

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH NEW DELHI**

Original Application No. 298/2023

IN THE MATTER OF:

Dr. Raja Singh

...Applicant

Versus

Union of India & Ors.

...Respondents

I N D E X

NDOH.26.09.2023

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Place: New Delhi
Dated: 15.09.2023

through



**GIGI C. GOERGE
ADVOCATE
FOR RESPONDENT No. 2
CHAMBER NO.457, LAWYER BLOCK-1
DELHI HIGH COURT, NEW DELHI
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BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH**NEW DELHI****O.A.NO.298/2023****IN THE MATTER OF:**

Dr.RAJA SINGH

.....APPLICANT

V/S

UNION OF INDIA & ORS

.....RESPONDENTS

Reply on behalf of respondent 2 Ministry of Housing & Urban Affairs**Most Respectfully Showeth:**

1. That the present reply is being filed through Sh. Shashi Singh, Executive Engineer, R-Division, CPWD, IP Bhawan, New Delhi who is authorized and competent to file the same on behalf of answering respondent.
2. That it is submitted to this Hon'ble Tribunal that Delhi Schedule of Rates(DSR) published by the Central Public Work Department(CPWD), is a comprehensive technical document for execution of civil works. Apart from CPWD, this document is used by several departments, institutions, public sector undertakings, architects and builders.
3. That the latest DSR published and in use is DSR-2021. It consist of rates of different type of materials, hire charges of machinery and labour. The DSR

also mentions the cost of material, machinery and labour for executing an activity used in the construction, for example excavation of earth for foundation, cost of machinery and labour used for excavating earth to make foundation of a structure. The copies of the relevant papers are annexed as Annexure-R1.

4. That the DSR is compilation of items which needed for the construction of a structure/building such as Earth Work, Brick Work, Reinforced Cement Concrete(RCC) Work, Stone Work, Wood Work, Steel Work, Flooring, Roofing, Aluminum Work, Water Supply, Sanitary Work, Road Work and different type of other works.
5. That for constructing a house/building earth work, brick work, RCC, Roofing, Plastering, Flooring and Distemper along with other items to carried out. The DSR has specified the different items to carry out these activities.
6. That the DSR 2021 have the items for different types of roofing like RCC Roofing, Galvanized Steel Sheet Roofing, Organic/Inorganic synthetic fiber cement, corrugated and semi corrugated roofing, stone slab roofing, insulated board roofing etc.
7. That in the DSR 2021, no item based on Asbestos material has been provided and therefore, the Asbestos materials are not considered to be

used in the works being executed by CPWD or any other works associated with Ministry of Urban Affairs.

PRAYER

In view of the above stated facts and circumstances nothing survives in the OA against the answering respondents and same is liable to be dismissed qua the answering respondents. However, answering respondents undertake to comply with directions issued to it by this Hon'ble Tribunal.

Date:- 15.09.2023
Place: New Delhi


Respondent No.2
Executive Engineer
'R' Division, C.P.W.D.
C-301, I.P. Bhawan
New Delhi-110002
Ph. No.: 23379085

Through



Gigi.C.George, Advocate

Standing Counsel(UOI)

Chamber No.457, Lawyers

Block-I, Delhi High Court

New Delhi

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M-9810625315

BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH**NEW DELHI****O.A.NO.298/2023****IN THE MATTER OF:**

Dr.RAJA SINGH

.....APPLICANT

V/S

UNION OF INDIA & ORS

.....RESPONDENTS

AFFIDAVIT

I, Shashi Singh aged about 57 years working as Executive Engineer do hereby solemnly affirm and declare as under:-

1. That I have gone through the official record. I have made myself conversant with the facts and circumstances of the present case and therefore, I am competent to depose this Affidavit.
2. That the accompanying reply has been drafted under my instructions. I have read the contents thereof, the same are true and correct and may kindly be read as part and parcel of this Affidavit as the same not being repeated herein for the sake of brevity.



Deponent 
Executive Engineer
'R' Division, C.P.W.D.
C-301, I.P. Bhawan
New Delhi-110002
Ph. No.: 23379085

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Annexure-R1

6



भारत सरकार
GOVERNMENT OF INDIA



केंद्रीय लोक निर्माण विभाग
CENTRAL PUBLIC WORKS DEPARTMENT

दिल्ली दर अनुसूची
(भाग-1)

Delhi Schedule of Rates
(Vol-1)

2021

महानिदेशक, के.लो.नि.वि., नई दिल्ली
Director General, CPWD, New Delhi

SUB HEAD : 12.0

ROOFING

BASIC RATES (SH: 12.0 ROOFING)

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
0013	Machine for rubbing of floors	day	300.00
0100	Bandhani	day	714.00
0101	Bhisti	day	714.00
0102	Blacksmith 1st class	day	784.00
0103	Blacksmith 2nd class	day	714.00
0111	Carpenter 1st class	day	784.00
0112	Carpenter 2nd class	day	714.00
0114	Beldar	day	645.00
0115	Coolie	day	645.00
0116	Fitter (grade 1)	day	784.00
0117	Assistant Fitter or 2nd class Fitter	day	714.00
0122	Mason (for plaster of paris work) 1st class	day	784.00
0123	Mason (brick layer) 1st class	day	784.00
0124	Mason (brick layer) 2nd class	day	714.00
0128	Mate	day	714.00
0130	Mistry	day	784.00
0131	Painter	day	714.00
0139	Skilled Beldar (for floor rubbing etc.)	day	714.00
0155*	Mason (average)	day	749.00
0222	Seam bolts and nuts 6 mm dia and 25 mm long	10 Nos	10.00
0223	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement corrugated sheet 6 mm thick	sqm	225.00
0224	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement close fitting adjustable ridge	metre	210.00
0225	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement corrugate serrated adjustable ridge	metre	210.00
0226	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement plain wing adjustable ridge	metre	210.00
0227	Fibre (high impact poly propylene reinforced) cement unserrated adjustable ridge for hips	metre	210.00
0228	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement corrugated apron piece	metre	200.00
0229	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement eaves filler piece	each	175.00
0230	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement north light curves	metre	280.00
0231	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement ventilator curves	each	310.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
0232	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement barge boards boards 6 mm thick	metre	400.00
0233	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement ridge finial	pair	165.00
0234	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement special north light curves	each	555.00
0235	Fibre reinforced by organic fibres and/or inorganic synthetic fibres cement S type louvers	each	260.00
0236	Multi purpose fibre reinforced by organic fibres and/or inorganic synthetic fibres cement board 6 mm thick	sqm	210.00
0242	6 mm thick multipurpose cement bonded wood particle board conforming to IS : 14276	sqm	195.00
0295	Stone Aggregate (Single size) : 20 mm nominal size	cum	1400.00
0297	Stone Aggregate (Single size) : 10 mm nominal size	cum	1350.00
0308	Bhusa	quintal	500.00
0309	Paving bitumen of grade VG-10 of approved quality	tonne	25614.00
0314	Bitumen hot sealing compound : grade A	kg	29.00
0328	White face insulating board: 12 mm thick	sqm	235.00
0332	Natural colour insulating board: 12 mm thick	sqm	210.00
0336	Flame retardant face insulating board: 12 mm thick	sqm	320.00
0341	Flat pressed 3 layer particle board (medium density) Grade 1, 12 mm thick	sqm	288.00
0367	Portland Cement (OPC-43 Grade)	tonne	5000.00
0368	White Cement	tonne	11200.00
0370	Coal (steam)	quintal	440.00
0452	Brass screws 25 mm	100 Nos	100.00
0637	Bright finished or black enameled mild steel screws 40 mm	100 Nos	60.00
0765	Hessian cloth	sqm	35.00
0771	Kerosene oil	litre	50.00
0811	Mud (dry)	cum	165.00
0845	Roofing paint for iron sheets in red colour	litre	120.00
0865	Pig lead	kg	130.00
0869	Plaster of Paris	kg	5.00
0870	Plug	each	10.00
0875	Red, chocolate, orange, buff or yellow (red oxide of iron) light shade pigment	kg	60.00
0886	Standard holder bat clamps for sand cast iron or cast iron pipes 150 mm dia	each	45.00
0966	Sand Cast iron plain shoe 150 mm dia	each	285.00
0982	Coarse sand (zone III)	cum	1500.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
0992	Galvanised steel plain sheets	quintal	5000.00
0994	Standard quality hard board sheet 3 mm thick	sqm	135.00
0996	Standard quality hard board sheet 4.5 mm thick	sqm	210.00
1001	Spun yarn	kg	50.00
1008	Flats up to 10 mm in thickness	quintal	4850.00
1015	Mild steel expanded metal 20x60 mm strands 3.25 mm wide 1.60 mm thick	sqm	280.00
1022	Galvanised steel bolts & nuts 6 mm dia and 25 mm long round head with slots	10 Nos	38.00
1023	Galvanised steel J or L hooks 8 mm dia	10 Nos	120.00
1024	Galvanised steel bolts & nuts 10 mm dia and 125 mm long round head with slots	each	9.00
1025	Mild steel bolts 6 mm dia and 25 mm long with hexagonal head	10 Nos	10.00
1031	Galvanised steel bolts & nuts 10 mm dia and 27 cm long both sides threaded with 4 galvanised steel nuts	each	20.00
1032	Galvanised steel bolts 10 mm dia and 7 cm long with nuts	each	6.00
1174	Red sand stone slab 45 mm to 50 mm thick (un-dressed)	sqm	260.00
1175	White sand stone slab 45 mm to 50 mm thick (un-dressed)	sqm	280.00
1190	Second class teak wood in planks	10 cudm	791.00
1196	First class kail wood in planks	10 cudm	300.00
1204	Precast heat resistant terrace tiles (size 300x300 mm) and 20 mm thick	sqm	409.00
1207	G.I. Limpet washer	100 Nos	21.00
1208	Bitumen washer	100 Nos	30.00
1209	G.I. plain washer thick	100 Nos	35.00
1210	G.I. plain washer thin	100 Nos	21.00
1211	G.I. plain washer for seam bolts	100 Nos	32.00
1213	Water proofing materials	kilogram	35.00
1219	M.S. Wire nails	kilogram	58.00
1220	M.S. Wire mesh (rabbit)	sqm	42.00
1331	M.S. Holder bat clamp of approved design for 100 mm S.C.I. pipe	each	30.00
1984	Common burnt clay F.P.S. bricks tile class designation 10	1000 Nos	4600.00
2202	Carriage of Stone aggregate below 40 mm nominal size	cum	163.93
2203	Carriage of Coarse sand	cum	163.93
2204	Carriage of Timber	cum	187.35
2205	Carriage of Steel	tonne	145.72
2207	Carriage of Brick tiles	1000 Nos	262.29
2209	Carriage of Cement	tonne	145.72
2211	Carriage of Tar / Bitumen	tonne	163.93

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
2216	Carriage of Stone blocks white & red sand stone & kota stone slab	tonne	145.72
2273	Carriage of A.C.sheet and accessories	tonne	145.72
2302	Carriage of G.I. sheet and accessories	tonne	145.72
2308	Carriage of Plaster of paris	tonne	145.72
3002	Polyvinyl chloride sheet 400 micron thick	sqm	45.00
3004	Stone ware spouts 100 mm dia 60 cm long	each	45.00
3050	Galvanised steel corrugated sheets	quintal	6000.00
3051	Aluminium troughed profile sheet 0.56mm thick with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm)	sqm	549.00
3052	Aluminium troughed profile sheet 0.71mm thick with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm	sqm	698.00
3053	Aluminium troughed profile sheet 0.91mm thick with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm	sqm	895.00
3054	Aluminium profile sheet 0.56mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	730.00
3055	Aluminium profile sheet 0.71mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	924.00
3056	Aluminium profile sheet 0.91mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	1182.00
3057	Aluminium Circular(sinusoidal) profile sheet 0.56mm thick with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm,cover width 1150mm	sqm	520.00
3058	Aluminium Circular(sinusoidal) profile sheet 0.71mm thick with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm,cover width 1150mm	sqm	670.00
3059	Aluminium Circular(sinusoidal) profile sheet 0.91mm thick with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm,cover width 1150mm	sqm	870.00
3060	Precoated Aluminium troughed profile sheet 0.56mm thcik with center to center pitch of 200 mm, depth of 32 mm, overall profile width1092 mm, cover width 1000mm	sqm	636.00
3061	Precoated Aluminium troughed profile sheet 0.71mm thick with center to center pitch of 200 mm, depth of 32 mm, overall profile width1092 mm, cover width 1000mm	sqm	809.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
3062	Precoated Aluminium troughed profile sheet 0.91mm thick with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm	sqm	1038.00
3063	Aluminium color coated profile sheet 0.56mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	846.00
3064	Aluminium color coated profile sheet 0.71mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	1071.00
3065	Aluminium color coated profile sheet 0.91mm thick with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm	sqm	1370.00
3066	Aluminium profile sheet 0.56mm thick with center to center pitch of 177.5 mm, depth of 28.5 mm, 987mm overall profile width, cover width 900mm	sqm	680.00
3067	Aluminium profile sheet 0.71mm thick with center to center pitch of 177.5 mm, depth of 28.5 mm, 987mm overall profile width, cover width 900mm	sqm	872.00
3068	Precoated/Mill finish Aluminium plain ridges 0.71 mm TCT/plain and 500- 600 mm wide	metre	564.00
3069	Precoated/Mill finish Aluminium flashings/aprons 0.50mm TCT/plain and wide upto 600 mm	metre	544.00
3070	Precoated/Mill finish Aluminium plain north light cuves	metre	584.00
3071	Precoated/mill finish aluminium Barge board (Upto 200 mm)	metre	487.00
3072	Precoated/Mill finish Aluminium crimp curve	sqm	538.00
3073	Precoated/Mill finish Aluminium gutter	metre	725.00
3074	Stainless steel self-tapping screw of 6x50mm with SS hex cap and 3mm thick EPDM seal	100 Nos	500.00
4009	Mild steel tubes hot finished welded type	kg	60.00
4202	Red oxide Zinc chromate primer	litre	120.00
7009	12.5 mm thick tapered edge plain gypsum plaster board conforming to IS 2095 (Part 1):2011	sqm	140.00
7010	Galvanised Steel ceiling section (size 80x26x0.50 mm)	metre	46.00
7011	Galvanised Steel perimetre Channel (Size 20x27x30x0.50 mm)	metre	22.00
7012	Galvanised Steel intermediate Channel (Size 15x45x15x0.90 mm)	metre	38.00
7013	Galvanised Steel angle hanger (Ceiling angle) (Size 25x10x0.50 mm)	metre	12.00
7014	Galvanised Steel connecting clips (2.64 mm dia and 230 mm long GI wire)	each	4.00
7015	Galvanised Steel soffit cleat (Size 27x37x25x0.60 mm)	each	3.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
7016	Joint filler	kg	24.00
7017	Joint finisher	kg	21.00
7018	Joint tape roll	roll	90.00
7019	Dash fastener / Chemical fastener	each	12.50
7020	All drive screws (for gypsum board)	100 Nos	58.00
7021	Primer (for gypsum board)	litre	70.00
7028	12.5 mm thick Fully Perforated gypsum board	sqm	380.00
7031	12.5 mm thick tapered edge moisture resistant plain gypsum plaster board confirming to IS 2095 (Part 1):2011	sqm	250.00
7050	PU Primer	sqm	50.00
7051	40 mm (average) PU spray having 40-45 kg/m ³ density	sqm	350.00
7052	GI wire netting 3/4" x 24 G	sqm	26.00
7053	400 G polythene sheet	sqm	12.00
7090	Expanded polystyrene type N- Normal 50 mm thick	sqm	120.00
7091	Expanded polystyrene type - SE 50 mm thick	sqm	140.00
7187	C.I. grating 150 mm dia, weighing not less than 440 gm	each	27.00
7188	U-PVC pipes (working pressure 4 kg / cm ²) Single socketed pipe 75 mm dia	metre	70.00
7189	U-PVC pipes (working pressure 4 kg / cm ²) Single socketed pipe 110 mm dia	metre	130.00
7190	U-PVC pipes (working pressure 4 kg / cm ²) Rubber (Seal) Ring 75 mm dia	each	8.00
7191	U-PVC pipes (working pressure 4 kg / cm ²) Rubber (Seal) Ring 110 mm dia	each	11.00
7192	uPVC coupler for UPVC drainage pipes 75 mm	each	18.00
7193	uPVC coupler for UPVC drainage pipes 110 mm	each	39.00
7194	uPVC pushfit coupler (single) 75 mm thick	each	18.00
7195	uPVC pushfit coupler (single) 110 mm thick	each	32.00
7196	uPVC single equal Tee (without door) 75x75x75 mm	each	46.00
7197	uPVC single equal Tee (without door) 110x110x110 mm	each	81.00
7198	uPVC single equal Tee (with door) 75x75x75 mm	each	59.00
7199	uPVC single equal Tee (with door) 110x110x110 mm	each	92.00
7208	UPVC bend 87.5° 75 mm bend	each	35.00
7209	UPVC bend 87.5° 110 mm bend	each	59.00
7212	UPVC plain shoe 75 mm	each	27.00
7213	UPVC plain shoe 110 mm	each	47.00
7214	UPVC pipe clip 75 mm	each	15.00
7215	UPVC pipe clip 110 mm	each	14.00
7231	Resin Bonded Glass wool 16 kg/m ³ : 50 mm thick	sqm	90.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
7232	Resin Bonded Glass wool 24 kg/m ³ : 50 mm thick	sqm	130.00
7238	High Albedo paint	kg	215.00
7266	Pressed clay tiles 20mm thick 250x250 mm size	1000 Nos	8000.00
7267	Plain ceiling tiles (BWP type phenol formaldehyde synthetic resin bonded) (600x600x12 mm)	each	105.00
7268	Semi perforated ceiling tiles (600x600x12 mm)	each	100.00
7273	Resin Bonded Rockwool 48 kg/m ³	sqm	110.00
7385	3 mm thick translucent white acrylic plastic sheet	sqm	490.00
7386	12 mm thick particle board ceiling tile	sqm	95.00
7388	Dash hold fastener 12.5 mm dia, 50 mm long with 6 mm dia bolt	each	10.00
7857	P.T.M.T. Grating square slit 150 mm	each	45.00
7904	Machine moulded common burnt clay tile bricks of class designation 12.5	1000 Nos	4600.00
8589	Calcium Silicate tegular edged ceiling tiles 595x595 mm and 15 mm thick on edges	sqm	685.00
8590	Galvanised Steel main Tee ceiling section Size 24x38x0.33 mm (3 metre long)	each	140.00
8591	Galvanised Steel perimeter wall Angle Size 24 x 24 x 0.40 mm (3.00 metre long)	each	90.00
8592	Galvanised Steel intermediate cross T section Size 24 x 25 x 0.33mm (1.2 metre long)	each	45.00
8593	Galvanised Steel intermediate cross T section Size 24 x 25 x 0.33mm (0.6 metre long)	each	22.00
8594	Galvanised Steel soffit cleat size 25x35x1.60 mm	each	4.50
8595	Wooden screws with plastic rawl plugs 35x8 mm	each	1.00
8597	GI Metal Tile Clip in Plain Beveled edge global white colour tiles of size 600x600 mm and 0.5 mm thick	sqm	710.00
8598	GI Metal Tile Clip in Perforated Beveled edge global white colour tiles of size 600x600 mm and 0.5 mm thick	sqm	800.00
8599	GI Metal Tile Lay-in Plain Tegular edge global white color tiles of Size 595x595 mm and 0.5 mm thick	sqm	625.00
8600	GI Metal Tile Lay-in Perforated Tegular edge global white color tiles of Size 595x595 mm and 0.5 mm thick	sqm	735.00
8601	PVC Laminated Gypsum Tiles (Square edge) of Size 595x595 mm and 12.5 mm thick	sqm	880.00
8602	Gypsum Tiles Fully Perforated Square edge of Size 595x595 mm and 12.5 mm thick	sqm	380.00
8604	Spring T-section 24x34x0.45 mm (3.00 meter long)	metre	220.00
8605	C Wall angle section 20x30x20x0.50 mm (3.00 meter long)	metre	110.00
8606	Main C Carrier Size 10x38x10x0.70 mm (3.00 meter long)	metre	130.00
8607	Spring T-connector	each	5.00

Code No.	Description	Unit	Basic rate as on or just before 01.04.2021 ₹
8608	C Carrier Connector	each	12.00
8609	C Suspension Clip	each	10.00
8610	Wire Coupling Clip	each	10.00
8611	Main T ceiling sections 24x38x0.3 mm (3 metre long)	each	130.00
8612	Perimeter wall angle 24 x 24 x 0.3 mm (3 metre long)	each	80.00
8613	Intermediate cross T-Section 24x25x0.3 mm (1.2 m long)	each	40.00
8614	Intermediate cross T-Section 24x25x0.3 mm (0.6 m long)	each	20.00
8615	Hanger rod 4 mm thick	each	10.00
8616	Adjustment clip 85x30x0.8 mm	each	6.00
8617	Soffit cleat (Size 27x37x25x1.60 mm)	each	5.00
8618	Dash fastener 6 mm dia 50 mm long	each	10.00
8667	UV stabilised 2 mm thick plain FRP sheet	sqm	450.00
8668	UV stabilised 2 mm thick corrugated FRP sheet	sqm	525.00
8669	Mangalore ridge tiles 20 mm thick	each	8.00
8670	Mangalore tiles 20 mm thick	each	8.00
8671	Precoated galvanised iron profile sheet 0.50 mm TCT	sqm	375.00
8672	Precoated galvanised steel plain ridges 0.50 mm TCT and 500-600mm wide	metre	225.00
8673	Precoated galvanised steel flashings/aprons 0.50 mm TCT and upto 600mm wide	metre	235.20
8674	Precoated galvanised steel gutter 600mm overall girth	metre	440.00
8675	Precoated galvanised steel north light curves	metre	240.00
8676	Precoated galvanised steel barge board (upto 300mm)	metre	230.00
8677	Precoated galvanised steel crimp curve	sqm	235.00
8699	8 mm thick tapered edge calcium silicate board	sqm	270.00
8784	8 mm thick Calcium silicate perforated tiles of size 595 x595 mm	sqm	850.00
9977	Carriage	L.S.	2.12
9988	Carriage and sundries	L.S.	2.12
9999	Sundries	L.S.	2.12

12.0 ROOFING

Code No.	Description	Unit	Rate ₹
SHEET ROOFING			
12.1	Providing corrugated G.S. sheet roofing including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (up to any pitch in horizontal/ vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.		
12.1.1	1.00 mm thick with zinc coating not less than 275 gm/m ²	sqm	1320.35
12.1.2	0.80 mm thick with zinc coating not less than 275 gm/m ²	sqm	1135.45
12.1.3	0.63 mm thick with zinc coating not less than 275 gm/ m ²	sqm	978.00
12.2	Extra for straight cutting in C.G.S. sheet roofing for making opening of area exceeding 40 sq. decimeter for chimney stacks, sky light etc.:		
12.2.1	1.00 mm thick	metre	95.60
12.2.2	0.80 mm thick	metre	76.50
12.2.3	0.63 mm thick	metre	76.50
12.3	Extra for circular cutting in C.G.S. sheet roofing for making opening of area exceeding 40 sq. decimeter:		
12.3.1	1.00 mm thick	metre	552.85
12.3.2	0.80 mm thick	metre	441.60
12.3.3	0.63 mm thick	metre	441.60
12.4	Providing ridges or hips of width 60 cm overall width plain G.S. sheet fixed with polymer coated J or L hooks, bolts and nuts 8 mm dia G.I. limpet and bitumen washers complete.		
12.4.1	0.80 mm thick with zinc coating not less than 275 gm/m ²	metre	822.15
12.4.2	0.63 mm thick with zinc coating not less than 275 gm/m ²	metre	750.85
12.5	Providing valleys of 90 cm wide overall in plain G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts 8 mm dia G.I. limpet and bitumen washers complete :		
12.5.1	1.60 mm thick with zinc coating not less than 350 gm/m ²	metre	1370.40
12.6	Providing and fixing of 40 cm overall width plain G.S. sheet fixed with polymer coated J or L hooks, bolts and nuts, G.I. limpet and bitumen washer complete, bent to shape and fixed in wall with cement mortar 1:3 (1 cement : 3 coarse sand).		
12.6.1	1.00 mm thick with zinc coating not less than 275 gm/m ²	metre	700.20

Code No.	Description	Unit	Rate ₹
12.7	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G.S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete.		
12.7.1	0.80 mm thick with zinc coating not less than 275 gm/m ²	metre	811.85
12.7.2	0.63 mm thick with zinc coating not less than 275 gm/m ²	metre	752.45
12.8	Providing reinforced by organic fibres and/or inorganic synthetic fibres cement 6 mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8 mm dia. G.I. plain and bitumen washers or with self drilling fastener and EPDM washers etc. complete (excluding the cost of purlins, rafters and trusses), including cutting sheets to size and shape wherever required.	sqm	462.10
12.9	Extra for straight cutting in reinforced by organic fibres and/or inorganic synthetic fibres cement corrugated, semi corrugated 6 mm thick sheet roofing for making openings of area exceeding 40 square decimeter for chimney stacks, skylights etc.	metre	76.50
12.10	Extra for circular cutting in reinforced by organic fibres and/or inorganic synthetic fibres cement corrugated/ semi corrugated 6 mm thick sheet roofing for making openings of area exceeding 40 square decimeter.	metre	211.25
12.11	Extra for providing and fixing wind ties of 40x 6 mm flat iron section.	metre	163.65
12.12	Providing and fixing ridges and hips in fibre cement reinforced by organic fibres and/or inorganic synthetic fibres roofing with suitable fixing accessories or self drilling fastener and EPDM washer etc. complete.		
12.12.1	Corrugated serrated adjustable ridges	metre	444.75
12.12.2	Plain wing adjustable ridges	metre	444.75
12.12.3	Close fitting adjustable ridges	metre	498.60
12.12.4	Unserrated adjustable hips	metre	443.75
12.13	Providing and fixing fibre cement reinforced by organic fibres and/or inorganic synthetic fibres roofing accessories in all colours with polymer coated J or L hooks, bolts and nuts and or G.I. seam bolts and nuts, G.I. plain and bitumen washers or with self drilling fastener and EPDM washer etc. complete:		
12.13.1	Corrugated apron pieces	metre	364.40
12.13.2	Eave's filler pieces	metre	296.25
12.13.3	North light curves	metre	493.55
12.13.4	Ventilator curves	metre	535.95
12.13.5	Barge boards	metre	631.20
12.13.6	Ridge finials	pair	262.40
12.13.7	Special north light curves	each	878.55
12.13.8	S type louvers	metre	476.70

Code No.	Description	Unit	Rate ₹
12.14	Providing flat iron brackets 50x3 mm size with necessary bolts, nuts and washers etc. for fixing G.S. sheets gutters with purlins.	metre	77.00
12.15	Painting top of roofs with bitumen of approved quality @ 17kg per 10 sqm impregnated with a coat of coarse sand at 60 cum per 10 sqm, including cleaning the slab surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil complete :		
12.15.1	With residual type petroleum bitumen of grade VG -10	sqm	133.15
12.16	10 cm thick (average) mud phaska of damped brick earth on roofs laid to slope consolidated and plastered with 25 mm thick mud mortar mixed with bhusa @ 35 kg per cum of earth and gobri leaping with mix 1:1 (1 clay : 1 cow dung) and covered with flat tile bricks, grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% of integral water proofing compound by weight of cement and finished neat:		
12.16.1	With common burnt clay F.P.S.(non modular) brick tile of class designation 10	sqm	905.80
12.17	10cm thick (average) mud phaska of damped brick earth on roofs laid to slope consolidated and plastered with 25 mm thick mud mortar with bhusha @ 35 kg per cum of earth and gobri leaping with mix 1:1 (1 clay : 1 cow-dung) and covered with machine moulded tile bricks, grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% of integral water proofing compound by weight of cement and finished neat.		
12.17.1	With machine moulded common burnt clay F.P.S. (non modular) brick tiles of class designation 12.5, conforming to IS 2690	sqm	905.80
12.18	Extra for every additional 1 cm thickness of mud phaska.	sqm	20.35
12.19	Providing and laying brick tiles over mumty roofs, grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% of integral water proofing compound by weight of cement, over 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat:		
12.19.1	With common burnt clay F.P.S. (non modular) brick tiles of class designation 10	sqm	549.05
12.20	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.		
		sqm	620.00
12.21	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :		
12.21.1	In 75x75 mm deep chase	metre	260.20

Code No.	Description	Unit	Rate ₹
12.22	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	each	266.60
12.23	Providing sand stone slab for roofing and laying them in cement mortar 1 : 4 (1 cement : 4 coarse sand) over wooden karries or R.C.C. battens or structural steel sections (Karries or battens or structural steel sections to be paid separately), including pointing the ceiling joints with cement mortar 1:3 (1 cement : 3 fine sand) complete :		
12.23.1	Red sand stone slab		
12.23.1.1	40 to 50 mm thick	sqm	907.95
12.23.2	White sand stone slab		
12.23.2.1	40 to 50 mm thick	sqm	937.35
CEILING			
12.24	Providing and fixing insulating board ceiling of approved quality with necessary nails etc. complete (frame work to be paid separately) :		
12.24.1	Natural colour insulating board		
12.24.1.1	12 mm thick	sqm	774.15
12.24.2	White face insulating board		
12.24.2.1	12 mm thick	sqm	810.90
12.24.3	Flame retardant face insulating board		
12.24.3.1	12 mm thick	sqm	936.00
12.25	Providing and fixing flat pressed 3 layer medium density particle board or graded particle board (Grade I) IS: 3087 marked, in ceiling with necessary nails etc. complete (frame work to be paid separately):		
12.25.1	12 mm thick	sqm	888.20
12.26	Providing and fixing plain multipurpose cement board(Hight pressure steam cured) with suitable screws for cement particle board in ceiling etc. complete (frame work to be paid seperatately).		
12.26.1	6 mm thick Cement fiber board as per IS: 14862	sqm	773.40
12.26.2	6 mm thick Cement bonded wood particle board as per IS:14276	sqm	751.30
12.27	Extra for Circular cutting including wastages in ceiling with:		
12.27.1	2nd class teak wood planks 20 mm thick	metre	635.00
12.27.2	Natural colour insulating board		
12.27.2.1	12 mm thick	metre	402.55
12.27.3	White face insulating board:		
12.27.3.1	12 mm thick	metre	407.15

Code No.	Description	Unit	Rate ₹
12.27.4	Flame retardant face insulating board:		
12.27.4.1	12 mm thick	metre	422.70
12.27.5	Standard quality hard board sheet:		
12.27.5.1	3 mm thick	metre	388.70
12.27.5.2	4.5 mm thick	metre	402.50
12.28	Extra for providing and fixing ceiling to curved surfaces in narrow widths	sqm	373.00
12.31	Providing 10 mm thick plaster of Paris (gypsum anhydrous) ceiling up to a height of 5 m above floor level, over first class kail wood strips 25x6 mm with 10 mm gap in between and reinforced with rabbit wire mesh fixed to wooden frame (frame work to be paid separately):		
12.31.1	Flat surfaces	sqm	1421.25
12.31.2	Curved surfaces	sqm	1708.05
12.32	Extra for sunk or raised mouldings in the plaster of Paris (Gypsum anhydrous) ceiling.	sqm	485.75
12.33	Extra for providing plaster of Paris (Gypsum anhydrous) ceiling above 5 metres height from floor level.	sqm per metre height	218.90
12.34	Providing fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Fibre glass wool conforming to IS : 8183, density 24kg / m ³ , 50mm thick, wrapped in 200 G Virgin Polythene bags, fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5 mm x 24 gauge wire mesh, for top most ceiling of building.	sqm	597.85
12.35	Providing and fixing thermal insulation with Resin Bonded Fibre glass wool conforming to IS: 8183. Density 16 kg/m ³ , 50 mm thick, wrapped in 200G Virgin Polythene bags placed over existing false ceiling and held in position by criss-crossing GI wire.	sqm	242.80
12.36	Thermal Insulation of roofing with Expanded polystyrene fixed with suitable adhesive to the false ceiling as per the directions of the Engineer-in-charge:		
12.36.1	With Type N - Normal 50 mm thick	sqm	276.85
12.36.2	With Type SE - Self Extinguishing type 50 mm thick	sqm	306.30
RAIN WATER SPOUT AND PIPE			
12.37	Providing and fixing 100 mm diameter and 60 cm long rain water spout in cement mortar 1:4 (1 cement : 4 fine sand).		
12.37.1	Stone ware spout	each	142.10
12.38	Providing and fixing M.S. holder bat clamps of approved design to C.I. or S.C.I. rain water pipes embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and cost of cutting holes and making good the walls etc. :		
12.38.1	100 mm diameter	each	308.45
12.38.2	150 mm diameter	each	328.55

Code No.	Description	Unit	Rate ₹
12.39	Providing lead caulked joints to sand cast iron rain water pipes and fittings:		
12.39.1	100 mm dia Pipe	each	444.05
12.39.2	150 mm dia Pipe	each	604.65
12.40	Providing, fixing and embedding sand cast iron accessories for rain water pipes in the masonry surrounded with 12 mm thick cement mortar of the same mix, as that of masonry (lead caulking will be paid for separately):		
12.40.1	Sand cast iron plain shoes :		
12.40.1.1	150 mm diameter	each	431.10
12.41	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.		
12.41.1	75 mm diameter	metre	213.00
12.41.2	110 mm diameter	metre	319.75
12.42	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.		
12.42.1	Coupler		
12.42.1.1	75 mm	each	79.80
12.42.1.2	110 mm	each	119.95
12.42.2	Single pushfit Coupler		
12.42.2.1	75 mm	each	79.80
12.42.2.2	110 mm	each	110.60
12.42.3	Single tee with door		
12.42.3.1	75x75x75 mm	each	141.55
12.42.3.2	110x110x110 mm	each	205.45
12.42.4	Single tee without door		
12.42.4.1	75x75x75 mm	each	124.20
12.42.4.2	110x110x110 mm	each	190.75
12.42.5	Bend 87.5°		
12.42.5.1	75 mm bend	each	91.80
12.42.5.2	110 mm bend	each	132.00
12.42.6	Shoe (Plain)		
12.42.6.1	75 mm Shoe	each	81.10
12.42.6.2	110 mm Shoe	each	115.95

Code No.	Description	Unit	Rate ₹
12.43	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with M.S. screws of required length, including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.		
12.43.1	75 mm	each	310.85
12.43.2	110 mm	each	309.50
12.44	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	each	47.90
12.45	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :		
12.45.1	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- (Part I) :2011 (Board with BIS certification marks)	sqm	1145.95
12.45.2	12.5 mm thick tapered edge Glass Reinforced Gypsum (GRG) board conforming to IS: 2095- (Part 3):1996 (Boards with BIS certification marks)	sqm	1286.45
12.45.3	12.5 mm thick tapered edge gypsum moisture resistant board	sqm	1300.50

Code No.	Description	Unit	Rate ₹
12.45.4	Fully Perforated Gypsum Plaster Board of size 1200 x 2400x12.5 mm having approx. 15 % perforated area with perforation size and pattern as approved by the Engineer-in-charge and as per manufacturer's specification, with all 4 side tapered and backed by acoustical tissue with NRC value not less than 0.60	sqm	1483.15
12.46	Providing and fixing to the inlet mouth of rain water pipe PTMT (an Engineering Thermoplastic) grating square (Slit) 150 mm square with a height of 8 mm and weighing not less than 100 gms.	each	72.00
12.47	Providing & fixing UV stabilised fiberglass reinforced plastic sheet roofing up to any pitch, including fixing with polymer coated 'J' or 'L' hooks, bolts & nuts 8mm dia. G.I plain/bitumen washers complete but excluding the cost of purlins, rafters, trusses etc. The sheets shall be manufactured out of 2400 TEX panel rovigs incorporating minimum 0.3% ultra-violet stabiliser in resin system under approximately 2400 psi and hot cured. They shall be of uniform pigmentation and thickness without air pockets and shall conform to IS 10192 and IS 12866. The sheets shall be opaque or translucent, clear or pigmented, textured or smooth as specified.		
12.47.1	2 mm thick corrugated (2.5" or 4.2" or 6") or step-down (2" or 3" or 6") as specified	sqm	1179.25
12.47.2	2 mm thick flat	sqm	1048.50
12.48	Providing & fixing on roof pressed clay tile (Mangalore tile) of 20 mm nominal thickness and of approved size and as per approved pattern on steel frame work complete (steel frame work to be paid separately).	sqm	346.65
12.49	Providing & laying on roof pressed clay tile ridge (Mangalore tile) of 20mm thickness and of approved pattern on steel frame work complete (steel frame work to be paid separately).	sqm	77.75
12.50	Providing and fixing precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.	sqm	671.55
12.51	Providing and fixing precoated galvanised steel sheet roofing accessories 0.50 mm (+0.05 %) total coated thickness, Zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns using self drilling/ self tapping screws complete :		
12.51.1	Ridges plain (500 - 600mm)	metre	450.60

Code No.	Description	Unit	Rate ₹
12.51.2	Flashings/ Aprons.(Upto 600 mm)	metre	412.85
12.51.3	North light curves	metre	465.25
12.51.4	Barge board (Upto 300 mm)	metre	384.20
12.51.5	Crimp curve	sqm	422.50
12.51.6	Gutter (600 mm over all girth)	metre	1110.60
12.52	Providing and fixing tiled false ceiling of specified materials of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x 1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge.		
12.52.1	GI Metal Ceiling Lay in plain Tegular edge Global white color tiles of size 595x595 mm, and 0.5 mm thick with 8 mm drop; made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending.	sqm	1591.70
12.52.2	GI Metal Ceiling Lay in perforated Tegular edge global white color tiles of size 595x595 mm and 0.5 mm thick with 8 mm drop; made of GI sheet having galvanizing of 100 gms/sqm (both sides inclusive) and 20% perforation area with 1.8 mm dia holes and having NRC (Noise Reduction Coefficient) of 0.5, electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation, and backed with a black Glass fiber acoustical fleece.	sqm	1746.25
12.52.3	12.5 mm thick square edge PVC Laminated Gypsum Tile of size 595x595 mm, made of Gypsum plasterboard, manufactured from natural gypsum as per IS 2095 part I and laminated with white 0.16mm thick fire retardant PVC film on the face side and 12micron metalized polyester on the back side with all edges sealed with		

Code No.	Description	Unit	Rate ₹
	the face side PVC film which goes around and wraps the edges and is bonded to the edges and the back side metalized polyester film so as to make the tile a completely sealed unit.	sqm	1948.95
12.52.4	12.5 mm thick fully Perforated Gypsum Board tile made from plasterboard having glass fibre conforming to IS: 2095 part I, of size 595x595 mm, having perforation of 9.7x9.7 mm at 19.4 mm c/c with center borders of 48 mm and the side borders of 30 mm, backed with non woven tissue on the back side, having an NRC (Noise Reduction Coefficient) of 0.79, with 50 mm resin bonded glass wool backing.	sqm	1247.50
12.53	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture of size 595 x 595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanised steel sections (galvanising @ 120 grams per sqm including both side) consisting of main 'T' runner suitably spaced at joints to get required length and of size 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, resting on periphery walls /partitions on a Perimeter wall angle pre-coated steel of size(24x24X3000 mm made of 0.40 mm thick (minimum) sheet with the help of rawl plugs at 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture in the grid, including, cutting/ making opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc., wherever required. Main 'T' runners to be suspended from ceiling using G.I. slotted cleats of size 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyster baked paint, for all heights, as per specifications, drawings and as directed by Engineer-in-Charge.</p> <p>Note :- Only calcium silicate false ceiling area will be measured from wall to wall. No deduction shall be made for exposed frames/opening (cut outs) having area less than 0.30 sqm. The calcium silicate ceiling tile shall have NRC value of 0.50 (Minimum), light reflection > 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity <0.043 w/mK.</p>	sqm	1718.70

Code No.	Description	Unit	Rate
12.54	Providing and fixing GI Clip in Metal Ceiling System of 600x600 mm module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.5 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm made of G.I steel 0.7 mm thick from the soffit with help of soffit cleat 37x27x25x1.6 mm, rawl plugs of size 38x12 mm and C carrier suspension clip and main carrier bracket at 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join. C carrier and spring T connectors have to be used. All sections to be galvanized @ 120 gms/sqm (both side inclusive), fixing with clip in tiles into spring T with :		
12.54.1	GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5 mm thick with 25 mm height, made of G I sheet having galvanizing of 100 gms/ sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending.	sqm	1871.80
12.54.2	GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5 mm thick with 25 mm height, made of G I sheet having galvanizing of 100 gms/ sqm (both sides inclusive) and 20% perforation area with 1.8 mm dia holes and having NRC of 0.5, electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation.	sqm	1998.25
12.55	Providing and fixing Heat Resistant Terrace Tiles (300 mm x 300 mm x 20 mm) with SRI (solar refractive index) > 78, solar reflection > 0.70 and initial emittance > 0.75 on waterproof and sloped surface of terrace, laid on 20 mm thick cement sand mortar in the ratio of 1:4 (1 cement : 4 coarse sand) and grouting the joints with mix of white cement & marble powder in ratio of 1:1, including rubbing and polishing of the surface upto 3 cuts complete, including providing skirting upto 150 mm height along the parapet walls in the same manner.	sqm	1444.90
12.56	Providing and laying roof insulation with 40 mm thick impervious sprayed, closed cell free Rigid Polyurethane foam over deck insulation conforming to IS - 12432 Pt. III (density of foam being 40-45 kg/ cum), over a coat of polyurethane primer applied @ 6-8 sqm per litre, laying 400 G polythene sheet over PUF spray and providing a wearing course of 40 mm thick cement screed 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 20 mm nominal size) in chequered rough finish, in panels of 2.5 m x 2.5 m and embedding with 24 G wire netting and sealing the joints with polymerized mastic, all complete as per direction of Engineer-in-Charge.	sqm	1363.95

Code No.	Description	Unit	Rate ₹
12.57	Providing and fixing thermal insulation with Resin Bonded Fibre glass wool conforming to IS: 8183 having density 24 kg/m ³ , 50 mm thick, wrapped in 200G Virgin Polythene Bags fixed to wall with screw, rawel plug & washers and held in position by criss crossing GI wire etc. complete as per directions of Engineer-in-Charge.	sqm	307.35
12.58	Providing and fixing tiled false ceiling of specified materials of size 595x595 mm in true horizontal level, suspended on interlocking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x 1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanized butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge.		
12.58.1	8 mm thick fully perforated calcium silicate board made with Calcareous & Siliceous materials reinforced with cellulose fiber manufactured through autoclaving process to give stable crystalline structure with minimum compressive strength 225 kg/sq. cm, bending strength 100 kg/sq. cm, of size 595x595 mm, having perforation of dia. 10 mm with minimum perforated area 18 % with non woven tissue on the back side, having an NRC (Noise Reduction Coefficient) of 0.85, with 50 mm thick rockwool of 48 kg /cum backing.	sqm	1851.50
12.59	Providing & fixing false ceiling at all height including providing & fixing of framework made of special section, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/ sqm (both side inclusive) as per IS : 277 and consisting of angle cleat of size 25mm wide x 1.6mm thick with flanges of 27mm and 37mm, at 1200mm c/c, one flange fixed to the ceiling with dash fastener 12.5mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25 x10 x0.50mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I channels 45 x15 x 0.90mm running at the spacing of 1200 mm c/c, to which the ceiling section 0.5mm thick		

Code No.	Description	Unit	Rate ₹
	bottom wedge of 80mm with tapered flanges of 26 mm each having lips of 10.5mm, at 450mm c/c, shall be fixed in a direction perpendicular to G.I intermediate channel with connecting clip made out of 2.64mm dia x 230mm long G.I wire at every junction, including fixing perimeter channels 0.50mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/partitions with the help of Rawl plugs at 450mm centre, with 25mm long dry wall screws @ 230mm interval, including fixing of Calcium Silicate Board to ceiling section and perimeter channels with the help of dry wall screws of size 3.5 x25mm at 230mm c/c, including jointing & finishing to a flush finish of tapered and square edges of the board with recommended jointing compounds, jointing tapes, finishing with jointing compounds in three layers covering up to 150mm on both sides of joints and two coats of primer suitable for boards, all as per manufacture's specification and also including the cost of making opening for light fittings, grills, diffusers, cut outs made with frame of perimeter channels suitably fixed, all complete as per drawings, specificaton and direction of the Engineer in charge but excluding the cost of painting with:		
12.59.1	8 mm thick Calcium Silicate Board made with Calcareous & Siliceous materials reinforced with cellulose fiber manufactured through autoclaving process.	sqm	1330.40
12.60	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Rockwool conforming to IS: 8183,density 48 kg/ m3, 50 mm thick, wrapped in 200 G Virgin Polythene bags fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5mm x 24 gauge wire mesh, for top most ceiling of building.	sqm	568.45
12.61	Providing and fixing thermal insulation with Resin bonded rock wool conforming to IS: 8183, density 48 kg/m3, 50 mm thick, wrapped in 200 G virgin Polythene bags placed over existing false ceiling and held in position by criss-crossing G.I wire.	sqm	272.25
12.62	Providing and fixing thermal insulation with Resin Bonded rock wool conforming to IS: 8183, having density 48 kg/m3,50 mm thick,wrapped in 200 G Virgin Polythene Bags fixed to wall with screw, rawel plug & washers and held and in position by criss cossing G.I wire etc. complete as per directions of Engineer-in- Charge.	sqm	277.90
12.63	Providing and applying two coats of High Albedo paint having minimum Solar Reflective Index (SRI) 108 (with solar reflectance & thermal emittance tested as per ASTM) C 1549 and ASTM C 1371 respectively), VOC less than 10 cc/gm. The coating thickness and the methodology of application shall strictly as per manufacturer's specifications and as approved by Engineer-in-Charge. Surface preparation includes cleaning with metal wire brush to remove all dust, fungus etc., washing with water all complete. The contractor shall give guarantee for the performace of SRI and also the durability of coating, all complete as per direction of Engineer-in-Charge.	sqm	309.55

Code No.	Description	Unit	Rate ₹
12.64	Providing & fixing at all heights, levels and locations Mill finish Aluminium alloy roofing sheets of alloy IS designation 31500, temper Hx8 conforming to IS 737 and dimensions as per IS code 2676 with characteristics of good formability and corrosion resistance. The profile sheets shall be fixed to truss members in slope or required pitch or curvature with Hex cap headed self drilling/tapping Stainless steel screws M6, 50 mm long with 3 mm EPDM seal washer etc. all inclusive of labour, scaffolding, T&P and sundries etc. complete as per directions of the Engineer-In-Charge. (Cost of truss/frame work shall be paid separately).		
12.64.1	0.56 mm, Aluminium troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	936.70
12.64.2	0.71 mm, troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	1158.80
12.64.3	0.91 mm, troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	1452.20
12.64.4	0.56mm Aluminium profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	1201.20
12.64.5	0.71mm Aluminium profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	1488.90
12.64.6	0.91mm Aluminium profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	1871.50
12.64.7	0.56mm Aluminium Circular (sinusoidal) profile with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm, cover width 1150mm.	sqm	916.85
12.64.8	0.71mm Aluminium Circular (sinusoidal) profile with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm, cover width 1150mm.	sqm	1147.10
12.64.9	0.91mm Aluminium Circular (sinusoidal) profile with center to center pitch of 75 mm, depth of 19 mm, overall profile width 1250mm, cover width 1150mm.	sqm	1454.10
12.65	Providing & fixing at all heights, levels and locations colour finish Aluminium alloy roofing sheets of alloy IS designation 31500, temper Hx8 conforming to IS 737 and dimensions as per IS code 2676 with characteristics of good formability and corrosion resistance. The profile sheets shall be fixed to truss members in slope or required pitch or curvature with Hex cap headed self drilling/tapping Stainless steel screws M6, 50		

Code No.	Description	Unit	Rate ₹
	mm long with 3 mm EPDM seal washer etc. all inclusive of labour, scaffolding, T&P and sundries etc. complete as per directions of the Engineer-In-Charge. (Cost of truss/frame work shall be paid separately).		
12.65.1	0.56 mm, Aluminium Color coated troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	1006.30
12.65.2	0.71 mm, Aluminium Color coated troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	1324.05
12.65.3	0.91 mm, Aluminium Color coated troughed profile with center to center pitch of 200 mm, depth of 32 mm, overall profile width 1092 mm, cover width 1000mm.	sqm	1665.30
12.65.4	0.56mm Aluminium color profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	1373.25
12.65.5	0.71mm Aluminium color coated profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	1706.90
12.65.6	0.91mm Aluminium color coated profile with center to center pitch of 175 mm, depth of 46mm, top crest width of 41mm, bottom valley width of 80mm, overall profile width of 1144mm, cover width 1050mm.	sqm	2150.30
12.65.7	0.56 mm Aluminium profile with center to center pitch of 177.5 mm, depth of 28.5 mm, 987mm overall profile width, cover width 900mm	sqm	1126.00
12.65.8	0.71 mm Aluminium profile with center to center pitch of 177.5 mm, depth of 28.5 mm, 987mm overall profile width, cover width 900mm	sqm	1410.45
12.66	Providing and fixing of Pre-coated colour or mill finish Aluminium Roofing Accessories in 0.71 mm thickness ,Alloy 31500 (IS designation) [Aluminium Alloy (AA) 3004 (ISO designation)] For color, coating shall be 5-7 microns epoxy primer on both sides of the sheet and polyester top coat 15-18 microns, using self drilling/tapping SS screws of size 6 x 50mm with 3mm thick EPDM seal and SS plain washer complete :		
12.66.1	Precoated/mill finish aluminium Ridges plain (500- 600mm)	metre	969.50

Code No.	Description	Unit	Rate ₹
12.66.2	Precoated/mill finish aluminium Flashings/ Aprons (Upto 600 mm)	metre	885.50
12.66.3	Precoated/mill finish aluminium North light curves	metre	971.55
12.66.4	Precoated/mill finish aluminium Barge board (Upto 200 mm)	metre	748.20
12.66.5	Precoated/mill finish aluminium Crimp curve	metre	829.05
12.66.6	Precoated/mill finish aluminium Gutter (600 mm over all girth)	metre	1616.00