	CM 1:4	0.65 quintal per 10 sqm of area
9.	75mm thick brick in	CM 1:3	0.81 quintal per 10 sqm of area
10.	Projected brick bands, Drip course etc. in CM 1:6 finished with 12mm thick cement plaster		0.165 quintal per 10 RM
11.	Half brick thick, Honey combed brick work in	CM 1:4	0.064 quintals per sqm

PLAIN/REINFORCED CONCRETE

1.	PCC of nominal mix 1:5:10 complete (excluding finishing with CP)	1.30 quintals per cum of concrete
2.	PCC of nominal mix 1:4:8 complete (excluding finishing with CP)	1.70 quintals per cum of concrete
3.	PCC of nominal mix 1:3:6 complete (excluding finishing with CP)	2.23 quintals per cum of concrete
4.	RCC/PCC of nominal mix 1:2:4 complete (excluding finishing with CP)	3.18 quintals per cum of concrete
5.	RCC/PCC of nominal mix 1:1.5:3 complete (excluding finishing with CP	4.00 quintals per cum of concrete

Controlled Concrete - Plain and Reinforced

7.	Concrete grade	(i)	M -5A	Volumetric
		(ii)	M -5B	
		(iii)	M -7.5A	
		(iv)	M -7.5B	
8.	Concrete grade	(i)	M -10A	Volumetric
		(ii)	M -10B	
		(iii)	M -10C	
9.	Concrete grade	(i)	M -15B	To be mutually agreed based on mix design to be prepared by bidder & approved by the Engineer plus wastage and all incidentals as decided. However the minimum
		(ii)	M -15C	
		(iii)	M -15D	
10.	Concrete grade	(i)	M -20B	
		(ii)	M -20C	
		(iii)	M -20D	
11..	Concrete grade	(i)	M -25B	
		(ii)	M -25C	
		(iii)	M -25D	

12.	Concrete grade	(i) (ii)	M -30C M -30D	cement content shall be followed.
13.	Applying cement slurry on RCC slab for receiving cement concrete flooring.			2.75 kg/sqm

FINISHING

1.	6mm thick C.P. 1:4	0.280 quintal per	10 sqm area
2.	10mm thick C.P. 1:5	0.370 quintal per	10 sqm area
3.	10mm thick C.P. 1:4	0.430 quintal per	10 sqm area
4.	10mm thick C.P. 1:6	0.300 quintal per	10 sqm area
5.	12mm thick C.P. 1:3	0.734 quintal per	10 sqm area
6.	12mm thick C.P. 1:4	0.547 quintal per	10 sqm area
7.	12mm thick C.P. 1:6	0.360 quintal per	10 sqm area
8.	15mm thick C.P. 1:4	0.655 quintal per	10 sqm area
9.	15mm thick C.P. 1:6	0.440 quintal per	10 sqm area
10.	20mm thick C.P. 1:4	0.850 quintal per	10 sqm area
11.	20mm thick C.P. 1:6	0.560 quintal per	10 sqm area
12.	12mm thick bearing plaster in CM 1:4 with neat cement finish	0.767 quintal per	10 sqm area
13.	Neat cement punning	0.220 quintal per	10 sqm area
14.	Flush or ruled or cut or weather pointing on brick work with CM 1:3	0.155 quintal per	10 sqm area
15	Flush or ruled or cut out or weather pointing on brick work with CM 1:2	0.200 quintal per	10 sqm area
16.	Raised and cut pointing on brick work with cement mortar 1:3	0.204 quintal per	10 sqm area
17.	Flush or ruled pointing on brick flooring with cement mortar 1:4	0.075 quintal per	10 sqm area

18.	Flush or ruled pointing on brick flooring with cement mortar 1:6	0.050 quintal per	10 sqm area

FLOORING

1.	Brick on edge flooring in cement mortar 1:4	1.100 quintal per	10 sqm area
2.	Brick on edge flooring in cement mortar 1:6	0.800 quintal per	10 sqm area
3.	25mm thick (IPS) cement concrete flooring 1:2:4 (1 cement : 2 sand : 4 graded stone chips 12mm nominal size) finished with a floating coat of neat cement.	1.020 quintal per	10 sqm area
4.	40mm thick (IPS) cement concrete flooring 1:2:4 with 20mm and down stone chips finished with a floating coat of neat cement.	1.700 quintal per	10 sqm area
5.	25mm thick (IPS) flooring with base coat 19mm thick 1:2:4 using stone chips 10mm nominal size and 6mm topping coat 1:1 (1 cement : 1 stone chips 3mm size) with a floating coat of neat cement.	1.370 quintal per	10 sqm area
6.	40mm thick (IPS) flooring with base coat 30mm thick 1:2:4 using stone chips 10mm nominal size and10mm topping coat 1:1 (1 cement : 1 stone chips 3 to 6mm size) with a floating coat of neat cement.	2.320 quintal per	10 sqm area
7.	25mm thick cast-in-situ grey terrazzo flooring, under layer 19mm thick cement concrete 1:2:4 with 10mm nominal size chips and 6mm thick topping laid in cement marble powder		

	mix 3:1 (3 cement : 1 marble powder) by weight in proportion of 4:7 (4 cement marble powder mix : 7 marble chips) by volume.	1.370 quintal per	10 sqm area
8.	40mm thick cast-in-situ grey terrazzo flooring, under layer 30mm thick cement concrete 1:2:4 with 10mm nominal size chips and10mm thick topping laid in cement marble powder mix 3:1 (3 cement : 1 marble powder) by weight in proportion of 4:7 (4 cement marble powder mix : 7 marble chips) by volume.	1.575 quintal per	10 sqm area
9.	40mm thick cast-in-situ terrazzo flooring, under layer 31mm thick cement concrete 1:2:4 with 10mm nominal size chips and top layer 9mm thick with marble chips of size 4 to 7mm nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder) by weight in proportion of 4:7 (4 cement marble powder mix : 7 marble chips) by volume.		
	a) Dark or light shade pigment with grey cement	1.583 quintal per	10 sqm area
	b) Light shade pigment or without any (grey cement) pigment with white cement	1.010 quintal per (grey cement) 0.580 quintal per (white cement)	10 sqm area 10 sqm area
	c) Medium shade pigment with 50% grey cement and 50% white cement	1.295 quintal per (grey cement) 0.290 quintal per (white cement)	10 sqm area 10 sqm area
10.	40mm thick cast-in-situ terrazzo flooring, under layer 28mm thick cement concrete 1:2:4 with 10mm		

	nominal size chips and top layer 12mm thick with marble chips of size 7 to 12mm nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder) by weight in proportion of 2:3 (2 cement marble powder mix : 3 marble chips) by volume.		
a)	Dark or light shade pigment with grey cement	1.705 quintal per	10 sqm area
b)	Light shade pigment or without any (grey cement) pigment with white cement	0.895 quintal per (grey cement) 0.810 quintal per (white cement)	10 sqm area 10 sqm area
c)	Medium shade pigment with 50% grey cement and 50% white cement	1.300 quintal per (grey cement) 0.405 quintal per (white cement)	10 sqm area 10 sqm area
d)	White cement without any pigment	0.895 quintal per (grey cement) 0.810 quintal per (white cement)	10 sqm area 10 sqm area
11.	Terrazzo cast-in-situ skirting and dado, top layer 6mm thick marble chips laid in cement marble powder mix 3:1 (3 cement : 1 marble powder) by weight in proportion of 4:7 (4 cement marble : 7 marble chips) by volume.		
(A)	18mm thick with under layer 12mm thick cement plaster 1:3		
a)	Dark or light shade pigment with grey cement	1.490 quintal per	10 sqm area
b)	Light shade pigment or without any pigment with white cement.	1.090 quintal per (grey cement) 0.400 quintal per	10 sqm area 10 sqm area

		(white cement)	
c)	Medium shade pigment with 50% grey cement and 50% white cement	1.290 quintal per (grey cement) 0.200 quintal per (white cement)	10 sqm area 10 sqm area
(B)	21mm thick, with under layer 15mm thick cement plaster 1:3		
a)	Dark or light shade pigment with grey cement	1.640 quintal per	10 sqm area
b)	Light shade pigment or without any pigment with white cement.	1.230 quintal per (grey cement) 0.400 quintal per (white cement)	10 sqm area 10 sqm area
c)	Medium shade pigment with 50% grey cement and 50% white cement	1.430 quintal per (grey cement) 0.200 quintal per (white cement)	10 sqm area 10 sqm area
12.	Precast terrazzo tiles 20mm thick with marble chips of sizes upto 6mm laid in 25mm thick bed of lime mortar, jointed with neat cement slurry mixed with pigment		
a)	Dark shades using grey cement	0.88 quintal per	10 sqm area
b)	Light shade using white cement.	0.44 quintal per (grey cement) 0.44 quintal per (white cement)	10 sqm area 10 sqm area
c)	Medium shade using 50% grey cement and 50% white cement	0.66 quintal per (grey cement) 0.22 quintal per (white cement)	10 sqm area 10 sqm area
13.	Precast terrazzo tiles 20mm thick with marble chips of sizes upto 6mm in		

	skirting or on walls, laid on 12mm thick cement plaster 1:3 jointed with neat cement slurry		
a)	Dark shades using grey cement	1.395 quintal per	10 sqm area
b)	Light shade using white cement.	1.175 quintal per (grey cement) 0.22 quintal per (white cement)	10 sqm area 10 sqm area
c)	Medium shade using 50% grey cement and 50% white cement	1.285 quintal per (grey cement) 0.11 quintal per (white cement)	10 sqm area 10 sqm area
14.	White glazed tiles 5, 6 or 7 mm thick in flooring, skirting and dado on 12 mm thick cement plaster 1 : 3 in base and joined with white cement, slurry etc.	0.942 quintal per (grey cement) 0.25 quintal per (white cement)	10 sqm area 10 sqm area
15.	Marble stone slab flooring over 20mm thick base of lime mortar 1:1:1 (1 lime : 1 surkhi : 1 sand) and jointed with white cement slurry etc.		
a)	20 mm thick / 30 mm thick / 40 mm thick	0.075 quintal per (white cement)	10 sqm area
16.	Marble stone slab flooring over 20mm thick base of cement mortar 1:4 & jointed with white cement slurry etc.		
a)	20 mm thick	1.275 quintal per (grey cement) 0.075 quintal per (white cement)	10 sqm area 10 sqm area
b)	30 mm thick	1.290 quintal per (grey cement) 0.075 quintal per	10 sqm area 10 sqm area

		(white cement)	
c)	40 mm thick	1.310 quintal per (grey cement) 0.075 quintal per (white cement)	10 sqm area 10 sqm area
17.	Marble tiles 18 to 24 mm thick in risers of steps, skirting, dado, walls and pillars laid on 12mm thick cement mortar 1:3 (1 cement : 3 sand) and jointed with white cement slurry	1.16 quintal per (grey cement) 0.075 quintal per (white cement)	10 sqm area 10 sqm area
18.	Extra for each additional thickness of 5 mm granolithic layer of 1:2:4 for flooring	0.016 quintal per	10 sqm of area
19	12mm thick cement plaster skirting, dado risers of steps and edges of ground sink with CM 1:3 finished with a floating coat of neat cement.	0.800 quintal per	10 sqm of area
20	15mm thick cement plaster skirting, dado risers of steps and edges of ground sink with CM 1:3 finished with a floating coat of neat cement.	0.995 quintal per	10 sqm of area
21.	19mm thick cement plaster skirting and dado with 12mm thick backing with CM 1:3 and 7mm topping 1:1 (1 cement : 1 stone chips 3mm size) finished with a floating coat of neat cement.	1.35 quintal per	10 sqm of area
22.	25mm thick cement plaster skirting and dado with 18mm thick backing with CM 1:3 and 7mm topping 1:1 (1 cement : 1 stone chips 3mm size) finished with a floating coat of neat cement.	1.85 quintal per	10 sqm of area

MISCELLANEOUS

1.	Marble work for wall lining (Veneer	0.715 quintal per	10 sqm of area

	work) 1.8 to 2.4 cm thick in CM 1:3 including pointing with white cement mortar 1:2 (1 white cement : 2 marble dust)	(grey cement) 0.170 quintal per (white cement)	10 sqm of area
2.	Marble work for wall lining (Veneer work) 4 cm thick in CM 1:3 including pointing with white cement mortar 1:2 (1 white cement : 2 marble dust)	1.020 quintal per (grey cement) 0.170 quintal per (white cement)	10 sqm of area 10 sqm of area
3.	Grading roof for water proofing treatment with :-		
a)	CC 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 20mm nominal size)	3.2 quintal per	cum of Concrete
b)	CM 1:3	5.1 quintal per	cum of mortar
c)	CM 1:4	3.8 quintal per	cum of mortar
4.	Providing and fixing MS fan clamps of standard shape and size in existing RCC slab including cutting chase and making good.	0.016 quintal	each
5.	Making plinth protection 50mm thick of CC 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20mm nominal size) over 75mm bed of dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth.	1.1 quintal per	10 sqm of area
6.	Grouting with		
a)	CM 1:2	7.18 quintal per	cum
b)	CM 1:3	5.40 quintal per	cum
7.	DPC 25mm thick (1:2:4)	0.81 quintal per	10 sqm of area

8.	Making plinth protection with bricks on edge in CM 1:6 over 7.5cm bed of dry brick aggregate 40mm nominal size rammed, consolidated and grouted with fine sand and top of bricks pointed with CM 1:2.	0.86 quintal per	10 sqm of area
9.	Providing and fixing 25mm dia GI pipe outlet in CM 1:3 including cutting and making good the walls.	0.05 quintal per	10 RM
10.	Providing and fixing 40mm dia GI pipe outlet in CM 1:3 including cutting and making good the walls.	0.075 quintal per	10 RM
11.	Providing chases 75mm wide 50mm deep in walls for conduit pipe and filling the same with CC 1:3:6	0.075 quintal per	10 RM
12.	Fixing steel windows with 1:2:4 concrete blocks	0.40 quintal per	10 sqm of area
13.	Cement-sand mortar :		
a)	1:1(1cement :1sand)	10.2 quintals per	cum
b)	1:2(1cement : 2sand)	6.8 quintals per	cum
c)	1:3(1cement : 3sand)	5.1 quintals per	cum
d)	1:4(1cement : 4sand)	3.8 quintals per	cum
e)	1:5(1cement : 5sand)	3.1 quintals per	cum
f)	1:6(1cement : 6sand)	2.5 quintals per	cum

DRAINAGE/SANITARY & WATER SUPPLY INSTALLATIONS

1.	100mm dia AC rain water pipe I/c fittings with CM 1:2	0.725 quintal per	100 RM of pipe
2.	150mm dia AC rain water pipe		

	I/c fittings with CM 1:2	0.82 quintal per	100 RM of pipe
3.	Fixing IWC pan with traps, pair of footrests, and flushing cistern complete	0.125 quintal	each
4.	Fixing EWC pan with trap and flushing cistern complete	0.01 quintal	each
5.	Fixing wash basin and kitchen sink	0.025 quintal	l each
6.	Fixing urinal cistern including pipes	0.025 quintal	each
7.	Fixing & finishing floor trap	0.015 quintal	each
8.	Fixing HCI pipes and specials, 100mm dia and 75mm dia including making good the walls	0.135 quintal per	10 RM of pipe
9.	Fixing GI pipes of all dia with clamps (for inside work only)	0.015 quintal per	10 RM of pipe
10.	Jointing glazed stoneware pipe with CM 1:1		
	a) 100 mm dia	2.17 quintals per	10 RM of pipe
	b) 150 mm dia	3.23 quintals per	10 RM of pipe
11.	Laying cement concrete 1:5:10 all round SW pipe including bed concrete as per standard design		
	a) 100mm dia SW pipe	19.24 quintals per	100 RM of pipe
	b) 150mm dia SW pipe	23.53 quintals per	100 RM of pipe
12.	Gully chamber as per specification.	0.385 quintal	each
13.	Stopcock chamber as per specification	0.185 quintal	each

14.	Inspection chambers as per specification			
	a)	600x600x600mm deep	1.43 quintals	each
	b)	750x600x600mm deep	1.435 quintals	each
	c)	900x900x600mm deep	1.885 quintals	each
15.	Extra depth of inspection chambers as per specification			
	a)	600x600mm	0.805 quintal per	RM of depth
	b)	750x600mm	1.295 quintal per	RM of depth
	c)	900x900mm	1.460 quintal per	RM of depth
	d)	1200x900mm	1.835 quintal per	RM of depth