GOVERNMENT
OF
MADHYA PRADESH

PUBLIC WORKS DEPARTMENT

SCHEDULE OF RATES

FOR

BUILDING WORKS

2009

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FOR
BUILDING WORKS

IN FORCE FROM 15TH JUNE' 2009

ISSUED BY :-

ENGINEER-IN-CHIEF
M.P.PWD. BHOPAL

Price : Rs. 500/-

(Excluding Postage and forwarding Charges etc.)

FOREWORD

Schedule of Rates for Building works being published by Public Works Department from time to time, is a very comprehensive document and useful in execution of works. This Schedule of Rates is also being used as a guide by number of departments, government undertakings and to some extent by Private sector builders and Architects etc. as well.

The Public Works Department Schedule of Rates, for building works since its inception has been revised from time to time in order to bring it in line with the prevailing technology and market rates.

The last Schedule of Rates for building works was published in November' 1999,since then the prices of labour and materials have registered substantial increase, Beside the cost, there has been spurt of new construction materials and also with the advent of mechanized construction techniques for speedier construction it has necessitated revision of existing S.O.R. to include the aforesaid changes. Accordingly this Schedule of Rates has been prepared, incorporating elements of machinery and updation of new construction material and adoption of modern techniques of construction, wherever applicable.

Although this S.O.R. contains most of the items of S.O.R. 1999, the nomenclature of many items have been improved by making it more generic by deleting the brand names and making it more comprehensive by providing reference to various BIS standard and locations in regard to their applicability. The items which are either obsolete or not in use have been deleted. Several new items based on new material and new technologies in the construction sector being adopted in P.W.D. works have also been included in this document.

The rates of material and labour taken in this schedule are based on latest market rates.

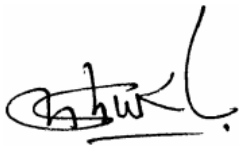
Due care has been taken to print the Schedule of Rates as correctly as possible. It is, however, possible, that some error might have crept in, In case any error or omission is noticed, it may be brought to the notice of this office.

I extend my gratitude and thanks to the following officers for taking keen interest to update this SOR to the present requirement.

1. Shri V.K. Bhugaonkar, Chief Engineer (Planning)
2. Shri V.K. Arakh Executive Engineer. (PWD Division No. 2, Bhopal).
3. Shri G.D. Gupta Executive Engineer.
4. Shri Javed Shakil Graduate Engineer.
5. Shri Arif Ahmed Ghauri Graduate Engineer.

I am sure that this Schedule of Rates will be quite useful to all concern in Building Industry in general and P.W.D. in particular.

Suggestions, if any for improvement of this S.O.R are also welcome. The same may be sent to email address pwdbhop@mp.nic.in.



Bhopal,
15th June' 2009

(SHAILENDRA SHUKLA)
ENGINEER-IN-CHIEF

GENERAL NOTES

1 DEFINITIONS :

a) Specifications would refer to the Central Public Works Department (C.P.W.D.) specifications as applicable as on date.

b) Engineer-in-Charge would refer to the Executive Engineer of the Public Works Division for the time being. It would also refer to the "Engineer" mentioned in the aforesaid specifications.

c) B.I.S. would refer to Bureau of Indian Standards.

2 In the absence of any stipulation to the contrary, unit rates for various items of works are for completing works to the requirements of the specifications including full compensation for all operations & inclusive of all labour, materials, royalties, lease rent, wastages, temporary work, plant, equipment, over head charges and profit, unless specified otherwise.

3 The mode of measurements shall be as per provisions contained in the relevant chapters and items of the specifications, unless specified otherwise.

4 The rates include the element of hire and running charges of all types of plants, machinery and equipment, required to complete the work, unless specified otherwise. The rates provided in this schedule of rates include cost, lead, lift of all materials required for execution of works inclusive of all charges like duties, octroi, tax, royalty, insurance etc. as may be applicable, all labour, all lead and lift (unless otherwise specifically provided for) including performance all workmanship, provision erection and removal of centering forms scaffolding benching ladders templates, tools and plants and all other applications etc, required for the proper execution work unless otherwise specified. Provisions for covering etc. necessary to protect the work / structure from inclement weather etc. and damage arising from falling materials or other cause such as rain, fire etc shall be the contractors responsibility. Rates are also inclusive of curing wherever required including arrangement of water and its lead or lift whatsoever. If there is any soucrce of water like tube well, hand pump, well etc. under Govt. custody and if water from this source is used for construction activity by the contractor then water charge will be deducted at the rate of 1% of the amount paid to the contractor from the item involving the use of water.

5 The labour only provided in the Schedule of Rates includes the cost of all labour including necessary machine, tools, scaffolding, handling of the materials at site of work, all workmanship and including the cost of the scaffolding, curing, any sundry materials like nails, spikes, water etc. and as detailed above, but does not include the cost of main material, which means materials shall be made available at or near the site of work. The rate includes provision of handling, storing under cover as required.

6 The rates also include the element of testing of samples of various materials brought by the contractor for use on the work, as well as other necessary tests for items of work as stipulated in the specifications. Frequency of such tests to be carried out must not be less than the prescribed frequencies. Copies of registers, containing records of tests shall have to be presented alongwith running account bills. Register (original) shall have to be submitted along with the final bill. Tests shall have to be conducted by the contractor's Engineer under the supervision of the Engineer-in-Charge or his authorised representatives. The contractor shall have to establish a field laboratory at the site of work, if the amount of contract exceeds Rs.25.00 lakhs. In other cases, testing of construction materials should be got done from any of the tests laboratories of the various Government Departments, Government/Semi Govt. under takings and Technical Institutes, Engineering College, Polytechnic, I.T.I. etc.,

6.1 The work should not be accepted in any case, if the contractor fails to observe the instructions of the department, regarding testing of materials.

6.2 Before making any payment, it will be the responsibility of the officers making payment to assure that all tests as per prescribed frequencies, have been carried out, and found as per requirement.

6.3 If tests are not conducted to the prescribed frequency, the Engineer in-Charge should reject that part of the work.

7 All materials shall conform to the relevant Indian Standard Specifications prevailing on the date of issue of notice inviting tender. All materials before use in works shall require approval of the Engineer in charge, who will get them tested sampled as per relevant IS code 15:5454:1978 at contractors cost and samples so approved be kept in the office of the concerned sub divisional officer till finalization of the work.

8 It will not be obligatory on the part of Engineer-in-Charge to provide any assistance in obtaining of lease/permits for extraction of minor minerals. The contractor will not be entitled to any excuse, whatsoever, on account of any delays in obtaining minor minerals to be used on the work.

9 Not withstanding anything to the contrary, aggregates to be used for all cement concrete items shall be crushed in the machanical crushers. All concrete shall have to be mixed in power driven mixers having hoppers and capacity of mixing concrete mix of atleast one bag of cement.

10 Nothing extra shall be payable on account of use of Narmada Sand or sand brought from any other quarry / river. Sand should conform to the requirements of IS: 1542 and IS: 2166 for using it in construction work.

11 When cement is used for mortar/volumetric mix etc. batch of one bag mix cement or its multiples shall be mixed and the measurement of box for metal, sand to be of 35 liters or multiples of it (convenient box size 40x35x25 cm.). For design mix concrete batching shall be done by weight.

12 If any item of work is found not upto the prescribed standard but the Engineer-in-Charge is of the opinion that the same is structurally adequate and can be accepted at a reduced rate, then in such cases, the Engineer-in-Charge shall have to submit proposals for appropriate reduction of rates supported by an analysis, in justification thereof, through a D.O. letter to the Chief Engineer concerned to obtain his approval expeditiously (ordinarily within 15 days). The approved analysis along with orders of the Chief Engineer shall have to be appended to the bills of the contractor.

13 Rates in this S.O.R. would also apply for works (Administrative approval upto Rs.2.00 Lakhs) on piece work/work order system. Rates payable for any item of work proposed to be done under this system may either be at par or below the rates in this S.O.R.

14 Rubble available from excavation of hard rock shall be the property of the contractor subject to recovery of Rs. 150 per cum. of the quantity of the rock excavated.

15 The contractor shall have to provide a ruled duplicate register at site named "Site order book". It shall be in the custody of departmental supervisory staff. The Engineer-in-Charge or his authorised representative may record his instructions in this book, which shall be noted by the Contractor or his authorised representative for compliance.

16 Teak wood shall not be used in any building work unless specific sanction of the State Government is obtained.

16.1 Provision of teak wood shall not be made in any of the estimate without prior sanction of the state Government.

17.1 Where contract provides for cement to be arranged by the Contractor himself, only I.S.I. Marked cement of relevant I.S. specifications shall be allowed to be used in the work subject to the following tests. The arrangement for necessary equipment and testing shall have to be made by the contractor himself at site, to be decided by the Engineer-in-Charge. All expenses shall be borne by the contractor. Any lot of cement brought to site by the contractor, would be permitted to be used in the work only after the satisfactory results of the tests, under the supervision of the Engineer-in-Charge or his authorised representative. The record of the tests result shall be maintained in the register referred in subsequent para.

a. Test for initial & final setting time as per IS: 3536 – 1996 1 Test for 10 tonnes or part thereof upto 10 Tonnes.

b. Test for deter mination of compressive strength of cement as per IS:3536-1996 1 Test for 50 tonnes or part thereof upto 10 Tonnes.

17.2 A duplicate register as per format here under shall be maintained at site of work. Extract certified copies of the entries for each month shall be submitted to the Engineer-in-Charge by the Contractor. The original register shall also be submitted to the Engineer-in-Charge on completion of the work by the Contractor.

S.	Date of receipt of cement	No. of bags	Name and address of firm, from whom purchased.	Signature of contractor or his authorised representative	Signature of authorised representative of Engineer-in-charge	Result of test for initial and final setting time.	Result of tests for compressive strength of cement	Remarks

17.3 When the strength of concrete required is upto M-20, then O.P.C. conforming to I.S. 269-1989 or P.P.C. confirming to I.S. : 1498-1976 may be used.

17.4 When the strength of concrete required is more than M-20 but upto M-30, then O.P.C. conforming to IS : 8112 - 1989 shall be used.

17.5 For prestressed concrete works and when the strength of concrete required is more than M-30, then O.P.C. conforming to IS : 12269-1987 shall be used.

17.6 Nominal mix would be adopted for cement concrete M-7.5, M-10, M-15, and M-20, Design mix shall have to be adopted for concrete of higher strengths.

18 As regard to steel reinforcement ;

a) Mild steel and medium tensile steel bars shall conform to IS :432 (Part-I),
b) Hot rolled deformed bars shall conform to IS : 1139,
c) Cold Twisted bars shall conform to IS : 1786,
d) Hard drawn steel wire fabric shall conform to IS : 1566 and
e) Rolled steel made from structural steel shall conform to IS : 226.

18.1 All reinforcement shall be free from loose mill scales, loose rust and coats of paints, oil, mud or other coatings which may destroy or reduce bond.

18.2 Only such steel as is obtained from main producers of steel e.g. SAIL, IISCO, TISCO or such steel rolling mills as are having licence from the B.I.S. to manufacture such steel for reinforcements, shall be allowed to be used in the work.

18.3 The Contractor shall have to produce Test Certificate in the proforma prescribed approved by B.I.S. from the manufacturer for every batch of steel brought to site of work.

18.4 Before commencement of use of steel, from any batch brought to site of work by the contractor, the Engineer-in-Charge shall arrange to get samples tested for nominal mass, tensile strength, bend test and rebend test from any Laboratory of his choice at the cost of Contractor. The selection of test specimens and frequency shall be as per relevant I.S. specification & of steel used.

19 The rates for various items in this S.O.R. are subject to stipulations in these "General Notes".

20 Items not included in this S.O.R. shall neither be provided in any estimate nor executed without express prior permission of the Engineer-in-Chief even though shown in the drawings prepared by the Chief Architect or any Consulting Architect. If any new or modified item is proposed to be provided in any estimate or intended to

be executed in any work, proposals with full justification thereof along with financial implication must be submitted to the Engineer-in-Chief for obtaining prior approval.

21 In case of any contradiction in the provisions of the specifications and the S.O.R., the provisions of the latter would take precedence.

22 The rates as given in this schedule for all items are final, binding and conclusive. In case of doubt and printing mistakes if any, the decision of the Engineer-in-Chief will be final and binding

23 In the interpretation of description of items or rates of the schedule of rates and specifications, the decision of the Engineer-in-Chief shall be final and binding

(SHAILENDRA SHUKLA)
ENGINEER-IN-CHIEF

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CHAPTER- I

CARRIAGE OF MATERIALS

Item No.	Description	Unit	Rate (in Rs.)
1.1	**Transportation of metal.**		
1.1.1	For a lead up to 1 km.	Cum.	60.00
1.1.2	For a lead up to 2 km.	Cum.	66.00
1.1.3	For a lead up to 3 km.	Cum.	69.00
1.1.4	For a lead up to 4 km.	Cum.	72.00
1.1.5	For a lead up to 5 km.	Cum.	77.00
1.1.6	Beyond 5 km and upto 10 km (Add for every 1 km)	Cum.	3.60
1.1.7	Beyond 10 km and upto 20 km (Add for every 1 km)	Cum.	3.00
1.1.8	Beyond 20 km and upto 50 km (Add for every 1 km)	Cum.	2.70
1.1.9	Beyond 50 km (Add for every 1 km)	Cum.	2.20
1.2	**Transportation of other different material (Rate as % of metal)**		Rate as % of Metal
1.2.1	Flag stone/cut stone	cum.	40% above
1.2.2	Masonry stones	cum.	75% above
1.2.3	Rubble	cum.	15% above
1.2.4	Loose moorum/sand/earth/surkhi/cement/stone dust/hot mix asphalt material	cum.	10% below
1.2.5	Excavated/compactd ordinary & other soil measured as per clause 301.8, 304.4 and 305.8	cum.	20% above
1.2.6	Excavated ordinairy rock measured as per clause 304.4	cum.	90% above
1.2.7	Coal/fuel wood/iron work/steel/G.I.sheets/ pipes/line/ machinary etc.	M.T.	7.5% below
1.2.8	150 mm dia Ballies.	R.M.	1.5% of metal
1.2.9	75/100 mm dia Ballies.	R.M.	0.75% of metal
1.2.10	Tar/paints/Bitumen etc.	M.T.	5% above
1.2.11	**Hume pipe**		
	1.2.11.1 1000 mm dia	R.M.	80%of metal
	1.2.11.2 1200 mm dia	R.M.	110% of metal
1.3	**Transportation by trucks on hire.**		
1.3.1	Trucks hired for full load excluding loading/ unloading and stacking for items not covered above for distances.		
1.3.1.1	Upto 15 kms.	Per km	35.00
1.3.1.2	Beyond 15kms and upto 50kms add extra over 1.3.1.1 above.	Per km	27.00
1.3.1.3	Beyond 50 kms. add extra over 1.3.1.2 above.	Per km	20.00
1.3.2	Loading of trucks	Cum	18.00
1.3.3	Unloading of trucks and stackings	Cum	18.00
1.4	**Unloading and stacking etc. at the railway yard from wagons**		
1.4.1	Cement	M.T.	30.00
1.4.2	Lime/coal	M.T.	28.00
1.4.3	fuel wood /iron/G.I. sheet/pipes/machinery	M.T.	28.00
1.4.4	Tar/bitumen/oil paint etc.	M.T.	24.00

CHAPTER-II

EXCAVATION FOR FOUNDATIONS

Notes:

1 The excavations shall conform to the lines & levels shown in the drawings and as directed by the Engineer-in-Charge. The contractor shall not excavate outside the limits of excavation. Any excess depth/width, excavated beyond the specified levels/dimensions on the drawing shall be made good at the cost of the contractor with the concrete as specified for the foundation.

2 Rate includes dressing the pits and excavated materials after dumping as directed by Engineer-in-Charge.

3 **CLASSIFICATION OF EXCAVATED MATERIALS**

a) Soil : This shall comprise top soil, turf, sand, clay, mud, peat, black cotton soil, shale, moorum, copra admixture of these and similar material which yields to the ordinary application of pick spade and/or shovel, rake or other ordinary digging equipment. Removal of gravel or any other nodular material having dimensions in any one direction not exceeding 300mm occuring in such soil shall be deemed to be covered under this category. Macadam surfaces such as water bound macadam and bitumen/tar bound, soling of roads, paths etc. in all depths/thicknesses shall be classified as soils.

b) Ordinary Rock : Laterites, shales and conglomerates, varieties of lime stone and sand stone etc., cement/lime concrete, stone masonry and brick work in cement/lime mortar below ground level, reinforced cement concrete and boulders having maximum dimension in any direction of more than 300mm., loose or embedded in soil, may or may not be requiring blasting are classified as ordinary rocks.

c) Hard Rock (Requiring Blasting) : This shall comprise Granites, Basalt and similar rocks for the excavation of which the use of mechanical plant and or blasting is required.

d) Excavation in Rocks, where blasting is prohibitted : Hard rock requiring blasting but where blasting is prohibitted for any reason and excavation has to be carried out by chiselling, wedging or any other agreed method.

4 **BLASTING OPERATIONS**

Blasting shall be carried out in a manner that completes the excavation to the lines and levels as indicated in the drawings with the least disturbance to adjacent material. It shall be done only with the written permission of the Engineer-in-Charge. All statutory laws, regulations, rules etc. pertaining to the acquisition, transport, storage, handling and use of explosives shall be strictly followed.

The contractor may adopt any method or methods of blasting consistent with the safety and job requirements. Prior to starting any phase of the operation, the contractor shall provide information describing pertinent blasting procedures, dimensions and notes.

The magazine for storage of explosives shall be limited to the designs and specifications of the explosive department concerned and located at the approved site.

No unauthorised person shall be admitted in to the magazine, which when not in use, shall be kept security locked. No matches or inflamable material shall be allowed in the magazine. Materials, tools, plants, equipments and personnel, deputed on blasting operation, should be approved by Engineer-in-Charge.

5 Extra rates for excavation for under water or in foul condition will be payable only for excavation below sub soil water level.

6 Lift is to be calculated on the height of C.G. of lifted materials above C.G. of borrow pit. In measuring lifts no notice will be taken of lifts less than 0.5 M.

7 In measuring lead, distance less than 25 meters will be ignored and 25 meters or above shall taken as 50 meters and part thereof.

8 Surface dressing comprises training the uneven surface of ground to uniform surface (either horizontal or slopping) by scraping off high patches and filling in low patches with the scraped soil. The Maximum depth of cutting or filling not exceeding 15cm.

9 Dry vegetation earth sand gravel, stone, deserts or brickwork, concrete, masonry etc. obtained from the excavation shall be property of Govt. of M.P. The rates of excavation include the separation of serviceable and unserviceable materials and depositing the serviceable ones in regular heaps.

10 Shoring in wells, foundations and trenches will not be payable without obtaining prior approval of concern Superintending Engineer.

11 **Rates:** Rates of all items in this chapter are inclusive of the expenses of all labour, materials, T & P and all incidental and other charges required completing the item of work in full and also including hire & running expenses of all machineries required for the work, including stacking of excavated materials as directed where ever required.

12 **Antiquities:**
Any ancient carvings, relics of antiquity, coins or other curiosities which may be discovered or excavated, are the property of the Government and are to be delivered to the Engineer-in-Charge.

Item No.	Description	Unit	Rate (in Rs.)
2.1	Surface dressing of the ground including removing vegetation and in-equalities not exceeding 15 cm deep and disposal of rubbish, lead upto 50 m and lift upto 1.5 m.		
	2.1.1 All kinds of soil.	100sqm	553.00
2.2	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50m outside the periphery of the area cleared.	100sqm	285.00
2.3	Clearing grass and removal of the rubbish upto a distance of 50 m outside the periphery of the area cleared.	100sqm	146.00
2.4	Felling trees of the girth (measured at a height of 1 m above ground level) including cutting of trunks and branches removing the roots and stacking of serviceable material and disposal of unserviceable material.		
	2.4.1 Beyond 30 cm girth upto and including 60 cm girth	each	88.00
	2.4.2 Beyond 60 cm girth upto and including 120 cm girth	each	388.00
	2.4.3 Beyond 120 cm girth upto and including 240 cm girth	each	1790.00
	2.4.4 Above 240 cm girth	each	3092.00
2.5	Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including disposal of excavated earth upto 50 m and lift upto 1.5 m, disposed soil to be levelled and neatly dressed :		
	2.5.1 All kinds of soil	sqm	22.00
2.6	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in over areas foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	2.6.1 All kinds of soil.	Cum.	107.00
2.7	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed.		
	2.7.1 Ordinary rock	Cum.	171.00
	2.7.2 Hard rock (requiring blasting)	Cum.	284.00
	2.7.3 Hard rock (blasting prohibited)	Cum.	364.00
2.8	Excavation work in foundation trenches or drains not exceeding 1.5 m in width or 10 sqm on plan including dressing of sides and ramming of bottoms lift upto 1.5 m, including getting out the excavated soil and disposal of surplus		

Item No.	Description	Unit	Rate (in Rs.)
	excavated soils as directed, within a lead of 50m.		
	2.8.1 Ordinary rock	Cum.	182.00
	2.8.2 Hard rock (requiring blasting)	Cum.	307.00
	2.8.3 Hard rock (blasting prohibited)	Cum.	369.00
2.9	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :		
	2.9.1 All kinds of soil		
	2.9.1.1 Pipes, cables etc, not exceeding 80 mm dia.	metre	75.00
	2.9.1.2 Pipes, cables etc. Exceeding 80 mm dia. but not exceeding 300 mm dia.	metre	122.00
	2.9.1.3 Pipes, cables etc. Exceeding 300 mm dia but not exceeding 600 mm.	metre	190.00
2.10	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5 m, but not exceeding 3 m. (Rate is over corresponding basic item for depth upto 1.5 metre).	metre	133%
2.11	Extra for excavating trenches for pipes,cables, etc, in all kinds of soil for depth exceeding 3m in depth, but not exceeding 4.5m. (Rate is over corresponding basic item for depth upto 1.5m.)	metre	340%
2.12	Excavating trenches of required width for pipes, cables, etc, including excavation for sockets, depth upto 1.5 m including getting out the excavated materials, refilling the excavated soil as required in layers not exceeding 20 cm in depth including consolidating each deposited layers by ramming, watering etc. stacking serviceable material for measurements and disposal of unserviceable material as directed, within a lead of 50m :		
	2.12.1 Ordinary rock :		
	2.12.1.1 Pipes, cables etc. not exceeding 80 mm dia.	meter	127.00
	2.12.1.2 Pipes, cables etc. Exceeding 80 mm dia but not exceeding 300 mm dia.	metre	275.00
	2.12.1.3 Pipes, cables exceeding 300 mm dia but not exceeding 600mm dia	metre	317.00
	2.12.2 Hard rock (requiring blasting)		
	2.12.2.1 Pipes, cables etc. not exceeding 80 mm dia.	metre	422.00
	2.12.2.2 Pipes, cables etc. Exceeding 80 mm dia but not exceeding 300 mm dia.	metre	462.00
	2.12.2.3 Pipes, cables etc. Exceeding 300 mm dia but not exceeding 600mm dia	metre	486.00
	2.12.3 Hard rock (blasting prohibited)		

Item No.		Description	Unit	Rate (in Rs.)
	2.12.3.1	Pipes, cables etc. not exceeding 80 mm dia.	metre	200.00
	2.12.3.2	Pipes, cables etc. Exceeding 80 mm dia. but not exceeding 300 mm dia.570	metre	496.00
	2.12.3.3	Pipes, cables etc. Exceeding 300 mm dia but not exceeding 600mm dia.	metre	570.00
2.13		Extra for excavating trenches for pipes, cables, etc. in ordinary/hard rock exceeding 1.5m in depth but not exceeding 3m. (Rate is over corresponding basic item for depth upto 1.5m)	metre	104%
2.14		Extra for excavating trenches for pipes, cables, etc. in ordinary/ hard rock exceeding 3m in depth but not exceeding 4.5 m. (Rate is over corresponding basic item for depth upto 1.5 m.)	metre	259%
2.15		Close timbering in trenches including strutting, shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered).		
	2.15.1	Depth not exceeding 1.5m.	sqm	70.00
	2.15.2	Depth exceeding 1.5m but not exceeding 3m.	sqm	72.00
	2.15.3	Depth exceeding 3m but not exceeding 4.5m.	sqm	78.00
2.16		Close timbering in case of shafts, wells, cesspits, manholes and the like including strutting, shoring and packing cavities (wherever required) etc. complete. (Measurements to be taken of the face area timbered).		
	2.16.1	Depth not exceeding 1.5m.	sqm	72.00
	2.16.2	Depth exceeding 1.5 m but not exceeding 3 m.	sqm	77.00
	2.16.3	Depth exceeding 3 m but not exceeding 4.5 m.	sqm	82.00
2.17		Close timbering over areas including strutting, shoring and packing, cavities (wherever required) etc. complete. (Measurements to be taken of the face area timbered) :		
	2.17.1	Depth not exceeding 1.5 m.	sqm	62.00
	2.17.2	Depth exceeding 1.5 m but not exceeding 3 m.	sqm	65.00
	2.17.3	Depth exceeding 3 m but not exceeding 4.5 m.	sqm	68.00
2.18		Extra for planking, strutting and packing materials for cavities (in close timbering) if required to be left permanently in position. (Face area of timber permanently left to be measured).	sqm	923.00
2.19		Open timbering in trenches including strutting and shoring complete (measurements to be taken of the face area timbered):		
	2.19.1	Depth not exceeding 1.5 m.	sqm	35.00
	2.19.2	Depth exceeding 1.5 m but not exceeding 3 m.	sqm	37.00
	2.19.3	Depth exceeding 3 m but not exceeding 4.5 m.	sqm	39.00

Item No.	Description	Unit	Rate (in Rs.)
2.20	Open timbering in case of shafts, wells, cesspits, manholes and the like including strutting and shoring complete (Measurements to be taken of the face area timbered):		
	2.20.1 Depth not exceeding 1.5 m.	sqm	30.00
	2.20.2 Depth exceeding 1.5 m but not exceeding 3 m.	sqm	33.00
	2.20.3 Depth exceeding 3 m but not exceeding 4.5 m.	sqm	36.00
2. 21	Open timbering over areas including strutting, shoring etc. complete. (Measurements tobe taken of the face area timbered):		
	2.21.1 Depth not exceeding 1.5 m.	sqm	21.00
	2.21.2 Depth exceeding 1.5 m but not exceeding 3 m.	sqm	23.00
	2.21.3 Depth exceeding 3 m but not exceeding 4.5 m.	sqm	26.00
2.22	Extra for planking and strutting in open timbering if required to be left permanently in position. (Face area of the timber permanentlyleft to be measured).	sqm	464.00
2.23	Extra rates for quantities of works, executed:	.	
	2.23.1 In or under water and/or liquid mud, including pumping out water as required.	metre depth	20%
	2.23.2 In or under foul position, induding pumping out water as required.	metre depth	25%
2.24	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	Cum.	49.00
2.25	Extra for every additional lift of 1.5 m or part thereof in.		
	2.25.1 All kinds of soil.	Cum.	20.00
	2.25.2 Ordinary orhard rock.	Cum.	36.00
2.26	Supplying and filling in plinth with crusher stone dust/ coarse sand under floors including, watering, ramming consolidating in layers not exceeding 20cm in depth in layers not exceeding 20cm in depth and dressing complete.	Cum.	530.00
2.27	Supplying and filling in plinth with Hard muram/ Hard copra under floors including, watering, ramming consolidating and dressing complete	Cum.	337.00
2.28	Excavating holes upto 0.5Cum. including getting out the excavated soil, then returning the soil as required in layers not exceeding 20cm in depth, induding consolidating each deposited layer by ramming, watering etc, disposing of surplus excavated soil; as directed within a lead of 50m and lift upto 1.5m.		
	2.28.1 All kinds of soil.	each	57.00
	2.28.2 Ordinary rock	each	93.00

Item No.	Description	Unit	Rate (in Rs.)
	2.28.3 Hard rock (requiring blasting)	each	169.00
	2.28.4 Hard rock (blasting prohibited)	each	200.00
2.29	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment 20% With chlorophysipuos/ lindare eusulsifiable concentrate including cost of emulsinfiable:		
	2.29.1 Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300 mm including excavation channel along the wall & rodding etc. complete:		
	2.29.1.1 With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration.	RM	31.00
	2.29.2 Along the external wall below concrete or masonry apron using chemical emulsion @2.25 litres per linear metre induding drilling and plugging holes etc.		
	2.29.2.1 With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration.	RM	33.00
	2.29.3 Treatment of soil under existing floors using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 sand) to match the existing floor :		
	2.29.3.1 With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	sqm	69.00
	2.29.4 Treatment of existing masonry using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1 cement : 2 sand) to the full depth of the hole :		
	2.29.4.1 With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	metre	44.00
	2.29.5 Treatment at points of contact of wood work by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150mm centre to centre and sealing the same.	metre	117.00
2.30	Deduct for disposed soil not levelled and neatly dressed for all excavation item above	Cum.	15.00
2.31	Preconstruction curative Cum. preventive antitermite treatment to the building under construction by providing (i) surface treatment by spreading emulsion over the plinth area before laying the base concrete under floors @ 5.0 litres/Sqm.(ii) Pumping the emulsion in plinth masonry on filling side at floor junction @ 7.5 litres/Sqm. (iii) Pumping the emulsion from	Sqm	132.00

Item No.	Description	Unit	Rate (in Rs.)
	outer side of the plinth below ground alround the masonry @ 5.0 litres/Sqm as per I.S. 8944 Emulsion. (1Chlorpyrifos: 19 water) with five years service guarantee (Measurements to be taken for plinth area)		
2.32	Making bore holes for providing dowel bars at designed depth in rock foundation by drilling 40 mm dia bore hole in rock including necessary bending hooking, in position and grouting with cement slurry etc. complete as per drawing and spectification. (Steel to be paid separately).	RM	196.00

CHAPTER-III

MORTARS

NOTES :

1 **Cement:** Cement to be used in the works shall be any of the following types with the prior approval of the Engineer-in-charge :

a) Ordinary portland cement, 33 Grade conforming to IS : 269.
b) Ordinary portland cement, 43 Grade conforming to IS : 8112.
c) Ordinary portland cement, 53 Grade conforming to IS : 12269.
d) Sulphate resistant portland cement conforming to IS : 12330.

2 **Sand:** Sand to be used in the work, shall conform to IS: 1542-1960 for plaster and IS: 2166-1965 for masonry work.

3 **Cement Mortar:** Cement and sand shall be mixed in specified proportions given in the agreement/drawings. All mortars shall be mixed with a minimum quantity of water to produce desired workability consistent with maximum density of mortar. The mix shall be clean and free from injurious type of soil/acid/alkali/organic matter or deleterious substances.

4 **Water :** Water used for mixing and curring shall be clean and free from injurious amount of oils, acids, alkalis, salts, sugar, organic or other substances. Potable water is generally considered satisfactory for preparing mortars.

5 The mixing shall preferably be done in a mechanical mixer operated manually or by power. Hand mixing can be resorted to as long as uniform density of the mix and its strength are assured subject to prior approval of the Engineer-in-Charge. Hand mixing operation, if permitted, shall be carried out on a clean water tight platform where cement and sand shall be first mixed dry in the required proportion by being turned over and over, backwards and forwards several times till the mixture is of uniform colour. Thereafter, minimum quantity of water shall be added to bring the mortar to the consistency of stiff paste. The mortar shall be mixed for at least two minutes after addition of water.

Mortar shall be mixed only in such quantity as required for immediate use. The mix which has developed initial set, shall not be used. Intial set of mortar with O.P.C. shall normally be considered to have taken place in 30 minutes after mixing. If the mortar has stiffened during initial setting time because of evaporation of water, same can be re-tempered by adding water as frequently as needed to restore requisite consistency but this retempering shall not be permitted after 30 minutes. Mortar, unused for more than 30 minutes, shall be rejected and removed from site.

Item No.	Description	Unit	Rate (in Rs.)
3.1	Cement mortar 1:2 (1 cement : 2 sand).	Cum.	4313.00
3.2	Cement mortar 1:3 (1 cement : 3 sand).	Cum.	3572.00
3.3	Cement mortar 1:4 (1 cement : 4 sand).	Cum.	2928.00
3.4	Cement mortar 1:5 (1 cement : 5 sand).	Cum.	2582.00
3.5	Cement mortar 1:6 (1 cement : 6 sand).	Cum.	2285.00
3.6	Cement mortar 1:2 (1 cement : 2 stone dust).	Cum.	3979.00
3.7	Cement mortar 1:2 (1 cement : 2 marble dust).	Cum.	4644.00
3.8	Cement mortar 1:5 (1 cement : 5 marble dust).	Cum.	1954.00
3.9	White cement mortar 1:2 (1 white cement : 2 marble dust).	Cum.	9678.00
3.10	White cement mortar 1:3 (1 white cement : 3 marble dust).	Cum.	7718.00
3.11	White cement mortar 1:5 (1 white cement : 5 marble dust).	Cum.	5248.00

CHAPTER-IV

PLAIN CEMENT CONCRETE

Notes:

1 **Cement:** Cement to be used in the works shall be any of the following types with the prior approval of the Engineer-in-charge :

a) Ordinary portland cement, 33 Grade conforming to IS : 269.
b) Ordinary portland cement, 43 Grade conforming to IS : 8112.
c) Ordinary portland cement, 53 Grade conforming to IS : 12269.
d) Sulphate resistant portland cement conforming to IS : 12330.

2 **Aggregates:** aggregate shall consist of clean, hard, strong, dense, non-porous and durable pieces of crushed stone. They shall not consist pieces of disintegrated stones, soft, flaky, elongated particles, salt, alkali, vegetable matter or other deleterious materils. All aggregate shall conform to IS: 383 and tests for conformity shall be carried out as per IS : 2386 parts I to VIII.

The maximum value of flakiness Index for aggregate shall not exceed 35 percent. The aggregate shall satisfy the following requirements of grading:

Grading Requirements of Aggregate

IS Sieve	Percent by weight passing the sieve		
	40mm	20mm	12.5mm
63mm	100	-	-
40mm	95-100	100	-
20mm	30-70	95-100	100
12.5mm	-	-	90-100
10mm	10-35	25-55	40-85
4.75	0-5	0-10	0-10

3 **Sand/Fine Aggregates :**
Sand to be used for lime or cement concrete should be dry and free from all deleterious materials, and shall conform to IS: 383-2007 & fine aggregates shall not contain dust, lumps, soft or flaky materials, mica or other deleterious materials. Fine aggregates having positive alkali-silica reaction shall not be used. All fine aggregate shall conform to IS : 383. The fineness modulus of fine aggregate shall neither be less than 2.0 nor greater than 3.5

4 **Water :** Water used for mixing and curing shall be clean and free from injurious amounts of oils, acids, alkalis, salts, sugar, organic materials or other substances that may be deleterious to concrete. Potable water is generally considered satisfactory for mixing and curing of concrete.

5 **Concrete:** Concrete shall be mixed either in a concrete mixer or in a batching and mixing plant. Hand mixing is prohibited. Mixing shall be continued till materials are uniformly distributed and a uniform colour of the entire mass is obtained and each individual particle of the aggregate shows complete coating of mortar, containing its proportionate amount of cement. In no case, mixing shall be done for less than 2 minutes.

Concrete shall be transported and placed as near as practicable to its final position. Concrete shall not be freely dropped into place from a height exceeding 1.50metres and it shall be compacted in its final position within 30 minutes of its discharge from the mixer. It shall be compacted thoroughly by vibration or other means during placing so as to produce a dense homogeneous void-free mass having the required surface finish. Bottom and side surfaces shall give a uniform texture, smooth surface and good appearance. Non uniform texture and rough surface of concrete shall be treated as defective work and it has to be remedied with 1:3 cement plaster but in no case, more than 5% of area be permitted to be made good with plastering, Concrete having rough, non uniform texture and honey combing in more than 5% area shall be rejected and the payment for the formwork shall also be not made.

6 Formwork shall include all temporary or permanent forms required for forming the concrete of the shape, dimensions and surface finish as shown on the drawings together with all props, staging, centering, scaffolding and temporary construction required for their support.

7 All materials shall conform to the specifications issued by the Indian Standards Institution. Materials and components used for formwork shall be examined for damage or excessive deterioration before use/reuse and shall be used only if found suitable after necessary repairs. In case of timber form work, the inspection shall not only cover physical damages but also signs of attacks by decay, rot or insect attack or the development of splits.

8 Form shall be constructed with metal or timber. The metal used for forms shall be of such thickness that the forms remain true to shape. All bolts should be counter sunk.

9 The contractor shall furnish the design and drawing of complete formwork (i.e. the forms as well as their supports) for approval of the Engineer-in-Charge before any erection is taken up. Not withstanding any approval or review of drawing and design by the Engineer-in-Charge, the contractor shall be entirely responsible for the adequacy and safety of form work.

10 The formwork shall be robust and strong and joints shall be leakproof. Staging must have cross bracings and diagonal bracings in both direction and the number of joints in the form work shall be kept to a minimum by using large size panels.

11 Rates in this chapter are for the finished work including the cost of all materials, labour, tools and plant required for design, construction and removal of formwork including properly supporting the members until the concrete is cured, set and hardened as required and also inclusive of lining with material approved by the Engineer-in-Charge so as to provide a smooth finish of uniform texture, appearance and to produce a finished concrete true to shape, line, levels and dimension as shown on the drawings. The material used shall leave no stain on the concrete and so fixed to its backing as not to impart any blemishes. The rate also includes coating of formwork with an approved release agent that will effectively prevent sticking and will not stain the concrete surface. Lubricating (machine oils) are prohibited for use as a coating.

12 The rate includes provision of gradient in formwork for terrace roof as per direction of Engineer-in-Charge and the gradient shall be provided necessarily so that water is drained out quickly and effectively.

13 Rates also include all leads and lifts of all materials etc. required for the work.

Item No.	Description	Unit	Rate (in Rs.)
4.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :		
	4.1.1 With 20mm nominal size graded stone aggregate.		
	4.1.1.1 M 25	Cum.	5036.00
	4.1.1.2 M 20	Cum.	3831.00
	4.1.1.3 M 15	Cum.	3414.00
	4.1.1.4 M 10	Cum.	2900.00
	4.1.2 With 40mm nominal size graded stone aggregate.		
	4.1.2.1 M 15	Cum.	3362.00
	4.1.2.2 M 10	Cum.	2833.00
	4.1.2.3 M 7.5	Cum.	2546.00
	4.1.2.4 M 5	Cum.	2301.00
	4.1.3 With Fly ash		
	4.1.3.1 1:2:3½:9 (1 ordinary portland cement : 2 Fly ash : 3½ sand : 9 graded stone aggregate 40 mm nominal size)	Cum.	2466.00
	4.1.3.2 1:2½:4:11 (1 ordinary portland cement : 2½ fly ash : 4 sand : 11 graded stone aggregate 40 mm nominal size)	Cum.	2207.00
4.2	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. up to floor two level, exduding the cost of centering, shuttering and finishing :		
	4.2.1 With 20mm nominal size graded stone aggregate		
	4.2.1.1 M 25	Cum.	5210.00
	4.2.1.2 M 20	Cum.	4039.00
	4.2.1.3 M 15	Cum.	3643.00
	4.2.1.4 M 10	Cum.	3140.00
	4.2.2 With 40mm nominal size graded stone aggregate		
	4.2.2.1 M 15	Cum.	3594.00
	4.2.2.2 M 10	Cum.	3076.00
4.3	Centering and shuttering induding strutting, propping etc. and removal of form work for :		
	4.3.1 Foundations, footings, bases for columns.	sqm	127.00
	4.3.2 Retaining walls,return walls,walls (any thickness) including attached pilasters, buttresses, plinth and string courses fillets etc.	sqm	193.00
	4.3.3 Columns, piers, abutments, pillars, posts and struts.	sqm	199.00

Item No.	Description	Unit	Rate (in Rs.)
4.4	Providing and laying cement concrete in kerbs, steps and the like at or near ground level excluding the cost of centering, shuttering and finishing.		
	4.4.1 M15 (With 20mm nominal size graded stone aggregrate)	Cum.	3414.00
	4.4.2 M 10 (With 20mm nominal size graded stone aggregrate)	Cum.	2900.00
4.5	Providing and fixing up to floor two level precast cement concrete string or lacing courses, copings, bed plates, anchor blocks, plain window sills, shelves, louvers, steps, stair cases, etc. Including hoisting and setting in position with cement mortar 1:3 (1 Cement : 3 sand), cost of required centering, shuttering and finishing smooth with 6mm thick cement plaster 1:3 (1 Cement : 3 sand) on exposed surfaces complete.		
	4.5.1 M15 (With 20mm nominal size graded stone aggregate)	Cum.	4670.00
	4.5.2 M10 (With 20mm nominal size graded stone aggregate)	Cum.	4218.00
4.6	Providing and fixing at or near ground level precast cement concrete in kerbs, edgings etc. as per approved pattern and setting in position with cement mortar 1:3 (1 Cement : 3 sand) including the cost of required centering, shuttering and finishing smooth with 6mm thick cement plaster 1:3 (1 cement : 3 fine sand) on exposed surfaces complete.		
	4.6.1 M15 (With 20mm nominal size graded stone aggregate)	Cum.	4115.00
4.7	Providing and fixing up to floor two level precast cement concrete solid block including hoisting and setting in position with cement mortar 1:3 (1 cement : 3 sand), cost of required centering, shuttering and finishing smooth with 6mm thick cement plaster 1:3 (1 cement : 3 fine sand) on exposed surfaces complete :		
	4.7.1 M15 (With 20mm nominal size graded stone aggregate)	Cum.	5395.00
	4.7.2 M10 (With 20mm nominal size graded stone aggregate)	Cum.	4942.00
4.8	Providing and fixing up to floor two level precast cement concrete hollow block including hoisting and setting in position with cement mortar 1:3 (1 cement : 3 sand), cost of required centering, shuttering and finishing smooth with 6mm thick cement plaster 1:3 (1 cement : 3 fine sand) on exposed surfaces complete :		
	4.8.1 M15 (With 20mm nominal size graded stone aggregate)	Cum.	4695.00
	4.8.2 M10 (With 20mm nominal size graded stone aggregate)	Cum.	4487.00
4.9	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggegate 12.5mm nominal size).	sqm	151.00
4.10	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20mm nominal size).	sqm	185.00
4.11	Extra for providing and mixing water proofing material in cement concrete work @ 1 kg per 50kg of cement.	per 50 kg cement	44.00

Item No.	Description	Unit	Rate (in Rs.)
4.12	Applying a coat of residual petroleum bitumen of penetration 80/100 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	sqm	79.00
4.13	Extra for concrete work in superstructure above floor two level for each floors or part thereof.	@ 1% of rate of concrete	
4.14	Extra for laying concrete in or under water and/or liquid mud including cost of pumping or bailing out water and removing slush etc. complete.	Cum. per meter depth	193.00
4.15	Extra for laying concrete in or under foul positions.	Cum	75.00
4.16	Making plinth protection 50mm thick of cement concrete grade M 10 over 75mm bed of dry metal ballast 40mm nominal size well rammed and consolidated and filled with sand including finishing the top smooth (with 20mm nominal size graded stone aggregate.)	sqm	332.00

Note:- Flyash conforming to grade I of IS: 3812 (Part - I) may be used as part replacement of OPC provided uniform blending with cement is ensured in accordance with clauses 5.2 and 5.2.1 of 15:456:- 2000 in the items of BMC and RMC.

CHAPTER-V

REINFORCED CEMENT CONCRETE

NOTES:

1 **Cement:** Cement to be used in the works shall be any of the following types with the prior approval of the Engineer-in-charge:

a) Ordinary portland cement, 33 Grade conforming to IS : 269.
b) Ordinary portland cement, 43 Grade conforming to IS : 8112.
c) Ordinary portland cement, 53 Grade conforming to IS : 12269.
d) Sulphate resistant portland cement, conforming to IS : 12330.

2 **Steel:** Steel to be used shall conform to IS: 1786. All steel shall be procured from original producers; no re-rolled steel shall be incorporated in the work.

Only new steel shall be delivered to the site. Every bar shall be inspected before asssembling on the work and defective, brittle or burnt bar shall be discarded. Cracked ends of bars shall be discarded.

3 **Aggregates:** aggregate shall consist of clean, hard, strong, dense, non-porous and durable pieces of crushed stone. They shall not consist pieces of disintegrated stones, soft, flaky, elongated particles, salt, alkali, vegetable matter or other deleterious materials. All aggregate shall conform to IS: 383 and tests for conformity shall be carried out as per IS: 2386 parts I to VIII.

The maximum value of flakiness Index for aggregate shall not exceed 35 percent. The aggregate shall satisfy the following requirements of grading:

Grading Requirements of Aggregate

IS Sieve	Percent by weight passing the sieve		
	40mm	20mm	12.5mm
63mm	100	-	-
40mm	95-100	100	-
20mm	30-70	95-100	100
12.5mm	-	-	90-100
10mm	10-35	25-55	40-85
4.75	0-5	0-10	0-10

4 **Sand/Fine Aggregates:** Fine aggregates shall not contain dust, lumps, soft or flaky materials, mica or other deleterious materials. Fine aggregates, having positive alkali-silica reaction, shall not be used.

All fine aggregates shall conform to IS : 383. The fineness modulus of fine aggregate shall neither be less than 2.0 nor greater than 3.5.

5 **Water:** Water used for mixing and curing shall be clean and free from injurious amount of oils, acids, alkalis, salts, sugar, organic materials or other substances that may be deleterious to concrete. Potable water is generally considered satisfactory for mixing and curing of concrete.

6 **Concrete:** Concrete shall be mixed either in a concrete mixer or in a batching and mixing plant. Hand mixing is prohibited. Mixing shall be continued till materials are uniformly distributed and a uniform colour of the entire mass is obtained and each individual particle of the aggregate shows complete coating of mortar, containing its proportionate amount of cement. In no case, mixing shall be done for less than 2 minutes.

Concrete shall be transported and placed as near as practicable to its final position. Concrete shall not be freely dropped into place from a height exceeding 1.50 metres and it shall be compacted in its final position within 30 minutes of its discharge from the mixer. It shall be compacted thoroughly by vibration or other means during placing so as to produce a dense homogeneous void-free mass having the required surface finish.

Bottom and side surfaces shall give a uniform texture, smooth surface and good appearance. Non uniform texture and rough surface of concrete shall be treated as defective work and it has to be remedied with 1:3 cement plaster.

7 Item for Ready mixed concrete has also been included in this chapter in view of changing technology.

Item No.	Description	Unit	Rate (in Rs.)
5.1	Providing and laying in position specified grade of reinforced cement concrete (with 20mm nominal size graded stone aggregate) excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level :		
5.1.1	M 20 Nomial mix	Cum.	3936.00
5.2	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, posts and struts suspended floor roof slab, beams, etc. up to floor two level excluding cost of centering, shuttering, finishing and reinforcement :		
5.2.1	M 20 Nomial mix (with 20mm nominal size graded stone aggregate)	Cum.	4321.00
5.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope of any degree landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor two level excluding the cost of centering, shuttering, finishing and reinforcement in concrete grade.		
5.3.1	M 20 Nomial mix (with 20mm nominal size graded stone aggregate)	Cum.	3863.00
5.4	Providing and laying up to floor two level reinforced cement concrete in kerbs, steps and the like excluding the cost of centering, shuttering, finishing and reinforcement with Concrete grade M20 Nomial mix (with 20mm normal size graded stone aggregade)	Cum.	4103.00
5.5	Reinforced cement concrete work in arches, archribs, domes, vaults, shells, folded plate and roofs having slope at any degree up to floor two level excluding the cost of centering, shuttering, finishing and reinforcement in Concrete grade.		
5.5.1	M 20 Nomial mix (with 20mm nominal size graded stone aggregate)	Cum.	4135.00
5.6	Add extra for reinforced cement concrete work in chimneys, shafts, up to floor two level excluding the cost of centering, shuttering, finishing and reinforcement.	Cum.	511.00
5.7	Reinforced cement concrete work in well-steining excluding the cost of centering, shuttering, finishing and reinforcement in concrete grade		
5.7.1	M 20 Nomial mix (with 20mm nominal size graded stone aggregate)	Cum.	3979.00
5.8	Reinforced cement concrete work in vertical and horizontal fins individually or forming box louvers, facias and eaves boards up to floor two level excluding the cost of centering, shuttering, finishing and reinforcement in concrete grade.		
5.8.1	M 20 Nomial mix (with 20mm nominal size graded stone aggregate)	Cum.	3077.00

Item No.	Description	Unit	Rate (in Rs.)
5.9	Centering and shuttering including strutting, propping etc. and removal of form for :		
5.9.1	Foundations, footings, bases of columns, etc. for mass concrete up to plinth level.	sqm	127.00
5.9.2	Walls (any thickness) including attached pilasters butteresses, plinth beams and string courses etc.up to plinth level.	sqm	193.00
5.9.3	Suspended floors, roofs, landings, balconies and access platform. Shelves (Cast in situ) Lintels, beams, beams, girders, bressumers and cantilevers, Columns, Pillars, Posts and Struts Walls in super structure.	sqm	199.00
5.9.4	All types of staircases including riser & landing.	sqm	248.00
5.9.5	Arches, domes, vaults up to 6 m span	sqm	691.00
5.9.6	Extra for arches, domes, vaults exceeding 6 m span	sqm	260.00
5.9.7	Chimneys and shafts	sqm	147.00
5.9.8	Vertical and horizontal fins individually or forming box louvers band, facias and eaves boards Weather shade, Chajjas, corbels etc., including edges.	sqm	259.00
5.9.9	Extra for shuttering in circular work or any other geometrical shape (20% of respective centering and shuttering items).	sqm	20% of respective item
5.9.10	Cornices and mouldings	sqm	323.00
5.9.11	Coffer / waffle slab of any size or shape as shown in the drawing.	sqm	710.00
5.10	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc. including cost of de-shuttering and decentering at all levels, over a height of 4m, for every additional height of 1 metre or part thereof (Plan area to be measured)		
5.10.1	Suspended floors, roofs, landing, beams and balconies	sqm	113.00
5.11	Providing, hoisting and fixing up to floor two level precast reinforced cement concrete in shelves including setting in cement mortar 1:3 (1 cement : 3 sand), cost of required centering, shuttering and finishing with neat cement punning on exposed surfaces but excluding the cost of reinforcement with concrete grade M 15 (with 12.5 mm normal size graded stone aggregade)	Cum.	6905.00
5.12	Providing precast cement concrete Jali 1:2:4 (1cement :2sand:4 graded stone aggregate 6mm nominal size) reinforced with 1.6 mm dia mild steel wire induding centering and shuttering, roughening cleaning, fixing and finishing in cement mortar 1:3 (1cement:3 fine sand) etc. complete exduding plastering of the jambs, ills and soffits.		
5.12.1	50 mm thick	sqm	435.00
5.12.2	40 mm thick	sqm	381.00
5.12.3	25 mm thick	sqm	372.00

Item No.	Description	Unit	Rate (in Rs.)
5.13	Encasing rolled steel sections, in beams and columns, with cement concrete M 20 (1 cement:1.5 sand: 3 graded stone aggregate 20mm nominal size) including centering and shuttering complete but excluding cost of reinforcement.	Cum.	5214.00
5.14	Encasing rolled steel section in grillages with cement concrete M20 (1 cement: 1.5 sand: 3 graded stone aggregate 20 mm nominal size) including centering and shuttering but excluding cost of expanded metal and hangers.	Cum.	3613.00
5.15	Extra for providing and fixing expanded metal mesh of size 20x60mm and strands 3.25mm wide 1.6mm thick weighing 3.64 kg. per sqm. for encasing of rolled steel sections in beams, columns and grillages excluding cost of hangers.	sqm	358.00
5.16	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding including cost of binding wire up to floor two level including all wastage etc. complete.		
	5.16.1 Mild steel and Medium Tensile steel bars.	kilogram	41.50
	5.16.2 Hard drawn steel wire	kilogram	46.60
	5.16.3 Cold twisted bars (CTD)	kilogram	42.00
	5.16.4 Hot rolled deformed bars	kilogram	42.00
	5.16.5 Hard drawn steel wire fabric	kilogram	54.00
	5.16.6 Thermo-Mechanically Treated bars.(TMT)	kilogram	42.00
5.17	Add extra for providing reinforcement above Floor two level for every additional floor or part there of.	kilogram	1% of the respective Item
5.18	Providing and fixing in position copper plate as per design for expansion joints.	kilogram	354.00
5.19	Providing and filling in position, blown bitumen in expansion joints 25mm thick.	sqm	391.00
5.20	Providing and filling in position bitumen mix filler of Proportion 80 kg. of hot bitumen, 1 kg. Of cement and 0.25 cubicmetre of sand for expansion joints 25 mm thick.	sqm	100.00
5.21	Providing and fixing in position 25 mm thick bitumen impregnated fibre board conforming to IS: 1838 including cost of primer, sealing compound in expansion joints.	sqm	351.00
5.22	Providing and fixing sheet covering over expansion joints with iron screws as per design to match the colour / shade of wall treatment.		
	5.22.1 Non-asbestos fibre cement board 6mm thick as per IS:14862.	metre	71.00
	5.22.1.1 150mm wide.	metre	94.00
	5.22.1.2 200mm wide.		

Item No.	Description	Unit	Rate (in Rs.)
	5.22.2 Aluminium fluted strips 3.15mm thick.		
	5.22.2.1 150 mm wide.	metre	324.00
	5.22.2.2 200 mm wide.	metre	430.00
5.23	Providing for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections.	metre	12.50
5.24	Extra for laying reinforced cement concrete in or under water and/ or liquid mud including cost of pumping or bailing out water and removing slush etc., complete.	Cum per meter depth.	192.00
5.25	Extra for laying reinforced cement concrete in or under foul positions.	Cum.	71.00
	DESIGN MIX		
5.26	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including all lift of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-20 grade reinforced cement concrete by using 403kg. of cement per Cum. of concrete. All work up to floor II level.	Cum.	4360.00
5.27	Providing and laying in position ready mixed concrete manufactured in fully automatic batching plant and transported to site of work in transit mixer for a lead up to 10kms having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering finishing and reinforcement including cost of admixtures in recommended proportions as per IS:9103 to accelerate/ retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer-in-charge. M-20 grade Reinforced cement concrete by using 403kg of cement per Cum. of concrete. All works up to 50 mt height above plinth level	Cum.	4812.00
5.28	Add for providing richer mixes respectively at all floor levels.		
	5.28.1 Providing M-25 grade concrete by using 410kg of cement per Cum. of concrete instead of M-20 grade B.M.C/ R.M.C.	Cum.	30.00
	5.28.2 Providing M-30 grade concrete by using 420kg of cement per Cum. of concrete instead of M-20 grade B.M.C/ R.M.C.	Cum.	60.00
	5.28.3 Providing M-35 grade concrete by using 428kg of cement per Cum. of concrete instead of M-20 grade B.M.C./ R.M.C.	Cum.	108.00
	5.28.4 Providing M-40 grade concrete by using 435kg of cement per Cum. of concrete instead of M-20 grade B.M.C./ R.M.C..	Cum.	151.00

Item No.	Description	Unit	Rate (in Rs.)
5.29	Add or deduct for using more/less cement respectively than the quantity as provided in the item of batch mix concrete/RMC as arrived as per mix design.	quintal	575.00
5.30	Extra for RCC work above floor II level for each floor or part there off.	Cum.	@ 1 % of respective item
5.31	Extra for carriage of R.M.C. beyond the initial lead of 10km.	Cum/km	21.00
Note:-	Flyash conforming to grade I of IS: 3812 (Part - I) may be used as part replacement of OPC provided uniform blending with cement is ensured in accordance with clauses 5.2 and 5.2.1 of 15:456:- 2000 in the items of BMC and RMC.		

CHAPTER-VI

BRICK WORK

Notes :

1 This work shall consist of construction of structures with bricks jointed together by cement mortar in accordance with the details shown on the drawings or as approved by the Engineer in charge

2 Burnt clay bricks shall conform to the requirements of IS:1077. They shall be free from cracks and flaws and nodules of free lime. The brick shall have smooth rectangular faces with sharp corners and emit a clear ringing sound when struck.

3 Cement mortar for the work shall be as per details given in Chapter III of this SOR.

4 All bricks shall be thoroughly soaked in a tank filled with water for a minimum period of one hour prior to being laid. Soaked bricks shall be removed from the tank sufficiently in advance so that they are skin dry at the time of actual laying. Such soaked bricks shall be stacked on a clean place where they are not contaminated with dirt, earth, etc.

5 The thickness of joints shall not exceed 10mm. All joints on exposed faces shall be tooled to give concave finish.

6 The brick work shall be built in uniform layers, and for this purpose wooden straight edge with graduations indicating thickness of each course including joint shall be used. Corners and other advanced work shall be raked back. Brickwork shall be done true to plumb or in specified batter. All courses shall be laid truly horizontal and vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. During construction, no part of work shall rise more than one metre above the general construction level, to avoid unequal settlement and improper jointing. Where this is not possible in the opinion of the Engineer in charge, the works shall be raked back according to the bond (and not toothed) at an angle not steeper than 45 degrees with prior approval of the Engineer in charge. Toothing may also be permitted where future extension is contemplated.

7 Where fresh masonry is to join with masonry that is partially/entirely set, the exposed jointing surface of the set masonry shall be cleaned, roughened and wetted, so as to effect the best possible bond with the new work. All loose bricks and mortar or other material shall be removed.

In the case of vertical or inclined joints, it shall be further ensured that proper bond between the old and new masonry is obtained by interlocking the bricks. Any portion of the brickwork that has been completed shall remain undisturbed until thoroughly set.

8 Green work shall be protected from rain by suitable covering and shall be kept constantly moist on all faces for a minimum period of seven days. Brickwork carried out during the day shall be suitably marked indicating the date on which the work is done so as to keep a

watch on the curing period. Watering may be done carefully so as not to disturb or wash out the green mortar.

During hot weather, all finished or partly completed work shall be covered or wetted in such a manner as will prevent rapid drying of the brickwork.

During the period of curing of brick work, it shall be suitably protected from all damages. At the close of day's work or for other period of cessation, watering and curing shall have to be maintained. Should the mortar perish i.e. become dry, white or powdery through neglect of curing, work shall be pulled down and rebuilt as directed by the Engineer in charge. If any stains, appear during watering, the same shall be removed from the face.

The scaffolding shall be sound, strong and safe to withstand all loads likely to come upon it. Putlog holes are not allowed.

9 Bricks having crushing strength of more than 40kg/cm2. shall be used for load bearing walls.

10 Classification of Bricks and Masonry:-
In this schedule the following three classifications of bricks and masonry is given and shall have the minimum crushing strength when tested according to IS: 1077-1992

(a) Class 40 TM chimney brick/grog or ghol brick: - For this item either selected chimney burnt bricks or ghol bricks are used and superior workmanship than the following varieties is required. The crushing strength when thoroughly soaked in water shall not be less than 40kg/sq.cm.

(b) Class 25 TM chimney brick masonry: - The crushing strength when thoroughly soaked in water shall not be less than 25 kg/sq.cm.

(c) Class 25TM open bhatta or pajawa burnt brick :- As is clear the only difference between (b) and (c) varies in the method of burning bricks. The crushing strength when thoroughly soaked in water shall not be less than 25 kg/sq.cm.

11 Periodical sampling and testing of bricks shall be carried out at contractors cost to classify the brick. The record of test results shall be kept with the Executive Engineer, or Authorised officer.

12 When reinforcement is used in 10cm thick brick masonry, minimum lap of reinforcement should be 15cm. In case of wall joints of the main wall, reinforcement should go 15cm to the main wall.

Item No.	Description	Unit	Rate (in Rs.)
6.1	Brick work with well burnt chimney bricks in bulls patent trench kiln manifactured by ghol process ,crushing strength not less than 40kg /sqcm and water absorption not more than 15% in foundation and plinth		
6.1.1	Cement mortar 1:4 (1 cement : 4 sand)	Cum.	3567.00
6.1.2	Cement mortar 1:6 (1 cement : 6 sand)	Cum.	3381.00
6.2	Brick work with well burnt chimney bricks in bulls patent trench kiln ,crushing strength not less than 25kg /sqcm and water absorption not more than 20% in foundation and plinth		
6.2.1	Cement mortar 1:4 (1 cement : 4 sand)	Cum.	2355.00
6.2.2	Cement Mortar 1:6 (1 cement : 6 sand).	Cum.	2190.00
6.3	Brick work with well brunt open bhatta, bricks, crushing strength not less than 25kg /sqcm and water absorption not more than 20% in foundation and plinth		
6.3.1	Cement Mortar 1:6 (1 cement : 6 sand).	Cum.	1955.00
6.4	Brick work with M.S. bricks of class designation 40 in superstructure above plinth level up to floor II level in all shapes and sizes in :		
6.4.1	Cement mortar 1:4 (1 cement : 4 sand)	Cum.	3780.00
6.4.2	Cement mortar 1:6 (1 cement : 6 sand)	Cum.	3599.00
6.5	Extra for brick work in superstructure above floor II level for each additional floor or part thereof.	Cum.	Add @1% of respective item
6.6	Extra for forming cavity 5cm to 7.5cm wide in cavity walls with necessary weep and vent holes including use of cores and cost of providing and fixing bitumastic coated M .S. ties 300mm long of 25x3mm section at not less than 3 ties per sqm as per approved design.	sqm	49.00
6.7	Brick work in plain arches in superstructure including centering and shuttering complete for span up to 6 metres with M.S. brick of class designation 40 in cement mortar 1:3 (1 cement : 3 sand).	Cum.	5146.00
6.8	Brick work in gauged arches in superstructure in cement mortar 1:3 (1 cement : 3 sand) induding centering and shuttering complete, for span up to 6 meters with M.S. Brick of dass designation 40.	Cum.	5927.00
6.9	Extra for additional cost of centering for arches exceeding 6m span including all shuttering, bolting, wedging and removal (Area of the soffit to be measured).	sqm	522.00
6.10	Half brick masonry with M.S. brick of class designation 40 in super structure above plinth level up to floor II level		
6.10.1	Cement mortar 1:3 (1 cement : 3 sand)	sqm	438.00
6.10.2	Cement mortar 1:4 (1 cement : 4 sand)	sqm	419.00

Item No.	Description	Unit	Rate (in Rs.)
6.11	Half brick masonry with M.S. bricks of class designation 25 in superstructure above plinth level up to floor II level.		
	6.11.1 Cement mortar 1:3 (1 cement :3 sand)	sqm	322.00
	6.11.2 Cement mortar 1:4 (1 cement :4 sand)	sqm	302.80
6.12	Extra for half brick masonry in superstructure, above floor II level for every floor or part thereof respective item.	sqm	@ 1 % of respective item
6.13	Extra for providing and placing in position 2 Nos. 8mm dia. M.S. bars at every third course of half brick masonry (with M.S. bricks).	sqm	48.00
6.14	Honey-comb brick work 10 cm thick with bricks of class designation 40 in cement mortar 1:4 (1 cement : 4 sand).	sqm	336.00
6.15	Extra for laying brick work in or under water and/or liquid mud including cost of pumping or bailing out water and removing slush etc. complete.	Cum.	193.00
6.16	Extra for laying brick work in or under foul position.	Cum.	75.00
6.18	Brick work with modular fly ash lime bricks (FALG Bricks) conforming to IS:12894-2002, class designation 100 average compressive strength in super structure above plinth level up to floor II level in :		
	6.18.1 Cement mortar 1:4 (1 cement : 4 sand)	Cum.	2586.00
	6.18.2 Cement mortar 1:6 (1 cement : 6 sand)	Cum.	2422.00
6.21	Providing and laying autoclaved aerated cement blocks masonry with 100mm thick AAC blocks in super structure above plinth level up to floor II level in cement mortar 1:4 (1 cement : 4 sand) The rate includes providing and placing in position 2 Nos. 8 mm dia M.S. bars at every third course of masonry work.	Cum.	3258.00
6.22	Extra for AAC block masonry in superstructure above floor II level for every floor or part there of respective item.	Cum.	@ 1 % of respective item

CHAPTER-VII

STONE WORK

Notes:

1 The work shall consist of construction of structures with stone jointed together by cement mortar in accordance with the details shown on the drawings.

2 Stones shall be of the type specified. It shall be hard, sound, free from cracks, decay and weathering and shall be freshly quarried from an approved quarry. Stone with round surface shall not be used.

The stones, when immersed in water for 24 hours, shall not absorb water by more than 5 percent of their dry weight when tested in accordance with IS: 1124.

The length of stones shall not exceed three times its height nor shall they be less than twice its height plus one joint. No stone shall be less in width than the height and the width on the base shall not be greater than three-fourth of the thickness of the wall nor less than 150mm.

3 The type of masonry used for the structures shall be random rubble masonry (coursed or uncoursed) or Coursed rubble masonry (Second Sort) or ashler masonry.

4 The dressing of stone shall be as specified for individual type of masonry work and it shall also conform to the general requirements of IS:1597 and requirement for dressing of stone covered in IS : 1129.

The masonry work shall be laid to lines, levels, curves and shapes as shown in the plan. The height, in each course, shall be kept same and every stone shall be fine tooled on all beds, joints and face full and true. The exposed faces shall be gauged out, grooved, regulated and sunk or plain moulded as the case may be.

Stones shall be sufficiently wetted before laying to prevent absorption of water from mortar. Stratified stones must be laid on their natural beds. All bed joints shall be normal to the pressure upon them.

Stones in the hearting shall be laid on their broadest face that gives a better opportunity to fill the spaces between stones. The practice of placing loose mortar on the course and pouring water on it to fill the gaps in stones is not acceptable. Mortar may be fluid mixed throughly and then poured in the joints. No dry or hollow space shall be left anywhere in the masonry and each stone shall have all the embedded faces completely covered with mortar.

Shaping and dressing shall be done before the stone is laid in the work. No dressing and hammering, which will loosen the masonry, will be allowed after it is once placed. All necessary chases for joggles, dowels and clamps should be formed before hand.

Sufficient transverse bonds shall be provided by the use of bond stone extending from the front to the back of the wall and in case of thick wall from outside to the interior and vice versa. In the latter case, bond stones shall overlap each other in their arrangement.

In case, headers are not available, precast headers of M 15 concerete shall be used. Cast-in-situ headers are not permitted.

Stones shall break joint on the face for at least half the height of the course and the bond shall be carefully maintained throughout.

In band work at all angle junctions of walls, the stones at each alternate course shall be carried into each of the respective walls so as to unite the work thoroughly.

The practice of building up thin faces tied with occasional through stones and filling up the middle with small stuff or even dry packing is not acceptable.

All quoins and the angles of the opening shall be made from selected stones, carefully squared and bedded and arranged to bond alternately long and short in both directions.

All vertical joints shall be truly vertical. Vertical joints shall be staggered as far as possible. Distance between the nearer vertical joints of upper layer and lower shall not be less than half the height of the course.

Only rectangular shaped bond stones or headers shall be used. Bond stones shall overlap each other by 150mm or more.

All connected masonry in a structure shall be carried up nearly at one uniform level throughout but when breaks are unavoidable, the masonry shall be raked in sufficiently long steps to facilitate jointing of old and new work. The stepping of raking shall not be more than 45 degrees with the horizontal.

6 Quoin stone i.e. stone specially selected and neatly dressed for forming an external angle in masonary work, shall not be less than 0.03 cubic metre in volume.

7 The plum stones are selected long stones embedded vertically in the interior of the masonary to form a bond between successive courses and shall be provided at about 900mm. intervals.

Item No.		Description	Unit	Rate (in Rs.)
7.1		Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 sand : 12 graded stone aggregate 20mm nominal size) at plinth level with :		
	7.1.1	Cement mortar 1:6 (1 cement : 6 sand)	Cum.	1962.00
7.2		Extra for random rubble masonry with hard stone in superstructure above plinth level and upto floor two level, including leveling up with cement concrete 1:6:12 (1 cement : 6 sand : 12 graded stone aggregate 20mm nominal size) at window sills, ceiling level and the like.	Cum.	394.00
7.3		Extra for random rubble masonry with hard stone in superstructure above floor II level for every floors or part thereof	Cum.	@ 1% of respective item.
7.4		Extra for random rubble masonry with hard stone in :		
	7.4.1	Square or rectangular pillars	Cum.	148.00
	7.4.2	Circular pillars.	Cum.	441.00
7.5		Extra for random rubble masonry with hard stone curved on plan for a mean radius not exceeding 6 m.	Cum.	249.00
7.6		Coursed rubble masonry foundation and plinth with : (first sort) with hard stone in		
	7.6.1	Cement mortar 1:6 (1 cement : 6 sand)	Cum.	2149.00
7.7		Coursed rubble masonry (second sort) with hard stone in foundation & plinth with :		
	7.7.1	Cement mortar 1:6 (1 cement : 6 sand)	Cum.	2035.00
7.8		Extra for coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and upto floor two level.	Cum.	387.00
7.9		Extra for coursed rubble masonry with hard stone (first or second sort) in superstructure above floor II level for every floors or part thereof.	Cum.	339.00
7.10		Extra for coursed rubble masonry with hard stone (first or second sort) in :		
	7.10.1	Square or rectangular pillars	Cum.	163.00
	7.10.2	Circular pillars.	Cum.	499.00
7.11		Extra for coursed rubble masonry with hard stone(first or second sort) curved on plan for a mean radius not exceeding 6 m.	Cum.	198.00
7.12		Stone work in plain ashlar in super structure upto floor two level in cement mortar 1:6 (1 cement : 6 sand) including pointing with cement mortar 1:2 (1 white cement : 2 marble dust/sand) with an admixture of pigment matching the stone shade :		

Item No.		Description	Unit	Rate (in Rs.)
	7.12.1	One face dressed.		
	7.12.1.1	Red sand stone	Cum.	13998.00
	7.12.1.2	White sand stone	Cum.	14032.00
	7.12.2	Both face dressed.		
	7.12.2.1	Red sand stone.	Cum.	18567.00
	7.12.2.2	White sand stone	Cum.	17585.00
7.13	Stone work plain ashlar in arches in cement mortar 1:3 (1 cement : 3 sand) including centering, shuttering and pointing with white cement mortar 1:2 (1 white cement : 2 marble dust/sand) with an admixture of pigment matching the stone shade.			
	7.13.1	Red sand stone	Cum.	16165.00
	7.13.2	White sand stone	Cum.	16320.00
7.14	Stone work plain ashlar in domes in cement mortar 1:3 (1 cement : 3 sand) including centering, shuttering and pointing with white cement mortar 1:2 (1 white cement : 2 marble dust/sand) with an admixture of pigment matching the stone shade.			
	7.14.1	Red sand stone	Cum.	23193.00
	7.14.2	White sand stone	Cum.	23347.00
7.15	Stone work ashlar punched (ordinary) in superstructure upto floor two level in cement mortar 1:6 (1 white cement : 6 sand) including pointing with cement mortar 1:2 (1 white cement : 2 stone dust/sand) with an admixture of pigment matching the stone shade.			
	7.15.1	Red sand stone.		
	7.15.1.1	One faced punched.	Cum.	13490.00
	7.15.1.2	Double faced punched.	Cum.	16413.00
	7.15.2	White sand stone.		
	7.15.2.1	Single face punched.	Cum.	13559.00
	7.15.2.2	Double faced punched.	Cum.	16568.00
7.16	Extra for stone work, plain ashlar or ashlar punched above floor two level for every floor or part thereof.		Cum.	339.00
7.17	Extra for plain ashlar or ashlar punched in :			
	7.17.1	Square or rectangular pillars	Cum.	1042.00
7.18	Extra for stone work; plain ashlar or ashlar punched curved on plan with a mean radius not exceeding 6 m.		Cum.	724.00
7.19	Extra for additional cost of centering for arches exceeding 6m span including all strutting, bolting, wedging etc. and removal (area of soffit to be measured).		sqm	472.00
7.20	Stone work sunk or moulded or sunk and moulded upto floor Two level in cement mortar 1:6 (1 cement : 6 sand) including pointing with white cement mortar 1:2 (1 white : 2 marble dust/sand) with an			

Item No.		Description	Unit	Rate (in Rs.)
		admixture of pigment matching the stone shade :		
	7.20.1	Red sand stone	Cum.	18157.00
	7.20.2	White sand stone	Cum.	18565.00
7.21		Extra for stone work sunk or moulded or sunk and moulded or carved in :		
	7.21.1	Triangular or Square or rectangular pillars	Cum.	2540.00
	7.21.2	Circular or polygonal pillars	Cum.	3850.00
7.22		Extra for stone work sunk or moulded in cornices.	per metre per cm girth	10.00
7.23		Stone work (machine cut edges) for wall lining etc. (veneer work) backing filled with a grout of 12mm thick cement mortar 1:3 (1 cement : 3 sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust/sand) with an admixture of pigment matching the stone shade : (To be secured to the backing by means of cramps which shall be paid for separately) :		
	7.23.1	Red sand stone - exposed face fine dressed with rough backing.		
	7.23.1.1	70 mm thick	sqm	1387.00
	7.23.1.2	60 mm thick	sqm	1206.00
	7.23.1.3	50 mm thick	sqm	1141.00
	7.23.1.4	40 mm thick	sqm	1598.00
	7.23.1.5	30 mm thick	sqm	957.00
	7.23.2	Red sand stone - Exposed face machine cut and table rubbed with rough backing.		
	7.23.2.1	70 mm thick	sqm	1608.00
	7.23.2.2	60 mm thick	sqm	1531.00
	7.23.2.3	50 mm thick	sqm	1455.00
	7.23.2.4	40 mm thick	sqm	1390.00
	7.23.2.5	30 mm thick	sqm	1348.00
	7.23.3	White sand stone - exposed face fine dressed with rough backing.		
	7.23.3.1	70 mm thick	sqm	1282.00
	7.23.3.2	60 mm thick	sqm	1215.00
	7.23.3.3	50 mm thick	sqm	1157.00
	7.23.3.4	40 mm thick	sqm	1081.00
	7.23.3.5	30 mm thick	sqm	1015.00
	7.23.4	White sand stone - Exposed face machine cut and table rubbed with rough backing.		
	7.23.4.1	70 mm thick	sqm	1619.00
	7.23.4.2	60 mm thick	sqm	1553.00
			sqm	1486.00

Item No.	Description	Unit	Rate (in Rs.)
7.23.4.3	50 mm thick	sqm	1460.00
7.23.4.4	40 mm thick	sqm	1352.00
7.23.4.5	30 mm thick		
7.24	Extra for stone work (veneer work) curved on plan with a mean radius not exceeding 6 m.	Cum.	1042.00
7.25	Providing and fixing stainless steel cramps of required size and shape for anchoring stone wall lining to the backing or securing adjacent stones in stone wall lining in cement mortar 1:2 (1 cement : 2 sand) including making the necessary chases in stone and holes in walls wherever required.	kilogram	535.00
7.26	Providing and fixing stone dowels double wedge shape as per design in cement mortar 1:2 (1 cement : 2 sand) including making the necessary chases.	each	22.00
7.27	Providing and fixing copper pins 7.5 cm long 6 mm diameter for securing adjacent stones in stone wall lining in cement mortar 1:2 (1 cement: 2 sand) including making the necessary chases.	each	19.00
7.28	Providing and fixing sloping chajja of stone 40 mm thick and upto 80 cm wide beyond the wall as measured along the slope in cement mortar 1:4 (1 cement : 4 sand) with 12mm diameter anchoring steel bar 45 cm long fixed in each stone and supported on and including with bricks cave of class designation 40 in cement mortar 1:4 (1 cement : 4 sand) including pointing in cement mortar 1:2 (1 white cement: 2 stone dust) with an admixture of pigment matching the stone shade:		
7.28.1	Red sand stone:		
7.28.1.1	With M.S Bricks	sqm	710.00
7.28.2	White sand stone:		
7.28.2.1	With M.S. bricks	sqm	710.00
7.29	Providing and fixing horizontal chajja of stone 40 mm thick and upto 80 cm projection in cement mortar 1:4 (1 cement : 4 sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade::		
7.29.1	Red sand stone	sqm	449.00
7.29.2	White sand stone	sqm	449.00
7.30	30mm red sand stone sun-shade (chisel-dressed) supported on red sand stone brackets, fixed in walls with cement mortar 1:4 (1 cement : 4 sand) including finishing complete.	sqm	484.00
7.31	Providing and fixing red sand stone brackets 55x22.5x45cm sunk and moulded including providing and fixing with 4 Nos. gun metal cramp 25x6mm 30 cm long and dowel bars 7.5 cm long 6 mm dia as per design.	each	1464.00

Item No.	Description	Unit	Rate (in Rs.)
7.32	Stone work, plain in copings, cornices, string courses and plinth courses, upto 75 mm thick in Cement mortar 1:6 (1 cement : 6 sand) including pointing with white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade.	Cum.	1799.00
7.32.1	Red sand stone	Cum.	1803.00
7.32.2	White sand stone		
7.33	Providing and fixing stone jali 40mm thick throughout in cement mortar 1:3 (1cement :3sand) including pointing in white cement mortar 1:2 (1white cement: 2stone dust) with an admixture of pigment, matching the stone shade, jali slab without any chamfers etc.		
7.33.1	Red sand stone	sqm	3951.00
7.33.2	White sand stone	sqm	3951.00
7.34	Extra for laying stone work in or under water and/or liquid mud including cost of pumping or bailing out water and removing slush etc. complete.	Cum./ mtr depth	193.00
7.35	Extra for laying stone work in or under foul position.	Cum.	75.00
7.36	Wall lining butch work upto 10m height with red/ white sand stone 40 mm thick rough facing on the exposed surface with stone strips of minimum length 300 mm and required width including embedding every tenth layer and bottom most layer in masonry or concrete after making necessary chases of size 75x75mm and by providing layer of 75mm thick strips i/c 12mm thick bed of cement mortar 1:3 (1 Cement : 3 sand) i/c ruled pointing in cement mortar 1:2 (1 white cement: 2 stone dust) with an admixture of pigment to match the shade of stone complete as per direction of Engineer-in-charge.	sqm	924.00
7.37	Stone work (machine cut edges) for wall lining upto 10 m height etc. (Veneer work) backing filled with a grout of 12mm thick cement mortar 1:3 (1 Cement : 3 sand) and jointed with Cement mortar 1:2 (1 cement : 2 stone dust) including rubbing and polishing complete. (To be secured to the backing by means of cramps which shall be paid for separately)		
7.37.1	25mm thick Kota stone slabs exposed face dressed and rubbed.	sqm	822.00
7.38	Stone tile work for wall lining upto 10 m height with special adhesive over 12mm thick bed of cement mortar 1:3 (1 cement : 3 sand) including pointing in white cement with an admixture of pigment to match the stone shade.		
7.38.1	8mm thick (mirror polished and machine cut edge)		
7.38.1.1	Granite stone of any colour and shade.	sqm	1100.00
7.38.1.2	Raj Nagar plain white marble/ Udaipur green marble/ Zebra black marble.	sqm	928.00
7.39	Extra for stone work for wall lining on exterior walls of height more than 10 m from ground level for every additional height of 3 m or part there of.	sqm	55.00

Item No.	Description	Unit	Rate (in Rs.)
7.40	Providing and fixing dry cladding upto 10 metre heights with 30mm thick gang saw cut stone with (machine cut edges) of uniform colour and size upto 1mx1m, fixed to structural steel frame work and/ or with the help of cramps, pins etc. and sealing the joints with approved weather sealant as per Architectural drawing and direction of Engineer-in-charge. (The steel frame work, stainless steel cramps and pins etc. shall be paid for separately.)		
7.40.1	Red sand stone.	sqm	975.00
7.40.2	White sand stone	sqm	975.00
7.41	Providing and fixing structural steel frame (for dry cladding with 30 mm thick gang saw cut with machine cut edges sand stone) on walls at all heights using M.S. square/ rectangular tube in the required pattern as per architectural drawing including cost of cutting, bending, welding etc. The frame work shall be supported in wall with the help of MS brackets/ lugs of angle iron/ flats etc. which shall be welded to the frame and embedded in brick wall with cement concrete block 1:2:4 (1 cement :2 sand :4 graded stone aggregate 20mm nominal size) of size 300x230x300mm including cost of necessary centring and shuttering and with approved expansion hold fasteners on CC/RCC surface including drilling necessary holes. Approved cramps/ pins etc. shall be welded to the frame work to support stone cladding the steel work will be given a priming coat of Zinc primer as approved by Engineer-in-charge and painted with two or more coats of epoxy paint (Shop drawings shall be submitted by the contractor to the Engineer-in-charge for approval before execution). The frame work shall be fixed in true horizontal & vertical lines/planes. (Only structural steel frame work shall be measured for the purpose of payment, stainless steel cramps shall be paid for separately and nothing extra shall be paid.)	kilogram	88.00
7.42	Providing and fixing adjustable stainless steel cramps of approved quality and of required shape and size adjustable with stainless steel nuts bolts and washer (total weight not less than 260 gms) for dry stone cladding fixed on frame work at suitable location including making necessary recesses in stone slab, drilling required holes etc complete as per direction of the Engineer-in-charge.	each	304.00

CHAPTER-VIII

MARBLE WORK

Notes:

Marble work in wall lining etc. (Veneer Work).

Marble slab to be used in wall lining shall be hard, sound, dense, homogeneous and of uniform texture. It shall be uniform in colour and free from stains, cracks, decay and weathering. As far as possible single stone slab shall be used for wall lining but in no case more than 2 slabs shall be permitted to be used to cover the wall height.

Classification of white marble shall be done as specified in head notes chapter no. XI for marble flooring and the slab shall satisfy the minimum requirements as in table showing physical characteristics of marble stone, slab & tiles in head notes of chapter no. XI.

MARBLE JALI

White marble shall be classified as specified in item no. I above and marble slabs used for making jali shall satisfy minimum requirements for marble slab as specified in head note above.

The marble jali shall be of required thickness and as per pattern specified. All exposed faces shall be fine tooled to a uniform finish. Fixing shall be done with the adjoining working grooves, rivets etc. as shown in the drawing or as specified by the Engineer-in-Charge.

Item No.	Description	Unit	Rate (in Rs.)
8.1	Marble work gang saw cut (polished and machine cut) of thickness 16mm for wall lining (veneer work) in cement mortar 1:3 (1 cement:3 sand) including pointing with white cement mortar 1:2 (1 white cement : 2 marble dust) with an admixture of pigment to match the marble shade: (To be secured to the backing by means of cramps, which shall be paid for separately). At all floor levels.		
	8.1.1 Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble./ katni marble		
	8.1.1.1 Area of slab upto 0.50 sqm	sqm	1583.00
	8.1.1.2 Area of slab over 0.50 sqm	sqm	1800.00
8.2	Providing and fixing 16mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels.(Sample to be got approved by Engineer-in-charge.		
	8.2.1 Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble/ katni marble		
	8.2.1.1 Area of slab upto 0.50 sqm. But not less than 0.30 sqm	sqm	1362.00
	8.2.1.2 Area of slab over 0.50 sqm.	sqm	1570.00
	8.2.2 Granite of any colour and shade		
	8.2.2.1 Area of slab upto 0.50 sqm But not less than 0.30 sqm	sqm	2515.00
	8.2.2.2 Area of slab over 0.50 sqm.	sqm	2612.00
8.3	Providing edge moulding to 16mm thick marble stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.		
	8.3.1 Marble work	metre	95.00
	8.3.2 Granite work.	metre	117.00
8.4	Extra for fixing marble /granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	metre	112.00
8.5	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	each	158.00
8.6	Mirror polishing on kota stone marble work/Granite work/stone work where ever required to give high glossy finish complete.	sqm	93.00
8.7	Providing and fixing cramps of required size & shape in RCC/ CC backing with cement mortar 1:2 (1 cement :2 sand) including		

Item No.	Description	Unit	Rate (in Rs.)
	drilling necessary hole in stones and embedding the cramp in the hole (fastener to be paid separately).		
	8.7.1 Gunmetal cramps.	kg	506.00
	8.7.2 Stainless steel cramps.	kg	535.00
8.8	Providing and fixing expansion hold fasteners on C.C. /R.C.C. surface backing including drilling necessary holes and the cost of bolt etc complete.		
	8.8.1 Wedge expansion type		
	8.8.1.1 Fastener with threaded dia 6 mm.	each	17.00
	8.8.1.2 Fastener with threaded dia 10 mm.	each	19.00
	8.8.1.3 Fastener with threaded dia 12 mm.	each	35.00
8.9	Stone tile (polished) work for wall lining over 12mm thick bed of cement mortar 1:3 (1 cement : 3 sand) and cement slurry @ 3.3 kg/sqm including pointing in white cement with pigment to mach the shade of stone etc. complete.		
	8.9.1 8mm thick.		
	8.9.1.1 Raj nagar plain white marble/ Udaipur green marble/ Zebra black marble.	sqm	857.00
	8.9.1.2 Granite of any colour and shade.	sqm	1179.00
8.10	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50 cm deep and 1.8 cm thick fixed in urinal partitions by cutting a chase of appropriate width with chase cutter and embedding the stone in the chase with epoxy grout or with cement concrete 1:2:4 (1 cement: 2 sand: 4 graded stone aggregate 6 mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	8.10.1 White Agaria Marble Stone.	sqm	2497.00
	8.10.2 Granite Stone of approved shade.	sqm	2860.00

CHAPTER - IX

WOOD WORK AND PVC WORK

Notes:

FRAMED WORK:

1. The timber used in the work shall conform to IS: 883.

2. Rates include cost of all materials i.e. timber spikes, nails, screws, glue etc. required for the work. Rates also include cost of all labour for making, hosting, erecting and fixing in possition.

3. Timber discribed as "Framed and Fixed" timber include:-

   3.1 Joints in wood work are not permitted. Unless otherwise specified, all joints shall be simple tenon and mortice joints.

   3.2 Lapping, halving, tabling, scarping, notching, birds mouth cutting, splayed or bevelled ends

   3.3 Framing together with mortise and tenon tusk tenon or dovetailed joints

   3.4 Framed joinery put together with white lead or glue in joints and pinned with hard wood or bamboo pins.

   3.5 Boring for bolts

   3.6 Hoisting erecting and fixing in position.

   3.7 Small labours like splays, chambers, rounded angles and rounded nosing

SHUTTERS :

1. For all hard wood shutters, timber shall conform to IS : 883.

2. For factory made panelled shutters approved hard wood as per IS : 4021 duly kiln seasoned & ascu vacCumed pressure treated as per IS : 1141 & IS : 401 shall only be accepted.

3. Flush doors with solid block board core shall conform to IS:2201-1973.

4. The rate for glazed and partly glazed shutter include the cost of wooden fillets, plain or moulded and of the size and design depending on the type of shutter being glazed.

5. All fittings & fixtures like hinges, aldrops, tower bolts, handles, nails, screws etc. shall be as per the relevant IS specifications.

6. Glass panes shall conform to IS : 1761-1960.

Item No.	Description	Unit	Rate (in Rs.)
9.1	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position:		
9.1.1	Second class teak wood	Cum.	59629.00
9.1.2	Sal wood	Cum.	41548.00
9.1.3	Kiln seasoned and chemically treated Hollock wood.	Cum.	40504.00
9.2	Providing laminated veneer lumber conforming to IS:14616 and TAD -15: 2001 (Part B) in factory made frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position as per directions of Engineer-in-charge.	Cum.	96187.00
9.3	Providing wood work in frames of false ceiling, partitions etc. sawn and put up in position :		
9.3.1	Sal wood	Cum.	37066.00
9.3.2	Kiln seasoned and chemically treated Hollock wood.	Cum.	38920.00
9.4	Extra for additional labour for circular works, such as in frames of fan light		
9.4.1	Second class teak wood	Cum.	5984.00
9.4.2	Sal wood	Cum.	3639.00
9.4.3	Kiln seasoned and chemically treated Hollock wood.	Cum.	4051.00
9.5	Providing and fixing panelled or panelled and glazed shutters for doors, windows and clerestory windows including ISI marked black enamelled M.S butt hinges with necessary screws excluding, panelling which will be paid for separately.		
9.5.1	Second class teak wood		
9.5.1.1	35 mm thick shutters	sqm	1982.00
9.5.1.2	30 mm thick shutters	sqm	1743.00
9.5.2	Kiln seasoned and chemically treated Hollock wood.		
9.5.2.1	35 mm thick shutters	sqm	1126.00
9.5.2.2	30 mm thick shutters	sqm	1024.00
9.6	Providing and fixing 35 mm thick factory made laminated veneer lumber door shutter conforming to IS 14616 and TADS 15:2001 (Part B) induding ISI marked black enameled M.S. butt hinges with necessary screws as per directions of Engineer-in-charge and panelling with panels		
9.6.1	12mm thick plain grade -1, medium density flat pressed three layer particle board FPT -I or graded wood particle board FPT - I IS: 3087 marked bonded with BWP type synthetic resin adhesive as per IS : 848	sqm	1982.00
9.6.2	12 mm thick pre-laminated particle board (decorative lamination on both sides) grade - 1, medium density flat pressed, three layer particle board FPT - I or graded wood particle board FPT - I, conforming to IS :	sqm	2214.00

Item No.		Description	Unit	Rate (in Rs.)
		3087 bonded with BWP type synthetic resin adhesive as per IS : 848 and pre- laminated conforming to IS : 12823 Grade 1, Type - II marked:		
	9.6.3	12 mm thick one side Pre-laminated particle board (decorative lamination on one side and other sides balancing lamination) grade layer particle board FPT - I or graded wood particle board - 1 medium density flat pressed, three FPT-1 conforming to IS : 3087 bonded with BWP type synthetic resin adhesive as per IS : 848 and pre-laminated conforming to IS : 12823 Grade -1, Type II marked:	sqm	2040.00
9.7		Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick :		
	9.7.1	Second class teak wood	sqm	1584.00
	9.7.2	Kiln seasoned and chemically treated Hollock wood	sqm	898.00
	9.7.3	Ply wood 5 ply, 9 mm thick:		
	9.7.3.1	Decorative plywood both side decorative veneer (Type - I) conforming to IS 1328 BWR type.	sqm	1074.00
	9.7.3.2	Decorative plywood one side decorative veneer and commercial veneer on other face (Type 1) conforming to IS 1328 BWR Type	sqm	1060.00
	9.7.4	Ply wood 7 ply, 9 mm thick:		
	9.7.4.1	Decorative plywood one side decorative veneer and commercial veneer on other face (Type 1) conforming to IS 1328 BWR Type	Sqm	1199.00
	9.7.5	Particle Board 12 mm thick		
	9.7.5.1	Plain particle board flat pressed, 3 layer or graded wood particle board medium density Grade I, IS : 3087 marked.	sqm	582.00
	9.7.5.2	Veneered flat pressed three layer or graded wood particle board with commercial veneering on both sides conforming to IS:3097, grade I.	sqm	769.00
	9.7.5.3	Pre-laminated particle board with decorative lamination on one side and balancing lamination on other side, Grade I, Type II IS: 12823 marked.	sqm	1012.00
	9.7.5.4	Pre-laminated particle board with decorative lamination on both sides, Grade I, Type II, IS:12823 marked.	sqm	1074.00
9.8		Providing and fixing panelling or panelling and glazing in		

Item No.	Description	Unit	Rate (in Rs.)
	panelled or panelled and glazed shutters for doors, windows and clerestory windows (area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick. Coir veneer board (conforming to IS :14842-2000)		
	9.8.1 12 mm thick	sqm	908.00
9.9	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes including black enamelled ISI marked M.S butt hinges with necessary screws.		
	9.9.1 Second class teak wood		
	9.9.1.1 35 mm thick	sqm	2486.00
	9.9.1.2 30 mm thick	sqm	2213.00
	9.9.2 Kiln seasoned and chemically treated Hollock wood		
	9.9.2.1 35 mm thick	sqm	1480.00
	9.9.2.2 30 mm thick	sqm	1200.00
9.10	Providing and fixing factory made laminated veneer lumber glazed shutter conforming to IS: 14616 and TADS 15:2001 (Part B) , using 4mm thick float glass panes for doors, windows and clerestory windows including ISI marked black enamelled M.S butt hinges with necessary screws as per directions of Engineer-in-charge		
	9.10.1 30 mm thick shutters	sqm	1659.00
9.11	Extra for providing heavy sheet float glass panes instead of ordinary float glass in glazed doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured)		
	9.11.1 5.5 mm thick instead of 4 mm thick.	sqm	139.00
9.12	Extra for providing frosted glass panes 4 mm thick instead of ordinary float glass panes 4 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	sqm	157.00
9.13	Deduct for providing pin headed glass panes instead of ordinary float glass panes weighing 4 mm thick in doors, windows and clerestory windows, shutters (Area of opening for glass panes excluding portion inside rebate shall be measured).	sqm	198.00
9.14	Extra for providing ISI marked Stainless Steel butt hinges instead of black enamelled M.S. butt hinges with necessary screws. (Shutter area to be measured).	sqm	122.00
9.15	Deduct if fixed shutters (without hinges) are provided instead of		

Item No.	Description	Unit	Rate (in Rs.)
	openable shutters for doors, windows or clerestory windows with		
	9.15.1 Stainless steel butt hinges with stainless steel screws :		
	9.15.1.1 For 2nd class teak wood and other inferior class of wood shutters.	sqm	111.00
	9.15.2 Black enamelled MS butt hinges with necessary screws.		
	9.15.2.1 For 2nd class teak wood and other inferior class of wood shutters.	sqm	40.00
9.16	Providing and fixing 25 mm thick shutters for cup board etc. :		
	9.16.1 Panelled or panelled & glazed shutters :		
	9.16.1.1 Second class teakwood including ISI marked anodised aluminium butt hinges with necessary screws.	sqm	1901.00
	9.16.2 Glazed shutters :		
	9.16.2.1 Second class teakwood including ISI marked anodised aluminium butt hinges with necessary screws.	sqm	1861.00
9.17	Providing and fixing flat pressed 3 layer particle board medium density exterior grade (Grade I) or graded wood particle board IS : 3087 marked to frame, backing or studding with screws etc. complete (Frames, backing or studding to be paid separately) :		
	9.17.1 12 mm thick	sqm	419.00
	9.17.2 18 mm thick	sqm	542.00
9.18	Providing and fixing Pre-laminated flat pressed 3 layer (medium density) particle board or graded wood particle board IS : 3087 marked with one side decorative and other side balancing lamination Grade I, Type II exterior grade IS : 12823 marked in shelves with screws and fittings wherever required, edges to be painted with polyurethane primer (fittings to be paid separately).		
	9.18.1 18 mm thick	sqm	950.00
	9.18.2 25 mm thick	sqm	1056.00
9.19	Providing and fixing 25 mm thick shutters for cupboards etc. including ISI marked black enamelled M.S. butt hinges with necessary screws :		
	9.19.1 Panelled or panelled and glazed shutters		
	9.19.1.1 Second class teakwood	sqm	1835.00
	9.19.2 Glazed shutters		
	9.19.2.1 Second class teakwood	sqm	1948.00
9.20	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.		

Item No.		Description	Unit	Rate (in Rs.)
	9.20.1	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	sqm	1593.00
	9.20.2	30 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	sqm	1477.00
	9.20.3	25 mm thick (for cupboard) including ISI marked nickel plated bright finished M.S. Piano hinges IS : 3818 marked with necessary screws.	sqm	1459.00
9.21		Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters :		
	9.21.1	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	sqm	1244.00
	9.21.2	30 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	sqm	1116.00
	9.21.3	25mm thick (for cupboard) including ISI marked nickel plated bright finished MS piano hinges with necessary screws.	sqm	1082.00
9.22		Extra for providing and fixing flush doors with decorative veneering	sqm	227.00
	9.22.1	On one side in item no. 9.21		
9.23		Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) Over item no. 9.20 and 9.21.	sqm	285.00
9.24		Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured) :		
	9.24.1	Rectangular or square.	sqm	110.00
	9.24.2	Circular.	sqm	145.00
9.25		Extra if louvers (not exceeding 0.2 sqm) are provided in flush door shutters (overall area of door shutters to be measured).		
	9.25.1	Decorative type door.	sqm	250.00
9.26		Extra for cutting rebate in flush door shutters (Total area of the shutter to be measured).	sqm	66.00
9.27		Providing and fixing 35mm thick wire gauge shutters using galvanised M.S. wire gauge of average width of aperture 1.4mm with wire of dia. 0.63 mm for doors, windows and clerestory windows including ISI marked bright finished or/and black enamelled M.S. butt hinges with necessary screws :		

Item No.	Description	Unit	Rate (in Rs.)
	9.27.1 Second class teakwood.	sqm	2218.00
	9.27.2 Kiln seasoned and chemically treated Hollock wood.	sqm	1356.00
9.28	Providing and fixing 35mm thick wire gauge shutters using galvanised M.S. wire gauge of average width of aperture 1.4mm with wire of dia. 0.63 mm for doors, windows and clerestory windows including ISI marked stainless steel butt hinges with necessary screws :		
	9.28.1 Second class teakwood.	sqm	2319.00
	9.28.2 Kiln seasoned and chemically treated Hollock wood.	sqm	1456.00
9.29	Providing and fixing 30mm thick wire gauge shutters using galvanised M.S. wire gauge of average width of aperture 1.4mm with wire of dia. 0.63 mm for doors, windows and clerestory windows including ISI marked Stainless Steel butt hinges with necessary screws :		
	9.29.1 Second class teakwood.	sqm	2022.00
	9.29.2 Kiln seasoned and chemically treated Hollock wood.	sqm	1284.00
9.30	Providing and fixing 30mm thick wire gauge shutters using galvanised M.S. wire gauge of average width of aperture 1.4mm with wire of dia 0.63 mm for doors, windows and clerestory windows including ISI marked bright finished or /and black enamelled M.S. butt hinges with necessary screws :		
	9.30.1 Second class teakwood.	sqm	1946.00
	9.30.2 Kiln seasoned and chemically treated Hollock wood.	sqm	1208.00
9.31	Providing and fixing wire gauge laminated veneer lumber shutters conforming to IS : 14616, and as per TADS 15 :2001 (Part B) using galvanised wire gauge with average width of aperture 1.4mm in both directions with wire of dia 0.63mm as per IS :1568 for doors, windows and clerestory windows including ISI marked bright finished or/ and black enamelled M.S. butt hinges with necessary screws as per directions of Engineer-in-charge:		
	9.31.1 35 mm thick shutters	sqm	1796.00
	9.31.2 30 mm thick shutters	sqm	1576.00
9.32	Providing 50x50x50mm 2nd class teak wood plugs including cutting brick work and fixing in cement mortar 1:3 (1 cement : 3 fine sand) and making good the walls etc.	each	11.00
9.33	Providing and fixing expandable fasteners of specified size with necessary plastic sleeves and galvanised M.S. screws including drilling holes in masonry work /CC/ R.C.C. and making good etc. complete.		
	9.33.1 25 mm long	each	12.00
	9.33.2 32 mm long	each	15.00

Item No.	Description	Unit	Rate (in Rs.)
	9.33.3 40 mm long	each	17.00
	9.33.4 50 mm long	each	18.00
9.34	Providing and fixing 2nd dass teak wood plain lining tongued and grooved on and including wooden plugs complete with necessary screws and priming coat on unexposed surface.		
	9.34.1 40 mm thick.	sqm	3957.00
	9.34.2 25 mm thick.	sqm	2536.00
	9.34.3 20 mm thick	sqm	1961.00
	9.34.4 12 mm thick	sqm	1237.00
9.35	Providing and fixing in wall lining flat pressed three layer (medium density) particle board or graded wood Pre-laminated one side decorative lamination on other side balancing lamination Grade I, Type II, IS : 12823 marked including priming coat on unexposed surface, with necessary fixing arrangement and screws etc. complete :		
	9.35.1 12 mm thick	sqm	884.00
	9.35.2 18 mm thick	sqm	1031.00
	9.35.3 25 mm thick	sqm	1140.00
9.36	Providing and fixing specified wood frame work consisting of battens 50x25mm fixed with rawl plug and drilling necessary holes for rawl plug etc. including priming coat complete.	Cum.	61574.00
	9.36.1 Hollock wood.		
9.37	Providing and fixing plywood 4 mm thick one side decorative veneer conforming to IS: 1328 (type-1) for plain lining / cladding with necessary screws, priming coat on unexposed surface with:	sqm	628.00
	9.37.1 Decorative veneer facings of approved manufacture.		
9.38	Providing and fixing 4mm thick coir veneer board, ISI marked IS : 14842 - 2000, plain lining with necessary screws, priming coat on unexposed surface etc., complete.	sqm	558.00
9.39	Providing and fixing skirting of Pre-laminated with (one side decorative and other side balancing lamination) flat pressed, 3 layer or graded particle board (medium density) Grade I, Type II, IS :12823 marked, with necessary fixing arrangements and screws including drilling necessary holes for rawl plugs etc. and priming coat on unexposed surface complete		
	9.39.1 18 mm thick	sqm	1130.00
	9.39.2 25 mm thick	sqm	1239.00
9.40	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :		

Item No.	Description	Unit	Rate (in Rs.)
	9.40.1 2nd class teak wood		
	9.40.1.1 50x12 mm	metre	109.00
	9.40.1.2 50 x 20 mm	metre	104.00
	9.40.2 Hollock wood		
	9.40.2.1 50x12 mm	metre	48.00
	9.40.2.2 50x20 mm	metre	64.00
9.41	Providing and fixing plain jaffri of 35x10 mm laths placed 35 mm apart (frames to be paid separately) including fixing 50x12 mm beading complete with :		
	9.41.1 Second class teak wood.	sqm	1280.00
9.42	Providing and fixing 18 mm thick, 150 mm wide pelmet of flat pressed 3 layer or graded wood particle board medium density grade I, IS : 3087 marked including top cover of 6 mm commercial ply wood conforming to IS: 303 BWR grade, nickel plated M.S. pipe 20 mm dia (heavy type) curtain rod with nickel plated brackets including fixing with 25x3 mm M.S. flat 10 cm long and rawl plugs 50 mm long (designation 10 no.) etc all complete	metre	269.00
9.43	Providing and fixing 18 mm thick, 150 mm wide pelmet of coir veneer board ISI marked IS : 14842 - 2000, including top cover of 6 mm coir veneer board, nickle plated M.S. Pipe 20 mm dia. (heavy type) curtain rod with nickel plated brackets including fixing with 25x3 mm M.S. Flat 10 cm long and rawl plug 50 mm long (designation 10 No.) etc., all complete	metre	341.00
9.44	Extra for using veneered particle board conforming to IS 3097 Grade I, in item of pelmet 18mm thick 150mm wide.		
	9.44.1 Non decorative veneer on both sides.	metre	26.00
	9.44.2 Particle board with decorative veneering on both sides.	metre	76.00
9.45	Providing and fixing teak wood lipping of size 25x3mm in pelmet.	metre	18.00
9.46	Providing and fixing curtain rods of 1.25 mm thick chromium plated brass plate, with two chromium plated brass brackets fixed with C.P. brass screws and wooden plugs, etc., wherever necessary complete :		
	9.46.1 12 mm dia.	metre	207.00
	9.46.2 20 mm dia.	metre	224.00
	9.46.3 25 mm dia.	metre	322.00
9.47	Providing and fixing nickel plated M.S. pipe curtain rods with nickel plated brackets :		
	9.47.1 20 mm dia (heavy type)	metre	87.00
	9.47.2 25 mm dia (heavy type)	metre	91.00

Item No.	Description	Unit	Rate (in Rs.)
9.48	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. all complete.		
	9.48.1 Fixed to steel windows by welding.	kg	60.00
	9.48.2 Fixed to openings /wooden frames with rawl plugs screws etc.	kg	65.00
9.49	Providing and fixing expanded metal 20x60mm strands 3.25mm wide and 1.6mm thick for windows etc. including 62x19mm beading of IInd class teak wood.	sqm	737.00
9.50	Providing and fixing hard drawn steel wire fabric 75x25 mm mesh of weight not less than 7.75 Kg per sqm to window frames etc. including 62x19 mm beading of second class teak wood.	sqm	778.00
9.51	Providing and fixing fly proof galvanised M.S. wire gauge to windows and clerestory windows using galvanised M.S. wire gauge with average width of aperture 1.4 mm in both directions with wire of dia. 0.63 mm.		
	9.51.1 With 2nd class teak wood beading 62X19 mm.	sqm	636.00
	9.51.2 With 12 mm mild steel U beading.	sqm	362.00
9.52	Add extra for providing S.S wire gauge of average widt of aperture 1.4mm with wire gauge of 0.63mm instead of M.S wire gauge for item 9.27, 9.28, 9.29, 9.30, 9.51	Sqm	182.00
9.53	Deduct for fixing 75x25 mm hard drawn steel wire fabric of weight not less than 7.75 Kg. per sqm in panelled and glazed door and window shutter instead of glass sheet 4 mm thick.	sqm	7.00
9.54	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embeddings in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 sand : 6 graded stone aggregate 20mm nominal size)	each	47.00
9.55	Providing beams including hoisting, fixing in position and applying wood preservative for the unexposed surfaces, etc. complete with :		
	9.55.1 Sal wood.	Cum.	36082.00
	9.55.2 Hollock wood.	Cum.	37030.00
9.56	Providing and fixing ISI marked M.S. pressed butt hinges bright finished with necessary screws etc. complete :		
	9.56.1 125x65x2.12 mm	each	21.00
	9.56.2 100x58x1.90 mm	each	8.00
	9.56.3 75x47x1.70 mm	each	7.00
	9.56.4 50x37x1.50 mm	each	3.00

Item No.	Description	Unit	Rate (in Rs.)
9.57	Providing and fixing IS : 1341 marked M.S. heavy weight butt hinges with necessary screws etc. complete :		
	9.57.1 125x90x4.00 mm	each	37.00
	9.57.2 100x75x3.50 mm	each	22.00
	9.57.3 75x60x3.10 mm	each	13.00
	9.57.4 50x40x2.50 mm	each	7.00
9.58	Providing and fixing ISI marked oxidised M.S. pressed butt hinges with necessary screws etc. complete.		
	9.58.1 125x65x2.12 mm	each	20.00
	9.58.2 100x58x1.90 mm	each	13.00
	9.58.3 75x47x1.70 mm	each	10.00
	9.58.4 50x37x1.50 mm	each	5.00
9.59	Providing and fixing ISI marked oxidised M.S. pressed Parliamentary hinges with necessary screws etc. complete :		
	9.59.1 150x125x27x2.50 mm	each	46.00
	9.59.2 125x125x27x2.50 mm	each	34.00
	9.59.3 100x125x27x2.50 mm	each	30.00
	9.58.4 75x100x20x2.24 mm	each	27.00
9.59A	Providing and fixing ISI marked oxidised M.S. single acting spring hinges with necessary screws etc. complete :		
	9.59A.1 150 mm	each	110.00
	9.59A.2 125 mm	each	102.00
	9.59A.3 100 mm	each	74.00
9.60	Providing and fixing oxidised M.S. double acting spring hinges with necessary screws etc. complete.		
	9.60.1 150 mm	each	99.00
	9.60.2 125 mm	each	87.00
	9.60.3 100 mm	each	60.00
9.61	Providing M.S. Piano hinges ISI marked IS : 3818 finished with nickel plating and fixing with necessary screws etc., complete.		
	9.61.1 Overall width 35 mm.	metre	84.00
	9.61.2 Overall width 50 mm.	metre	83.00
	9.61.3 Overall width 65 mm.	metre	89.00
9.62	Providing and fixing ISI marked oxidised M.S. sliding door bolts with nuts and screws etc. complete :		
	9.62.1 300x16 mm	each	93.00
	9.62.2 250x16 mm	each	86.00
9.63	Providing and fixing ISI marked oxidised M.S. tower bolt black finish, (Barrel type) with necessary screws etc. complete :		
	9.63.1 250x10 mm	each	50.00

Item No.	Description	Unit	Rate (in Rs.)
	9.63.2 200x10 mm	each	35.00
	9.63.3 150x10 mm	each	24.00
	9.63.4 100x10 mm	each	19.00
9.64	Providing and fixing ISI marked 85x42mm oxidised M.S. pull bolt lock conforming to IS : 7534 with necessary screws bolts, nut and washers etc. complete.	each	54.00
9.65	Providing and fixing ISI marked oxidised M.S. door latches conforming to IS:5930 with screws etc. complete :		
	9.65.1 300x20x6 mm	each	52.00
	9.65.2 250x20x6 mm	each	48.00
9.66	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete :		
	9.66.1 125 mm	each	16.00
	9.66.2 100 mm	each	9.00
	9.66.3 75 mm	each	8.00
9.67	Providing and fixing oxidised M.S. hasp and staple (safety type) conforming to IS : 363 with necessary screws etc. complete :		
	9.67.1 150 mm	each	14.00
	9.67.2 115 mm	each	13.00
	9.67.3 90 mm	each	11.00
9.68	Providing and fixing oxidised M.S. casement stays (straight peg type) with necessary screws etc. complete.		
	9.68.1 300 mm weighing not less than 200 gms.	each	38.00
	9.68.2 250 mm weighing not less than 150 gms.	each	33.00
	9.68.3 200 mm weighing not less than 120 gms.	each	29.00
9.69	Providing and fixing oxidised M.S. Safety chain with necessary fixtures for doors. (Weighting not less than 450 gms.)	each	96.00
	STAINLESS STEEL FITTINGS		
9.70	Providing and fixing IS : 12817 marked stainless steel butt hinges with stainless steel screws etc. complete :		
	9.70.1 125x64x1.90 mm	each	49.00
	9.70.2 100X58X1.90 mm	each	39.00
	9.70.3 75x47x1.80 mm	each	27.00
	9.70.4 50x37x1.50 mm	each	25.00
9.71	Providing and fixing IS : 12817 marked stainless steel butt hinges (heavy weight) with stainless steel screws etc. complete :		
	9.71.1 125x64x2.50 mm	each	56.00
	9.71.2 100x60x2.50 mm	each	40.00
	9.71.3 75x50x2.50 mm	each	30.00

Item No.	Description	Unit	Rate (in Rs.)
9.72	Providing and fixing bright finished brass butt hinges with necessary screws etc. complete :		
	9.72.1 125x85x5.5 mm (heavy type)	each	512.00
	9.72.2 125x70x4 mm (ordinary type)	each	99.00
	9.72.3 100x85x5.5 mm (heavy type)	each	432.00
	9.72.4 100x70x4 mm (ordinary type)	each	74.00
	9.72.5 75x65x4 mm (heavy type)	each	150.00
	9.72.6 75x40x2.5 mm (ordinary type)	each	35.00
	9.72.7 50x40x2.5 mm (ordinary type)	each	22.00
9.73	Providing and fixing bright finished brass parliamentary hinges with necessary screws etc. complete :		
	9.73.1 150x125x27x5 mm	each	394.00
	9.73.2 125x125x27x5 mm	each	371.00
	9.73.3 100x125x27x5 mm	each	352.00
	9.73.4 75x100x20x3.2 mm	each	270.00
9.74	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete :		
	9.74.1 250x10 mm	each	245.00
	9.74.2 200x10 mm	each	219.00
	9.74.3 150x10 mm	each	167.00
	9.74.4 100x10 mm	each	118.00
9.75	Providing and fixing bright finished brass door latch with necessary screws etc. complete :		
	9.75.1 300x16x5 mm	each	186.00
	9.75.2 250x16x5 mm	each	174.00
9.76	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles with necessary screws etc. complete (best make of approved quality).	each	384.00
9.77	Providing and fixing bright finished brass 100 mm mortice latch with one dead bolt and a pair of lever handles with necessary screws etc. complete (best make of approved quality).	each	349.00
9.78	Providing and fixing bright finished brass night latch including necessary screws etc. complete (best make of approved quality).	each	964.00
9.79	Providing and fixing special quality bright finished brass cupboard or ward robe locks with four levers including necessary screws etc. complete (best make of approved quality) :		
	9.79.1 40 mm	each	111.00
	9.79.2 50 mm	each	134.00
	9.79.3 65 mm	each	140.00
	9.79.4 75 mm	each	169.00

Item No.	Description	Unit	Rate (in Rs.)
9.80	Providing and fixing 50 mm bright finished brass cup board or wardrobe knob with necessary screws (best make of approved quality)	each	154.00
9.81	Providing and fixing bright finished brass handles with screws etc. complete :		
	9.81.1 125 mm	each	106.00
	9.81.2 100 mm	each	98.00
	9.81.3 75 mm	each	75.00
9.82	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	each	113.00
9.83	Providing and fixing IS : 3564 marked Aluminium die cast body tubular type universal hydraulic door closer with necessary accessories and screws etc. complete.	each	698.00
9.84	Providing and fixing IS : 3564 marked aluminium extruded section body tubular type universal hydraulic door closer with double speed adjustment with necessary accessories and screws etc. complete.	each	930.00
9.85	Providing and fixing bright finished brass casement window fastener with necessary screws etc. complete.	each	52.00
9.86	Providing and fixing bright finished brass casement stays (straight peg type) with necessary screws etc. complete :		
	9.86.1 300 mm weighing not less than 330 gms	each	129.00
	9.86.2 250 mm weighing not less than 280 gms	each	114.00
	9.86.3 200 mm weighing not less than 240 gms	each	99.00
9.87	Providing and fixing bright finished brass hasp and staple (safety type) with necessary screws etc. complete:		
	9.87.1 150 mm	each	130.00
	9.87.2 115 mm	each	106.00
	9.87.3 90 mm	each	85.00
9.88	Providing and fixing chromium plated brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles with necessary screws etc. complete (best make of approved quality).	each	674.00
9.89	Providing and fixing chromium plated brass night latch including necessary screws etc. complete (Best make of approved quality).	each	616.00
9.90	Providing and fixing special quality chromium plated brass cupboard locks with six levers including necessary screws etc. complete (Best make of approved quality) of:		
	9.90.1 Size 40 mm	each	134.00
	9.90.2 Size 50 mm	each	140.00

Item No.	Description	Unit	Rate (in Rs.)
	9.90.3 Size 65 mm	each	169.00
	9.90.4 Size 75 mm	each	175.00
9.91	Providing and fixing chromium plated brass 50 mm cupboard or wardrobe knobs with nuts complete.	each	43.00
9.92	Providing and fixing chromium plated brass handles with necessary screws etc. complete:		
	9.92.1 125 mm	each	185.00
	9.92.2 100 mm	each	150.00
	9.92.3 75 mm	each	110.00
9.93	Providing and fixing chromium plated brass casement window fastener with necessary screws etc. complete.	each	75.00
9.94	Providing and fixing chromium plated brass casement stays (straight peg type) with necessary screws etc. complete :		
	9.94.1 300 mm weighing not less than 330 gms	each	238.00
	9.94.2 250 mm weighing not less than 280 gms	each	215.00
	9.94.3 200 mm weighing not less than 240 gms	each	192.00
9.95	Providing and fixing ISI marked aluminium butt hinges ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete:		
	9.95.1 125x75x4 mm	each	77.00
	9.95.2 125x63x4 mm	each	74.00
	9.95.3 100x75x4 mm	each	67.00
	9.95.4 100x63x4 mm	each	64.00
	9.95.5 100x63x3.2 mm	each	67.00
	9.95.6 75x63x4 mm	each	43.00
	9.95.7 75x63x3.2 mm	each	39.00
	9.95.8 75x45x3.2 mm	each	21.00
9.96	Providing and fixing aluminium sliding door bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete :		
	9.96.1 300x16 mm	each	159.00
	9.96.2 250x16 mm	each	135.00
9.97	Providing and fixing aluminium tower bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete :		
	9.97.1 300x10 mm	each	72.00
	9.97.2 250x10 mm	each	64.00

Item No.	Description	Unit	Rate (in Rs.)
	9.97.3 200x10 mm	each	55.00
	9.97.4 150x10 mm	each	59.00
	9.97.5 100x10 mm	each	34.00
9.98	Providing and fixing aluminium pull bolt lock anodised ISI marked (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade with necessary screws bolts, nut and washers etc. complete.	each	104.00
9.99	Providing and fixing 50 cm long aluminium kicking plate 100x3.15 mm anodised (anodic coating not less than grade AC 10 as per IS :1868) transparent or dyed to required colour or shade with necessary screws etc. complete.	each	137.00
9.100	Providing and fixing aluminium handles ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete :		
	9.100.1 125 mm	each	49.00
	9.100.2 100 mm	each	35.00
	9.100.3 75 mm	each	28.00
9.101	Providing and fixing aluminium hanging floor door stopper ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade with necessary screws etc. complete.		
	9.101.1 Single rubber stopper	each	38.00
	9.101.2 Twin rubber stopper	each	49.00
9.102	Providing and fixing aluminium casement stays ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade with necessary screws etc. complete.	each	85.00
9.103	Providing and fixing bright finished brass 100 mm mortice latch and lock ISI marked with six levers and a pair of anodised (anodic coating not less than grade AC 10 as per IS : 1868) aluminium lever handles with necessary screws etc. complete (Best make of approved quality).	each	710.00
9.104	Providing and fixing aluminium tee channels (heavy duty) with rollers, stop end in pelmets as curtain rod.	metre	72.00
	GYPSUM BOARD PARTITIONS		
9.105	Providing and fixing partition upto ceiling height consisting of G.I. frame and required board including providing and fixing of frame work made of special section power pressed/ roll form G.I. sheet with zinc coating of grade 175 in consisting of floor and ceiling		

Item No.	Description	Unit	Rate (in Rs.)
	channel 50mm wide having equal flanges of 32mm and 0.5mm thick fixed to the floor and ceiling at the spacing of 610mm centre to centre with dash fastener of 12.5mm dia meter 40mm length and the studs 48mm wide having one flange of 34mm and other flange 36mm and 0.50mm thick fixed vertically within flanges of floor and ceiling channel and placed at a spacing of 610mm centre to centre by 6mm dia bolts and nuts at both ends of partition fixed flush to wall with rawl plugs at spacing of 450mm centre to centre and fixing of boards to either side of frame work by 20mm long drive wall screws on 300mm centre to studs, floor and ceiling channels at the spacing of centre, including jointing and finishing to a flush finish with recommended jointing compound, jointing tape, joint finisher and two coats of primer suitable for board as per manufacture's specification all complete.		
9.105.1	67mm overall thickness partition with 8.5mm thick double skin glass reinforced Gypsum (GRG) board conforming to IS: 2095: part III.	sqm	1502.00
9.105.2	75mm overall thickness partition with 12.5mm thick double skin plain Gypsum board conforming to IS: 2095: part I	sqm	790.00
9.105.3	66mm overall thickness Partition with 8mm thick double skin Calcium Silicate Board made with Calcareous & Siliceous materials reinforced with cellulose fiber manufactured through autoclaving process with Compressive Strength 225 kg/sq.cm, Bending Strength 100 kg/ sg.cm.	sqm	941.00
9.105.4	66mm overall thickness partition using 8mm thick double skin non- asbestos multipurpose cement board reinforced with cellulose fibre manufactured through autoclaving process (High pressure steam cured) as per IS: 14862 with suitable fibre cement screw.	sqm	1011.00
9.106	Providing and fixing PTMT handles with necessary screws etc. complete.		
9.106.1	125x34x24 mm weighing not less than 23 gms.	each	38.00
9.106.2	150x34x24 mm weighing not less than 26 gms.	each	42.00
9.107	Providing and fixing PTMT Butt hinges with necessary screws etc. complete.		
9.107.1	75x60x10 mm fitted with 5.5 mm dia M.S. Bright Bar Rod weighing not less than 34 gms.	each	52.00
9.107.2	100x75x10 mm fitted with 5.5 mm dia MS Bright Bar	each	68.00

Item No.	Description	Unit	Rate (in Rs.)
	Rod weighing not less than 53 gms.		
9.108	Providing and fixing PTMT Tower Bolts with 12 mm one piece rod inside and necessary screws etc., complete.		
	9.108.1 152x42x18 mm weighing not less than 60 gms.	each	79.00
	9.108.2 202x42x18 mm weighing not less than 78 gms.	each	91.00
9.109	Providing and fixing PTMT door catcher of length 72mm and dia. of 42mm with suitable washers weighing not less than 33gms.	each	30.00
9.110	Providing and fixing Bamboo jaffery/ fencing consisting of superior quality 25mm dia (Average) half cut bamboo placed vertically and fixed together with three numbers horizontal running members of hollock wood in scantling of section 50X25mm fixed with nails and G.I wire to existing surface complete as per direction of Engineer-in-charge.	sqm	1460.00
9.111	Providing and fixing wooden moulded corner beading of triangular shape to the junction of panelling etc. with iron screws, plugs and priming coat on unexposed surface etc. complete 2nd class teak wood.		
	9.111.1 50x50mm (base and height).	metre	66.00
9.112	Providing and fixing 2nd class teak wood lipping/ moulded beading or taj beading of size 18X5mm fixed with wooden adhesive of approved quality and screws/ nails on the edges of the Pre-laminated particle board as per direction of Engineer-in-charge.	metre	23.00
9.113	Providing and fixing bright finished 100mm mortice lock with 6 levers without pair of handles for aluminium door with necessary screws etc complete (Best make of approved quality) as per direction of Engineer-in- charge.	each	221.00
9.114	Providing and fixing magnetic catcher in cupboard / ward robe shutters including fixing with necessary screws etc. Complete (Best make of approved quality.		
	9.114.1 Triple strip vertical type.	each	20.00
	9.114.2 Double strip (horizontal type).	each	17.00
9.115	Providing and fixing powder coated telescopic drawer channels with necessary screws etc. complete as per directions of Engineer-in-charge.		
	9.115.1 300MM long	Pair	148.00
	9.115.2 450 MM long	Pair	200.00
	9.115.3 500 MM long	Pair	244.00
9.116	Providing and fixing sliding arrangement in racks/ cupboards/cabinets shutter by P/F stainless steel rollers to run	each	14.00

Item No.	Description	Unit	Rate (in Rs.)
	inside C or E aluminium channel section (The payment of C or E channel shall be made separately)		
9.117	Providing and fixing factory made PVC door frame made of PVC extruded section having an overall dimension as below (tolerance ±1mm) with wall thickness 2.0mm ± 0.2mm, corners of the door frame to be mitred and welded of plastic, galvanized brackets and stainless steel screws. The hinge side vertical of the frames reinforced by galvanized M.S. tube of size 19 X 19mm and 1mm ± 0.1mm wall thickness and 3 nos.stainless steel hinges fixed to the frame complete as per manufacturers specification and direction of Engineer-in-charge		
	9.117.1 Extruded section profile size 48x40 mm.	metre	145.00
	9.117.2 Extruded section profile size 50x42 mm.	metre	153.00
9.118	Providing and fixing to existing door frames.		
	9.118.1 24 mm thick factory made PVC door shutters made of styles and rails of a PVC hollow section of size 59x24 mm and wall thickness 2 mm ± 0.2 mm with inbuilt edging on both sides. The styles and rails mitred and joined at the corners by means of M.S. anised/plastic brackets of size 75x220 mm having wall thickness 1.0 mm and stainless steel screws. The styles of the shutter reinforced by inserting galvanised M.S. tube of size 20x20 mm and 1 mm ± 0.1 mm wall thickness. The lock rail made up of 'H' section, a PVC hollow section of size 100x24 mm and 2 mm ± 0.2 mm wall thickness fixed to the shutter styles by means of stic/galvanised M.S. 'U' cleats. The shutter frame filled. with a PVC multi-chambered single panel of size not less than 620 mm, having over all thickness of 20 mm and 1 mm ± 0.1 mm wall thickness. The panels filled vertically and tie bar at two places by inserting horizontally 6 mm galvanised M.S. rod and fastened with nuts and washers, complete as per manufacturer's specification and direction of Engineer-in- charge. (For W.C. and bathroom door shutter).	sqm	2217.00
	9.118.2 30 mm thick factory made Polyvinyl Chloride (PVC) door shutter made of styles and rails of a PVC hollow section of size 60x30 mm and wall thickness 2 mm ± 0.2 mm with inbuilt decorative moulding edging on one side. The styles and rails mitred and joined at the corners by means of M.S.galvanised/plastic brackets of	sqm	2391.00

Item No.	Description	Unit	Rate (in Rs.)
	size 75x220 mm having wall thickness 1.0 mm and stainless steel screws. The styles of the shutter reinforced by inserting galvanised M.S. tube of size 25x20 mm and 1 mm ± 0.1 mm wall thickness. The lock rail made up of 'H' section, a PVC hollow section of size 100x30 mm and 2 mm ± 0.2 mm wall thickness fixed to the shutter styles by means of plastic/ galvanised M.S. 'U' cleats.The shutter frame filled with a PVC multi-chambered single panel of size not less than 620 mm, having over all thickness of 20 mm and 1 mm ± 0.1 mm wall thickness . The panels filled vertically and tie bar at two places by inserting horizontally 6 mm galvanised M.S. rod and fastened with nuts and washers, complete as per manufacturer's specification and direction of Engineer-in-charge.		
9.118.3	25mm thick PVC flush door shutters made out of a one piece Multi chamber extruded PVC section of the size of 762mm X 25mm or less as per requirement with an average wall thickness of 1mm ± 0.3mm. PVC foam end cap of size 23x10mm are provided on both vertical edges to ensure the overall thickness of 25mm. An M.S. tube having dimensions 19mm x 19mm is inserted along the hinge side of the door. Core of the door shutter should be filled with High Density Polyurethane foam. The Top & Bottom edges of the shutter are covered with an end-cap of the size 25MM X 11MM. Door shutter shall be reinforced with special polymeric reinforcements as per manufactures' specification and direction of Engineer-in-charge to take up necessary hardware and fixtures. Stickers indicating the locations of hardware will be pasted at appropriate places	sqm	2507.00
9.119	Providing and fixing factory made P.V.C. door frame of size 50x47mm with a wall thickness of 5mm, made out of extruded 5mm rigid PVC foam sheet mitred at corners and joined with 2 Nos. of 150mm long brackets of 15x15mm M.S. square tube, the vertical door profiles to be reinforced with 19x19mm M.S. square tube of 19 gauge, EPDM rubber gasket weather seal to be provided through out the frame. The door frame to be fixed to the wall using M.S. screws of 65/100mm size complete as per manufacturers specification and direction of Engineer-in-Charge.	metre	382.00

Item No.	Description	Unit	Rate (in Rs.)
9.120	Providing and fixing to existing door frames.		
9.120.1	30mm thick factory made panel PVC door shutter consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19mm x 19mm for styles and 15x15mm for top & bottom rails. M.S. frame shall have a coat of steel primers of approved make and manufacture . M.S. frame covered with 5mm thick heat moulded PVC 'C' channel of size 30mm thickness, 70mm width out of which 50mm shall be flat and 20mm shall be tapered in 45degree angle on either side forming styles; and 5mm thick, 95mm wide PVC sheet out of which 75mm shall be flat and 20mm shall be tapered in 45 degree on the inner side to form top and bottom rail and 115mm wide PVC sheet out of which 75mm shall be flat and 20mm shall be tapered on both sides to form lock rail. Top,bottom and lock rails shall be provided either side of the panel. 10mm (5mm x 2) thick, 20mm wide cross PVC sheet be provided as gap insert for top rail & bottom rail. paneling of 5mm thick both side PVC sheet to be fitted in the M.S.frame welded/ sealed to the styles & rails with 7mm (5mm+2mm) thick x 15mm wide PVC sheet beading on inner side, and joined together with solvent cement adhesive. An additional 5mm thick PVC strip of 20mm width is to be stuck on the interior side of the 'C' Channel using PVC solvent adhesive etc. complete as per direction of Engineer-in- charge. Manufacturer's specification & drawing (for W.C. and bathroom door shutter).	sqm	2188.00
9.120.2	30mm thick factory made solid both side Pre-laminated panel PVC door shutter consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19mm x 19mm for styles and 15x15mm for top & bottom rails. M.S. frame shall have a coat of steel primers of approved make and manufacture. M.S. frame covered with 5mm thick heat moulded Pre-laminated PVC 'C' channel of size 30mm thickness, 70mm width out of which 50mm shall be flat and 20mm shall be tapered in 45degree angle on either side forming styles; and 5mm thick, 95mm wide PVC sheet out of which 75mm shall be flat and 20mm shall be tapered in 45 degree on the inner side to form top and bottom rail and 115mm wide	sqm	2536.00

Item No.	Description	Unit	Rate (in Rs.)
	PVC sheet out of which 75mm shall be flat and 20mm shall be tapered on both sides to form lock rail. Top, bottom and lock rails shall be provided either side of the panel. 10mm (5mm x 2) thick, 20mm wide cross PVC sheet be provided as gap insert for top rail & bottom rail. paneling of 5mm thick both side Pre-laminated PVC sheet to be fitted in the M.S. frame welded/ sealed to the styles & rails with 7mm (5mm+2mm) thick x 15mm wide PVC sheet beading on inner side, and joined together with solvent cement adhesive. An additional 5mm thick PVC strip of 20mm width is to be stuck on the interior side of the 'C' Channel using PVC solvent adhesive etc. complete as per irection of Engineer-in-charge. Manufacturer's specification & drawing bathroom door hutter).		
9.121	Providing and fixing of Fiber Glass Reinforced plastic (FRP) Door Frames of three legged of cross-section 90mm x 45mm having single rebate of 32mm x 15mm to receive shutter of 30mm thickness .The laminate doorframe molded with fire resistant grade unsaturated polyester resin and chopped mat .Doorframe laminate shall be 2mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiberglass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	metre	413.00
9.122	Providing and fixing to existing doorframes.		
9.122.1	30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5mm thick FRP laminate for panels and conforming to IS: 14856 - 2000 including fixing to frames.	sqm	1955.00
9.122.2	30mm thick fiberglass reinforced plastic (F.R.P.) flush door shutter in different plain and wood finish made with fire retardant grade unsaturated polyester resin,moulded to 3mm thick FRP laminate all around, with suitable wooden blocks inside at required places for fixing of fittings and polyurethane foam (PUF) /	sqm	2536.00

Item No.	Description	Unit	Rate (in Rs.)
	Polystyrene foam to be used as filler material throughout the hollow panel,casted monolithically with testing parameters of F.R.P. laminate conforming to table - 3 of IS: 14856 : 2000, complete as per direction of Engineer-in-charge.Providing and fixing factory made door frame (single rebate) made of solid		
9.123	PVC foam profile with homogenous fine cellular structure having smooth outer integral skin having 60mm width & 30mm thickness and shall be fixed to wall as per instructions of engineer-in-charge using 100x8 sheet metal CSK screws.	metre	436.00
9.124	Providing and fixing 28 mm thick door shutter made of solid PVC foam profile with homogenous fine cellular structure having smooth outer integral skin having 71mm width & 28mm thick as styles and rails. Joints are made using solvent adhesive and GI 'C' sections (39mm x 19mm x 0.6mm thick) or M S pipe (40mm x 20mm) stiffener frame insert & telescopic polymeric 'L' corners .The panel shall be filled with 3mm thick high - pressure compact laminate as per manufacturer's specifications and direction of Engineer-in-charge, cover moulding shall be provided for covering fixing screws and elegant look.(for W.C. and bathroom door shutter).	sqm	2536.00
9.125	Providing and fixing PVC rigid foam sheet 1mm thick on existing door shutters (bathroom and W.C. doors) using synthetic rubber based adhesive.	sqm	434.00
9.126	Providing and fixing 12mm thick panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25mm to 40mm thick.		
9.126.1	Marine plywood of lamination / painting quality and conforming to IS: 710	sqm	1234.00
9.126.2	Fire retardant plywood of lamination / painting quality conforming to IS: 5509. Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of approved quality	sqm	1157.00
9.127	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density		

Item No.	Description	Unit	Rate (in Rs.)
	protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of aproved quality		
	9.127.1 1.5 mm thick.	sqm	661.00
	9.127.2 1.0 mm thick.	sqm	565.00
9.128.	Providing and fixing factory made Fiberglass Reinforced plastics (F.R.P.) chajja 4mm thick of required colour, size and design made by Resin Transfer Moulding (RTM) Machine Technology, resulting in void free compact laminate in single piece, having smooth gradual slope curvature for easy drainage of water and duly reinforced by 2nos. vertically and 1nos. horizontally 50x2mm thick M.S. flat with 12mm in built hole for grouting on the existing wall along with the 50mm flanges duly inserted and sealed in the wall complete in one single piece casted monolithically,including all necessary fittings . The FRP Chajja should be manufactured using unsaturated Polyester resin as per IS: 6746 duly reinforced with fibre glass chopped strand mat (CSM) as per IS: 11551 complete with protective Gel coat U/V coating on Top for complete resistance from the extreme of temperature, weather & sunlight,	sqm	4626.00
9.129	Providing and fixing cup board shutters 25mm thick, with Pre-laminated flat pressed three layer particle board or graded wood particle board IS: 12823 marked exterior grade (Grade I Type II) having one side decorative lamination and other side balancing lamination including IInd class teak wood lipping of 25mm wide x12 mm thick with necessary screws and bright finished stainless steel piano hinges complete as per direction of the Engineer-in-Charge	sqm	1147.00
9.130	Providing and fixing cup board shutters with 25mm thick veneered particle board IS : 3097 marked exterior grade (Grade I) of approved make including IInd class teak wood lipping of 25mm wide x 12 mm thick with necessary screws and bright finished stainless steel piano hinges complete as per direction of Engineer-in-Charge.		
	9.130.1 With decorative veneering on one side and commercial veering on other side.	sqm	932.00
	9.130.2 With non decorative veneering on both sides.	sqm	839.00
9.131	Providing and fixing factory made Pre-laminated particle board flat pressed three layer or graded wood particle board with one side decorative finish and other side balancing lamination conforming to IS: 12823 Grade I Type II, of approved design, and		

Item No.	Description	Unit	Rate (in Rs.)
	edges sealed with water resistant paint and lipped with aluminium 'U' type edge beading all-round the shutter, including fixing with angle cleat, grip strip, cadmium plated steel screws including fixing of aluminium hinges 100x63x4 mm etc. complete as per architectural drawing and direction of Engineer-in-Charge (Cost of 'U' beading and hinges will be paid for separately).		
	9.131.1 25 mm thick.	sqm	913.00
9.132	Providing and fixing aluminum U beading of required size to Pre-laminated /flush door shutter including fixing etc. complete as per direction of Engineer-in-charge.	kg	359.00
9.133	Providing and fixing, in position concealed G.I. section for wall paneling using board of required thickness fixed on the 'W' profile (0.55mm thick) having a knurled web of 51.55mm and two flanges of 26mm each with lips of 10.55 mm placed @ 610mm C/C in perimeter channel having one flange of 20mm and another flange of 30mm with thickness of 0.55mm and web of length 27mm. Perimeter channel is fixed on the floor and the ceiling with the nylon sleeves @ 610mm C/C with fully threaded self- tapping drywall screws. Board is fixed to the 'W' profile with 25 mm countersunk ribbed head screws @ 200mm C/C., all complete as per the drawing & directions of engineer-in-charge the joints of the boards are finished with specially formulated jointing compound and 48mm wide jointing tape to provide seamless finish.		
	9.133.1 Tapered edge calcium silicate board made with calcareous & siliceous materials reinforced with cellulose fiber manufactured through autoclaving process to give stable crystalline structure with compressive strength 225 kg/sq.cm, Bending strength 100 kg/sq.cm.		
	9.133.1.1 10mm thick.	sqm	677.00
	9.133.2 Non -asbestos multipurpose cement board reinforced with cellulose fibre manufactured through autoclaving process (high pressure steam cured) as per IS 14862 with suitable fibre cement screw.		
	9.133.2.1 8 mm thick.	sqm	549.00
	9.133.3 Gypsum board conforming to IS: 2095 -1996:Part -I		
	9.133.3.1 12.5 mm thick.	sqm	429.00
9.134	Providing and fixing to existing door frames Polywood 24mm thick factory made PVC door shutters made of styles and rails of a pvc hollow section of size 59X24mm and wall thickness	Sqm.	2100.00

Item No.	Description	Unit	Rate (in Rs.)
	2mm±0.2mm with inbuilt edging on both sides.The styles and rails mitred and joined at the corners by means of M.S. galvanized\Plastic brackets of size 75X220mm and 1mm stainless steel screws.The styles of the shutter reinforced ny inserting galvanized M.S.tube of size 20X20mm and 1mm±0.1mm wall thickness.The lock rail made up of 'H' section,a PVC hollow section of size 100X24mm and 2mm±0.2mm wall thickness fixed to the shutter styles by means of plastic/galvanized M.S.'U' cleats. The shutter frame filled with a PVC multi-chambered single panel of size not less 620mm, having over all thickness of 20mm and 1mm±0.1mm wall thickness.The panels filled vertically and tie bar at two places by inserting horizontally 6mm galvanized M.S.rod and fastened with nuts and washers,complete as per manufacturer's specification and direction of Engineer-in-charge.(for W.C.and bathroom door shutter).		
9.135	Providing and fixing to existing door frame Polywood 30mm thick factory made Polyvinyl Chloride (PVC) door shutter made of styles and rails of a PVC hollow section of size 60X30mm and wall thickness 2mm±0.2mm with inbuilt decorative moulding edging on one side.The styles and rails mitred and joined at the corners by means of M. S. galvanized/plastic brackets of size 75x220 mm having wall thickness 1.0mm and stainless steel screws. The styles of the shutter reinforced by inserting galvanized M. S. tube of size 20x20 mm and 1 mm ± 0.1 mm wall thickness. The lock rail made up of 'H' section, a PVC hollow section of size 100x30 mm and 2 mm ± 0.2 mm wall thickness fixed to the shutter styles by means of plastic/galvanized M.S 'U' cleats. The shutter frame filled with a PVC multi-chambered single panel of size not less than 620 mm, having over all thickness of 20 mm and 1 mm ± 0.1 mm wall thickness. The panels filled vertically and tie bar at two places by inserting horizontally 6 mm galvanized M. S rod and fastened with nuts and washers, complete as per manufactuer's specification and direction of Engineer-in-charge.	Sqm.	2400
9.136	Providing and fixing to existing door frame Polywood 38mm thick factory made Polyvinyl Chloride (PVC) door shutter made of styles and rails of a PVC hollow section of size 90X38mm and wall thickness 2mm±0.2mm. The styles and rails mitred and joined at the corners by means of M. S. galvanized/plastic brackets of size 75x220 mm having wall thickness 1.0mm and	Sqm.	2500.00

Item No.	Description	Unit	Rate (in Rs.)
	stainless steel screws. The styles of the shutter reinforced by inserting galvanized M. S. tube of size 25x20 mm and 1 mm ± 0.1 mm wall thickness. The lock rail made up of 'H' section, a PVC hollow section of size 105x38 mm and 2 mm ± 0.2 mm wall thickness fixed to the shutter styles by means of plastic/galvanized M.S 'U' cleats. The shutter frame filled with a PVC multi-chambered PVC panel of size 100CX20MM with 1.2 mm ± 0.1 mm wall thickness., complete as per manufactuer's specification and direction of Engineer-in-charge.		
9.137	Providing and fixing Polywood factory made PVC door frame made of PVC extruded section having an overall dimension as below (tolerance ± 1mm) with wall thickness 2.00mm±0.2mm,corners of the door frame to be mitred and welded of plastic, galvanized brackets and stainless steel screws.The hinge side vertical of the frames reinforced by galvanized M.S.tube of size 19 X 19mm and 1mm±0.1mm wall thickness and 3 nos. stainless steel hinges fixed to the frame complete as per manufacturers specification and direction of Engineer-in-charge.		
	9.137.1 Extruded section profile size 48X40mm.	Rmtr	194.00
	9.137.2 Extruded section profile size 42X50mm.	Rmtr	194.00
9.138	Providing and fixing Polywood factory made PVC door frame made of PVC extruded section having an overall dimension as below (tolerance ± 1mm) with wall thickness 2.00mm±0.2mm, corners of the door frame to be mitred and joined at the corners by means of plastic, galvanized brackets and stainless steel screws.The hinge side vertical of the frames reinforced by galvanized M.S.tube of size 19 X 38 mm and 1mm±0.1mm wall thickness and 3 nos. stainless steel hinges fixed to the frame complete as per manufacturers specification and direction of Engineer-in-charge.		
	9.138.1 Extruded section profile size 50X60mm.	Rmtr	230.00
9.139	Providing and fixing Polywood factory made PVC door frame made of PVC extruded section having an overall dimension as below (tolerance±1mm) with wall thickness 2.00mm±0.2mm, corners of the door frame to be mitred and joined at the corners by means of plastic, galvanized brackets and stainless steel screws.The hinge side vertical of the frames reinforced by galvanized MS.tube of size 19X38mm and 1mm±0.1mm wall thickness and 3nos. stainless steel hinges fixed to the frame complete as per manufacturers specification and direction of Engineer-in-charge.		
	9.139.1 Extruded section profile size 53 X 60 MM	Rmtr	230.00

Item No.	Description	Unit	Rate (in Rs.)
9.140	Providing and fixing to exisiting door frame Polywood 35mm thick factory made Polyvinyl Chloride (PVC) door shutter made of stiles and rails of a PVC hollow section of size 35X110mm and wall thickness 2mm 0.2mm with inbuilt decorative moulding edging on one side. The stiles of the shutter reinforced by inserting PVC section of size 28x30mm of 1.5mm 0.2mm wall thickness. Stiles and rails miltred and welded at the corners. The lock rail made up of 'H' section, a PVC profile section of size 35x105mm and 2mm 0.2mm wall thickness welded to the shutter stile, the shutter frame filled with a PVC multichambered single panel of size not less than 610mm, having overall thickness of 20mm and 1mm 0.1mm wall thickness with 20mm moulding panel beading of size 8.5x15mm.complete as per manufacturer's specification and direction of Engineer-in-charge.	Sqm.	2850.00
9.141	PVC FALSE CEILING (Flush Type) PW625 Providing and fixing of false ceiling with grid of M.S. tube section of size 25mm X 25mm and with a wall thickness of 1.2mm±0.2mm Polywood. The side pipe and the intermediate pipes is fixed to the roof from the top with the help of ceiling angles/wire and mild steel grid shall be painted with one coat of red lead primer, grid shall be covered by the PVC profile section of size 6mm X 250mm with wall thickness of 0.80mm±0.2mm, with the help of self tapping screw of 6mm X 13mm, 6mm X 19mm. Necessary cutouts for electric connections, lighting, air conditioning etc. shall be provided at required place. The perimeter edge shall be covered by extruded PVC corner beading section of size 9mm X 28mm or 25mm X 30mm with a wall thickness of 1mm±0.2mm fixed by applying cynoacrylic adhesive or self taping screw. All complete as per manufacturer's specification and direction of Engineer-in-charge..	Sqm.	1002.00
9.142	PVC DOOR – 35 MM (Single Panel/glass/louver) Providing and fixing to existing door frame 35mm thick factory made Polyvinyl Chloride (PVC) door shutter made of stiles and rails of a PVC profile section of size 35x110mm and wall thickness 2mm ±0.2mm with inbuilt decorative moulding edging on one side. The stiles and rails with inserting of PVC reinforcement section of size 27x30mm mitre and welded at the corners. The stiles of the shutter reinforced by inserting PVC section of size 27x30mm/galvanized M.S. tube of size 25x25mm and 1mm ±0.1mm wall thickness. The lock rail made up of 'H' section, a	Sqm	2450.00

Item No.	Description	Unit	Rate (in Rs.)
	PVC profile section of size 35x105mm and 2mm ± 0.2mm wall thickness welded to the shutter stile with a PVC profile section single panel of size not less than 620mm, having overall thickness of 20 mm and 1 mm±0.1 mm wall thickness with 20 mm panel beading of size 8.5x15mm/glass (4mm thick plain)/Louver section of size 48mm x 9mm,louver frame of size 15mm x 32 mm as per manufactures specification and direction of Engineer-in-charge.		
9.143	Providing and fixing of Wall Paneling on grid made out of PVC profile Section of size 21 x 17 mm Polywood with wall thickness of 1.5 mm ±0.2mm, fixed on existing wall with wood screw of size 50 mm X 8 mm with rowel plug at a spacing of 900 mm center.PVC profile section of Size 150mm X 10 mm with a wall thickness of 1 mm ±0.2mm to be fixed on the grid by self taping screw of size 19 mm x 6 mm. Necessary cut out for electrical connection to be provide at required palace Polywood. The edge and periphery, finally to be covered by extruded PVC beading Section of size 28 mm X 12 mm with a wall thickness 1.00mm ± 0.2mm. All complete as per manufacturer's specification and direction of Engineer-in-charge.	Sqm	1156.00
9.144	Openable PVC Windows (Outward/Inward) Providing and fixing of PVC casement openable windows (outward / inward) produced by ISO 9001:2000 Qaulity Management System and 14001:2004 Environmental Management System certified company, having : Frame: Made from the Extruded PVC Window Profile Section Polywood of size 60 x 60mm having outer wall thickness of 2.25mm (+/- 0.2mm) and 3 box multi-chamber construction, White in finish, duly reinforced with 1.2mm thick G/J/U/O TYPE GI section. All the four corners shall be mitered cut & thermal welded so as to form window frame. Frame shall be milled with drain and air equalizer hole in order to be water tight and for drainage of acCum.ulated water, if any, to outer side. Fix Mullion made of 76 x 60mm PVC Profile Section with steel reinforcement shall be provided in windows having 2 or more openable shutters, as per the requirement. Frame shall have 'O' type EPDM gasket fitted in in-built groove of frame profile for proper air & sound insulation of the shutter. Shutter: The shutter of outward openable window shall be made of size 78 x 60mm and shutter of inward openable window shall be made of size 73 x 60mm Extruded 3 box multi-chamber PVC Window Profile Section of white colour having outer wall thickness	Sqm	6015.00

Item No.	Description	Unit	Rate (in Rs.)

of 2.25mm (+/- 0.2mm) provided with reinforcement of 1.2mm thick G/J/U/O TYPE GI section duly mitered cut & thermal welded at all corners and fitted with PVC glazing bead of size 34 x 20mm with 'K' & 'O' type inner and outer EPDM weather seal gaskets alongwith 5mm thick ISI make plain float glass. All welding joints of frame and shutter shall be cleaned and milled with the CNC mechanism to provide uniform grooved finish on all visible joints.

Hardware: Window shutters are fixed with frame on 2.5mm thick SS301 Grade Friction Hinge System to keep the window opened at desired angle. Friction Hinge also enables easy cleaning of glass on both side from the inside of building. Locking of windows is provided with multi-point transmission gear (ESPAG) with white finish powder-coated handle.

Installation at Site: Complete window is to be installed on site with 10 x 100mm fastners with white cap in existing pre-finished wall cut-out cemented to glass level plane at all height & width and silicon glue is applied to fill up the crevices between wall and window frame.

Complete in all respect as per the drawing and specifications and direction of engineer-in-charge

CHAPTER-X

STEEL WORK

Notes:

1 Structural steel shall be of tested, standard quality conforming to IS: 226-69 & commercial quality shall conform to IS: 1977-69.

2 Steel work in single section are for works, like hold fasts & iron work for wooden trusses, M.S. Square/round guard bars fixed in wooden or steel windows & ventilators frames etc.

3 Steel work riveted or bolted shall conform to IS: 1148-1968 and IS : 800-1962.

4 Welding of steel shall be electric arc welding as per IS : 816-1956 and shall be on the lines given in IS : 800-1962.

5 Rolling shutters should conform to IS : 6248-1971.

6 Rolled steel sections for fabrication of steel glazed doors, windows & ventilators shall conform to IS : 7452-1974.

7 Glass panes should conform to IS : 1761-1960.

8 Screws shall conform to IS : 4218 (Part I to VI) 1967.

9 Steel doors, windows & ventilators shall conform to IS : 1038-1975 and IS : 7452-1974.

10 The rates of steel doors, windows & ventilators include cost of all materials, labour, T&P, hire & running charges of machineries & wastages etc. and also include cost of welding, all fixtures, erecting and fixing the sections in position.

11 Rates of steel angle iron fencing include all forging, reducing to required size, shape & figure, drilling, tapping, punching, counter sinking for screws, nailing etc. and every description of workmanship that may be necessary to fabricate, finish, erect and fix in positions in perfect manner.

12 Cold rolled framed profiles of pressed steel made from commercial M.S. Sheets conforming IS-513 of 1973 and as per general specfications of IS : 4351 are to be filled with M-15 grade of concrete and rates of items with these sections are inclusive of the cost of concrete.

Item No.	Description	Unit	Rate (in Rs.)
10.1	Structural steel work in single section fixed with or without connecting plate including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	kg	43.80
10.2	Structural steel work riveted, bolted or welded in builtup for all type sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	kg	44.70
10.3	Providing and fixing in position collapsible steel shutters with vertical channels 20x10x2mm and braced with flat iron diagonals 20x5mm size with top and bottom rail of T-iron 40x40x6mm with 40mm dia, steel pulleys complete with bolts, nuts, locking arrangement, stoppers,handles, including applying a priming coat of approved steel primer.	Sqm	2731.00
10.4	Providing and fixing 1mm thick M.S. sheet sliding-shutters with frame and diagonal braces of 40x40x6mm angle iron, 3mm M.S. gusset plates at the junction and corners 25mm dia pulley, 40x40x6mm angle and T-iron guide at the top and bottom respectively including applying a priming coat of approved steel primer.	Sqm	2145.00
10.5	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6mm angle iron and 3mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
10.5.1	Using M.S. angels 40x40x6 mm for diagonal braces.	Sqm	1785.00
10.5.2	Using flats 30x6mm for diagonal braces and central cross piece.	Sqm	1697.00
10.6	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5cm long wire springs grade No.2 and M.S. top cover of required thickness for rolling shutters.		
10.6.1	80x1.25mm M.S. laths with 1.25 mm thick top cover.	Sqm	1557.00
10.6.2	80x1.20 mm M.S. laths with 1.20 mm thick top cover.	Sqm	1066.00
10.6.3	80x0.90 mm M.S. laths with 0.90 mm thick top cover.	Sqm	999.00
10.7	Providing and fixing ball bearing for rolling shutters.	Each	554.00

Item No.	Description	Unit	Rate (in Rs.)
10.8	Extra for providing mechanical device chain and crank operation for operating rolling shutters.		
	10.8.1 Exceeding 10.00 sqm and upto 16.80 sqm in the area.	sqm	463.00
	10.8.2 Exceeding 16.80 sqm in area.	sqm	521.00
10.9	Extra for providing grilled rolling shutters manufactured out of 8 mm dia. M.S. bar instead of laths as per design approved by Engineer-in- charge.(area of grill to be measured).	sqm	244.00
10.10	Fixing only standard steel glazed doors, windows and ventilators in walls with 15x3mm lugs 10 cm long embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20 mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required, including fixing of float glass panes with glazing clips and special metal-sash putty of approved make, or metal beading with screws glass panes cut to size and glazing clips or metal beading with screws, shall paid separately wide item no 10.27)	Kg	24.30
10.11	Providing and fixing factory made ISI marked steel glazed doors,windows and ventilators side /top /centre hung with beading and all members such as K11 B and K12 B etc. complete of standard rolled steel sections, joints mitred and flash butt welded and sash bars tenoned and riveted with 15x3mm lugs, 10cm long, embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required, including providing and fixing of hinges,pivots, float glass panes with glazing clips and special metal sash putty of approved make and a priming coat of approved steel primer excluding the cost of metal beading and other fittings except necessary hinges or pivots complete as per approved design. (glass panes paid sepertely)	kg	151.00
10.12	Extra for providing and fixing steel beading of approved shape and section with screw instead of glazing clips and metal sash putty in steel doors, windows, ventilators and composite units.	metre	20.00
10.13	Providing and fixing T-iron frames for doors, windows and ventilators of mild steel Tee-sections, joints mitred and welded with 15x3 mm lugs 10cm long embedded in cement concrete blocks 15x10x10 cm of 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20 mm nominal size) or with wooden plugs and	kg	51.00

Item No.	Description	Unit	Rate (in Rs.)
	screws or rawl plugs and screws or with dash fastener or with fixing clips or with bolts and nuts as require including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		
10.14	Providing and fixing pressed steel door frames confirming to IS: 4351 manufactured from commercial mild steel sheet of 1.25 mm thickness including hinges jamb, lock jamb, bead and if required angle threshold of mild steel angle of section 50x25mm, or base ties of 1.25mm pressed mild steel welded or rigidly fixed together by mechanical means, adjustable lugs with split end tail to each jamb including steel butt hinges 2.5mm thick with mortar guards, lock strike- plate and shock absorbers as specified and applying a coat of approved steel primer after pre-treatment of the surface as directed by Engineer-in-charge:		
10.14.1	Single rebate (size, 80 mm x 50 mm)	metre	313.00
10.14.2	Single rebate (size, 100 mm x 50 mm)	metre	330.00
10.14.3	Double rebate (size, 115 mm x 50 mm)	metre	348.00
10.15	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular section made of 1.60mm thick M.S. Sheet, joints mitred and welded and grinded finish profiles required size with 15x3mm lugs 10cm long embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primers.	kg	87.00
10.16	Steel work in built up tubular trusses including cutting, hoisting fixing in position and applying a priming coat of approved steel primer, welded and bolted including special shaped washers etc. complete.		
10.16.1	Hot finished welded type tubes.	kg	68.00
10.16.2	Hot finished seamless type tubes.	kg	74.00
10.16.3	Electric resistance or induction butt welded tubes.	kg	86.00
10.17	Providing and fixing M.S. fan clamp type I or II of 16 mm dia M.S. bar bent to shape with hooked ends in R.C.C. slabs, beams during laying including painting the exposed portion of loop, all as per standard design complete.	each	76.00
10.18	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height, top lid of 1.5mm thick M.S. sheet with its top surface hacked for	each	122.00

Item No.	Description	Unit	Rate (in Rs.)
	proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3mm dia. round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.		
10.19	Providing and fixing M.S. round holding down bolts with nuts and washer plates complete.	kg	59.00
10.20	Providing and fixing bolts including nuts and washers complete.	kg	74.00
10.21	Providing and fixing M.S. rivets of sizes in position.	kg	75.00
10.22	Welding by gas or electric plant induding transportation of plant at site etc. complete.	cm	2.60
10.23	Steel work welded in built up sections/ framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required. hoisting, fixing in position and applying a priming coat of approved steel		
10.23.1	In stringers, treads, landings etc. of stair cases including use of chequered plate wherever required, all complete.	kg	52.70
10.23.2	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works.	kg	55.50
10.24	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and staircase railing including applying a priming coat of approved steel primer.		
10.24.1	M.S. tube.	kg	70.00
10.24.2	E.R.W. tubes.	kg	90.00
10.24.3	G.I. pipes.	kg	67.00
10.25	Providing and fixing glazing in steel doors windows, ventilator, shutters & partitions etc. per architectural drawing & as per direction of engineer-in-charge. With steel beading metal sash puttey.		
10.25.1	With float glass 4mm thick	Sqm	646.00
10.25.2	With float glass 5.5mm thick	Sqm	800.00
10.25.3	With float glass 8mm thick	Sqm	961.00
10.26	Supplying and fixing at site:		
10.26.1	R.C.C. Standards post/ struts/rails/ poles of mix 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 12.5 mm nominal size) with wooden plugs or 6mm bar nibs wherever required as per direction of Engineer-in-charge including fixing (cost of earth works in excavation, concrete works in foundation to be paid separately).	Cum.	12717.00

Item No.	Description	Unit	Rate (in Rs.)
	10.26.2 Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete.	Kg	45.00
10.27	Supplying and fixing turn buckles & straining bolts for barbed wire fencing.	each set	93.00
10.28	Fencing with R.C.C. post placed at required distance, embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post one side only, provided with horizontal lines and two diagonals of barbed wire 9.38 kg per 100 metres (min) between the two posts fitted and fixed with G.I. staples on wooden plugs or G.I. binding wire tied to 6 mm bar nibs fixed while casting the post (cost of R.C.C. posts, struts, earth work and concrete to be paid for separately) :- Payment to be made per metre cost of total length of barbed wire used.		
	10.28.1 With G.I. barbed wire (2-ply 12 gauge)	Metre	6.00
	10.28.2 With G.I. barbed wire (7 strand 16 gauge)	Meter	21.00
10.29	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire 9.38 kg per 100 m (minimum) between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately) :- Payment to be made per metre cost of total length of barbed wire used.		
	10.29.1 With G.I. barbed wire (2-ply 12 gauge)	Metre	6.00
	10.29.2 With G.I. barbed wire (7 Strand 16 gauge)	Meter	21.00
10.30	Providing and fixing Welded steel wire fabric fencing with posts of specified material and of standard design placed and embedded in cement concrete blocks 45x45x60 cm of mix 1:5:10 (1 cement:5 fine sand : 10 graded stone aggregate 40mm nominal size) every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and struts embedded in cement concrete blocks 70x45x50 cm of the same mix, provided with welded steel wire fabric fixed between the posts fitted and fixed with G.I. staples on wooden plugs or tied to 6 mm bar nibs with G.I. binding wire (cost of posts, welded steel wire fabric, painting, earth work in		

Item No.	Description	Unit	Rate (in Rs.)
	excavation and concrete to be paid for separately)		
	10.30.1 25 x 25mm size 12 gauge	Sqm	347.00
	10.30.2 50 x 25mm size 12 gauge	Sqm	283.00
	10.30.3 50 x 50mm size 12 gauge	Sqm	244.00
10.31	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 50x50mm including strengthening with 2mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer- in-charge.		
	10.31.1 Made of G.I. wire of dia 4mm.	sqm	378.00
	10.31.2 Made of G.I. wire of dia. 4mm, PVC coated to achieve outer dia. not less than 5mm in required colour and shade.	sqm	407.00
10.32	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 25x25 mm made of G.I. wire of dia. 3mm induding strengthening with 2mm dia. wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.	sqm	469.00

CHAPTER-XI
FLOORING

Notes:

1 Marble chips / terrazo floors, skirting and dados shall conform to IS : 2114-1962.

2 Marble powder used in mosaic/terrazo topping shall pass through IS : sieve No. 30.

3 Pigments used in terrazo/marble chips shall be of permanent colour.

4 For the situ marble chips/terrazo flooring the first grinding shall be done with carborandom stones of 60 grit size, the second grinding with 80 grit size and the third grinding with 120 to 150 grit size and the fourth grinding with 320 to 400 grit size.

5 For the slab or tiles flooring, the joints in the tiles or slab shall be of 1.50mm thickness. The joints shall be filled with the cement grout of the same shade as the colour of slab or tile. The terrazo tiles shall conform to IS : 1237-1959.

6 The slab or tiled flooring shall be grinded with carborandom stone. The first grinding shall be with carborandom stones of 48 to 60 grit size and the second grinding with 120 grit and final grinding with 220 to 350 grit. In case of plain/coloured terrazo tiles, initial grinding with carborandom stones of 48 to 60 grit is not necessary.

7 Chequerred terrazo tiles shall conform to IS : 1237-1959 and overall thickness of chequerred tiles should not be less than 22mm. The grooves in the chequerres shall be uniform and straight. The depth of the groove shall not be less than 3.0mm.

8 The glazed tiles white/coloured, shall be of approved make and shall conform to IS : 777-1970. The top surface of the tiles shall be glazed. The glazed shall be either glossy or matt as specified. They shall be flat & true to shape and free from crack, crazing spots, chipped edges and corners. The glazing shall be of uniform shade.

9 **MARBLE STONE:** Marble shall be hard, sound, dense and homogeneous in texture with crystalline texture. It shall be uniform in colour and free from stains, cracks, decays and weathering.

i)	Makarana second quality	-	White marble having lighter shades/spots.
ii)	Rajnagar plain	-	White marble with blue or grey shades.
iii)	Agaria White katani	-	White marble with irregular blue and black spots.

PHYSICAL PROPERTIES OF MARBLE BLOCKS, SLABS AND TILES

Sr.No.	Characteristics	Requirements	Method of Test
1	Moisture absorption after 24 hours immersion in cold water.	Max. 0.40% by weight	IS : 1124-1974
2	Hardness	Min. - 3	Mhos scale
3	Specific gravity	Min. - 2.50	IS : 1122-1974.

10 **Kota Stone :** Kota stone slabs/tiles shall be of selected quality, hard, sound, dense and homogeneous in texture, free from cracks, decay, weathering and flaws. They shall be hand or machine cut in requisite thickness.

11 **Red/White/Coloured Sand stone :** The slabs of white, red and stones of other colours found at Shivpuri, Mandana, Jaisalmer, Dholpur, Basoda, Raisen and at other places to be used in flooring work shall be hard, durable and tough, free from cracks, decays and weathering. In case of red sand stones and other coloured sand stones, white patches or streaks and in case of white sand stones, coloured patches or streaks shall not be allowed. However, scattered spots upto 10mm diametre shall be permitted.

12 **Wooden Flooring : T**he wooden flooring shall conform to IS : 3670-1966.

13 The rates include cost of all materials, labour, T&P, wastages, water for curing, hire & running charges of machinaries and all leads & lifts of all materials etc. complete.

14 In case of composite flooring with two or more types of stones and where single type of stone used is 90% or more in area, the entire area is to be paid at the rate of flooring with that type of stone and in case, where the area of single type of stone is less than 90%, the flooring done shall be measured separately and paid at the rate of flooring for each type of stone seperately.

15. Ceremic/vitrified shall be of first quality, homogenous in colour/ texture free from cracks, decay and flaw and shall conform to IS 15622

Item No.	Description	Unit	Rate (in Rs.)
11.1	Cement concrete flooring 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.(Area of panels not exceeding 2 sqm)		
11.1.1	40mm thick with 20mm nominal size stone aggregate.	sqm	208.00
11.2	52 mm thick cement concrete flooring with concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix 2 graded stone aggregate 6 mm nominal size) by volume .hardening compound is mixed @ 2 litre per 50kg of cement or as per manufacturers specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	sqm	305.00
11.3	62 mm thick cement concrete flooring with concrete hardener topping under layer 50 mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20mm nominal size) and top layer 12mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix 2 graded stone aggregate 6mm nominal size) by volume. Hardening compound is mixed @ 2 litre per 50kg of cement or as per manufactures specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	sqm	344.00
11.4	Cement plaster skirting (up to 30 cm height) with cement mortar 1:3 (1 cement : 3 sand) finished with a floating coat of neat cement.		
11.4.1	18 mm thick	sqm	182.00
11.5	Cement concrete pavement with 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) including finishing complete.	Cum.	3696.00
11.6	Extra for making chequers of approved pattern on cement concrete floors, steps, landing, pavements etc.	sqm	15.00
	TERRAZO FLOORING		
11.7	40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 12.5mm nominal size) and top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from 1mm to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder) by weight in proportion of		

Item No.	Description	Unit	Rate (in Rs.)
	4:7 (4 cement marble powder mix : 7 marble chips) by volume including cement slurry etc. complete :		
	11.7.1 Dark shade pigment with ordinary cement.	sqm	334.00
	11.7.2 Light shade pigment with white cement.	sqm	376.00
	11.7.3 Medium shade pigment with 50% white cement and 50% ordinary cement.	sqm	358.00
	11.7.4 White cement without any pigment.	sqm	339.00
	11.7.5 Light shade pigment with ordinary cement.	sqm	357.00
	11.7.6 Ordinary cement without any pigment.	sqm	314.00
11.8	40 mm thick marble chips flooring, rubbed and polished to granolithic finish, under layer 31mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 12.5mm nominal size) and top layer 9mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from 4mm 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 : 7 marble chips) by volume including cement slurry etc. complete.		
	11.8.1 Dark shade pigment with Ordinary cement.	sqm	342.00
	11.8.2 Light shade pigment with white cement.	sqm	401.00
	11.8.3 Medium shade pigment with 50% white cement and 50% ordinary cement.	sqm	376.00
	11.8.4 White cement without any pigment.	sqm	365.00
	11.8.5 Light shade pigment with ordinary cement.	sqm	376.00
	11.8.6 Ordinary cement without any pigment.	sqm	321.00
11.9	40 mm thick marble chips flooring, rubbed and polished to granolithicfinish, under layer 28 mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 12.5mm nominal size) and top layer 12mm thick with white, black, chocolate, grey yellow or green marble chips of sizes from 7mm to 10mm 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 including cement slurry etc. complete :		
	11.9.1 Dark shade pigment with ordinary cement.	sqm	364.00
	11.9.2 Light shade pigment with white cement.	sqm	433.00
	11.9.3 Medium shade pigment with 50% white cement and 50% ordinary cement.	sqm	392.00
	11.9.4 White cement without any pigment.	sqm	378.00
	11.9.5 Light shade pigment with ordinary cement.	sqm	375.00
	11.9.6 Ordinary cement without any pigment.	sqm	332.00

Item No.	Description	Unit	Rate (in Rs.)
11.10	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6 mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4 mm 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 :		
11.10.1	18 mm thick with under layer 12 mm thick in cement plaster 1:3 (1 cement : 3 sand) :		
11.10.1.1	Dark shade pigment with ordinary cement.	sqm	389.00
11.10.1.2	Light shade pigment with white cement.	sqm	423.00
11.10.1.3	Medium shade pigment with 50% white cement and 50% ordinary cement.	sqm	405.00
11.10.1.4	White cement without any pigment.	sqm	402.00
11.10.1.5	Light shade pigment with ordinary cement.	sqm	397.00
11.10.1.6	Ordinary cement without any pigment.	sqm	374.00
11.11	Providing and fixing glass strips of required hight in joints of terrazo/ cement concrete floors.		
11.11.1	40 mm wide and 4 mm thick.	Metre	22.00
11.12	Extra for laying terrazo flooring on staircase treads not exceeding 30 cm in width including cost of forming, nosing etc.	sqm	21.00
11.13	Crazy marble stone flooring including filling the gaps with light shade pigment with white cement marble powder mixture (3 parts of white cement : 1 part of marble powder) by weight in proportion of 4:7 (4 cement marble powder mix : 7 white, black or white and black marble chips of sizes from 1mm to 4mm nominal size by volume) and under layer 25mm thick cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 12.5 mm nominal size) rubbing, polishing and cement slurry etc. complete :		
11.13.1	18 mm thick crazy marble stone white, black or as specified.	sqm	520.00
11.14	Precast terrazo tiles 22mm thick with graded marble chips of size upto 12mm laid in floors, and landings, jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete with precast tiles on 20mm thick bed of cement mortar 1:4 (1 cement :4 sand) :		
11.14.1	Light shade using white cement.	sqm	648.00
11.14.2	Medium shade using 50%white cement and 50% ordinary cement.	sqm	532.00

Item No.	Description	Unit	Rate (in Rs.)
	11.14.3 Dark shade using ordinary cement.	sqm	521.00
	11.14.4 Ordinary cement without any pigment.	sqm	488.00
11.15	Extra if terrazo tiles are laid in treads of steps not exceeding 30 cm in width.	sqm	19.00
11.16	Precast terrazo tiles 20 mm thick with graded marble chips of sizes upto 12 mm in skirting and risers of steps not exceeding 30 cm in height on 12 mm thick cement plaster 1:3 (1 cement : 3 sand) jointed with neat cement slurry mixed with pigment to match the shade of the tiles, including rubbing and polishing complete with tiles of :		
	11.16.1 Light shade using white cement.	sqm	634.00
	11.16.2 Medium shades using 50% white cement and 50% ordinary cement.	sqm	574.00
	11.16.3 Dark shade using ordinary cement.	sqm	544.00
	11.16.4 Ordinary cement without any pigment.	sqm	515.00
11.17	Chequered terrazo tiles 22 mm thick with graded marble chips of size up to 6 mm in floors jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete on 20 mm thick bed of cement mortar 1:4 (1 cement :4 sand) :		
	11.17.1 Light shade using white cement.	sqm	602.00
	11.17.2 Medium shade using 50% white cement, 50% ordinary cement.	sqm	557.00
	11.17.3 Dark shade using ordinary cement.	sqm	525.00
	11.17.4 Ordinary cement without any pigment.	sqm	497.00
11.18	Chequerred precast cement concrete tiles in any size 22 mm thick in footpath & courtyard jointed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and cleaning etc. complete on 20 mm thick bed of cement mortar 1:4 (1 cement: 4 sand).		
	11.18.1 Light shade using white cement.	sqm	852.00
	11.18.2 Medium shade using 50% white cement 50% Grey cement	sqm	1050.00
	11.18.3 Dark shade using ordinary cement.	sqm	541.00
	11.18.4 Ordinary cement without any pigment.	sqm	523.00
11.19	Providing and fixing 10mm thick acid and or alkali resistant tiles of approved make and colour using acid and or alkali resisting mortar bedding and joints filled with acid and or alkali resisting cement as per IS : 4457 complete as per the direction of Engineer-in- Charge.		

Item No.		Description	Unit	Rate (in Rs.)
	11.19.1	In flooring on a bed of 10 mm thick mortar 1:4 (1 acid proof cement : 4 sand).		
	11.19.1.1	Acid and alkali resistant tile.	sqm	873.00
	11.19.2	In dado/skirting on 12mm thick mortar 1:4 (1 acid proof cement: 4 sand).		
	11.19.2.1	Acid and alkali resistant tile.	sqm	909.00
11.20		Tile work in skirting, risers of steps and dado (up to 2 m height) over 12 mm thick bed of cement mortar 1:3 (1 cement :3 sand) and jointed with grey cement slurry @ 3.3 kg/sqm including pointing in white cement mixed with pigment of matching shade complete.		
	11.20.1	Marble tiles (polished) Raj Nagar.		
	11.20.1.1	8 mm thick.	sqm	608.00
STONE FLOORING				
11.21		Marble stone flooring with 16 mm thick marble stone (sample of marble shall be approved by Engineer-in-charge) over 20 mm (average) thick base of cement mortar 1:4 (1 cement:4 sand)laid and jointed with grey cement slurry including rubbing and polishing complete with : (Area of Slabs over 0.50sqm)		
	11.21.1	Makrana white second quality.	sqm	2871.00
	11.21.2	Raj Nagar plain.	sqm	801.00
	11.21.3	Agaria White/ katani marble	sqm	1670.00
	11.21.4	Black Zebra.	sqm	858.00
	11.21.5	Udaipur/Baroda green marble	sqm	981.00
	11.21.6	Pink plain marble.	sqm	970.00
	11.21.7	Jaisalmer yellow	sqm	970.00
11.22		Extra for marble stone flooring in treads of steps and risers using single length up to 2.00 metre.	sqm	129.00
11.23		Kota / cuddapah stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 sand) :		
	11.23.1	25 mm thick	sqm	670.00
11.24		Kota /cuddapahstone slabs 25 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	sqm	701.00
11.25		40 mm thick stone flooring over 20 mm (average)thick base of		

Item No.	Description	Unit	Rate (in Rs.)
	cement mortar 1:5 (1 cement : 5 sand) including pointing with cement mortar 1:2 (1 cement : 2 sand) with an admixture of pigment to match the shade of stone. Red sand stone / White sand stone)		
	11.25.1 Rough chiseled dressed stone	Sqm	267.00
	11.25.2 Fine dressed stone	Sqm	361.00
11.26	Providing nosing in treads of steps of Kota stone/ sand stone slab./ Marble stone i/c rubbing polishing etc. Complete.	metre	27.00
11.27	Extra for Kota stone/ sand stone in treads of steps and risers using single length up to 1.05 metre.	sqm	7.00
11.28	25mm wooden planking, tongued and grooved in flooring including fixing with iron screws complete with :		
	11.28.1 Second class teak wood	sqm	1893.00
	11.28.2 Second class sal wood	sqm	1548.00
11.29	38mm thick wood block flooring of first class teak wood laid over 25mm thick leveling layer of cement concrete 1:2:4 (1 cement : 2 sand 4 graded stone aggregate 10mm nominal size) to be paid separately coated with a thin layer of hot bitumen (blown type) @ 2.45 kg per sqm. including fixing blocks in position after dipping in hot bitumen (blown type) up to half depth, planed, levelled smooth and finished complete.	sqm	3810.00
11.30	Providing and fixing M.S. angle 50x50x5 mm to act as nosing with lugs of M.S. flat 10x5 mm 10cm long forked at end 60cm apart (minimum three lugs to be provided) including necessary welding and applying a priming coat of approved primer on exposed surface etc. complete.	kilogram	48.00
11.31	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (6-7mm thickness) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete	sqm	547.00
11.32	Providing and laying Ceramic glazed floor tiles of any size (9-10mm thickness) of 1st quality conforming to IS : 15622 of approved make in colours such as White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 sand) including pointing the joints with white cement and matching pigment etc., complete.	sqm	737.00
		sqm	759.00

Item No.	Description	Unit	Rate (in Rs.)
11.33	Providing and laying Ceramic glazed floor tiles of any size (9-10mm thickness) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown laid on 20mm thick bed of Cement Mortar 1:4 (1 Cement : 4 sand) including pointing the joints with white cement and matching pigments etc., complete.		
11.34	Providing and laying polished vitrified floor tiles in different sizes of 10mm thickness with water absorption's less than 0.08% and conforming to IS : 15622 of approved make in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 sand) including grouting the joints with white cement and matching pigments etc., complete.		
11.34.1	Size of Tile 50x50 cm	sqm	868.00
11.34.2	Size of Tile 60x60 cm	sqm	958.00
11.34.3	Size of Tile 80x80 cm	sqm	1458.00
11.34.4	Size of Tile 100x100 cm	sqm	1627.00
11.35	Deduct for not using 20mm thick cement mortar 1:4 (1 cement : 4 sand) bedding.	sqm	98.00
11.36	Fixing glazed/ Ceramic/ Vitrified floor tiles with cement based high polymer modified quick-set tile adhesive (Water based) conforming to IS: 15477 , using 5kg. adhesive per sqm of tile area, in average 3mm thickness	sqm	526.00
11.37	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction and of approved size and shape laid in required colour and pattern over and including 40mm thick compacted bed of course sand filling the joints with sand etc. all complete as per the direction of Engineer in charge.	Sqm	367.00
11.38	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M-30 grade reflective type rubber modulded glossy colour paving block made by block making machine with strong vibratory compaction and of approved size and shape laid in required colour and pattern over and including 60mm thick compacted bed of stone dust filling the joints with sand etc. all complete as per the direction of Engineer in charge including locking edges wherever required wihing cement concrete M15 grade or cement mortor 1:3 with pigment of required shade to match the colour /shade of block including cost of labour, material , etc. all complete.	Sqm	473.00

Item No.	Description	Unit	Rate (in Rs.)
11.39	Granite stone flooring with 18mm thick granite stone (sample of granite shall be approved by engineer-in-charge) over 20mm (average) thick base of cement mortar 1:4 (1 cement :4 sand) laid and jointed with white cemtent slurry mixed with pigment of required shade to match the shade of stone complete. (area of slab over 0.50 sqm) (item to be executed only in public buildings.)		
11.39.1	Black Granite stone	Sqm	1868.00
11.39.2	All shades other than black	sqm	2367.00

CHAPTER-XII

ROOFING AND CEILING

Notes :

1 In case of corrugated A.C. or G.S. sheet, the sheet shall be laid on the roof with a lap of not less than 15 cm. at the end of two corrugation at the sides. The holes for the screws or bolt shall be drilled (not punched) from in side toward outside about 23 cm. apart or as directed by the Engineer-in-charge. On the sides and at every 2nd corrugation on the ends, care being taken that all holes shall occur on the ridge of the sheet on the outside as laid in a uniform pattern.

2 The rates for A.C. or G.S. sheet roofing are inclusive of neccesary overlaps and wastages in cutting and all standard screws, nuts, washers, bolts, patent 'J' & 'L' hooks, bolts and other fasteners required as per specifications unless otherwise specified.

3 In tiled roofing, the three lowest courses of tiles of each layer, ridge and hip tiles shall be set in cement mortar 1:6 (with pigment to match the colour of tiles and are inclusive of these items).

4 In Manglore tiles, the three end rows at eves, gable or other exposed parts should be tied with G.I. wire 18 gauge.

5 The wooden planks, fixed in the ceiling shall be of 20mm thickness and shall be planned, moulded, beaded and fixed to the pattern as directed by the Engineer-in-charge. The wooden beading should be of size 65x12mm section, fixed to the frame work with necessary screws and spacing not exceeding 30cm. or as directed by the Engineer-in-Charge. The overlaps of beading shall be mitred at the junction.

6 The G.S. sheet to be used in work shall conform to IS : 277-1969.

7 The A.C. sheet shall conform to IS : 459-1970.

8 The blown bitumen to be used for water proofing treatment shall conform to IS : 702.

9 The self finished felt type-2, grade-2 fibre base, self finished, bitumen felt shall conform to IS: 1322-1970.

10 Hessain base felt type-3 shall conform to IS : 1322-1970.

11 The rates include the cost of all materials, labour, T&P, wastages and hire & running charges of machinaries etc. for all the items of this chapter.

Item No.	Description	Unit	Rate (in Rs.)
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 and 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	1.00mm thick with zinc coating not less than 275gm/m²	sqm	687.00
12.1.2	0.80mm thick with zinc coating not less than 275gm/m²	sqm	580.00
12.1.3	0.63 mm thick with zinc coating not less than 275gm/ m²	sqm	482.00
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	18.00
12.2.2	0.80 mm thick	metre	14.00
12.2.3	0.63 mm thick	metre	14.00
12.3	Extra for circular cutting in C.G.S. sheet roofing for making opening of area exceeding 40 square decimeter :		
12.3.1	1.00 mm thick	metre	104.00
12.3.2	0.80 mm thick	metre	83.00
12.3.3	0.63 mm thick	metre	83.00
12.4	Providing ridges or hips of width 60 cm over all 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	0.80mm thick with zinc coating not less than 275gm/m²	metre	337.00
12.4.2	0.63mm thick with zinc coating not less than 275gm/m²	metre	324.00
12.5	Providing valleys of 90cm wide overall in plain G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts 8mm dia.. G.I. limpet and bitumen washers complete :		
12.5.1	1.60mm thick with zinc coating not less than 350gm/m²	metre	754.00
12.6	Providing flashing of 40 cm over all width in plain, G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts, G.I.		

Item No.	Description	Unit	Rate (in Rs.)
	limpet and bitumen washer complete, bent to shape and fixed in wall with cement mortar 1:3 (1cement : 3 sand).		
	12.6.1 1.00mm thick with zinc coating not less than 275gm/m²	metre	263.00
12.7	Providing and fixing 15 cm wide 45 cm over all 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 0.80mm thick with zinc coating not less than 275gm/m²	metre	326.00
	12.7.2 0.63mm thick with zinc coating not less than 275gm/m²	metre	261.00
12.8	Providing non-asbestos high impact Polypropylene reinforced cement 6mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8mm 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: corrugated sheets and induding cutting to size and shape wherever required.	sqm	235.00
12.9	Straight cutting in non- asbestos polypropylene reinforced cement corrugated, semi-corrugated 6 mm thick sheet roofing for making openings of area exceeding 40 square decimeter for chimney stacks, skylights etc.	metre	14.00
12.10	Circular cutting in non-asbestos polypropylene reinforced cement corrugated/semi-corrugated 6 mm thick sheet roofing for making openings of area exceeding 40 square decimeter.	metre	39.00
12.11	Providing and fixing wind ties of 40x6mm flat iron section.	metre	75.00
12.12	Providing and fixing ridges and hips in non-asbestos fibre cement high impact polypropylene reinforced roofing with suitable fixing accessories or self drilling fastener and EPDM washer etc. complete.		
12.12.1	Corrugated serrated adjustable ridges	metre	238.00
12.12.2	Plain wing adjustable ridges	metre	238.00
12.12.3	Close fitting adjustable ridges	metre	264.00
12.12.4	Unserrated adjustable hips	metre	286.00
12.13	Providing and fixing non-asbestos fibre cement high impactpoly propylene reinforced 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 washeretc. complete:		

Item No.		Description	Unit	Rate (in Rs.)
	12.13.1	Corrugated apron pieces	metre	166.00
	12.13.2	Eave's filler pieces	metre	143.00
	12.13.3	North light curves	metre	270.00
	12.13.4	ventilator curves	metre	374.00
	12.13.5	Barge boards	metre	303.00
	12.13.6	Ridge finials	pair	147.00
	12.13.7	Special north light curves	each	369.00
	12.13.8	S type louvers	metre	150.00
12.14	Providing flat iron brackets 50x3mm size with necessary bolts, nuts and washers etc. for fixing asbestos cement/G.S. sheets gutters with purlins.		metre	40.00
12.15	Painting top of roofs with bitumen of approved quality at 17kg per 10 sqm impregnated with a coat of sand at 60 cudm per 10sqm including deaning the slab surface with brushes and finally with a piece of doth lightly soaked in kerosene oil complete :			
	12.15.1	With residual type petroleum bitumen of penetration 80/100	sqm	72.00
12.16	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness and of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 sand) mixed with 2% integral water proofing compound laid over a bed of 20 mm thick cement mortar 1:4(1cement:4 sand) and finished neat complete.		sqm	435.00
12.17	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 sand : 4 stone aggregate 10mm and down graded) including finishing with cement mortar 1:3 (1 Cement : 3 fine sand) as per standard design:			
	12.17.1	In 75x75mm deep chase	metre	71.00
12.18	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. Sheet 1mx1mx400micron, finished with 12mm cement plaster 1:3 (1 cement 3 sand) and a coat of neat cement rounding the edge sand: making and finishing the outlet complete.		each	150.00
12.19	Providing sand stone slab for roofing and laying them in cement mortar 1 :4 (1 cement : 4 sand) over wooden karries or R.C.C. battens (Karries and battens to be paid separately) including pointing the ceiling joints with cement mortar 1:3 (1 cement : 3 coarse sand) complete :			
	12.19.1	Red sand stone slab		
	12.19.1.1	40 to 50 mm thick	Sqm	309.00

Item No.	Description	Unit	Rate (in Rs.)
	12.19.2 White sand stone slab :		
	12.19.2.1 40 to 50 mm thick	Sqm	282.00
12.20	Providing and fixing insulating board ceiling of approved quality with necessary nails etc. complete (frame work to be paid separately) :		
	12.20.1 Natural colour insulating board		
	12.20.1.1 12 mm thick	sqm	341.00
	12.20.2 White face insulating board		
	12.20.2.1 12 mm thick	sqm	430.00
	12.20.3 Flame retardant face insulating board		
	12.20.3.1 12 mm thick	sqm	398.00
12.21	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) :		
	12.21.1 12 mm thick	sqm	475.00
12.22	Providing and fixing plain Multipurpose Cement board (High Pressure steam cured) as per IS : 14862 : 2000) with suitable fibre cement screw in ceiling etc. complete (frame work to be paid separately) :		
	12.22.1 6 mm thick cement board	Sqm	322.00
12.23	Extra for Circular cutting and waste in ceiling with:		
	12.23.1 2nd class teak wood planks 20 mm thick	metre	258.00
	12.23.2 Natural colour insulating board		
	12.23.2.1 12 mm thick	metre	99.00
	12.23.3 White face insulating board:		
	12.23.3.1 12 mm thick	metre	110.00
	12.23.4 Flame retardant face insulating board:		
	12.23.4.1 12 mm thick	metre	106.00
	12.23.5 Standard quality hard board sheet:		
	12.23.5.1 3 mm thick	metre	97.00
	12.23.5.2 4.5 mm thick	metre	100.00
12.24	Extra for providing and fixing ceiling to curved surfaces in narrow widths	sqm	70.00
12.25	Providing and fixing false ceiling with 12 mm thick plain/ semi perforated or with design ceiling tiles of BWP type phenol formaldehyde synthetic resin bonded pressed particle board conforming to IS:3087 finished with a coat of aluminium primer on both sides & edges and two coats of synthetic enamel paint of approved quality on exposed face fixed to a grid made out of	sqm	194.00

Item No.	Description	Unit	Rate (in Rs.)
	anodised aluminium(with 15 micron anodic coating) T-sections 35 x15x1.5 mm size main runners and cross runners 23.5x19x1.5 mm fixed to main runners placed 600 mm centre to centre both ways so as to form a grid of 600 mm square. The frame work shall be suspended from ceiling by level adjusting hangers of 6 mm dia M.S rod fixed to roof slab by means of ceiling cleats. The suspenders shall be placed 600x 1200 mm centre to centre including fixing to the frame with C.P brace screws and applying a priming coat of zinc chromate yellow primer (aluminium frame work shall be paid separately).		
12.26	Extra for providing 3 mm thick translucent white acrylic plastic sheets of approved quality in false ceiling instead of 12 mm thick plain/or with design particle board ceiling tiles in item above.	sqm	337.00
12.27	Providing 10 mm thick plaster of Paris (gypsum anhydrous) ceiling up to a height of 5 m above floor level over first class sal/ saj 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) :		
	12.27.1 Flat surfaces	Sqm	406.00
	12.27.2 Curved surfaces	sqm	619.00
12.28	Extra for any sunk or raised mouldings in the plaster of Paris (Gypsum anhydrous) ceiling	sqm	153.00
12.29	Extra for providing plaster of Paris (Gypsum anhydrous) ceiling above 5metres height from floor level.	sqm per metre height	41.00
12.30	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Fibre glass wool conforming to IS : 8193 density 24kg/m3, 50mm 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 24g wire and mesh, for top most ceiling of building.	sqm	431.00
12.31	Providing and fixing thermal insulation with Resin Bonded Fibre glass wool conforming to IS: 8193. Density 16kg/m3, 50mm thick, wrapped in 200G Virgin Polythene bags placed over existing false ceiling and held in position by criss-crossing GI wire.	sqm.	228.00
12.32	Thermal Insulation of roofing with Expanded polystyrene fixed with suitable adhesive to the false ceiling as per the directions of the Engineer-in-charge :		
	12.32.1 With Type N - Normal 50 mm thick	Sqm	218.00
	12.32.2 With Type SE - Self Extinguishing type 50 mm thick	Sqm	301.00

Item No.	Description	Unit	Rate (in Rs.)
12.33	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. for working pressure of 4kg/cm^2		
12.33.1	75 mm diameter	metre	136.00
12.33.2	90 mm diameter	meter	181.00
12.33.3	110 mm diameter	metre	225.00
12.34	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.		
12.34.1	Coupler		
12. 34.1.1	75 mm	each	159.00
12. 34.1.2	90 mm	each	186.00
12. 34.1.3	110 mm	each	213.00
12. 34.2	Single pushfit Coupler :		
12. 34.2.1	75 mm	each	200.00
12. 34.2.2	90mm	each	230.00
12. 34.2.3	110 mm	each	260.00
12. 34.3	Single tee with door		
12. 34.3.1	75x75x75 mm	each	268.00
12. 34.3.2	90x90x90 mm	each	333.00
12. 34.3.3	110x110x110 mm	each	399.00
12. 34.4	Single tee without door		
12. 34.4.1	75x75x75 mm	each	268.00
12. 34.4.2	90x90x90 mm	each	322.00
12. 34.4.3	110x110x110 mm	each	376.00
12. 34.5	Bend 87.5°		
12. 34.5.1	75 mm bend	each	142.00
12. 34.5.2	90 mm bend	each	183.00
12. 34.5.3	110 mm bend	each	225.00
12. 34.6	Shoe		
12. 34.6.1	75 mm Shoe	each	241.00
12. 34.6.2	90 mm shoe	each	331.00
12. 34.6.3	110 mm Shoe	each	422.00
12.35	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50mm hard wood plugs, screwed with M.S. screws of required length induding cutting brick work and fixing in cement		

Item No.	Description	Unit	Rate (in Rs.)
	mortar 1:4 (1 cement : 4 sand) and making good the wall etc. complete.		
	12.35.1 75 mm	each	100.00
	12.35.2 110 mm	each	137.00
12.36	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	63.00
12.37	Providing and fixing at all height false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanised in accordance with zinc coating of grade 350 as per IS : 277 and consisting of angle cleats of size 25mm wide x 1.6mm thick with flanges of 22mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diax40mm long with 6mm dia bolts to the angle hangers of 25x25x0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I. channels 45x15x0.9mm running at the rate of 1200mm centre to centre to which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips of 10.5mm at 450mm centre to centre shall be fixed in a direction perpendicular to G.I. channel with connecting clips made out of 2.64mm diax230mm long G.I. wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws @ 230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher and two coats of primer suitable for board as per manufactures 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 drawing and specification and direction of the Engineer in Charge but excluding the cost of painting with :		
	12.37.1 12.5 mm thick tapered edge gypsum board conforming to IS: 2095-Part I.	sqm	592.00
12.38	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	92.00

Item No.	Description	Unit	Rate (in Rs.)
12.39	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.		
12.39.1	2mm thick corrugated (2.5" or 4.2" or 6") or step-down (2" or 3" or 6") as specified.	sqm	706.00
12.39.2	2mm thick flat.	sqm	633.00
12.40	Providing & fixing pressed clay tile (Mangalore tile) 20 mm nominal thickness and of approved size and as per approved pattern ceiling on steel frame work complete (steel frame work to be paid separately).	sqm	198.00
12.41	Providing & laying pressed clay tile ridge (Mangalore tile) of 20mm thickness of approved pattern ceiling over steel frame work complete (steel frame work to be paid separately).	sqm	89.00
12.42	Supply & installation of silicon modified polymer precoated galvanised iron profile sheets (size,shape and pitch of corrugation as approved by Engineer-in-charge)0.50 mm +/- 5% total coated thickness (TCT) thick Zinc coating 120gsm as per IS: 277 in 240mpa 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 while 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 55mm) with EPDM seal or with polymer coated J or L hooks, bolts and nuts 8mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead complete upto any pitch in horizontal/ vertical or curved surfaces excluding the cost of purlins, rafters and trusses nd including cutting to size and shape wherever required.	sqm	458.00
12.43	Providing and fixing silicon modified polymer precoated galvanised steel sheet roofing accessories 0.50 mm +/- 5% total coated thickness (TCT) thick Zinc coating 120gsm as per IS: 277 in 240mpa steel grade, 5-7 microns epoxy primer on both		

Item No.	Description	Unit	Rate (in Rs.)
	side of the sheet and polyester top coat 15-18 microns using self drilling/ self tapping screws or with polymer coated J or hooks, bolts and nuts and or G.I. seam bolts and nuts, G.I. plain and bitumen washers complete :		
12.43.1	Ridges plain (500 - 600mm).	metre	483.00
12.43.2	Flashings/ Aprons.(Upto 600 mm)	metre	473.00
12.43.3	North light curves.	metre	531.00
12.43.4	Barge board (Upto 300 mm).	metre	537.00
12.43.5	Crimp curve	sqm	566.00
12.43.6	Gutter (600 mm over all girth).	metre	562.00

CHAPTER-XIII

FINISHING WORK

Notes:

1 Plastering shall be done where shown on the drawing. Plastering shall be started from top and worked down. All putlog holes shall be properly filled in advance of the plastering while the scaffolding is being taken down. Wooden screeds 75mm wide and of the thickness of the plaster shall be fixed vertically 2.5 to 4 metres apart, to act as gauges and guides in applying the plaster. The mortar shall be laid on the wall between the screeds using the plasterer's float and pressing the mortar so that the raked joints are properly filled. The plaster shall then be finished off with a wooden straight edge reaching across the screeds. The straight edge shall be worked on the screeds with a small upward and sideways motion 50mm to 75mm at a time. Finally, the surface shall be finished off with a plasterer's wooden float. Metal floats shall not be used.

2 Pointing shall be carried out using mortar not leaner than 1:3 by volume of cement and sand or as shown on the drawing. The mortar shall be filled and pressed into the raked joints before giving the required finish.

3 Curing shall be commenced as soon as the mortar used for finishing has hardened sufficiently not to be damaged during curing. It shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages.

4 For a white washing, class C lime i.e. fat lime shall be used.

5 For colour wash the colouring material shall be of approved make and as approved by Engineer-in-Charge.

6 Dry distemper shall conform to I.S. 427-1965.

7 Oil bound distemper shall conform to I.S. 428-1969.

8 Cement paint shall conform to I.S. 5410-1969.

9 Primer on wooden surfaces is to be followed by putty of two parts of white chalk powder, one part of enamel paint and added by turpentine oil proportionately to prepare a smooth surface by sand pappering.

10 Primer on metal steel surfaces shall be done with red oxide zinc chromite.

11 Synthetic enamel paint shall conform to I.S. 2932-1974, IS 2933-1975 and IS 133-1975.

12 Ready mixed paints shall conform to I.S. 3631-1966.

13 Clear synthetic varnish shall conform to IS 525-1968.

14 Copal varnish shall conform to I.S. 337-1975.

15 Waxing - A mixture of bee's wax and turpentine oil in proportion of 2 Bee's wax : 1½ double boiled linseed oil : 1 turpentine : ½ varnish shall be used. The wax is melted and added to turpentine.

16 The other paints etc. should conform to the following specifications:

a) Aluminium paint	-	IS 2339-1963
b) Black japan	-	IS 341-1968
c) Anti corrosive Bituminious	-	IS158-1969
d) Plastic emulsion paint	-	IS 5411-1974
e) French polish	-	IS 348-1986
f) Red oxide	-	IS 2074-1963
g) Turpentine	-	IS 533-1973
h) Double boiled linseed oil	-	IS 77-1977

17 Painting of frames and shutters of doors, windows, ventilators, steel work, and corrugated sheets etc. will be measured by multiplying the length or width by the height of one face only and the area thus obtained being further multiplied by factors as per I.S. 1200 of mode of measurements for building works with further amendments if any.

18 In case of sponge/sand faced (Non plain or equivalent) plastered surface of wall, the area measured, is to be multiplied by the factor 1.50 for payments of white wash, colour wash and distempering for one or more coats of required finish.

19 The rates in this chapter are for all locations like walls, ceiling, sloping roofs and in all floors and heights and depths, and for all shades with cost of all materials, labour, scaffoldings, T & P, hire & running charges of machineries, ladders, cans, brushes and other appliances etc. required for the efficient execution of work.

Item No.	Description	Unit	Rate (in Rs.)
13.1	12 mm cement plaster of mix :		
	13.1.1 1:4 (1 cement: 4 sand)	sqm	90.00
	13.1.2 1:6 (1 cement: 6 sand)	sqm	80.00
13.2	15 mm cement plaster on rough side of single or half brick wall of mix :		
	13.2.1 1:4 (1 cement: 4 sand)	sqm	106.00
	13.2.2 1:6 (1 cement: 6 sand)	sqm	93.00
13.3	20 mm cement plaster of mix :		
	13.3.1 1:4 (1 cement: 4 sand)	sqm	129.00
	13.3.2 1:6 (1 cement: 6 sand)	sqm	113.00
13.4	12 mm cement plaster 1:3 (1 cement: 3 sand) finished with a floating coat of neat cement.	sqm	121.00
13.5	15 mm cement plaster 1:3 (1 cement: 3 sand) finished with a floating coat of neat cement on the rough side of single or half brick wall.	sqm	132.00
13.6	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 sand) finished with a top layer 6mm thick cement plaster 1:6 (1 cement: 6 fine sand).	sqm	117.00
13.7	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 sand) and a top layer 6mm thick cement plaster 1:3 (1 cement: 3 sand) finished rough with sponge.	sqm	132.00
13.8	6 mm cement plaster of mix:CM 1:3 (1 cement: 3 sand)	sqm	69.00
13.9	6 mm cement plaster 1:3 (1 cement: 3 sand) finished with a floating coat of neat cement and thick coat of lime wash for bearing of R.C.C. slabs and beams.	sqm	100.00
13.10	Neat cement punning	sqm	23.00
13.11	Rough cast plaster upto 10m height above ground level with a mixture of sand and gravel or crushed stone from 6mm to 10mm nominal size dashed over and including the fresh plaster in two layers, under layer 12mm cement plaster 1:4 (1cement: 4sand) and top layer 10mm cement plaster 1:3 (1cement:3 sand) mixed with 10% finely grounded hydrated lime by volume of cement.		
	13.11.1 Ordinary cement finish using ordinary cement	sqm	215.00
13.12	Pebble dash plaster upto 10m height above ground level with a mixture of washed pebble or crushed stone 6mm to 12.5mm nominal size dashed over and including fresh plaster in two layers under layer 12mm cement plaster 1:4 (1cement: 4 sand) and top layer 10mm cement plaster with cement mortar 1:3	sqm	204.00

Item No.	Description	Unit	Rate (in Rs.)
	(1cement: 3 sand) mixed with 10% finely grounded hydrated lime by volume of cement.		
13.12A	Providing sand faced plaster to concrete or brick masonry surfaces in all positions in two coats, base coat of 13 mm thick in cement mortar 1:4 (1 cement : 4 sand), clearing the surface by combing it and finishing coat of 8 mm. thick in cement mortar 1:3 (1 cement: 3 sand) and surface taking out grains by mechanical arrangement by with cost of all material, labour, and T & P induding all lead, lift and scaffolding etc. complete.	Sqm	198.00
13.13	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers. For each bag of 50 kg cement used in the mix	each bag	45.00
13.14	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.	sqm	17.00
13.15	Extra for plastering on circular work not exceeding 6 m in radius:		
	13.15.1 In one coat	sqm	8.00
	13.15.2 In two coats	sqm	12.00
13.16	Extra for plastering done on moulding cornices or architraves induding neat finish to line and level:		
	13.16.1 In one coat	sqm	109.00
	13.16.2 In two coats	sqm	180.00
13.17	Extra for plastering :		
	13.17.1 Spherical ceiling	sqm	29.00
	13.17.2 Groined ceiling	sqm	32.00
	13.17.3 Flewing soffits	sqm	19.00
13.18	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete	sqm	59.00
13.19	Extra for lining out plaster to imitate stone or concrete blocks walling	sqm	18.00
13.20	12 mm thick plain cement mortar bands in cement mortar 1:4 (1 cement: 4 sand) :		
	13.20.1 Flush Band	cm per mtr	1.50
	13.20.2 Sunk Band	cm per mtr	1.50
	13.20.3 Raised Band	cm per mtr	1.70
	13.20.4 Moulded Band	cm per mtr	2.70
13.21	18 mm thick plain cement mortar band in cement mortar 1:4 (1 cement: 4 sand):		
	13.21.1 Flush Band	cm per mtr	1.90
	13.21.2 Sunk Band	cm per mtr	2.10

Item No.	Description	Unit	Rate (in Rs.)
	13.21.3 Raised Band	cm per mtr	2.30
	13.21.4 Moulded Band	cm per mtr	3.90
13.22	18 mm thick moulded cement mortar band in two coats under layer 12mm thick with cement mortar 1:5 (1 cement: 5 sand) top layer 6mm thick with cement mortar 1:4 (1 cement: 4 sand).	cm per mtr	3.70
13.23	Pointing on stone work with cement mortar 1:3 (1 cement: 3 sand) :		
	13.23.1 Flush/ Ruled pointing	sqm	67.00
	13.23.2 Raised and cut pointing	sqm	121.00
13.24	Raised and cut pointing on stone work in white cement mortar 1:3 (1 white cement: 3 marble dust)	sqm	139.00
13.25	Pointing on stone slab ceiling with cement mortar 1:2 (1 cement: 2 fine sand):		
	13.25.1 Flush/ Ruled pointing	sqm	39.00
13.26	Extra for pointing on walls on the outside at height more than 10 m from ground level for every additional height of 3 m or part there of.	sqm	3.00
13.27	White washing with lime to give an even shade:		
	13.27.1 New work (three or more coats)	sqm	7.00
13.28	Colour washing such as green, blue or buff to give an even shade :		
	13.28.1 New work (two or more coats) with a base coat of white washing with lime	sqm	9.50
	13.28.2 New work (two or more coats) with a base coat of whiting	sqm	9.60
13.29	Distempering with dry distemper of approved brand and manufacture (two or more coats) and of required shade on new work, over and including priming coat of whiting to give an even shade.	sqm	28.00
13.30	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade		
	13.30.1 New work (two or more coats) over and including priming coat with cement primer.	sqm	45.00
13.31	Distempering with 1st quality acrylic washable distemper (ready mixed) of approved manufacturer and of required shade and colour complete. as per manufacturer's specification.		
	13.31.1 Two or more coats on new work.	sqm	31.00
13.32	Applying one coat of cement primer of approved brand and manufacture on wall surface :		
	13.32.1 Cement primer.	sqm	19.00

Item No.	Description	Unit	Rate (in Rs.)
13.33	Finishing walls with water proofing cement paint of required shade :		
13.33.1	New work (Two or more coats applied @ 3.84 kg/10 sqm).	sqm	31.00
13.34	Finishing walls with textured exterior paint of required shade :		
13.34.1	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including base coat of water proofing cement paint applied @ 2.20kg/10 sqm.	sqm	105.00
13.35	Finishing walls with Acrylic Smooth exterior +paint of required shade:		
13.35.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/ 10 sqm).	sqm	59.00
13.36	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade		
13.36.1	New work (Two or more coats applied @ 1.43 ltr/ 10 sqm. over and including base coat of water proofing cement paint applied @ 2.20 kg/ 10 sqm).	sqm	65.00
13.37	Finishing walls with Deluxe Multi surface paint system for interiors and exteriors using primer as per manufacturers specifications :		
13.37.1	Two or more coats applied @ 1.25 ltr/10 sqm. over and including one coat of Special primer applied @ 0.75 ltr /10 sqm.	sqm	71.00
13.37.2	Painting wood work with Deluxe Multi Surface Paint of required shade. Two or more coat applied @0.90 ltr/10 sqm over an under coat of primer applied @0.75 ltr/ 10 sqm of approved brand or manufacture	sqm	59.00
13.37.3	Painting Steel work with Deluxe Multi Surface Paint to give an even shade. Two or more coat applied @0.90 ltr/10 sqm over an under coat of primer applied @ 0.80 ltr/ 10 sqm of approved brand or manufacture	sqm	59.00
13.38	Extra for applying water proofing cement paint as primer applied @ 2.29 kg/10 sqm instead of primer for exterior finishing in Item No. 13.37.1	sqm	1.10
13.39	Applying priming coat :		
13.39.1	With ready mixed pink/Grey primer of approved brand and manufacture on wood work (hard & soft wood)	sqm	20.00
13.39.2	With ready mixed aluminium primer of approved brand and manufacture on resinous wood and plywood	sqm	20.00

Item No.	Description	Unit	Rate (in Rs.)
	13.39.3 With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/steel works	sqm	16.00
	13.39.4 With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel work (second coat)	sqm	9.00
13.40	Painting one thin coat with white lead of approved brand and manufacture on wet or patchy portion of plastered surfaces	sqm	25.00
13.40	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete.		
	13.40.1 On steel work	sqm	89.00
	13.40.2 On concrete work	sqm	91.00
13.41	Painting on G.S. sheet with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade		
	13.41.1 New work (two or more coats) including a coat of approved steel primer but excluding a coat of mordant solution.	sqm	45.00
13.42	Applying a coat of mordant solution on G.S. sheet :		
	13.42.1 With a solution of 38 gms of copper acetate in a litre of soft water	sqm	17.00
	13.42.2 With a solution made of 13 gms of hydrochloric acid in a solution of 13 gms each of copper chloride, copper nitrate and ammonium chloride dissolved in a litre of soft water.	sqm	12.00
13.43	Painting (two or more coats) on rain water, soil, waste and vent pipes and fittings with black anticorrosive bitumastic paint approved brand and manufacture over and including a priming of ready mixed zinc chromate yellow primer on new work :		
	13.43.1 100 mm diameter pipes	metre	14.40
	13.43.2 150 mm diameter pipes	metre	25.00
13.44	Painting (two or more coats) on rain water, soil, waste and vent pipes and fittings with synthetic enamel paint of approved brand and manufacture and required colour over a priming coat of approved steel primer on new work.		
	13.44.1 100 mm diameter pipes	metre	22.00
	13.44.2 150 mm diameter pipes	metre	33.00
13.45	Painting with oil type wood preservative of approved brand and manufacture:		
	13.45.1 New work (two or more coats)	sqm	15.00

Item No.	Description	Unit	Rate (in Rs.)
13.46	Providing and applying two coats of fire retardant paint unthinned on cleaned wood/ply surface @3.5sqm per litre percoat induding preparation of base surface as per recomm-endations of manufacturer to make the surface fire retardant.	sqm	272.00
13.47	Coal tarring two coats on new work using 0.16 and 0.12 litre coal tar per sqm in the first coat and second coat respectively.	sqm	17.00
13.48	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade:		
	13.48.1 Two or more coats on new work	sqm	46.00
13.49	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	13.49.1 Two or more coats on new work	sqm	37.00
13.50	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:		
	13.50.1 Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	sqm	56.00
13.51	Painting with aluminium paint of approved brand and manufacture to give an even shade .		
	13.51.1 Two or more coats on new work	sqm	44.00
13.52	Painting with acid proof paint of approved brand and manufacture of required colour to give an even shade:		
	13.52.1 Two or more coats on new work.	sqm	54.00
13.53	Painting with black anti-corrosive bitumastic paint of approved brand and manufacture to give an even shade:		
	13.53.1 Two or more coats on new work.	sqm	29.00
13.54	Floor painting with floor enamel paint of approved brand and manufacture of required colour to give an even shade:		
	13.54.1 Two or more coats on new work.	sqm	41.00
13.55	Varnishing with varnish of approved brand and manufacture:		
	13.55.1 Two or more coats of glue sizing with copal varnish over an under coat of flatting varnish.	sqm	54.00
	13.55.2 Two or more coats glue sizing with spar varnish or an under coat of flatting varnish.	sqm	59.00
13.56	French spirit polishing :		
	13.56.1 Two or more coats on new works including a coat of wood filler.	sqm	80.00
13.57	Polishing on wood work with ready mixed wax polish of approved brand and manufacture :		
	13.57.1 New work	sqm	42.00

Item No.	Description	Unit	Rate (in Rs.)
13.58	Floor polishing on masonry or concrete floors with wax polish of approved brand and manufacture.	sqm	18.00
13.59	Lettering with black Japan paint of approved brand and manufacture	per letter per cm height	1.00
13.60	Washed stone grit plaster on exterior walls of height upto 10 M. above level in two layers, under layer 12mm cement plaster 1:4 (1 cement: 4 sand) furrowing the under layer with scratching tool, applying cement slurry on the under layer @ 2 Kg of cement per square metre, top layer 15mm cement plaster 1:1/2:2 (1 cement: 1/2 sand : 2 stone chipping 10mm nominal size) in panels with groove all around as per approved pattern induding scrubbing and washing, the top layer with brushes and water to expose the stone chippings ,complete as per specification and direction of Engineer-in- charge (Payment for providing grooves shall be made separately).	sqm	277.00
13.61	Forming groove of uniform size in the top layer of washed stone grit plaster as per approved pattern using wooden battens, nailed to the under layer including removal of wooden battens, repair to the edges of panels and finishing the groove complete as per specifications and direction of the Engineer-in-charge :		
13.61.1	15 mm wide and 15 mm deep groove	metre	13.00
13.61.2	20 mm wide and 15 mm deep groove	metre	15.00
13.62	Extra for washed grit plaster on exterior walls of height more than 10m from ground level for every additional height of 3 m or part thereof.	sqm	41.00
13.63	Extra for washed stone grit plaster on circular work not exceeding 6m in radius (in two coats).	sqm	24.00
13.64	Forming groove of uniform size from 12x12mm and upto 25x15mm in plastered surface as per approved pattern using wooden battens, nailed to the under layer including removal of wooden battens, repairs to the edges of plaster panel and finishing the groove complete as per specifications and direction of the Engineer-in-Charge.	metre	15.00
13.65	Extra for using white cement in place of ordinary cement in the top layer of the item of washed stone grit plaster.	sqm	85.00
13.66	Providing and applying 12 mm thick (average) premixed formulated one coat gypsum lightweight plaster having additives and light weight aggregates as vermiculite/ perlite respectively conforming to IS: 2547 (Part - 1 & II) 1976, applied on hacked /	sqm	141.00

Item No.	Description	Unit	Rate (in Rs.)
	uneven background such as bare brick/ block/ RCC work on walls & ceiling at all floors and locations, finished in smooth line and level etc. complete.		
13.67	Providing and fixing broken glass in cement mortar 1.6 including cost of mortar, over compound walls	sqm	42.00
13.68	Providing & fixing chicken mesh as per ISI specification and in the required with 50mm long Bombay nails on vertical and horizontal junctions of RCC and brick wall including scaffolding and all lead and lift etc. complete before plastering upt 10 meter height.	Sqm	74.00
13.69	Providing and applying special putty in two coats based materials varnish, Belgium chalk, turpentile oil, white paint, shafeda induding sand papering for making the surface smooth for applying any or vinyl paints including all cost of material and labour etc complete.	Sqm	29.00
13.70	Providing and applying Birla/J.K. or equivalent wall care exterior/interior mix putty for outer surface i/c sand pappering for making the surface smooth for applying any or vinyle paint with all cost of materials, labours, and scaffolding etc. in all position complete.(this Item is to be executed only in new public buildings).	Sqm	93.00
13.71	Providing and fixing ceramic steel green/black chalk board (vitereous enameled ceramic steel surface). of sizes.		
	13.71.1 size 1200mmx1800mm	each	8050.00
	13.71.2 size 1200mmx2400mm	each	10450.00
	13.71.3 size 1200mmx3000mm	each	13000.00

CHAPTER-XIV

REPAIRS TO BUILDING WORK

Notes:

1 Repairs to plaster work include cutting the patch and preparing the wall surface. Patches of 2.50 square metres and less in area shall be covered under this chapter. Plastering in patches over 2.50 square metres in area shall be paid for at the rate as applicable to new work.

2 Doors, windows and ventilators in existing opening shall be conveniently erected in position. The hold fasts of overall lenght of 40cm. shall be embedded all round in cement concrete block of size 30x10x20cm. where necessary. Masonry shall be chipped carefully and uniformly to admit easy insertion of frame in opening.

3 Before making opening in the masonry, it is necessary to examine that the wall exclusive of opening is adequate to take the load coming on the structure. All precautions as explained in chapter of demolishing & dismentaling should be followed.

4 Renewing glass panes with putty and nails or with wooden fillets:
Materials shall conform to I.S. 1761-1960.

5 Fixing fan clamps in existing R.C.C. slabs shall be done without any damage to adjoining portion of the ceiling. The fan clamps to be fixed in R.C.C. shall be not less than 16mm. in diameter M.S. bar. The fixing shall be done by making chases of size 15x7.50cm. in ceiling to R.C.C. surfaces. The two arms at the ends of the clamps shall be passed through the space over the reinforcement bar from the bottom of the slab. The chase in the ceiling filled with cement concrete M 15 grade & curing shall be done as per specifications.

6 R.C.C. columns and beams which have cracked or where reinforcements have deteriorated, shall be repaired by guniting, where necessary, centering for the beams and slabs and shoring for the columns in both the planes shall be provided before guniting is started. Curing shall be done as per specifications.

7 Repairs to flooring shall be done with proper slope as per the existing floor slope, no damage shall be done to the existing floor panel edges of adjoining panels.

8 The rates include, unless otherwise specified, cost of all materials, labour, scaffolding, T & P and hire, running charges of machineries etc. for all leads and lifts required for the work.

Item No.	Description	Unit	Rate (in Rs.)
14.1	Repairs to plaster of thickness 12mm to 20mm in patches of area 2.5 sq. meters and under including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete including disposal of rubbish to the dumping ground within 50metres lead :		
	14.1.1 With cement mortar 1:4 (1cement: 4 coarse sand).	sqm	140.00
14.2	Fixing chowkhats in existing opening including embedding chowkhats in floors or walls cutting masonry for holdfasts embedding hold fasts in cement concrete blocks with cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) painting two coats of approved wood preservative to sides of chowkhats and making good the damages to walls and floors as required complete including disposal of rubbish to the dumping ground within 50 meters lead :		
	14.2.1 Door chowkhats	each	376.00
	14.2.2 Window chowkhats	each	228.00
	14.2.3 Clerestory window chowkhats	each	165.00
14.3	Fixing chowkhat in existing opening in brick / RCC wall with dash fasteners/chemical fasteners of appropriate size (3nos on each vertical member of door chowkhat and 2 nos. on each vertical member of window chowkhas including Cost of dash fasteners/ chemical fastener	each	151.00
14.4	Making the opening in brick masonry including dismantling in floor or walls by cutting masonry and making good the damages to walls, flooring and jambs complete to match existing surface i/c disposal of mulba/ rubbish to the nearest municipal dumping ground.		
	14.4.1 For door/ window/ clerestory window.	sqm	247.00
14.5	Renewing glass panes, with putty and nails wherever necessary:		
	14.5.1 Float glass panes of thickness 4 mm	sqm	521.00
	14.5.2 Float glass panes of thickness 5.5 mm	sqm	716.00
14.6	Renewing glass panes, with wooden fillets wherever necessary:		
	14.6.1 Float glass panes of thickness 4 mm	sqm	591.00
	14.6.2 Float glass panes of thickness 5.5 mm	sqm	784.00
14.7	Renewing glass panes and refixing existing wooden fillets:		
	14.7.1 Float glass panes of thickness 4 mm	sqm	528.00
	14.7.2 Float glass panes of thickness 5.5 mm	sqm	684.00

Item No.	Description	Unit	Rate (in Rs.)
14.8	Supplying and fixing new wooden fillets wherever necessary:		
	14.8.1 2nd class teakwood fillets	metre	21.00
14.9	Renewal of old putty of glass panes (length)	metre	11.00
14.10	Refixing old glass panes with putty and nails	sqm	9.00
14.11	Fixing old glass panes with wooden fillets (excluding cost of fillets) mulba/ rubbish to the nearest municipal dumping ground.	sqm	110.00
14.12	Providing and fixing 16 mm M.S. Fan clamps of standard shape and size in existing R.C.C. slab induding cutting chase and making good and painting exposed portion of the clamps complete.	each	119.00
14.13	Replacing sand stone slabs in roofing laid in cement mortar 1:4 (1 cement : 4 sand) including necessary repair and cement pointing with the same motar complete including disposal of rebbish to dumping ground with in 50 metres of lead	sqm	337.00
	14.13.1 Red/ white sand stone slabs 30 to 50 mm thick		
14.14	Raking out joints in lime or cement mortar and preparing the surface for re-pointing or replastering including disposal of rubbish to the dumping ground within 50 metres lead.	sqm	12.00
14.15	Taking out wind ties from roof including cutting out rusted bolts, nuts etc. and removing materials to any distance within compound and stacking.	kg	1.80
14.16	Fixing of old wind tie with new fittings including painting two or more coats with anticorrosive bitumastic paint of approved brand & manufactuer over and including priming coat of ready mixed zinc chromate yellow primer of approved brand.	Metre	31.00
14.17	Renewing bottom rail and/or top rubber of collapsible gate induding making good all damages and applying priming coat of zinc chromate yellow primer of approved brand and manufacturer.	kg	84.00
14.18	Pumping out water caused by springs, tidal or river seepage, broken water mains or drains and the like.	kilo litre	43.00
14.19	Providing and fixing curtain rods of 1.25mm thick brass plates with two brass brackets fixed with brass screws and wooden plugs etc. wherever necessary complete.		
	14.19.1 20 mm diameter.	metre	332.00
	14.19.2 25 mm diameter.	metre	367.00
14.20	Providing and fixing M.S. round or square bars with M.S. flats at required spacing in wooden frames of windows and clerestory windows.	kg	45.00

Item No.	Description	Unit	Rate (in Rs.)
14.21	Providing joists (karries) including hoisting fixing in position and applying wood preservative on unexposed surface etc. complete with:		
	14.21.1 Sal wood.	Cum.	36200
14.22	White washing with lime to give an even shade :		
	14.22.1 Old work (two or more coats)	sqm	4.30
	14.22.2 Old work (one or more coats)	sqm	2.70
14.23	Removing white or colour wash by scrapping and sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete	sqm	3.40
14.24	Distempering with dry distemper of approved brand and manufacture (one or more coats) and of required shade on old work to give an even shade.	sqm	12.80
14.25	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade :	.	
	14.25.1 Old work (one or more coats)	sqm	16.00
14.26	Removing dry or oil bound distemper, water proofing cement paint and the like by scrapping, sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete.	sqm	4.50
14.27	Painting on G.S. sheet with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade		
	14.27.1 Old work (one or more coats)	sqm	21.00
14.28	Painting (one or more coats) on rain water, soil, waste and vent pipes and fittings with black anticorrosive bitumastic paint of approved brand and manufacture and of required colour on old work :		
	14.28.1 75 mm diameter pipes	metre	8.25
	14.28.2 100 mm diameter pipes	metre	10.70
	14.28.3 150 mm diameter pipes	metre	15.30
14.29	Painting with oil type wood preservative of approved brand and manufacture :		
	14.29.1 Old work (one or more coats)	sqm	11.55
14.30	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade :		
	14.301 One or more coats on old work.	sqm	30.00
14.31	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :		
	14.31.1 One or more coats on old work.	sqm	24.00

Item No.	Description	Unit	Rate (in Rs.)
14.32	Painting with aluminium paint of approved brand and manufacture to give an even shade :		
14.32.1	One or more coats on old work.	sqm	27.00
14.33	Painting with acid proof paint of approved brand and manufacture of required colour to give an even shade :		
14.33.1	One or more coats on old work.	sqm	33.00
14.34	Painting with black anti-corrosive bitumastic paint of approved brand and manufacture to give an even shade :		
14.34.1	One or more coats on old work.	sqm	19.00
14.35	French spirit polishing :		
14.35.1	One or more coats on old work.	sqm	41.00
14.36	Polishing on wood work with ready made wax polish of approved brand and manufacture :		
14.36.1	Old work	Sqm	22.00
14.37	Re-lettering with black Japan paint of approved brand and manufacture.	Per letter per cm height	1.00
14.38	Painting (one or more coats) with black Japan paint of approved brand and manufacture to give an even shade.	Sqm	20.00
14.39	Distempering with 1st quality acrylic washable distemper (ready made) of approved manufacturer and of required shade and colour complete. as per manufacturer's specification.		
14.39.1	One or more coats on old work.	sqm	15.00
14.40	Finishing walls with water proofing cement paint of required shade :		
14.40.1	Old work (one or more coats applied @ 2.20 kg/10 sqm) over priming coat of primer applied @ 0.80 litrs/10 sqm complete including cost of Priming coat.	sqm	29.00
14.41	Finishing walls with textured exterior paint of required shade :		
14.41.1	Old work (Two or more coats on existing cement paint surface applied @ 3.28 ltr/10 sqm.	sqm	92.00
14.41.2	Old work (One or more coats) applied @ 1.82 ltr/10 sqm.	sqm	54.00
14.42	Finishing walls with Acrylic Smooth exterior paint of required shade :		
14.42.1	Old work (Two or more coat applied @ 1.67 ltr/ 10 sqm) on existing cement paint surface).	sqm	43.00
14.42.2	Old work (One or more coat applied @ 0.90 ltr/10 sqm).	sqm	28.00
14.43	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade		

Item No.	Description	Unit	Rate (in Rs.)
	14.43.1 Old work (Two or more coats applied @ 1.43 ltr/ 10 sqm) over existing cement paint surface.	sqm	49.00
	14.43.2 Old work (one or more coats applied @ 0.83 ltr/10 sqm).	sqm	32.00
14.44	Painting (one or more coats) on rain water, soil, waste and vent pipes and fittings with black anticorrosive bitumastic paint approved brand and manufacture on old work :		
	14.44.1 100 mm diameter pipes	sqm	8.00
	14.44.2 150 mm diameter pipes	sqm	14.00
14.45	Varnishing with varnish of approved brand and manufacture:		
	14.45.1 One or more coats with copal varnish.	sqm	24.00
	14.45.2 One or more coats with spar varnish.	sqm	27.00
14.46	Melamine polishing on wood work (one or more coat).	sqm	48.00
14.47	Varnishing with flatting varnish of approved brand and manufacture one or more coats on old work.	sqm	19.00
14.48	40 mm thick stone flooring over 20 mm (average)thick base of cement mortar 1:5 (1 cement : 5 sand) including pointing with cement mortar 1:2 (1 cement : 2 sand) with an admixture of pigment to match the shade of stone. Red sand stone / White sand stone) stone to be supplied by the department.		
	14.48.1 Rough chiseled dressed stone	Sqm	162.00
	14.48.2 Fine dressed stone	sqm	206.00
14.49	Coursed rubble masonry (second sort) with hard stone in Cement mortar 1:6 (1 cement : 6 sand) (Stone shall be supplied by the department)	Cum.	1629.00

CHAPTER-XV

DISMANTALING AND DEMOLISHING

DISMANTALING

Notes :

1 The term "Dismantling" & "Demolishing" implies carefully taking up or down and removing by hand or with proper tools without any damage to articles and carefully lowering the materials to the ground but not thrown.

2 During distmantling every precaution shall be taken to prevent damage to any part of the structure and also to adjoining structures which are to be left intact. Any such damage claim, caused due to carelessness of the contractor, will be made good by the contractor at his own expenses.

3 All dismantled serviceable/unserviceable materials will form Government property. The serviceable material, received after dismantling, shall be stacked carefully within 50mts. lead as directed by Engineer-in-Charge.

4 Measurements of all works, except hidden works, shall be taken before dismantling and no allowance for increase in bulk shall be allowed.

5 The rates are applicable to all types of structures and for all floors and all heights and depth. The rates also include cost of T & P, scaffoldings and labour, hire and running charges of machineries if, required for the work.

Item No.	Description	Unit	Rate (in Rs.)
15.1	Demolishing lime concrete manually/ by mechanical means and disposal of material within 50 metres lead as per direction of Engineer–in-charge.	Cum.	139.00
15.2	Demolishing cement concrete manually/ by mechanical means		
	15.2.1 1:3:6 or richer mix	Cum.	397.00
	15.2.2 1:4:8 or leaner mix	Cum.	245.00
15.3	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in-charge.	Cum.	580.00
15.4	Demolishing R.B. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.	Cum.	502.00
15.5	Extra for cutting reinforcement bars manually/ by mechanical means in R.C.C. or R.B. work (Payment shall be made on the cross sectional area of R.C.C. or R.B. work) as per direction of Engineer - in -charge.	sqm	188.00
15.6	Extra for crapping, cleaning and straightening reinforcement from R.C.C. or R.B. work	kg	1.50
15.7	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.		
	15.7.1 In mud mortar	Cum.	115.00
	15.7.2 In lime mortar with old mughal bricks	Cum.	290.00
	15.7.3 In lime mortar	Cum.	139.00
	15.7.4 In cement mortar	Cum.	335.00
15.8	Removing mortar from bricks and cleaning bricks including stacking within a lead of 50 m (stacks of cleaned bricks shall be measured) :		
	15.8.1 From brickwork in mud mortar	1000 nos	750.00
	15.8.2 From brickwork in lime mortar	1000 nos	863.00
	15.8.3 From brickwork in cement mortar	1000 nos	1075.00
15.9	Demolishing stone rubble masonry manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge:		
	15.9.1 In lime mortar	Cum	189.00
	15.9.2 In cement mortar	Cum	400.00

Item No.	Description	Unit	Rate (in Rs.)
15.10	Dismantling dressed stone work ashlar face stone work, marble work or precast concrete work manually/ by mechanical means including stacking of serviceable and disposal of unserviceable material within 50m lead as per direction of Engineer-in-charge:		
15.10.1	In lime mortar	Cum	239.00
15.10.2	In cement mortar	Cum	468.00
15.11	Removing mortar from and cleaning stones and concrete articles (net quantity of stacks of cleaned materials will be measured) :		
15.11.1	In lime mortar	Cum	165.00
15.11.2	In cement mortar	Cum	190.00
15.12	Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead :		
15.12.1	Of area 3 sq. metres and below	each	58.00
15.12.2	Of area beyond 3 sq. metres	each	80.00
15.13	Taking out doors, windows and clerestory window shutters (steel or wood) including stacking within 50 metres lead:		
15.13.1	Of area 3 sq. metres and below	each	23.00
15.13.2	Of area beyond 3 sq. metres	each	30.00
15.14	Dismantling wood work in frames, trusses, purlins and rafters up to 10 metres span and 5 metres height including stacking the material within 50 metres lead:	Cum.	705.00
15.15	Extra for dismantling trusses, rafters, purlins etc. of wood work for every additional span of one metre or part thereof beyond 10 metres :		
15.15.1	Of sectional area 40 sq centimetres and above.	Cum. per	102.00
15.15.2	Of sectional area below 40 square centimetres.	Metre per	0.30
15.16	Extra for dismantling trusses, rafters, purlins etc. of wood work for every additional height of one metre or part thereof beyond 5 metres :		
15.16.1	Of sectional area 40 sq centimetres and above.	Cum. per	144.00
15.16.2	Of sectional area below 40 square centimetres.	metre per	0.60
15.17	Dismantling steel work in single sections including dismembering and stacking within 50 metres lead in:		
15.17.1	R.S. Joists	kg	0.50
15.17.2	Channels, angles, tees and flats	kg	0.40
15.18	Dismantling steel work in built up sections in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50metres lead.	Kg	0.80

Item No.	Description	Unit	Rate (in Rs.)
15.19	Dismantling steel work manually/ by mechanical means in built up sections without dismembering and stacking within 50 metres lead as per direction of Engineer-in-charge.	Kg	0.60
15.20	Extra for dismantling trusses, rafters, purlins etc. of steel work for every additional span of one metre or part thereof beyond 10 metres	Kg per metre span	0.15
15.21	Extra for dismantling trusses, rafters, purlins etc. of steel work for every additional span of one metre or part thereof beyond 10 metres	Kg per metre span	0.15
15.22	Extra for marking of structural steel work required to be re-erected.	Kg	0.70
15.23	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.		
	15.23.1 For thickness of tiles 10 mm to 25 mm	Sqm	14.70
	15.23.2 For thickness of tiles above 25mm and upto 40mm	Sqm	17.80
15.24	Demolishing dry brick pitching in floors, drains etc. including stacking serviceable material and disposal of unserviceable material within 50 metres lead :	Cum	215.00
15.25	Dismantling stone slab flooring laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Sqm	44. 00
15.26	Demolishing brick tile covering in terracing including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Sqm	16.50
15.27	Dismantling roofing including ridges, hips valleys and gutters etc., and stacking the material within 50 metres lead of:		
	15.27.1 G.S. Sheet	Sqm	26.50
	15.27.2 Asbestos sheet	Sqm	12.60
15.28	Dismantling stone slab roofing over wooden karries or R.C.C. battens (dismantling karries and battens to be paid for separately) including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Cum.	437.00
15.29	Dismantling wooden ballies in posts and struts induding stacking within 50 metres lead.	metre	3.50
15.30	Dismantling and stacking within 50m lead, fencing posts or struts including all earth work and dismantling of concrete etc.in base of		
	15.30.1 T' or 'L' iron or pipe	each	48.00
	15.30.2 R.C.C.	each	55.00
15.31	Cutting ballies or wooden posts of fencing at the point of projection above the concrete or ground and stacking the same	each	4.85

Item No.	Description	Unit	Rate (in Rs.)
	within 50 metres lead.		
15.32	Dismantling barbed wire or flexible wire rope in fencing including making rolls and stacking within 50 metres lead.	Kg	6.00
15.33	Dismantling wooden trellis work excluding frames but including stacking the serviceable material within 50 metres lead.	sqm	10.50
15.34	Dismantling expanded metal or I.R.C. fabrics with necessary battens and beading including stacking the serviceable material within 50 metres lead.	sqm	12.50
15.35	Dismantling wooden boardings in lining of walls and partitions, excluding supporting members but including stacking within 50 metres lead :		
	15.35.1 Up to 10 mm thick	sqm	10.00
	15.35.2 Thickness above 10 mm up to 25 mm	sqm	13.00
	15.35.3 Thickness above 25 mm up to 40 mm	sqm	15.00
15.36	Dismantling precast concrete or stone slabs in walls, partition walls etc. including stacking within 50 metres lead:		
	15.36.1 Thickness up to 40 mm	sqm	47.00
	15.36.2 Thickness above 40 mm up to 75 mm	sqm	71.00
15.37	Dismantling cement asbestos or other hard board ceiling or partition walls including stacking of serviceable materials and disposal of unserviceable materials within 50 metres lead.	sqm	9.00
15.38	Dismantling C.I. or asbestos rain water pipe with fittings and clamps including stacking the material within 50 metres lead :		
	15.38.1 75 to 80 mm dia pipe.	metre	12.00
	15.38.2 100 mm dia pipe	metre	12.00
	15.38.3 150 mm dia pipe	metre	13.00
15.39	Dismantling G.I. pipes (external work) including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means including stacking of pipes within 50 metres lead as per direction of Engineer-in-charge :		
	15.39.1 15 mm to 40 mm nominal bore	metre	26.00
	15.39.2 Above 40 mm nominal bore	metre	31.00
15.40	Dismantling C.I. pipes including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means breaking lead caulked joints, melting of lead and making into blocks including stacking of pipes, lead at site within 50 metre lead as per direction of Engineer-in-charge		
	15.40.1 Up to 150 mm diameter	metre	68.00
	15.40.2 Above 150 mm dia up to 300 mm dia.	metre	91.00
	15.40.3 Above 300 mm diameter	metre	123.00

Item No.	Description	Unit	Rate (in Rs.)
15.41	Taking out C.I. cover with frame from R.C.C. top slab of manholes of various sizes including demolishing of R.C.C. work manually/ by mechanical means and stacking of useful materials near the site and disposal of unserviceable materials into municipal dumps within 50 metres lead as per direction of Engineer-in-charge.	each	118.00
15.42	Taking out C.I. cover with frame from R.C.C. top slab of inspection chambers of various sizes including demolishing of R.C.C. Work manually/ by mechanical means and stacking of useful materials near the site and disposal of unserviceable materials into municipal dumps within 50 metres lead as per direction of Engineer-in-charge.	each	70.00
15.43	Dismantling of road gully chamber of various sizes including C.I. grating with frame including stacking of useful materials near the site and disposal of unserviceable materials into municipal dumps within 50 metres lead including refilling the excavated gap.	each	160.00
15.44	Dismantling of flushing cistern of any size including stacking of useful materials near the site and disposal of unserviceable materials within 50 metres lead.	each	151.00
15.45	Dismantling of C.I. sluice valve including stacking of useful materials		
15.45.1	Up to 150 mm diameter	each	56.00
15.45.2	Above 150 mm diameter	each	190.00
15.46	Dismantling of spindle fire hydrant including stacking of useful materials within 50 metres lead.	each	113.00
15.47	Dismantling of cement concrete platform along with curtain walls and base concrete etc. including stacking of useful materials near the site and disposal of unserviceable materials within 50 metres lead :		
15.47.1	120 x 120 cm (outside to outside)	each	180.00
15.47.2	210 x 120 cm (outside to outside)	each	276.00
15.47.3	320 x 120 cm (outside to outside)	each	390.00
15.48	Dismantling old plaster or skirting raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground within 50 metres lead.	sqm	9.00
15.49	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50m lead as directed by Engineer-in-charge.	sqm	9.00

Item No.	Description	Unit	Rate (in Rs.)
15.50	Demolishing C.C. /R.C.C. work by mechanical means and stockpiling at designated locations and disposal of dismantled materials up to a lead of 1000m, stacking serviceable and unserviceable material separately including cutting reinforcement bars.	Cum.	760.00
15.51	Dismantling of flexible pavement (bituminous courses) by 1129 as per direction of Engineer-in-charge.mechanical means and disposal of dismantled material up to a lead of 1000 metres,	Cum.	90.00

CHAPTER-XVI

DRILLING OF TUBE WELL

A. **GENERAL SPECIFICATIONS**

1 Tube wells drilled shall be perfectly vertical and the rates of drilling are inclusive of vertically test required to be conducted.

2 Total depth of bore shall generally be 200 ft. (60 meters) but the same may be increased or decreased depending upon the strata and the yield.

3 The size of the bore shall be determined by the internal dia of casing pipe in all cases except the gravel packed bore.

4 Non-perforated blank mild steel casing pipe of specified diameter and thickness shall be lowered for a depth of 9 meters from ground level in all cases but if the strata beyond 9 meters continuous to be soft casing pipe shall be lowered upto the , rock level or the hard stratum level to be decided by the Engineer-in-Charge. The blank casing shall protrude 0.3 meters to 0.75 meters above ground level and a M.S. cap shall be screwed at top.

5 The diameter of the bore shall be 6rnm less than internal dia of the casing' pipe beyond the end of casing pipe upto rock level and in rock the size of the bore shall be reduced by another 6mm.

6 In water bearing strata other than rock perforated or slotted pipes of suitable diameter and strainer shall have to be fitted below the casing pipe properly coupled with each other in continuation to the M.S. blank casing pipe,

7 *For* bigger dia bores e.g. 225mm to 300mm in sandy strata suitable size say 3mm to 10mrn of washed gravel will have to be shrouded around the annular space of the strainer and perforated or slotted pipes. This should be properly filled in layers and rammed so that the gravel may occupy the cavities in the strata around and there is no further sinking. The space around the blank casing shall be filled up with earth from spoils and properly rammed.

8 The gravel packing shall be applied for 30mm to 150mm all round the slotted or perforated pipe, depending upon the nature of strata encountered and the require size of finished bore.

9 Measurements for the gravel packed bores shall be allowed as per the internal dia of the housing pipe and not the casing pipe.

10 Diameter of the housing pipe shall be governed by the requirement of thickness of gravel packing material indicated under note 8 above.

11 The rates for drilling for the gravel packed bores shall be inclusive of lowering and removal of the housing pipe.

12 Drilling has to be done upto granite level.

13 The rates for drilling provided in the schedule are inclusive of depreciation charges of all T&P required for drilling operation transportation of drilling machine, erection at site, removal of machine from site after completion, cost of water, cost of drilling, fuel labour and all other unforeseen item for drilling work and clearance of site after completion of work.

14 The rates for other items of work provided in the schedule of rates are inclusive of cost of all material including taxes etc. and labour including transportation, erection operation, fuel and all other unforeseen item pertaining to the execution of the work, clearance of site etc. complete,

15 The Labour only' items provided in the schedule means all sorts of provision as detailed in note 13 except the cost of materials (including taxes etc.) supplied departmentally.

16 Requirement of casing pipe :

(a) The casing pipe generally conforming to IS specifications IS: 4260-1992 shall be used.

(b) For nominal bore 150mm or below, medium class seamless (HFS) casing pipe shall be used when the depth of casing is less than 30 meters however, when the depth of the casing is more than 30 meters. Heavy class seamless casing pipe shall be used.

(c) For nominal bore greater than-150mm electric resistance welded (E.R.W) casing pipes shall be used.

(d) The rates for casing pipes given in the schedule are based on the material as per 13:4270-1992.

17 Requirement of GI Pipes Fully galvanized GI pipes conforming to IS Specification IS: 1239 (Part-I) 1990 medium quality shall be used.

18 Deep well guide hand pump suitable for fixing on a bore having a minimum diameter of 100mm complete with brass cylinders and double buckets of suitable size for pumping 900 liters of water per hour at 40 strokes per minutes from a maximum suction of 50 meters hand pump to be equipped with M.S. handle and bracket and additional M.S. support to prevent guide flange from the breakage and thus prevent breakage of handle and bracket too. The pump to be in two halves provided with flanged joint for case of erection. The pump to be fitted with two vertical bright turned guide rods and provided with gun metal gland nuts and to have detachable compression cock spout and to be tapped for 32mm and 40mm pipes.

19 **Yield Test** Yield test means and include the observation of discharge from the well for the specified period varying from 4 to 20 hours, obtained by continuous pumping, for small and big bores, the rates include provision and transport to site of works all necessary equipment required for conducting the yield test and observation of yield in comparison to draw down and recuperation.

20 The rates include transportation for drilling to and from. No extra charges for installation and removal of the drilling machine from site of works are payable,

21 **Well Development** For gravel enveloped wells in unconsolidated or in consolidated formations development work shall consist of de-sanding by pumping the wall with a gradually increasing capacity pumping is started with an amount of 20% of the permanent capacity and carried on till the water has become clear, free of sand and silt. The rate of flow is then augmented to 40% and the process repeated. Descending is continued to an amount of 15% of the permanent capacity if for this rate of flow the water is free from *ail* materials surrounding the wall, the water will be perfectly clear for the normal capacity, when air is used submergence ratio, (ratio of length of drop pipe submerged to total length) 60% to 75"% shall be adopted.

22 **Disinfection** After the well is complete constructed, before putting it to use for human consumption, the well should be cleaned thoroughly of all foreign substances, the casing pipe swabbed with alkalis to remove oil, grease etc. and the well disinfected with a chlorine solution. The chlorine solution must be of such volume and strength that a concentration of at least 50 mg/L of chlorine is obtained in all parts of the well.

B. CONDITIONS FOR WORKS EXECUTED BY AGENCY OF CONTRACT

1 The notes and specifications given in this schedule are to be read in conjuction with the, instructions and conditions in Notification inviting tenders and the contract agreement. These have been intended to supplement the provisions in particular, but in case of any discrepancy, the provisions in the N.I.T. and contract agreement will take precedence.

2 All drilling operation will be executed in accordance with the specification prescribed in the schedule.

3 The site of tube wellwill be selected by Engineer-in-Charge.

4. . The contractor will employ any suitable machinery according to the strata encountered

5 Drilling will normally be done upto 60 meters but the depth may be reduced or increased as the case may be and the rates specified in the schedule of rates for actual work done shall be paid for.

6 No lead of water is payable on any item. The rates include cost of water required for the drilling etc.

7 No extra rate shall be paid for carting of any material from stores to site and transportation of machinery.

8 Record

(a) Samples not less than 500 gms. of strata shall be taken at every 3.8 meters or oftener as the strata changes and shall be carefully preserved at site in suitable sample boxes. These shall always be available for inspection by the Engineer-in-Charge or his representative. When drilling is completed, boxes of strata samples shall be handed over to the Engineer-in-Charge free of cost.

(b) Strata charts shall be maintained at site, consisting of the following information:
   (i) Description of depth of strata encountered,
   (ii) Spring level below ground level.
   (iii) Rate of progress of drilling and test report on vertically,
   (iv) Full particulars of the final test.

(c) A certified copy of the strata chart will be forwarded to the Engineer-in-Charge at the time of handing over the well.

(d) The contractor shall give weekly progress report to the Sub Divisional Officer and the Executive Engineer.

9 No payment will be made to the contractor for drilling in case any collapse of bore occurs during boring or during lowering the pipes etc. Any precautions, steps required to control caving of the bore shall also be the contractor's responsibility for which no extra charges will be paid for.

10 The contractor shall arrange to provide at his own cost necessary water for construction and no extra charges are payable.

11 All risks of accident and jamming and breaking of drilling tools etc. will be contractor's liability. No extra charges will be payable on this account.

12 If during any of the operation carried out for completion of the tube well, any tools, pipes etc. fall down in the well, the contractor shall carry out the necessary finishing operation of his own cost. He shall use his own equipment for such operation. If the tube becomes useless due to any fall of an article, it shall be treated as abandoned tube well and no payment shall be made.

13 The contractor shall not remove boring machine from a site until the measurements of bore are recorded. When measurements are to be taken the contractor shall inform the Engineer-in-Charge of the work well in time.

14 The contractor shall make his own arrangement at his own cost for housing his staff engaged for the drilling and other work, and the MP Model Rules relating to lay out water supply and sanitation in labour camps shall be followed.

15 The Engineer-in-Charge retains the right to stop the work on any well in any stage if it is found not desirable to continue the drilling any further. Payment will be made only for actual work done in this respect.

16 For gravel packing, proper care shall be taken to see that no earth or soil is mixed with gravel, from top or sides during gravel packing. The gravel shall be screened and washed before surrounding in the annular space of the bore.

17 **Yield Test**

(a) For small bores upto 150 mm dia the contractor shall arrange for yield test with hand pump four hours continuous pumping. The contractor will arrange as and when demanded testing (not more than twice per bore) limited to the time mentioned above.

(b) For bigger bores where power pumps are to be installed or for gravel packed - bores, the contractor shall be required to develop the bore with air compressor or suitable pumping equipment. The contractor shall make his own arrangement for the equipment required for developing and yield test. After proper development of the bore the contractor shall conduct successful yield test of the bore for 20 hours continuous pumping as fixed by the Executive Engineer, and observations recorded as per specifications.

18 Development of Bore

Proper development shall mean that the water pumped out of the bore is clean, free from sand or clay particles. The pumping operation for development shall not be included in the time required for yield test indicated above. Development of the bore shall be done as per specifications for a period of 60 to 72 hours by air compressor or power pump for bigger bores 150mm and above Development of small bores intended for hand pumps may be accomplished by working a hand pump continuously for eight hours.

19 Installation of Hand Pump

Standard type hand pumps with necessary GI rods and accessories will be supplied by the department free of cost. Necessary G.I. pipes of suitable diameter and convenient length of 3 to 4 meters cut and threaded shall be supplied by the contractor and hand pump fixed properly in position with suction pipe cylinder, check valve etc. complete. In case G.I. pipes are also supplied departmentally, labour rates for lowering of pipes shall be payable.

C. BLASTING OPERATION

In extremely hard rock formation like basalt it is very rare that large amount of water would by found except in shattered strata. Blasting with dynamite to shatter the rocks may widen the cracks and increase the flow Following procedure may be adopted.

The explosive should be placed at the bottom of the bore and covered with 1 meter of fine sand. The bore then should be filled with water. Electric detonators should be used and the wires from the explosive charge are held at the ground surface upto the magneto exploder or a battery kept at a distance of about 60 meters from the bore to be blasted.

After the charge is in position, it should be seen that the casing is about 3 meters above charge. If necessary the casing may be pulled up. The bore is now ready for blasting. The lead wires beconnected to the magneto blaster and the charge set off.

The amount of explosive required for the blasting depends upon the nature of rock.

Many drillers use cut and try approach. They use a charge of moderate size and if it proves small, repeat with a large one.

In Jabalpur Zone, the blasting is necessiated mostly in blastic formation where a shattering effect is desired. The charge will be prepared in the from of a long stick about 1 meter long by placing a number of sticks of dynamite end to end. The sticks are held together by wooden spikes and the whole set inserted in a plastic bag and after attached the detonators and lead wire the charge is lowered to the bottom.

The rates provided in the schedule are inclusive of supply of materials and use of equipment required for the operation.

D. DEVELOPMENT OF BORES BY ACID TREATMENT

Acid can be used in development of bores, tapping lime stone aquifers.

Acid dissolves-lime stone and this action opens up fractures and Crevices in the formation around the bore hole 200 liters of commercial acid HCl will dissolve approximately 03 Cum. of lime stone. Since commercial acid is concentrated it is difficult to handle, therefore, diluted acid (15 to 20% dilution by weight) or 50% to 20% dilution by volume can be used.

Following procedure for injecting the acid may be adopted.

Lower a length of pipes with perforation at the point where well is to be treated. Calculated volume of acid is pumped into the pipe.

SPECIFICATIONS FOR CASING PIPES

Reference 18:4270-1992

Table-1 , Dimensions and weights of screwed and socketted pipes

Nominal Size	Nominal Size	Outside diameter of pipes	Thickness of pipes	Weight per meter of plain tube	Outside diameter of socket	Overall length of socket
1	2	3	4	5	6	7
Mm	mm	mm	mm	kg/m.	mm	mm
100	100	114.3	6.3	16.3	132.1	114.3
150	150	168.3	8	31.5	187.9	127
200	200	291.1	8	41.5	244.5	152.4
250	250	273	9.5	61.7	298.5	177.8
323.9	9.5	73.7	355.6	177.8		

Table-2 Dimensions and weights of casing for screwed flush butt joints

Nominal Size	Outside diameter	Thickness	Weight per meter of plain tube
1	2	3	4
Mm	mm	mm	kg/m.
100	114.3	9.5	24.6
150	168.3	9.5	37.2
200	219.1	11	56.7
250	273	11	71.4
300	323.9	11	85.3

Tolerance as per 13:4270-1992 clause 7.2

7.2 Thickness - The permissible tolerance on tube thickness shall be as

Seamless tube + 15 percent -1.25 percent

Refernece IS: 1239 (Part-I)-1990

Table-3 Dimensions and nominal weights of black steel tubes. (Medium)

Nominal bore	Outside diamter	Thickness		Weight of black tubes	
	Max.	Min			
1	2	3	4	5	6
Mm	mm	mm	mm	kg/m	kg/m.
80	89.5	88	4.05	8.47	8.64
100	115	113.1	4.5	12.1	12.4
150	166.5	163.9	4.85	19.2	19.8

Note:- Dimensions and weights are in accordance with ISO/R-65.

Table - 4
Dimensions and nominal weights of black steel tubes. (Heavy)

Nominal bore	Outside diamter	Thickness		Weight of black tubes	
	Max.	Min		Plain end	Screwed and socketted
1	2	3	4	5	6
Mm	mm	mm	mm	kg/m	kg/m.
80	89.5	88	4.05	10.1	10.3
100	115	113.1	5.4	14.4	14.7
150	166.5	163.9	5.4	21.2	21.8

Note:- Dimensions and weights are in accordance with ISO/R-65. Tolerance on thickness 9-1 The following manufacturing tolerances shall be permitted on the tubes and sockets. Thickness:

1 Butt welded + Not limited
Medium and heavy tube

Item No.	Description	Unit	Rate (in Rs.)
16.1	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size of mild steel casing pipe or housing pipe (for gravel packed bore) in all strata other than hard rock and only boulders including all works pertaining to boring complete.		
	TO SUIT 100MM DIA. MILD STEEL CASING PIPE		
	16.1.1 From 00 to 30 mts. below G.L.	RM	304.00
	16.1.2 Above 30 to 60 mts. below G.L.	RM	350.00
	16.1.3 Above 60 to 120 mts. below G.L.	RM	409.00
	16.1.4 Above 120 to 180 mts. below G.L.	RM	467.00
16.2	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size of mild steel casing pipe or housing pipe (for gravel packed bore) in all strata other than hard rock and only boulders all works pertainning to boring complete.		
	TO SUIT 125MM DIA. MILD STEEL CASING PIPE		
	16.2.1 From 00 to 30 mts. below G.L.	RM	350.00
	16.2.2 Above 30 to 60 mts. below G.L.	RM	396.00
	16.2.3 Above 60 to 120 mts. below G.L.	RM	466.00
	16.2.4 Above 120 to 180 mts. below G.L.	RM	525.00
16.3	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size of mild steel casing pipe or housing pipe (for gravel packed bore) in all strata other than hard rock and only boulders including all works pertaining to boring complete.		
	TO SUIT 150MM DIA. MILD STEEL CASING PIPE		
	16.3.1 From 00 to 30 mts. below G.L.	RM	410.00
	16.3.2 Above 30 to 60 mts. below G.L.	RM	525.00
	16.3.3 Above 60 to 120 mts. below G.L.	RM	584.00
	16.3.4 Above 120 to 180 mts. below G.L.	RM	642.00
16.4	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size of mild steel casing pipe or housing pipe (for gravel packed bore) in all strata other than hard rock and only boulders including all works pertaining to boring complete.		
	TO SUIT 200MM DIA. MILD STEEL CASING PIPE		
	16.4.1 From 00 to 30 mts. below G.L.	RM	525.00
	16.4.2 Above 30 to 60 mts. below G.L.	RM	584.00
	16.4.3 Above 60 to 120 mts. below G.L.	RM	613.00
	16.4.4 Above 120 to 180 mts. below G.L.	RM	654.00
16.5	Drilling of tube well perfectly vertical for the specified depth		

Item No.	Description	Unit	Rate (in Rs.)
	below the ground level of a suitable size of mild steel casing pipe in hard rock and boulders induding all works pertaining to boring complete.		
	TO SUIT 100MM DIA. MILD STEEL CASING PIPE		
	16.5.1 From 00 to 30 mts. below G.L.	RM	409.00
	16.5.2 Above 30 to 60 mts. below G.L.	RM	467.00
	16.5.3 Above 60 to 120 mts. below G.L.	RM	584.00
	16.5.4 Above 120 to 180 mts. below G.L.	RM	700.00
16.6	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size o mild steel casing pipe in hard rock and boulders induding all works pertaining to boring complete.		
	TO SUIT 125MM DIA. MILD STEEL CASING PIPE		
	16.6.1 From 00 to 30 mts. below G.L.	RM	467.00
	16.6.2 Above 30 to 60 mts. below G.L.	RM	525.00
	16.6.3 Above 60 to 120 mts. below G.L.	RM	680.00
	16.6.4 Above 120 to 180 mts. below G.L.	RM	759.00
16.7	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size o mild steel casing pipe in hard rock and boulders induding all works pertaining to boring complete.		
	TO SUIT 150MM DIA. MILD STEEL CASING PIPE		
	16.7.1 From 00 to 30 mts. below G.L.	RM	525.00
	16.7.2 Above 30 to 60 mts. below G.L.	RM	584.00
	16.7.3 Above 60 to 120 mts. below G.L.	RM	700.00
	16.7.4 Above 120 to 180 mts. below G.L.	RM	817.00
16.8	Drilling of tube well perfectly vertical for the specified depth below the ground level of a suitable size of mild steel casing pipe in hard rock and boulders induding all works pertaining to boring complete.		
	TO SUIT 200MM DIA. MILD STEEL CASING PIPE		
	16.9.1 From 00 to 30 mts. below G.L.	RM	584.00
	16.9.2 Above 30 to 60 mts. below G.L.	RM	648.00
	16.9.3 Above 60 to 120 mts. below G.L.	RM	829.00
	16.9.4 Above 120 to 180 mts. below G.L.	RM	963.00
16.9	Providing, supplying and fixing M.S. blank casing pipes as specified in position perfectly vertical including transportation charges in the bore up to the required depth below ground level as specified in all strata including cutting, threading, coupling and all other operations pertaining to it and jointing materials etc. complete		

Item No.		Description	Unit	Rate (in Rs.)
	16.9.1	M.S. blank seamless casing pipe 100 mm dia.	RM	350.00
	16.9.2	M.S. blank seamless casing pipe 125 mm dia.	RM	560.00
	16.9.3	M.S. blank seamless casing pipe 150 mm dia.	RM	700.00
	16.9.4	M.S. blank seamless casing pipe 175 mm dia.	RM	875.00
	16.9.5	M.S. blank seamless casing pipe 200 mm dia.	RM	1051.00
	16.9.6	E.R.W.M.S. casing pipe 100 mm dia.	RM	222.00
	16.9.7	E.R.W.M.S. casing pipe 125 mm dia.	RM	292.00
	16.9.8	E.R.W.M.S. casing pipe 150 mm dia.	RM	327.00
	16.9.9	E.R.W.M.S. casing pipe 175 mm dia.	RM	496.00
	16.9.10	E.R.W.M.S. casing pipe 200 mm dia.	RM	584.00
16.10	Extra for slotted or perforated casing pipe as per item 16.10 above.			
	16.10.1	100 mm dia.	RM	105.00
	16.10.2	125 mm dia.	RM	128.00
	16.10.3	150 mm dia	RM	146.00
	16.10.4	175 mm dia	RM	152.00
	16.10.5	200 mm dia	RM	166.00
16.11	Labour for lowering and fixing of above pipes up to the required depth for above item, below the ground level as specified in all strata including cutting, threading, coupling and all other operations pertaining to the same and jointing material etc. complete.			
	16.11.1	M S Pipe 100 mm dia.	RM	12.00
	16.11.2	M S Pipe 125 mm dia.	RM	18.00
	16.11.3	MS Pipe. 150 mm dia.	RM	25.00
	16.11.4	M S Pipe 175 mm dia.	RM	26.00
	16.11.5	M S Pipe 200 mm dia.	RM	29.00
	16.11.6	M S Pipe 225 mm.dia.	RM	35.00
16.12	Providing, supplying and fixing M. S. blank socket or mild steel plug or screw caps of the standard make affixed on the top end of the casing pipe on the complete bore including all lead etc. complete as specified and directed.			
	16.12.1	Blank socket or Mild steel plug 100 mm dia	Each	175.00
	16.12.2	Blank socket or Mild steel plug 125 mm dia	Each	204.00
	16.12.3	Blank socket or Mild steel plug 150 mm dia	Each	233.00
	16.12.4	Blank socket or Mild steel plug 175 mm dia	Each	292.00
	16.12.5	Blank socket or Mild steel plug 200 mm dia	Each	321.00

Item No.	Description	Unit	Rate (in Rs.)
16.13	Labour only for fixing M. S. blank socket or mild steel plug or screw caps of the standard make affixed on the top end of the casing pipe on the complete bore induding all lead etc. complete as specified and directed.		
16.13.1	100 mm dia.	Each	6.00
16.13.2	125 mm dia.	Each	12.00
16.13.3	150 mm dia.	Each	18.00
16.13.4	175 mm dia.	Each	29.00
16.13.5	200 mm dia.	Each	35.00
16.14	Providing gravel packing with uniformly graded pack materials pea gravel 3mm to 10mm size of approved quality including collection, stacking, washing and packing in layers of suitable thickness in the annual space that is to be gravel packed including all lead and lift etc. complete.	Cum	584.00
16.15	Labour of gravel packing with pea gravel of gravel size as supplied departmentally at the Housing Board Store including washing and packing in layers of suitable thickness as required by manual labour including all leads and lifts etc. complete.	Cum	58.00
16.16	Providing and assembling in tube 32mm dia G.I. medium dass pipes conforming to IS : 238 Part-I 1985 in 2 meters pieces including cutting of full length pipe threading providing and fixing one extra socket of medium class for each piece etc. complete per piece at 3 meters.	Each	467.00

CHAPTER-XVII

SANITARY INSTALLATION

Notes :

1 Water closets and urinals shall conform to I.S. 771-1963.

2 Wash hand Basin shall conform to I.S. 771-1963.

3 Sinks shall conform to I.S. 771-1963.

4 The R.S. or C.I. cantilever brackets for wash hand basin & sink shall conform to IS 775-1962.

5 Socket and spigot spun Iron pipes shall conform to I.S. 1534-1947

6 The flushing of W.C. pan shall be done by "pull and let go" Flushing cistern of valve-less syphonic type conforming to I.S. 774 -1960.

7 C.I. pipes shall conform to I.S. 3114-1965. The overflow pipes shall be of G.I. 15mm. diameter with fittings.

8 The outlet flush pipe shall be of 32 diameter. They shall be one piece lead pipe or telescopic galvanised inside and outside.

9 Glazed stone ware pipe shall be of grade "A".

10 All joints shall be made with special care, particularly those between pipes of different material. All joints shall be perfectly air and water tight. No joint shall be embedded in wall if, avoidable.

11 The rates include, unless otherwise specified, cost of all material, labour, T&P, hire and running charges of machineries etc. with all leads and lifts required for the work. The rates also include labour for installation, making holes in walls, excavation, cutting of floors & making good the same to its original condition.

Item No.	Description	Unit	Rate (in Rs.)
17.1	Providing and fixing water closet squatting pan (Indian type W.C. pan) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, with all fittings and fixtures complete including cutting and making good the walls and floors wherever required :		
17.1.1	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests.	each	2468.00
17.1.2	Stainless Steel AISI-304(18/8) Orissa pattern W.C. pan of size 585x480 mm with flush pipe and integrated type foot rests.	each	5708.00
17.2	Providing and fixing white vitreous china pedestal type water closet (European type W.C. pan) with seat and lid, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever), conforming to IS : 7231, with all fittings and fixtures complete induding cutting and making good the walls and floors wherever required :		
17.2.1	W.C. pan with ISI marked white solid plastic seat and lid	each	2310.00
17.2.2	W.C. pan with ISI marked black solid plastic seat and lid	each	2287.00
17.3	Providing and fixing white vitreous china pedestal type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern, C.P. flush bend with fittings, C.I.brackets, 40mm flush bend, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design complete induding painting of fittings and brackets, cutting and making good the walls and floors wherever required :		
17.3.1	W.C. pan with ISI marked white solid plastic seat and lid.	each	3294.00
17.3.2	W.C. pan with ISI marked black solid plastic seat and lid.	each	3270.00
17.4	Providing and fixing white vitreous china flat back or wall corner type lipped front urinal basin of 430x260x350mm and 340x410x265mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, induding painting of fittings and brackets, cutting and making good the walls and floors wherever required :		
17.4.1	One urinal basin with 5 litre white P.V.C. automatic	each	1607.00

Item No.		Description	Unit	Rate (in Rs.)
		flushing cistern.		
	17.4.2	Range of two urinal basins with 5 litre white P.V.C. automatic flushing cistern.	each	2566.00
	17.4.3	Range of three urinal basins with 10litre white P.V.C. automatic flushing cistern.	each	3316.00
	17.4.4	Range of four urinal basins with 10 litre white P.V.C. automatic flushing cistern.	each	4482.00
17.5		Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350mm with white PVC automatic flushing cistern, with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS : 2556, C.I. trap with outlet grating and other couplings in C.P. brass including painting of fittings and cutting and making good the walls and floors wherever required :		
	17.5.1	Single half stall urinal with 5 litre P.V.C. automatic flushing cistern.	each	3910.00
	17.5.2	Range of two half stall urinals with 5 litre P.V.C. automatic flushing cistern.	each	6211.00
	17.5.3	Range of three half stall urinals with 10 litre P.V.C. automatic flushing cistern.	each	8234.00
	17.5.4	Range of four half stall urinals with 10 litre P.V.C. automatic flushing cistern.	each	10273.00
17.6		Providing and fixing one piece construction white vitreous china squatting plate with an integral longitudinal flushing pipe, white P.V.C. automatic flushing cistern, with fittings, standard size G.I. flush pipe for back and front flush with standard spreader pipes with fittings, G.I clamps and C.P. brass coupling complete including painting of fittings and cutting and making good the walls and floors etc. wherever required :		
	17.6.1	Single squatting plate with 5 litre P.V.C. automatic flushing cistern.	each	2431.00
	17.6.2	Range of two squatting plates with 5 litre P.V.C. automatic flushing cistern.	each	3951.00
	17.6.3	Range of three squatting plates with 10 litre P.V.C. automatic flushing cistern.	each	5252.00
	17.6.4	Range of four squatting plates with 10 litre P.V.C. automatic flushing cistern.	each	6384.00
17.7		Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern,		

Item No.		Description	Unit	Rate (in Rs.)
		induding painting of fittings and brackets, cutting and making good the walls wherever require :		
	17.7.1	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1492.00
	17.7.2	White Vitreous China Wash basin size 630x450 mm with a single 15 mm C.P. brass pillar tap.	each	1330.00
	17.7.3	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps.	each	1353.00
	17.7.4	White Vitreous China Flat back wash basin size 550x400mm with single 15 mm C.P. brass pillar tap.	each	1179.00
	17.7.5	White Vitreous China Angle back wash basin size 600x480 mm with single 15 mm C.P. brass pillar tap.	each	1242.00
	17.7.6	White Vitreous China Angle back wash basin size 400x400mm with single 15 mm C.P. brass pillar tap.	each	1097.00
	17.7.7	White Vitreous China Flat back wash basin size 450x300mm with single 15 mm C.P. brass pillar tap.	each	1086.00
	17.7.8	White Vitreous China Surgeon type wash basin of size 660x460 mm with a pair of 15 mm C.P. brass pillar taps with elbow operated levers.	each	2352.00
	17.7.9	White Vitreous China Surgeon type wash basin of size 660x460 mm with single 15 mm C.P. brass pillar taps with elbow operated levers ISI marked.	each	1887.00
	17.7.10	Stainless Steel ISI-304(18/8) Round basin 405x355 mm with single 15 mm C.P. brass pillar tap.	each	2538.00
	17.7.11	Stainless Steel ISI-304(18/8) Wash basin 530x345 mm with single 15 mm C.P. brass pillar tap.	each	2363.00
	17.7.12	Oval shape wash basin over counter/under counter with 15 mm C.P brass pillar tap (Counter to be paid sepratly)	each	1736.00
17.8		Providing and fixing white vitreous china pedestal for wash basin completely recessed at the back for the reception of pipes and fittings.	each	791.00
17.8A		Extra for providing china coloured wash basin/china coloured pedestal for was basin.	each	209.00
17.9		Providing and fixing kitchen sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P. brass waste of standard pattern, induding painting the fittings and brackets, cutting and making good the walls wherever required :		
	17.9.1	White glazed fire clay kitchen sink of size 600x450x250 mm.	each	2013.00

Item No.	Description	Unit	Rate (in Rs.)
17.10	Providing and fixing Stainless Steel ISI 304 (18/8) kitchen sink as per IS 13983 with C.I. brackets and 40 mm stainless steel plug including painting of fittings and brackets, cutting and making good the walls wherever required :		
17.10.1	Kitchen sink with drain board		
17.10.1.1	510x1040 mm bowl depth 250mm.	each	4885.00
17.10.1.2	510x1040 mm bowl depth 225mm.	each	3758.00
17.10.1.3	510x1040 mm bowl depth 200mm.	each	3514.00
17.10.1.4	510x1040 mm bowl depth 178mm.	each	3398.00
17.10.2	Kitchen sink without drain board		
17.10.2.1	610x510 mm bowl depth 200 mm.	each	2761.00
17.10.2.2	610x460 mm bowl depth 200 mm.	each	2587.00
17.10.2.3	470x420 mm bowl depth 178 mm.	each	2016.00
17.11	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug 40mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete including painting of fittings and brackets, cutting and making good the wall wherever required		
17.11.1	Size 450x300x150mm	each	1676.00
17.11.2	Size 600x450x200mm	each	2338.00
17.12	Providing and fixing draining board with C.I. brackets including painting of brackets, cutting and making good the walls wherever required :		
17.12.1	White glazed fire clay draining board of size 600x450x25mm	each	651.00
17.13	Providing and fixing white vitreous china water closet squatting pan (Indian type)		
17.13.1	Long pattern W.C. pan of size 580 mm	each	730.00
17.13.2	Orissa pattern W.C. pan of size 580x440 mm	each	1020.00
17.14	Extra for using coloured W.C. pan instead of white W.C. pan		
17.14.1	Orissa pattern W.C. pan 580x440 mm	each	209.00
17.15	Providing and fixing white vitreous china pedestal type (European type/ wash down type) water closet pan.	each	794.00
17.16	Extra for using coloured pedestal type W.C pan (European type) with low level cistern of same colour instead of white vitreous china W.C pan	each	1022.00
17.17	Providing and fixing a pair of white vitreous china foot rests of standard pattern for squatting pan water closet:		
17.17.1	250x130x30 mm	pair	148.00
17.17.2	250x125x25 mm	pair	125.00

Item No.	Description	Unit	Rate (in Rs.)
17.18	Providing and fixing P.V.C. low level flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, with all fittings and fixtures complete.		
	17.18.1 10 litre capacity - White	each	863.00
	17.18.2 10 litre capacity - coloured	each	1475.00
17.19	Providing and fixing controlled flush, low level cistern made of vitreous china with all fittings complete.		
	17.19.1 10 litre (full flush) capacity-white	each	1911.00
	17.19.2 10 litre (full flush) capacity-coloured	each	1992.00
17.20	Providing and fixing solid plastic seat with lid for pedestal type W.C. pan complete :		
	17.20.1 White solid plastic seat with lid	each	375.00
	17.20.2 Black solid plastic seat with lid	each	352.00
17.21	Extra for providing coloured other than black solid P.V.C. plastic seat and cover in European type W.C. pan, instead of white plastic seat and cover.	each	58.00
17.22	Providing and fixing G.I. inlet connection for flush pipe connecting with W.C. pan.	each	120.00
17.23	Providing and fixing white vitreous china flat back or wall corner type lipped front urinal basin of 430x260x350mm and 340x410x265mm sizes respectively.	each	586.00
17.24	Providing and fixing white vitreous china squatting plate urinal with integral rim longitudinal flush pipe.	each	1193.00
17.25	Providing and fixing white vitreous china wash basin including making all connections but excluding the cost of fittings :		
	17.25.1 Flat back wash basin of size 630x450mm.	each	782.00
	17.25.2 Flat back wash basin of size 550x400mm.	each	631.00
	17.25.3 Angle back wash basin of size 600x480mm.	each	695.00
	17.25.4 Angle back wash basin of size 400x400mm.	each	550.00
	17.25.5 Flat back wash basin of size 450x300mm.	each	538.00
	17.25.6 Surgeon type wash basin of size 660x460mm.	each	1049.00
17.26	Providing and fixing kitchen sink induding making all connections excluding cost of fittings.		
	17.26.1 White glazed fire clay sink of size 600x450x250mm.	each	1581.00
17.27	Providing and fixing white vitreous china laboratory sink induding making all connections excluding cost of fittings:		
	17.27.1 Size 450x300x150 mm.	each	884.00
	17.27.2 Size 600x450x200 mm.	each	1546.00
17.28	Providing and fixing P.V.C. waste pipe for sink or wash basin induding P.V.C. waste fittings complete.		
	17.28.1 Semi rigid pipe		

Item No.	Description	Unit	Rate (in Rs.)
	17.28.1.1 32 mm dia	each	58.00
	17.28.1.2 40 mm dia	each	70.00
	17.28.2 Flexible pipe		
	17.28.2.1 32 mm dia	each	64.00
	17.28.2.2 40 mm dia	each	70.00
17.29	Providing and fixing 100 mm sand cast Iron grating for gully trap.	each	19.00
17.30	Providing and fixing in position 25mm diameter mosquito proof coupling of approved municipal design.	each	26.00
17.31	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	each	717.00
17.32	Providing and fixing mirror of superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6 mm thick hard board backing :		
	17.32.1 Circular shape 450mm dia.	each	772.00
	17.32.2 Rectangular shape 453x357mm	each	546.00
	17.32.3 Oval shape 450x350mm (outer dimensions)	each	660.00
	17.32.4 Rectangular shape 1500x450 mm	each	1413.00
17.33	Providing and fixing 600x120x5mm glass shelf with edges round of supported on anodised aluminium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	each	243.00
17.34	Providing and fixing toilet paper holder :		
	17.34.1 C.P. brass	each	163.00
	17.34.2 Vitreous china	each	193.00
17.35	Providing and fixing soil, waste and vent pipes :		
	17.35.1 100 mm dia.		
	17.35.1.1 Sand cast iron S&S pipe as per IS: 1729.	metre	368.00
	17.35.1.2 Centrifugally cast (spun) iron socketed pipe as per IS: 3989.	metre	
	17.35.2 75 mm diameter :		
	17.35.2.1 Sand cast iron S&S pipe as per IS: 1729.	metre	314.00
	17.35.2.2 Centrifugally cast (spun) iron socketed pipe as per IS: 3989.	metre	439.00
17.36	Providing and filling the joints with spun yarn cement slurry and cement mortar 1:2 (1 cement : 2 fine sand) in S.C.I./ C.I. Pipes		
	17.36.1 75 mm dia pipe	each	27.00
	17.36.2 100 mm dia pipe	each	31.00

Item No.	Description	Unit	Rate (in Rs.)
17.37	Providing and fixing M.S. holder-bat clamps of approved design to Sand Cast iron/cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10cm of 1:2:4 mix (1 cement :2 sand:4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc. :		
17.37.1	For 100 mm dia. Pipe	each	71.00
17.37.2	For 75 mm dia. Pipe	each	69.00
17.38	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.		
17.38.1	100 mm		
17.38.1.1	Sand cast iron S&S as per IS - 1729	each	260.00
17.38.1.2	Sand cast iron S&S as per IS - 3989	each	274.00
17.38.2	75 mm dia		
17.38.2.1	Sand cast iron S&S as per IS - 1729	each	211.00
17.38.2.2	Sand cast iron S&S as per IS- 3989	each	246.00
17.39	Providing and fixing plain bend of required degree.		
17.39.1	100 mm		
17.39.1.1	Sand cast iron S&S as per IS - 1729	each	226.00
17.39.1.2	Sand cast iron S&S as per IS : 3989	each	260.00
17.39.2	75 mm		
17.39.2.1	Sand cast iron S&S as per IS -1729	each	175.00
17.39.2.2	Sand cast iron S&S as per IS - 3989	each	181.00
17.40	Providing and fixing heel rest sanitary bend		
17.40.1	100 mm dia		
17.40.1.1	Sand cast iron S&S as per IS - 1729	each	236.00
17.40.1.2	Sand cast iron S&S as per IS - 3989	each	283.00
17.40.2	75 mm		
17.40.2.1	Sand cast iron S&S as per IS - 1729	each	188.00
17.40.2.2	Sand cast iron S&S as per IS - 3989	each	245.00
17.41	Providing and fixing double equal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
17.41.1	100x100x100x100mm		
17.41.1.1	Sand cast iron S&S as per IS - 1729	each	430.00
17.41.1.2	Sand cast iron S&S as per IS - 3989	each	515.00
17.41.2	75x75x75x75 mm		
17.41.2.1	Sand cast iron S&S as per IS - 1729	each	385.00
17.41.2.2	Sand cast iron S&S as per IS - 3989	each	438.00

Item No.	Description	Unit	Rate (in Rs.)
17.42	Providing and fixing double equal plain junction of required degree.	each	411.00
	17.42.1 100x100x100x100 mm	each	411.00
	17.42.1.1 Sand cast iron S&S as per IS - 1729		
	17.42.1.2 Sand cast iron S&S as per IS - 3989	each	305.00
	17.42.2 75x75x75x75 mm	each	309.00
	17.42.2.1 Sand cast iron S&S as per IS - 1729		
	17.42.2.2 Sand cast iron S&S as per IS - 3989		
17.43	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.		
	17.43.1 100x100x100 mm		
	17.43.1.1 Sand cast iron S&S as per IS - 1729	each	355.00
	17.43.1.2 Sand cast iron S&S as per IS - 3989	each	430.00
	17.43.2 75x75x75 mm		
	17.43.2.1 Sand cast iron S&S as per IS - 1729	each	269.00
	17.43.2.2 Sand cast iron S&S as per IS - 3989	each	304.00
17.44	Providing & fixing single equal plain junction of required degree		
	17.44.1 100x100x100 mm		
	17.44.1.1 Sand cast iron S&S as per IS - 1729	each	395.00
	17.44.1.2 Sand cast iron S&S as per IS - 3989	each	370.00
	17.44.2 75x75x75 mm		
	17.44.2.1 Sand cast iron S&S as per IS - 1729	each	222.00
	17.44.2.2 Sand cast iron S&S as per IS - 3989	each	256.00
17.45	Providing and fixing double unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	17.45.1 100x100x75x75 mm		
	17.45.1.1 Sand cast iron S&S as per IS - 1729	each	506.00
	17.45.1.2 Sand cast iron S&S as per IS - 3989	each	597.00
17.46	Providing and fixing double unequal plain junction of required degree:		
	17.46.1 100x100x75x75 mm		
	17.46.1.1 Sand cast iron S&S as per IS - 1729	each	457.00
	17.46.1.2 Sand cast iron S&S as per IS - 3989	each	444.00
17.47	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	17.47.1 100x100x75 mm		
	17.47.1.1 Sand cast iron S&S as per IS - 1729	each	308.00
	17.47.1.2 Sand cast iron S&S as per IS - 3989	each	454.00

Item No.	Description	Unit	Rate (in Rs.)
17.48	Providing and fixing single unequal plain junction of required degree :		
	17.48.1 100x100x75 mm		
	17.48.1.1 Sand cast iron S&S as per IS - 1729	each	300.00
	17.48.1.2 Sand cast iron S&S as per IS - 3989	each	387.00
17.49	Providing and fixing double equal plain invert branch of required degree:		
	17.49.1 100x100x100x100 mm		
	17.49.1.1 Sand cast iron S&S as per IS - 1729	each	376.00
	17.49.1.2 Sand cast iron S&S as per IS 3989	each	411.00
	17.49.2 75x75x75x75 mm		
	17.49.2.1 Sand cast iron S&S as per IS - 1729	each	361.00
	17.49.2.2 Sand cast iron S&S as per IS - 3989	each	390.00
17.50	Providing and fixing single equal plain invert branch of required degree:		
	17.50.1 100x100x100 mm		
	17.50.1.1 Sand cast iron S&S as per iron 1729	each	329.00
	17.50.1.2 Sand cast iron S&S as per IS - 3989	each	376.00
	17.50.2 75x75x75 mm		
	17.50.2.1 Sand cast iron S&S as per IS - 1729	each	256.00
	17.50.2.2 Sand cast iron S&S as per IS - 3989	each	256.00
17.51	Providing and fixing double unequal invert branch of required degree :		
	17.51.1 100x100x75x75 mm		
	17.51.1.1 Sand cast iron S&S as per IS - 1729	each	387.00
	17.51.1.2 Sand cast iron S&S as per IS - 3989	each	497.00
17.52	Providing and fixing single unequal plain invert branch of required degree :		
	17.52.1 100x100x75 mm		
	17.52.1.1 Sand cast iron S&S as per IS - 1729	each	364.00
	17.52.1.2 Sand cast iron S&S as per IS - 3989	each	463.00
17.53	Providing and fixing sand cast iron S&S off sets as per IS: 1729		
	17.53.1 76 mm off sets		
	17.53.1.1 With 75 mm dia. pipe	each	173.00
	17.53.1.2 With 100 mm dia. pipe	each	245.00
	17.53.2 114 mm off sets		
	17.53.2.1 With 75 mm dia. pipe	each	265.00
	17.53.2.2 With 100 mm dia. Pipe	each	300.00
	17.53.3 152 mm off sets		
	17.53.3.1 With 75 mm dia. Pipe	each	259.00
	17.53.3.2 With 100 mm dia. Pipe	each	265.00

Item No.	Description	Unit	Rate (in Rs.)
17.54	Providing & fixing sand cast iron S&S off sets as per IS: 3989.		
	17.54.1 75 mm off sets		
	17.54.1.1 With 75 mm dia. pipe	each	281.00
	17.54.2 150 mm off sets		
	17.54.2.1 With 75 mm dia. pipe	each	261.00
	17.54.2.2 With 100 mm dia. Pipe	each	321.00
17.55	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :		
	17.55.1 100 mm		
	17.55.1.1 Sand cast iron S&S as per IS - 1729	each	387.00
	17.55.1.2 Sand cast iron S&S as per IS - 3989	each	337.00
	17.55.2 75 mm		
	17.55.2.1 Sand cast iron S&S as per IS - 1729	each	304.00
	17.55.2.2 Sand cast iron S&S as per IS - 3989	each	246.00
17.56	Providing and fixing terminal guard:		
	17.56.1 100 mm		
	17.56.1.1 Sand cast iron S&S as per IS - 1729	each	207.00
	17.56.1.2 Sand cast iron S&S as per IS - 3989	each	254.00
	17.56.2 75 mm		
	17.56.2.1 Sand cast iron S&S as per IS - 1729	each	140.00
	17.56.2.2 Sand cast iron S&S as per IS - 3989	each	201.00
17.57	Providing and fixing collar:		
	17.57.1 100 mm		
	17.57.1.1 Sand cast iron S&S as per IS - 1729	each	164.00
	17.57.1.2 Sand cast iron S&S as per IS - 3989	each	219.00
	17.57.2 75 mm		
	17.57.2.1 Sand cast iron S&S as per IS - 1729	each	146.00
	17.57.2.2 Sand cast iron S&S as per IS- 3989	each	175.00
17.58	Providing lead caulked joints to sand cast iron/centrifugally cast (spun) iron pipes and fittings of diameter:		
	17.58.1 100 mm	each	132.00
	17.58.2 75 mm	each	112.00
	17.58.3 50 mm	each	90.00
17.59	Providing and fixing M.S. stays and clamps for sand cast iron/centrifugally cast (spun) iron pipes of diameter :		
	17.59.1 100 mm	each	51.00
	17.59.2 75 mm	each	45.00
	17.59.3 50 mm	each	34.00
17.60	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, induding cost of cutting and making good the walls and floors		

Item No.	Description	Unit	Rate (in Rs.)
	17.60.1 100 mm inlet and 100 mm outlet		
	17.60.1.1 Sand cast iron S&S as per IS: 3989.	each	572.00
	17.60.1.2 Sand Cast Iron S&S as per IS: 1729.	each	464.00
	17.60.2 100 mm inlet and 75 mm outlet		
	17.60.2.1 Sand cast iron S&S as per IS - 3989	each	613.00
	17.60.2.2 Sand Cast Iron S&S as per IS- 1729.	each	415.00
17.61	Cutting chases in brick masonry walls for following diameter sand cast iron/ centrifugally cast (spun) iron pipes and making good the same with cement concrete 1:3:6(1 cement:3 sand :6 graded stone aggregate 12.5mm nominal size) including necessary plaster and pointing in cement mortar 1:4 (1 cement : 4 sand) :		
	17.61.1 100 mm dia.	metre	163.00
	17.61.2 75 mm dia.	metre	140.00
	17.61.3 50 mm dia.	metre	83.00
17.62	Painting sand cast iron/ centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate grey, or buff etc. over a coat of primer (of approved quality) for new work :	metre	23.00
	17.62.1 100 mm diameter pipe	metre	18.00
	17.62.2 75 mm diameter pipe		
17.63	Repainting sand cast iron/ centrifugally cast iron (spun) iron, soil, waste, vent pipes and fittings with paint of any colour such as chocolate, grey or buff etc :		
	17.63.1 100 mm diameter pipe	metre	11.00
	17.63.2 75 mm diameter pipe	metre	8.00
17.64	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required		
	17.64.1 White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	4110.00
17.65	Providing and fixing PTMT Waste Coupling for wash basin and sink, of approved quality and colour.		
	17.65.1 Waste coupling 31mm of 79mm length and 62mm breadth weighing not less than 45gms.	each	77.00

Item No.		Description	Unit	Rate (in Rs.)
	17.65.2	Waste coupling 38mm of 83mm length and 77mm breadth, weighing not less than 60gms.	each	105.00
17.66		Providing and fixing PTMT Bottle Trap for Wash basin and sink.		
	17.66.1	Bottle trap 31mm single piece moulded with height of 270mm, effective length of tail pipe 260mm from the centre of the waste coupling 77mm breadth with 25mm minimum water seal, weighing not less than 260gms.	each	384.00
	17.66.2	Bottle trap 38mm single piece moulded with height of 270mm, effective length of tail pipe 260mm from the centre of the waste coupling 77mm breadth with 25mm minimum water seal, weighing not less than 263gms.	each	407.00
17.67		Providing and fixing PTMT liquid soap container 109mm wide, 125mm high and 112mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour. weighing not less than 105 gms.	each	173.00
17.68		Providing and fixing PTMT towel ring trapezoidal shape 215mm long, 200mm wide with a minimum distances of 37mm from wall face with concealed fittings arrangement of approved quality and colour. Weighing not less than 88 gms	each	154.00
17.69		Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fitting arrangement of approved quality and colour.		
	17.69.1	450MM long towel rail with total length of 495mm, 78mm wide and effective height of 88mm, weighing not less than 170gms.	each	312.00
	17.69.2	600mm long towel rail with total length of 645mm, width 78mm and effective height of 88mm, weighing not less than 190gms.	each	349.00
17.70		Providing and fixing PTMT shelf 440 mm long, 124 mm width and 36mm height of approved quality and colour. Weighing not less than 300 gms.	each	393.00
17.71		Providing and fixing PTMT 15 mm Urinal spreader size 95x69x100 mm with 1/2" BSP thread and shapes. Weighing not less than 60 gms.	each	155.00
17.72		Providing and fixing PTMT urinal cock of approved quality and colour.		
	17.72.1	15mm nominal bore, 80mm long. 42mm high and 30mm wide with BSP female threads weighing not less than 48gms.	each	131.00

Item No.	Description	Unit	Rate (in Rs.)
17.73	Providing and fixing M.S. holder bat clamp of approved design to sand cast iron/ cast iron (spun) pipes comprising of M.S. flat brackets made of 50x5mm flat of specified shape, projecting 75mm outside the wall surface and fixed on wall with 4nos, 6mm dia expansion hold fasteners including drilling necessary holes in brick wall/ CC/ RCC surface and the cost of bolts etc. The pipes shall be fixed to the already fixed brackets with the help of 30mm x1.6mm galvanised M.S. flats of specified shape and of total length 420mm and shall be fixed with M.S. nuts, bolts, & washers of size 25x6mm, one bolts on each side of the pipe.		
17.73.1	Total bracket length 580mm of approved shape and design (for single 100mm dia pipe).	each	143.00
17.73.2	Total bracket length 810mm of approved shape and design (for two 100mm dia pipes).	each	169.00
17.73.3	Total bracket length 1040mm of approved shape and design (for three 100mm dia pipes).	each	196.00
17.74	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.for soil and wast pipes Single socketed pipes for working pressure of 4 kg./cm^2		
17.74.1	75 mm diameter	metre	136.00
12.74.2	90 mm diameter	meter	181.00
12.74.3	110 mm diameter	metre	225.00
17.75	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.		
17.75.1	Coupler		
17. 75.1.1	75 mm	each	159.00
17. 75.1.2	90 mm	each	186.00
17. 75.1.3	110 mm	each	213.00
17. 75.2	Single pushfit Coupler:		
17. 75.2.1	75 mm	each	200.00
17. 75.2.2	90mm	each	230.00
17. 75.2.3	110 mm	each	260.00
17. 75.3	Single tee with door		
17. 75.3.1	75x75x75 mm	each	268.00
17. 75.3.2	90x90x90 mm	each	333.00

Item No.	Description	Unit	Rate (in Rs.)
17. 75.3.3	110x110x110 mm	each	399.00
17. 75.4	Single tee without door		
17. 75.4.1	75x75x75 mm	each	268.00
17. 75.4.2	90x90x90 mm	each	322.00
17. 75.4.3	110x110x110 mm	each	376.00
17. 75.5	Bend 87.5°		
17. 75.5.1	75 mm bend	each	142.00
17. 75.5.2	90 mm bend	each	183.00
17. 75.5.3	110 mm bend	each	225.00
17. 75.6	Shoe		
17. 75.6.1	75 mm Shoe	each	241.00
17. 75.6.2	90 mm shoe	each	331.00
17. 75.6.3	110 mm Shoe	each	422.00

CHAPTER-XVIII

WATER SUPPLY

Notes :

1 Galvanized mild steel tubes/pipes with threaded and screw ends, medium grade shall conform to I.S. 1239-1968 Part I, screwed both ends conforming to I.S. 554-1955, pipe threads shall be used.

2 The pipes shall withstand either a hydraulic test of 14Kg/Sq.cm. or an air test of 7kg/sq.cm. with the fittings immersed in water.

3 All brass fittings including valves, stop cocks, ferrules, bib cocks shall conform to relevant I.S. specifications.

4 Ball valves shall comply the requirements of B.S. 1212-1953.

5 HDPE water storage tanks should be of approved make and conforming to IS:1270 as approved by the Engineer-in-Charge.

6 All socket and spigot spun Iron pipes shall conform to I.S. 1534-1947.

7 Lead for pipe joints shall be bluish-grey in colour, soft and malleable, readily melted and free from admixture of foreign matter and shall comply to I.S. 27 of 1950.

8 Water supply lines shall be avoided at the openings and they shall also not run with the lines carrying waste materials. Water supply line shall also not cross each other as far as possible.

9 The rates include cost of all materials, labour, T & P, hire & running charges of machineries etc. complete with all leads & lifts for all materials required for the work.

Materials

The pipes & Fittings of PPR-C (Poly Propylene Random Copolymer) PTMT Fill (Polytetra Methylene Terephthalate)

Jointing Procedure

1 Cut pipe straight (very important). This will allow pipe to bottom into the socket. .

2 Remove burr (shaving), use clean dry cloth or knife. Do not use abrasive material.

3 Clean pipe and fittings & ensure no dirt, grease or any other foreign matter

4 Check dry fit. Pipe should easily go into the socket 1/3 to 2/3 of the way before resistance is felt.

This is commonly referred to as interference fit. If pipe goes to the bottom of fitting without any resistance (interference) ensure fittings is correct size. If it is correct size get another fitting.

5 Apply a thin coat of cement into the fittings socket and a full even coat on the pipe the depth of socket bottom. Do not puddle cement in socket.

6 Insert pipe into the socket quickly while cement is still fluid (wet), if cement dried, re-coat pipe and fitting. Twist pipe turn, this will allow cement to cover any spot. Make sure pipe goes all the way to the bottom of the fitting.

7 Hold pipe and fitting together (30 second) to make sure pipe does not push out.

8 Wipe off excess cement with clean dry cloth.

9 Allow cement to cure before applying water (fluid) pressure. Cure tirue is depenc upon temperature, humidity etc however under normal conditions, allow 24 he cure time.

Installation of PPR-C Pipes

1 Sharp edged support should be avoided.

2 PPR-C. standard pipe clips may also be used care shall be taken not to over to and cause the clips to bite into the pipe. Pipe clips should be correctly aligned ; should provide a smooth surface of contact with pipe.

Underground installation

1 The trench bottom should be free from hard and sharp objects.

2 In uniform and relatively soft fine grained soils, the pipes may be directly laid on evenly finished trench bottom. In other case the pipes should be laid on prepared under bedding. Ideal under bedding should consist of free runn granular material passing 1/2" sieve offering free drainage. The thickness of prepared bedding should be on quarter of the pipe diameter subject to a minimum 50mm (2"). The back fill at the side and immediately above the pipe should similar to that specified above for under bedding, tt should extend to a minimum height above the pipe equivalent to that of under bedding. It should be compac around the pipe.

Laying and Jointing

Satisfactory jointing plays an important part in successful installation of the pipe. The joints should generally be at least equal in service performance to the pipe The important types of joints employed in PPR-C. pipe installation have been mentioned above.

Repairs to Pipe

In General the best method is to cut the damaged portion and replace it by a new pipe or prefabricated replacement unit or special pipe fittings.

Testing

1 The pipes after being laid and jointed shall be tested for water tightness before being covered. The testing may be done in such sections as found necessary under the circumstances of availability of water for testing purposes.

2 Testing may be done by closing each end of the section of the pipe line being tested, by means of a valve, blank flanges cap or plug and filling the pipe with water. The pressure shall than be raised by means of a small hand force pump till it registers 15% or any other fixed percentage above the highest working pressure in the section as per Indian Standard Specification The test pressure should be registered by means of a reliable gauge.

3 When the pipe is laid at an appreciable gradient, the test should be carried out at the lower end of the section.

4 The test pressure shall be maintained for 1/2 hour or any other specified period and each joint shall be inspected, while the pressure is on, the pipes shall be struck with a 2 kg. hammer.

5 All joints found sweating or leaking shall be set right and the above test applied until no further leaks are apparent. No pipe installation shall be accepted unless the leakage (evaluated on a pressure basis of 10 kg/cm2) is less than 240 liters per 24 hours per km. 25mm diameter pipe of 3.66 meter length and proportionate for other lengths of pipes. Leakage is generally due to newly made joints.

6 If any pipe burst during testing the same shall be replaced and the pipe line retested.

7 The testing may be repeated till it is fully ascertained that there is no leakage in the pipe line and the work has been done strictly as per specfications.

Item No.	Description	Unit	Rate (in Rs.)
18.1	Providing and fixing Polyethelene-Aluminium-Polyethelene (PE-AL-PE) Composite Pressure Pipes conforming to IS - 15450 UV. stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C including all special fittings of composite material (engineering plastic blend and brass inserts wherever required)e.g.elbows, tees, reducers,couplers & connectors etc. with clamps at 1.00 metre spacing. This includes testing of joints complete as per direction of the Engineer in charge.		
Internal work – Exposed on wall			
18.1.1	1216 (16 mm OD) pipe	metre	147.00
18.1.2	1620 (20 mm OD) pipe	metre	176.00
18.1.3	2025 (25 mm OD) pipe	metre	223.00
18.1.4	2532 (32 mm OD) pipe	metre	298.00
18.1.5	3240 (40 mm OD) pipe	metre	391.00
18.1.6	4050 (50 mm OD) pipe	metre	508.00
18.2	Providing and fixing Polyethelene-Aluminium-Polyethelene (PE-AL-PE) Composite Pressure Pipes conforming to IS - 15450 U.V.stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C including all special fittings of composite material (engineering plastic blend and brass inserts wherever required) e.g. elbows, tees, reducers,couplers & connectors etc. with clamps at 1.00 metre spacing. This includes the costs of cutting chases and induding testing of joints complete as per direction of the engineer in charge.		
	Concealed work including cutting chases & making good the wall etc.	metre	225.00
18.2.1	1216 (16mm OD) pipe	metre	261.00
18.2.2	1620 (20 mm OD) pipe	metre	320.00
18.2.3	2025 (25 mm OD) pipe	metre	413.00
18.2.4	2532 (32 mm OD) pipe		
18.3	Providing & fixing Polyethelene – Aluminium - Polyethelene (PE-AL-PE) Composite Pressure Pipes conforming to IS – 15450 - 2004 U.V. stabilized with carbon black having thermal stability for hot & cold water supply, capable to withstand temperature up to 80°C including all special fittings of composite material (engineering plastic blend and brass inserts wherever required)e.g. elbows, tees, reducers, couplers & connectors etc. with trenching, refilling and testing		

Item No.	Description	Unit	Rate (in Rs.)
	of joints complete as per direction of the engineer in charge.		
External work			
18.3.1	1216 (16 mm OD) pipe	metre	144.00
18.3.2	1620 (20 mm OD) pipe.	metre	171.00
18.3.3	2025 (25 mm OD) pipe.	metre	215.00
18.3.4	2532 (32 mm OD) pipe.	metre	284.00
18.3.5	3240 (40 mm OD) pipe.	metre	372.00
18.3.6	4050 (50 mm OD) pipe.	metre	488.00
PP- R PIPES			
18.4	Providing and fixing 3 layer PP-R (Poly propylene Random copolymer) pipes SDR 7.4 U V stabilized & anti - microbial fusion welded, having thermal stability for hot & cold water supply including all PP - R plain & brass threaded polypropylene random fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes testing of joints complete as per direction of Engineer in Charge.		
Internal work – Exposed on wall			
18.4.1	PN - 16 Pipe, 16 mm OD	metre	71.00
18.4.2	PN - 16 Pipe, 20 mm OD	metre	96.00
18.4.3	PN - 16 Pipe, 25 mm OD	metre	135.00
18.4.4	PN - 16 Pipe, 32 mm OD	metre	205.00
18.4.5	PN - 16 Pipe, 40 mm OD	metre	314.00
18.4.6	PN - 16 Pipe, 50 mm OD	metre	437.00
18.5	Providing and fixing 3 layer PP-R (Poly propylene Random copolymer) pipes SDR 7.4 U V stabilized & anti - microbial fusion welded, having thermal stability for hot & cold water supply including all PP - R plain & brass threaded polypropylene random fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.		
Concealed work including cutting chases and making good the walls etc.,			
18.5.1	PN - 16 Pipe, 16 mm OD	metre	123.00
18.5.2	PN - 16 Pipe, 20 mm OD	metre	153.00
18.5.3	PN - 16 Pipe, 25 mm OD	metre	202.00
18.5.4	PN - 16 Pipe, 32 mm OD	metre	289.00
18.6	Providing and fixing 3 layer PP-R (Polypropylene Random copolymer) pipes UV stabilized &anti-microbial fusion welded, having thermal stability for hot & cold water supply including all PP-R plain & brass threaded polypropylene random fittings		

Item No.	Description	Unit	Rate (in Rs.)
	induding trenching ,refilling & testing of joints complete as per direction of Engineer in Charge.		
External work			
18.6.1	PN - 16 Pipe, 16 mm OD (SDR – 7.4)	metre	68.00
18.6.2	PN - 16 Pipe, 20 mm OD (SDR – 7.4)	metre	91.00
18.6.3	PN - 16 Pipe, 25 mm OD (SDR – 7.4)	metre	129.00
18.6.4	PN - 16 Pipe, 32 mm OD (SDR – 7.4)	metre	194.00
18.6.5	PN - 16 Pipe, 40 mm OD (SDR – 7.4)	metre	295.00
18.6.6	PN - 16 Pipe, 50 mm OD (SDR – 7.4)	metre	417.00
18.6.7	PN - 16 Pipe, 63mm OD (SDR – 7.4)	metre	640.00
18.6.8	PN - 16 Pipe, 75 mm OD (SDR – 7.4)	metre	904.00
18.6.9	PN - 16 Pipe, 90 mm OD (SDR – 7.4)	metre	1,432.00
18.6.10	PN - 10 Pipe, 110 mm OD (SDR - 11)	metre	1,499.00
18.6.11	PN - 10 Pipe, 160 mm OD (SDR - 11)	metre	3,134.00
C.P.V.C. PIPES			
18.7	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply induding all CPVC plain & brass threaded fittings including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.		
Internal work - Exposed on wall			
18.7.1	15 mm nominal outer dia .Pipes.	metre	98.00
18.7.2	20 mm nominal outer dia .Pipes.	metre	116.00
18.7.3	25 mm nominal outer dia .Pipes.	metre	150.00
18.7.4	32 mm nominal outer dia .Pipes.	metre	196.00
18.7.5	40 mm nominal outer dia .Pipes.	metre	275.00
18.7.6	50 mm nominal outer dia .Pipes.	metre	419.00
18.8	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply induding all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.		
Concealed work including cutting chases and making good the walls etc.			
18.8.1	15 mm nominal outer dia .Pipes.	metre	155.00

Item No.		Description	Unit	Rate (in Rs.)
	18.8.2	20 mm nominal outer dia .Pipes.	metre	176.00
	18.8.3	25 mm nominal outer dia .Pipes.	metre	222.00
	18.8.4	32 mm nominal outer dia .Pipes.	metre	277.00
18.9		Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply induding all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement ,trenching ,refilling & testing of joints complete as per direction of Engineer in Charge.		
External work				
	18.9.1	15 mm nominal outer dia .Pipes.	metre	93.00
	18.9.2	20 mm nominal outer dia .Pipes.	metre	108.00
	18.9.3	25 mm nominal outer dia .Pipes.	metre	145.00
	18.9.4	32 mm nominal outer dia .Pipes.	metre	185.00
	18.9.5	40 mm nominal outer dia .Pipes.	metre	255.00
	18.9.6	50 mm nominal outer dia .Pipes.	metre	399.00
	18.9.7	62.50 mm nominal inner dia Pipes.	metre	1,218.00
	18.9.8	75 mm nominal inner dia .Pipes.	metre	1,591.00
	18.9.9	100mm nominal inner dia .Pipes.	metre	2,206.00
	18.9.10	150 mm nominal inner dia .Pipes.	metre	3,832.00
18.10		Providing and fixing G.I. pipes complete with G.I. fittings and clamps, induding cutting and making good the walls etc.		
Internal work – Exposed on wall.				
	18.10.1	15 mm dia. nominal bore	metre	106.00
	18.10.2	20 mm dia. nominal bore	metre	134.00
	18.10.3	25 mm dia. nominal bore	metre	180.00
	18.10.4	32 mm dia. nominal bore	metre	226.00
	18.10.5	40 mm dia. nominal bore	metre	264.00
	18.10.6	50 mm dia. nominal bore	metre	343.00
18.11		Concealed pipe including painting with anti corrosive bitumastic paint, cutting chases and making good the wall		
	18.11.1	15 mm dia nominal bore	metre	145.00
	18.11.2	20 mm dia nominal bore	metre	170.00
18.12		Providing and fixing G.I. pipes complete with G.I. fittings induding trenching and refilling etc.		
External work				
	18.12.1	15 mm dia. nominal bore	metre	94.00
	18.12.2	20 mm dia. nominal bore	metre	117.00
	18.12.3	25 mm dia. nominal bore	metre	157.00
	18.12.4	32 mm dia. nominal bore	metre	194.00

Item No.		Description	Unit	Rate (in Rs.)
	18.12.5	40 mm dia. nominal bore	metre	220.00
	18.12.6	50 mm dia. nominal bore	metre	280.00
	18.12.7	65 mm dia. nominal bore	metre	356.00
	18.12.8	80 mm dia. nominal bore	metre	458.00
18.13	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete :			
	18.13.1	25 to 40 mm nominal bore	each	166.00
	18.13.2	50 to 80 mm nominal bore	each	423.00
18.14	Fixing water meter and stop cock in G.I. pipe line including cutting and threading the pipe and making long screws etc. complete (cost of water meter and stop cock to be paid separately).		each	122.00
BRASS FITTINGS				
18.15	Providing and fixing brass bib cock of approved quality :			
	18.15.1	15 mm nominal bore 0.40kg	each	192.00
	18.15.2	20 mm nominal bore 0.75kg	each	235.00
18.16	Providing and fixing brass stop cock of approved quality :			
	18.16.1	15 mm nominal bore 0.40kg	each	192.00
	18.16.2	20 mm nominal bore 0.75kg	each	235.00
18.17	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :			
	18.17.1	15 mm nominal bore	each	206.00
	18.17.2	20 mm nominal bore	each	245.00
	18.17.3	25 mm nominal bore	each	286.00
	18.17.4	32 mm nominal bore.	each	358.00
	18.17.5	40 mm nominal bore	each	399.00
	18.17.6	50 mm nominal bore	each	578.00
	18.17.7	65 mm nominal bore	each	832.00
	18.17.8	80 mm nominal bore	each	1,369.00
18.18	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :			
	18.18.1	15 mm nominal bore	each	228.00
	18.18.2	20 mm nominal bore	each	333.00
	18.18.3	25 mm nominal bore	each	386.00
18.19	Providing and fixing gun metal non- return valve of approved quality (screwed end) :			
	18.19.1	25 mm nominal bore		
	18.19.1.1	Horizontal	Each	292.00
	18.19.1.2	Vertical	Each	318.00
	18.19.2	32 mm nominal bore		

Item No.		Description	Unit	Rate (in Rs.)
	18.19.2.1	Horizontal	each	371.00
	18.19.2.2	Vertical	each	464.00
	18.19.3	40 mm nominal bore		
	18.19.3.1	Horizontal	each	495.00
	18.19.3.2	Vertical	each	605.00
18.19.4	50 mm nominal bore			
	18.19.4.1	Horizontal	each	738.00
	18.19.4.2	Vertical	each	847.00
	18.19.5	65 mm nominal bore		
	18.19.5.1	Horizontal	each	1,282.00
	18.19.5.2	Vertical	Each	1,468.00
	18.19.6	80 mm nominal bore		
	18.19.6.1	Horizontal	Each	1,812.00
	18.19.6.2	Vertical	Each	2,391.00
18.20	Providing and fixing brass ferrule with C.I. mouth cover induding boring and tapping the main :			
	18.20.1	15 mm nominal bore	each	140.00
	18.20.2	20 mm nominal bore	each	187.00
	18.20.3	25 mm nominal bore	each	244.00
18.21	Providing and fixing uplasticised PVC connection pipe with brass unions :			
	18.21.1	30 cm length		
	18.21.1.1	15 mm nominal bore	each	35.00
	18.21.1.2	20 mm nominal bore	each	43.00
	18.21.2	45 cm length		
	18.21.2.1	15 mm nominal bore	each	45.00
	18.21.2.2	20 mm nominal bore	each	56.00
18.22	Providing and fixing C.P. brass shower rose with 15 or 20 mm inlet :			
	18.22.1	100 mm diameter	each	450.00
	18.22.2	150 mm diameter	each	505.00
		C.I/ DUCTILE IRON PIPES & SPECIALS		
18.23	Laying in position centrifugally cast (spun) iron S&S or flanged pipes (excluding cost of pipe)		quintal	56.00
18.24	Laying in position S&S or flanged C.I. special such as tees, bends, collars, tapers and caps etc.(excluding cost of specials).		quintal	100.00
18.25	Providing and laying S&S C.I. standard specials such as tees, bends, collars, tapers, caps etc. (Heavy class) :			
	18.25.1	Up to 300 mm dia.	quintal	2,893.00
	18.25.2	Over 300 mm dia.	quintal	3,120.00

Item No.	Description	Unit	Rate (in Rs.)
18.26	Providing and laying flanged C.I. standard specials such as tees, bends, collars, tapers, caps etc., suitable for flanged jointing as per IS : 1538 :		
18.26.1	Up to 300 mm dia.	quintal	5,123.00
18.26.2	Over 300 mm dia.	quintal	5,648.00
18.27	Providing and laying S&S centrifugally cast (spun) iron pipes (Class LA) conforming to IS - 1536 :		
18.27.1	100 mm dia. pipe	metre	737.00
18.27.2	125 mm dia. pipe	metre	902.00
18.27.3	150 mm dia. pipe	metre	1,067.00
18.27.4	200 mm dia. pipe	metre	1,484.00
18.27.5	250 mm dia. pipe	metre	2,107.00
18.27.6	300 mm dia. pipe	metre	2,800.00
18.27.7	350 mm dia. pipe	metre	3,456.00
18.27.8	400 mm dia. pipe	metre	4,233.00
18.27.9	450 mm dia. pipe	metre	5,067.00
18.27.10	500 mm dia. pipe	metre	6,167.00
18.27.11	600 mm dia. Pipe	metre	8,149.00
18.28	Providing lead caulked joints to spun iron or C.I. pipes and specials including testing of joints but excluding the cost of pig lead :		
18.28.1	100 mm diameter pipe	each	82.00
18.28.2	125 mm diameter pipe	each	120.00
18.28.3	150 mm diameter pipe	each	123.00
18.28.4	200 mm diameter pipe	each	163.00
18.28.5	250 mm diameter pipe	each	204.00
18.28.6	300 mm diameter pipe	each	246.00
18.28.7	350 mm diameter pipe	each	256.00
18.28.8	400 mm diameter pipe	each	332.00
18.28.9	450 mm diameter pipe	each	372.00
18.28.10	500 mm diameter pipe	each	394.00
18.28.11	600 mm diameter pipe	each	528.00
18.29	Supplying pig lead at site of work.	quintal	6,742.00
18.30	Providing flanged joints to double flanged C.I./ D.I. pipes and specials including testing of joints :		
18.30.1	80 mm diameter pipe	each	66.00
18.30.2	100 mm diameter pipe	each	113.00
18.30.3	125 mm diameter pipe	each	114.00
18.30.4	150 mm diameter pipe	each	157.00
18.30.5	200 mm diameter pipe	each	163.00
18.30.6	250 mm diameter pipe	each	237.00
		each	246.00

Item No.		Description	Unit	Rate (in Rs.)
	18.30.7	300 mm diameter pipe	each	335.00
	18.30.8	350 mm diameter pipe	each	564.00
	18.30.9	400 mm diameter pipe	each	702.00
	18.30.10	450 mm diameter pipe	each	778.00
	18.30.11	500 mm diameter pipe	each	892.00
	18.30.12	600 mm diameter pipe		
C.I. SLUICE VALVES/ FIRE HYDRANTS & FIXTURES				
18.31		Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately) :		
	18.31.1	100 mm diameter		
	18.31.1.1	Class I	each	2,468.00
	18.31.1.2	Class II	each	2,550.00
	18.31.2	125 mm diameter		
	18.31.2.1	Class I	each	3,035.00
	18.31.2.2	Class II	each	3,164.00
	18.31.3	150 mm diameter		
	18.31.3.1	Class I	each	3,689.00
	18.31.3.2	Class II	each	3,890.00
	18.31.4	200 mm diameter		
	18.31.4.1	Class I	each	6,732.00
	18.31.4.2	Class II	each	7,221.00
	18.31.5	250 mm diameter		
	18.31.5.1	Class I	each	10,014.00
	18.31.5.2	Class II	each	10,241.00
	18.31.6	300 mm diameter		
	18.31.6.1	Class I	each	12,271.00
	18.31.6.2	Class II	each	12,718.00
18.32		Constructing masonry Chamber 30x30x50 cm, inside with class 25 designation brick work in cement mortar 1:4 (1 cement :4 sand) for stop cock, with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement :2 sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement :5 fine sand:10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 sand) 12mm thick finished with a floating coat of neat cement complete as per standard design		
	18.32.1	With Modular bricks	each	600.00

Item No.	Description	Unit	Rate (in Rs.)
18.33	Constructing masonry Chamber 60x60x75 with brick inside of crushing strength not less than 25kg/sqcm and water absorpation not more than 20% brick work in cement mortar 1:4 (1 cement : 4 sand) for sluice valve, with C.I. surface box 100mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement :2 sand : 4 graded stone aggregate 20mm nominal size) including necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design :		.
18.33.1	With Modular bricks	each	3,595.00
18.34	Constructing masonry Chamber 90x90x100 cm, inside with brick of crushing strength not less than 25kg/sqcm and water absorpation not more than 20% class designation brick work in cement mortar 1:4 (1 cement : 4 sand) 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone mortar 1:3 (1 cement : 3 sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design :		
18.34.1	With Modular bricks	each	6,148.00
18.35	Constructing masonry Chamber 120x120x100 cm, inside with class 25 designation brick work in cement mortar 1:4 (1 cement : 4 sand) for sluice valve, with C.I. surface box 100 mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement :2 sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design :		
18.35.1	With Modular bricks	each	8,529.00
18.36	Constructing masonry Chamber 60x60x75 cm, inside with 25 class designation brick work in cement mortar 1:4 (1 cement : 4 sand) for fire hydrants, with C.I. surface box		

Item No.	Description	Unit	Rate (in Rs.)
	350x350 mm. top and 165 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design :		
	18.36.1 With Modular bricks	each	3,389.00
18.37	Constructing masonry Chamber 60x45x50 cm, inside with 40 class designation brick work in cement mortar 1:4 (1 cement : 4 sand) for water meter complete with C.I. double flap surface box 400x200x200 mm (inside) with locking arrangement and RCC top slab 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone aggregate 40 mmnominal size) and inside plastering with cement mortar 1:3 (1 cement :3 sand) 12mm thick finished with a floating coat of neat cement complete as per standard design :		
	18.37.1 With Modular bricks	each	3,366.00
18.38	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work :		
	18.38.1 15 mm diameter pipe.	metre	5.65
	18.38.2 20 mm diameter pipe.	metre	5.45
	18.38.3 25 mm diameter pipe.	metre	7.20
	18.38.4 32 mm diameter pipe.	metre	8.50
	18.38.5 40 mm diameter pipe.	metre	10.10
	18.38.6 50 mm diameter pipe.	metre	11.80
18.39	Repainting G.I. pipes and fittings with synthetic enamel white paint of approved quality :		
	18.39.1 15 mm diameter pipe.	metre	2.45
	18.39.2 20 mm diameter pipe.	metre	2.85
	18.39.3 25 mm diameter pipe	metre	3.70
	18.39.4 32 mm diameter pipe	metre	4.30
	18.39.5 40 mm diameter pipe	metre	5.05
	18.39.6 50 mm diameter pipe	metre	5.90
18.40	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :		
	18.40.1 15 mm diameter pipe	metre	2.60

Item No.		Description	Unit	Rate (in Rs.)
	18.40.2	20 mm diameter pipe	metre	3.05
	18.40.3	25 mm diameter pipe	metre	3.90
	18.40.4	32 mm diameter pipe	metre	4.55
	18.40.5	40 mm diameter pipe	metre	5.20
	18.40.6	50 mm diameter pipe	metre	6.10
	18.40.7	65 mm diameter pipe	metre	7.50
	18.40.8	80 mm diameter pipe	metre	8.65
18.41		Providing and filling coarse sand all-round the G.I. pipes in external work.		
	18.41.1	15 mm diameter pipe	metre	22.00
	18.41.2	20 mm diameter pipe	metre	22.00
	18.41.3	25 mm diameter pipe	metre	23.00
	18.41.4	32 mm diameter pipe	metre	23.00
	18.41.5	40 mm diameter pipe	metre	24.00
	18.41.6	50 mm diameter pipe	metre	25.00
	18.41.7	65 mm diameter pipe	metre	39.00
	18.41.8	80 mm diameter pipe	metre	40.00
	18.41.9	100 mm diameter pipe	metre	42.00
	18.41.10	150 mm diameter pipe	metre	63.00
18.42		Boring with 100 mm diameter casing pipe for hand pump/ tube well in all soils except ordinary hard rocks requiring blasting including removing the casing pipe after the hand pipe/tube well is lowered and tested :		
	18.42.1	Up to 6 metres depth.	metre	151.00
	18.42.2	Beyond 6 m and up to 12 m depth.	metre	179.00
	18.42.3	Beyond 12 m and up to 18 m depth.	metre	209.00
18.43		Providing and placing in position filters of 40 mm diameter G.I. pipe with brass strainer of approved quality.	metre	367.00
18.44		Providing & fixing to filter and lowering to proper levels 40mm G.I.pipe for tube well including cleaning &priming the tube well.	metre	209.00
18.45		Providing and placing in position hand pump of approved quality for 40mm diameter GI pipe complete with all accessories.	each	577.00
18.46		Providing & fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work)		
	18.46.1	15 mm nominal bore	each	76.00
	18.46.2	20 mm nominal bore	each	97.00
	18.46.3	25 mm nominal bore	each	107.00
	18.46.4	32 mm nominal	each	124.00

Item No.		Description	Unit	Rate (in Rs.)
	18.46.5	40 mm nominal bore	each	164.00
	18.46.6	50mm nominal bore	each	236.00
	18.46.7	65mm nominal bore	each	428.00
	18.46.8	80 mm nominal bore	each	507.00
18.47		Providing and fixing G.I. Union in existing G.I. pipe line, cutting and threading the pipe and making long screws including excavation, refilling the earth or cutting of wall and making good the same complete wherever required :		
	18.47.1	15 mm nominal bore.	each	149.00
	18.47.2	20 mm nominal bore.	each	170.00
	18.47.3	25 mm nominal bore.	each	181.00
	18.47.4	32 mm nominal bore.	each	197.00
	18.47.5	40 mm nominal bore.	each	237.00
	18.47.6	50 mm nominal bore.	each	336.00
	18.47.7	65 mm nominal bore.	each	528.00
	18.47.8	80 mm nominal bore.	each	607.00
18.48		Providing and placing on terrace (at all floor levels) high dersign HDPE (polyethylene) water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	Ltr.	5.00
C.P.BRASS FITTINGS.				
18.49		Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931		
	18.49.1	15 mm nominal bore.	each	313.00
18.50		Providing and fixing C.P. brass long nose bib cock of approved quality conforming to IS standards and weighing not less than 810 gms.		
	18.50.1	15 mm nominal bore.	each	274.00
18.51		Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms.		
	18.51.1	15 mm nominal bore	each	316.00
18.52		Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.		
	18.52.1	15 mm nominal bore.	each	313.00
18.53		Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931 a) 15 mm nominal bore		
	18.53.1	15mm nominal bore	each	348.00

Item No.	Description	Unit	Rate (in Rs.)
18.54	Providing and fixing C.P. brass pillar cock approved quality and make conforming to IS:specification. 15 mm nominal bore 125 mm long foam flow.	each	501.00
18.55	Providing and fixing C.P. brass base and mixer of approved quality and make conforming to IS:specification. 15 mm nominal bore.	each	1637.00
18.56	Providing and fixing C.P. brass wall mixer of approved quality and make conforming to IS:specification. 15 mm nominal bore.	each	1893.00
18.57	Providing and fixing C.P. brass sink mixer of approved quality and make conforming to IS:specification. 15 mm nominal bore.	each	1637.00
18.58	Providing and fixing C.P. brass grating of approved quality and make conforming to IS:specification. 100 mm dia.	each	37.00
18.59	Providing and fixing C.P. brass soap container 109 mm wide, 125 high and 112 mm distance from wall of standard shape with bracket of the same material with all fittings etc. of approved quality and make like Jaguor or equivalent conforming to IS:specification.	each	529.00
	PTMT FITTINGS		
18.60	Providing and fixing PTMT bib cock of approved quality and colour.		
18.60.1	15mm nominal bore, 86mm long. Weighing not less than 88 gms.	each	121.00
18.60.2	15 mm nominal bore, 122mm long. Weighing not less than 99 gms.	each	166.00
18.60.3	5 mm nominal bore, 165mm long. Weighing not less than 110 gms.	each	189.00
18.60.4	15mm nominal bore, 90mm long. Weighing not less than 93 gms.	each	137.00
18.61	Providing and fixing PTMT stop cock of approved quality and colour.		
18.61.1	15 mm nominal bore, 86mm long. Weighing not less than 88 gms.	each	121.00
18.61.2	20mm nominal bore, 89mm long. Weighing not less than 88 gms.	each	149.00
18.61.3	Concealed stop cock, 15mm nominal bore, 108mm long. Weighing not less than 108 gms.	each	195.00

Item No.	Description	Unit	Rate (in Rs.)
18.62	Providing and fixing PTMT pillar cock of approved quality and colour .		
18.62.1	15mm nominal bore, 107mm long. Weighing not less than 110 gms.	each	185.00
18.62.2	15mm nominal bore, 125mm long foam flow. Weighing not less than 120 gms.	each	267.00
18.63	Providing and fixing PTMT, push cock of approved quality and colour.		
18.63.1	15 mm nominal bore, 98mm long. Weighing not less than 75 gms.	each	114.00
18.63.2	15 mm nominal bore, 80mm long. Weighing not less than 46 gms.	each	96.00
18.64	Providing & fixing PTMT grating of approved quality and colour.		
18.64.1	Circular type.		
18.64.1.1	100 mm nominal dia.	each	40.00
18.64.1.2	125 mm nominal dia with 25 mm waste hole.	each	47.00
18.64.2	Rectangular type with openable circular lid.		
18.64.2.1	150 mm nominal size square 100 mm diameter of the inner hinged round grating.	each	109.00
AIR VALVE & WATER METER (BULK TYPE)			
18.65	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc if required will be paid separately) :		
18.65.1	50 mm dia	each	3,616.00
18.65.2	80 mm dia	each	5,277.00
18.65.3	100 mm dia	each	6,859.00
18.66	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by Municipal Board complete with bolts, nuts, rubber insertions etc. (The tail pieces if required will be paid separately) :		
18.66.1	80 mm dia nominal bore	each	2,448.00
18.66.2	100 mm dia nominal bore	each	3,720.00
18.66.3	150 mm dia nominal bore	each	5,262.00
18.66.4	200 mm dia nominal bore	each	5,915.00
18.67	Providing and fixing C.I. dirt box strainer for bulk type water meter with nuts, bolts, rubber insertions etc. complete conforming to IS : 2373 :		
18.67.1	80 mm dia	each	3,110.00
18.67.2	100 mm dia.	each	4,672.00
18.67.3	150 mm dia	each	6,068.00
18.67.4	200 mm dia	each	8,405.00

Item No.	Description	Unit	Rate (in Rs.)
18.68	Providing and fixing PTMT Ball cock of approved quality, colour and make complete with Epoxy coated aluminium rod with L.P./ H.P.H.D. plastic ball.		
18.68.1	15 mm nominal bore, 105 mm long. Weighing not less than 138 gms.	each	166.00
18.68.2	20 mm nominal bore, 120 mm long. Weighing not less than 198 gms.	each	235.00
18.68.3	25 than 440 gms.mm nominal bore, 152mm long. Weighing not less	each	497.00
18.68.4	40mm nominal bore, 206mm long. Weighing not less than 690 gms.	each	903.00
18.68.5	50mm nominal bore, 242mm long. Weighing not less than 1240 gms.	each	1,338.00
18.69	Providing and fixing PTMT angle stop cock 15 mm nominal bore. Weighing not less than 85 gms.	each	149.00
18.70	Providing and fixing PTMT swivelling shower, 15mm nominal bore. Weighing not less than 40gms.	each	102.00
18.71	Providing and fixing PTMT soap Dish Holder having length of 138mm, breadth 102mm, height of 75mm with concealed fitting arrangements. Weighing not less than 106 gms.	each	133.00
18.72	Providing and laying S&S C.I. Standard specials such as tees, bends, collars tapers and caps etc, suitable for flanged jointing as per IS : 1538 :		
18.72.1	Up to 300 mm dia	quintal	4,206.00
18.72.2	Above 300 mm dia	quintal	4,738.00
18.73	Providing and laying S&S C.I. Standard specials suitable for mechanical jointing as per IS : 13382		
18.73.1	Up to 300 mm dia	quintal	6,306.00
18.73.2	Above 300 mm dia	quintal	6,587.00
18.74	Providing and laying D.I. specials of class K-12 suitable for push-on jointing as per IS : 9523		
18.74.1	Up to 600 mm dia	quintal	10,487.00
18.74.2	Above 600 mm dia	quintal	15,685.00
18.75	Providing and laying D.I. Specials of Class K - 12 suitable for mechanical jointing as per IS : 9523 :		
18.75.1	Up to 600 mm dia	quintal	11,024.00
18.75.2	Above 600 mm dia	quintal	16,644.00
18.76	Providing push-on-joints to Centrifugally (Spun) Cast Iron Pipes or Ductile Iron Pipes including testing of joints and induding the cost of rubber gasket :		
18.76.1	100 mm dia pipes	joint	39.00

Item No.		Description	Unit	Rate (in Rs.)
	18.76.2	150 mm dia pipes	joint	60.00
	18.76.3	200 mm dia pipes	joint	98.00
	18.76.4	250 mm dia pipes	joint	112.00
	18.76.5	300 mm dia pipes	joint	153.00
	18.76.6	350 mm dia pipes	joint	182.00
	18.76.7	400 mm dia pipes	joint	340.00
	18.76.8	450 mm dia pipes	joint	378.00
	18.76.9	500 mm dia pipes	joint	393.00
	18.76.10	600 mm dia pipes	joint	489.00
	18.76.11	650 mm dia pipes	joint	740.00
	18.76.12	700 mm dia pipes	joint	853.00
	18.76.13	800 mm di a pipes	joint	953.00
	18.76.14	900 mm dia pipes	joint	1,255.00
	18.76.15	1000 mm dia pipes	joint	1,524.00
18.77		Providing and laying Double Flanged (screwed/ welded) Centrifugally (Spun) Cast Iron, Class B (IS : 1536) :		
	18.77.1	100 mm dia C.I. Double Flanged Pipe	metre	1,151.00
	18.77.2	150 mm dia C.I. Double Flanged Pipe	metre	1,782.00
	18.77.3	200 mm dia C.I. Double Flanged Pipe	metre	2,467.00
	18.77.4	250 mm dia C.I. Double Flanged Pipe	metre	3,305.00
	18.77.5	300 mm dia C.I. Double Flanged Pipe	metre	4,201.00
	18.77.6	350 mm dia C.I. Double Flanged Pipe	metre	5,373.00
	18.77.7	400 mm dia C.I. Double Flanged Pipe	metre	6,940.00
	18.77.8	450 mm dia C.I. Double Flanged Pipe	metre	8,986.00
	18.77.9	500 mm dia C.I. Double Flanged Pipe	metre	11,716.00
	18.77.10	600 mm dia C.I. Double Flanged Pipe	metre	15,288.00
18.78		Providing and laying S&S Centrifugally Cast (Spun) / Ductile Iron Pipes conforming to IS : 8329 :		
	18.78.1	100 mm dia Ductile Iron Class K-7 pipes	metre	703.00
	18.78.2	150 mm dia Ductile Iron Class K-7 pipes	metre	1,025.00
	18.78.3	200 mm dia Ductile Iron Class K-7 pipes	metre	1,457.00
	18.78.4	250 mm dia Ductile Iron Class K-7 pipes	metre	1,973.00
	18.78.5	300 mm dia Ductile Iron Class K-7 pipes	metre	2,785.00
	18.78.6	350 mm dia Ductile Iron Class K-7 pipes	metre	3,214.00
	18.78.7	400 mm dia Ductile Iron Class K-7 pipes	metre	3,838.00
	18.78.8	450 mm dia Ductile Iron Class K-7 pipes	metre	4,550.00
	18.78.9	500 mm dia Ductile Iron Class K-7 pipes	metre	5,367.00
	18.78.10	600 mm dia Ductile Iron Class K-7 pipes	metre	7,081.00
	18.78.11	700 mm dia Ductile Iron Class K-7 pipes	metre	8,796.00
	18.78.12	800 mm dia Ductile Iron Class K-7 pipes	metre	12,243.00

Item No.		Description	Unit	Rate (in Rs.)
	18.78.13	900 mm dia Ductile Iron Class K-7 pipes	metre	15,056.00
	18.78.14	1000 mm dia Ductile Iron Class K-7 pipes	metre	18,248.00
	18.78.15	100 mm dia Ductile Iron Class K-9 pipes	metre	776.00
	18.78.16	150 mm dia Ductile Iron Class K-9 pipes	metre	1,153.00
	18.78.17	200 mm dia Ductile Iron Class K-9 pipes	metre	1,589.00
	18.78.18	250 mm dia Ductile Iron Class K-9 pipes	metre	2,056.00
	18.78.19	300 mm dia Ductile Iron Class K-9 pipes	metre	2,639.00
	18.78.20	350 mm dia Ductile Iron Class K-9 pipes	metre	3,102.00
	18.78.21	400 mm dia Ductile Iron Class K-9 pipes	metre	4,436.00
	18.78.22	450 mm dia Ductile Iron Class K-9 pipes	metre	4,926.00
	18.78.23	500 mm dia Ductile Iron Class K-9 pipes	metre	6,591.00
	18.78.24	600 mm dia Ductile Iron Class K-9 pipes	metre	7,405.00
	18.78.25	700 mm dia Ductile Iron Class K-9 pipes	metre	10,053.00
	18.78.26	750 mm dia Ductile Iron Class K-9 pipes	metre	11,464.00
	18.78.27	800 mm dia Ductile Iron Class K-9 pipes	metre	11,808.00
	18.78.28	900 mm dia Ductile Iron Class K-9 pipes	metre	13,770.00
	18.78.29	1000 mm dia Ductile Iron Class K-9 pipes	metre	15,501.00
18.79		Providing and laying Double Flanged (Screwed/ Welded)Centrifugally (Spun) Ductile Iron Pipes of Class K - 9 conforming to IS : 8329 :		
	18.79.1	100 mm dia Ductile Iron Double Flanged	metre	2,206.00
	18.79.2	150 mm dia Ductile Iron Double Flanged	metre	3,055.00
	18.79.3	200 mm dia Ductile Iron Double Flanged	metre	3,963.00
	18.79.4	250 mm dia Ductile Iron Double Flanged	metre	5,263.00
	18.79.5	300 mm dia Ductile Iron Double Flanged	metre	6,772.00
	18.79.6	350 mm dia Ductile Iron Double Flanged	metre	8,434.00
	18.79.7	400 mm dia Ductile Iron Double Flanged	metre	10,076.00
	18.79.8	450 mm dia Ductile Iron Double Flanged	metre	12,181.00
	18.79.9	500 mm dia Ductile Iron Double Flanged	metre	14,761.00
	18.79.10	600 mm dia Ductile Iron Double Flanged	metre	20,024.00
	18.79.11	700 mm dia Ductile Iron Double Flanged	metre	24,693.00
18.80		Providing and fixing unplasticised P.V.C. connection pipe with PTMT Nuts collar and bush of approved quality and colour.		
	18.80.1	15 mm nominal bore with 30cm length.	each	46.00
	18.80.2	15 mm nominal bore with 45 cm length.	each	53.00
18.81		Providing and fixing PTMT extension nipple for water tank pipe, fittings of approved quality and colour.		
	18.81.1	15mm nominal bore Weighing not lessthan 32gms.	each	39.00
	18.81.2	20mm nominal bore. Weighing not less than 40gms.	each	46.00

Item No.	Description	Unit	Rate (in Rs.)
18.81.3	25mm nominal bore. Weighing not less than 62 gms.	each	67.00
18.82	Cutting holes up to 30x30 cm in walls including making good the same:		
18.82.1	With Modular bricks	each	91.00
18.83	Cutting holes up to 15x15cm in R.C.C. floors and roofs for passing drain pipe etc. and repairing the hole after insertion of drain pipe etc. with cement concrete 1:2:4 (1 cement :2 sand : 4 graded stone aggregate 20 mm nominal size) including finishing complete so as to make it leak proof.	each	82.00
18.84	Making chases up to 7.5x7.5 cm in walls including making good and finishing with matching surface after housing G.I. pipe etc.	metre	37.00
18.85	Making hole up to 20x20 cm and embedding pipes up to 150 mm diameter in masonry and filling with cement concrete 1:3:6 (1 cement : 3 sand 6 graded stone aggregate 20 mm nominal size) including disposal of malba.	metre	70.00
18.86	Disinfecting C.I. water mains by flushing with water containing bleaching powder at 0.5 gms per litre of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory.		
18.86.1	80 mm diameter C.I. pipe	100 m	290.00
18.86.2	100 mm diameter C.I. pipe	100 m	381.00
18.86.3	125 mm diameter C.I. pipe	100 m	479.00
18.86.4	150 mm diameter C.I. pipe	100 m	581.00
18.86.5	200 mm diameter C.I. pipe	100 m	787.00
18.86.6	250 mm diameter C.I. pipe	100 m	1,008.00
18.86.7	300 mm diameter C.I. pipe	100 m	1,150.00
18.86.8	350 mm diameter C.I. pipe	100 m	1,303.00
18.86.9	400 mm diameter C.I. pipe	100 m	1,471.00
18.86.10	450 mm diameter C.I. pipe	100 m	1,646.00
18.86.11	500 mm diameter C.I. pipe	100 m	1,835.00
18.86.12	600 mm diameter C.I. pipe	100 m	2,236.00
18.87	Extra for every operation disinfecting the C.I. main by flushing with water containing bleaching powder at 0.5 gms per litre of water and cleaning the same with fresh water, including getting the samples of water tested in the municipal laboratory:		
18.87.1	80 mm diameter C.I. pipe	100 mtr	107.00
18.87.2	100 mm diameter C.I. pipe	100 mtr	130.00

Item No.		Description	Unit	Rate (in Rs.)
	18.87.3	125 mm diameter C.I. pipe	100 mtr	160.00
	18.87.4	150 mm diameter C.I. pipe	100 mtr	188.00
	18.87.5	200 mm diameter C.I. pipe	100 mtr	284.00
	18.87.6	250 mm diameter C.I. pipe	100 mtr	336.00
	18.87.7	300 mm diameter C.I. pipe	100 mtr	389.00
	18.87.8	350 mm diameter C.I. pipe	100 mtr	464.00
	18.87.9	400 mm diameter C.I. pipe	100 mtr	542.00
	18.87.10	450 mm diameter C.I. pipe	100 mtr	625.00
	18.87.11	500 mm diameter C.I. pipe	100 mtr	709.00
	18.87.12	600 mm diameter C.I. pipe	100 mtr	888.00
18.88		Dismantling old C.I. pipes including excavation and refilling trenches after taking out the pipes, breaking lead caulked joints, melting of lead and making into blocks including stacking of pipes at site lead up to 50 metre:		
	18.88.1	80 mm diameter C.I. pipe	metre	83.00
	18.88.2	100 mm diameter C.I. pipe	metre	85.00
	18.88.3	125 mm diameter C.I. pipe	metre	88.00
	18.88.4	150 mm diameter C.I. pipe	metre	90.00
	18.88.5	200 mm diameter C.I. pipe	metre	100.00
	18.88.6	250 mm diameter C.I. pipe	metre	109.00
	18.88.7	300 mm diameter C.I. pipe	metre	117.00
	18.88.8	350 mm diameter C.I. pipe	metre	125.00
	18.88.9	400 mm diameter C.I. pipe	metre	131.00
	18.88.10	450 mm diameter C.I. pipe	metre	138.00
	18.88.11	500 mm diameter C.I. pipe	metre	144.00
	18.88.12	600 mm diameter C.I. pipe	metre	153.00
18.89		Labour for cutting C.I. pipe with steel saw.		
	18.89.1	80 mm diameter C.I. pipe	Each cut	22.00
	18.89.2	100 mm diameter C.I. pipe	Each cut	30.00
	18.89.3	125 mm diameter C.I. pipe	Each cut	42.00
	18.89.4	150 mm diameter C.I. pipe	Each cut	56.00
	18.89.5	200 mm diameter C.I. pipe	Each cut	75.00
	18.89.6	250 mm diameter C.I. pipe	Each cut	93.00
	18.89.7	300 mm diameter C.I. pipe	Each cut	111.00
	18.89.8	350 mm diameter C.I. pipe	Each cut	129.00
	18.89.9	400 mm diameter C.I. pipe	Each cut	148.00
	18.89.10	450 mm diameter C.I. pipe	Each cut	166.00
	18.89.11	500 mm diameter C.I. pipe	Each cut	184.00
	18.89.12	600 mm diameter C.I. pipe	Each cut	219.00

CHAPTER-XIX

DRAINAGE

Notes :

1 All soil waste pipes and accessories shall be of grade 'A'.

2 In brick masonry manholes/chambers, the benching of inlets and outlet lines shall not cross each other for effective drainage.

3 All the drainage line shall be laid as per required gradient.

4 Soak pits shall be constructed at least 3.00 m. apart from septic tank.

5 Cast Iron manhole covers and frames shall conform to I.S. 17276-1960.

6 Septic tanks shall be constructed conforming to I.S. 2470 (Part-I) 1963.

7 Centre to centre spacing of each manhole shall not exceed 6.00 m.

8 Rates include excavating soil for pipes, chambers etc. and also include refilling with the excavated stuff. Rates also include work of reinforcement and formwork required for top slab to manholes and chambers.

9 The rates include cost of all materials, labours, scaffolding, water, T & P, hire and running charges of machineries etc. complete with all leads and lifts for all materials required for the work.

Item No.	Description	Unit	Rate (in Rs.)
19.1	Providing, laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :		
19.1.1	100 mm diameter	metre	106.00
19.1.2	150 mm diameter	metre	152.00
19.1.3	200 mm diameter	metre	247.00
19.1.4	230 mm diameter	metre	270.00
19.1.5	250 mm diameter	metre	343.00
19.1.6	300 mm diameter	metre	470.00
19.2	Providing and laying cement concrete 1:5:10 (1 cement : 5 sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design:		
19.2.1	100 mm diameter S.W. pipe	metre	331.00
19.2.2	150 mm diameter S.W. pipe	metre	405.00
19.2.3	200 mm diameter S.W. pipe	metre	472.00
19.2.4	230 mm diameter S.W. pipe	metre	517.00
19.2.5	250 mm diameter S.W. pipe	metre	546.00
19.2.6	300 mm diameter S.W. pipe	metre	599.00
19.3	Providing and laying cement concrete 1:5:10 (1 cement : 5 sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design :		
19.3.1	100 mm diameter S.W. pipe	metre	157.00
19.3.2	150 mm diameter S.W. pipe	metre	255.00
19.3.3	200 mm diameter S.W. pipe	metre	300.00
19.3.4	230 mm diameter S.W. pipe	metre	329.00
19.3.5	250 mm diameter S.W. pipe	metre	349.00
19.3.6	300 mm diameter S.W. pipe	metre	403.00
19.4	Providing and fixing square-mouth S.W. gully trap grade 'A'' complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design : With Modular Bricks class designation 40		
19.4.1	100x100 mm size P type	each	935.00
19.4.2	150 x 100 mm size P type.	each	962.00
19.4.3	180x150 mm size P type.	each	1,037.00

Item No.	Description	Unit	Rate (in Rs.)
19.5	Dismantling of old S.W. pipes including breaking of joints and bed concrete stacking of useful materials near the site within 50 m lead and disposal of unserviceable materials into municipal dumps:	metre	13.00
19.5.1	100 mm diameter	metre	15.00
19.5.2	150 mm diameter	metre	16.00
19.5.3	200 mm diameter	metre	16.00
19.5.4	230 mm diameter	metre	17.00
19.5.5	250 mm diameter	metre	18.00
19.5.6	300 mm diameter	metre	20.00
19.5.7	350 mm diameter	metre	22.00
19.5.8	400 mm diameter	metre	23.00
19.5.9	450 mm diameter		
19.6	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :		
19.6.1	100 mm dia. R.C.C. pipe	metre	174.00
19.6.2	150 mm dia. R.C.C. pipe	metre	203.00
19.6.3	250 mm dia. R.C.C. pipe	metre	258.00
19.6.4	300 mm dia. R.C.C. pipe	metre	339.00
19.6.5	450 mm dia. R.C.C. pipe	metre	500.00
19.6.6	500 mm dia. R.C.C. pipe	metre	584.85
19.6.7	600 mm dia. R.C.C. pipe	metre	895.10
19.6.8	700 mm dia. R.C.C. pipe	metre	1,000.90
19.6.9	800 mm dia. R.C.C. pipe	metre	1,167.40
19.6.10	900 mm dia. R.C.C. pipe	metre	1,413.90
19.6.11	1000 mm dia. R.C.C. pipe	metre	1,740.95
19.6.12	1100 mm dia. R.C.C. pipe	metre	2,093.70
19.6.13	1200 mm dia. R.C.C. pipe	metre	2,208.30
19.7	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 sand : 8 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20mm nominal standard design : With modular bricks with dass designation 40		
19.7.1	Inside size 90x80 cm and 45 cm deep including	each	5384.00

Item No.		Description	Unit	Rate (in Rs.)
		C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) :		
	19.7.2	Inside size 120x90 cm and 90 cm deep including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg) :	each	11882.00
	19.7.3	Inside size 120x90 cm and 90 cm deep including C.I. cover with frame (heavy duty) 560 mm internal diameter, total weight of cover and frame to be not less than 208 kg (weight of cover 108 kg and weight of frame 100 kg) :	each	15674.00
19.8		Extra for depth for manholes. With Moudular bricks class designation 40		
	19.8.1	Size 90x80 cm	metre	2654.00
	19.8.2	Size 120x90 cm	metre	3180.00
19.9		Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 sand : 6 graded stone aggregate 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 sand : 4 coat of neat cement all complete as per standard design : With Modular bricks class designation 40.		
	19.9.1	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg., fixed in cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately) :	each	4934.00
19.10		Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91m to 1.67m With Moudular bricks class designation 40	metre	2290.00

Item No.	Description	Unit	Rate (in Rs.)
19.11	Constructing brick masonry circular manhole 1.22m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 sand) inside cement plaster 12mm thick with cement mortar 1:3 (1 cement :3 sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design : With Modular bricks class designation 40		
19.11.1	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560mm internal diameter conforming to I.S.12592, total weight of cover and frame to be not less than 182kg. fixed in cement concrete 1:2:4 (1cement : 2 sand:4 graded stone aggregate 20mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately):	each	8946.00
19.12	Extra depth for circular type manhole 1.22m internal dia (at bottom) beyond 1.68 m to 2.29 m : With Modular bricks class designation 40	metre	2955.00
19.13	Constructing brick masonry circular manhole 1.52 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4sand) inside cement plaster 12mm thick with cement mortar 1:3 (1cement :3sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1cement:3 sand: 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1cement:2sand :4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design : With Moudlar bricks class designation 40.		
19.13.1	2.30m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1cement:2 sand:4 graded stone aggregate 20mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately)	each	18282.00

Item No.	Description	Unit	Rate (in Rs.)
19.14	Extra depth for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m : With Modular bricks class designation 40	metre	6,956.00
19.15	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20 mm nominal size) as per standard design :		
19.15.1	With 20x20 mm square bar	each	150.00
19.15.2	With 20 mm diameter round bar	each	125.00
19.16	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	each	182.00
19.17	Replacement of M.S. foot rests in manholes including dismantling concrete blocks and fixing with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 sand : 6 graded stone aggregate 20 mm nominal size) :		
19.17.1	With 20x20 mm square bar	each	168.00
19.17.2	With 20 mm diameter round bar	each	143.00
19.18	Supplying and fixing C.I. cover without frame for manholes :		
19.18.1	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg.	each	1,007.00
19.18.2	500 mm diameter C.I. cover (medium duty) the weight of the cover to be not less than 58 kg.	each	2,507.00
19.18.3	560 mm diameter C.I. cover (heavy duty) the weight of the cover to be not less than 108 kg.	each	4,293.00
19.19	Providing and fixing in position pre-cast R.C.C. manhole cover and frame of required shape and approved quality		
19.19.1	L D- 2.5		

Item No.		Description	Unit	Rate (in Rs.)
	19.19.1.1	Rectangular shape 600x450mm internal dimensions	each	883.00
	19.19.1.2	Square shape 450mm internal dimensions	each	749.00
	19.19.1.3	Circular shape 450mm internal diameter	each	672.00
	19.19.2	M D - 10		
	19.19.2.1	Square shape 450mm internal dimension	each	825.00
	19.19.2.2	Circular shape 500mm internal diameter	each	793.00
	19.19.3	H D - 20		
	19.19.3.1	Circular shape 560 mm internal diameter	each	1,110.00
	19.19.4	HD - 35		
	19.19.4.1	Circular shape 560 mm internal dia.	each	1,223.00
19.20		Supplying and fixing C.I. cover 300x300 mm without frame for gully trap (standard pattern) the weight of cover to be not less than 4.5kg.	each	205.00
19.21		Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :		
	19.21.1	For pipes 100 to 230 mm diameter	each	164.00
	19.21.2	For pipes 250 to 300 mm diameter	each	205.00
	19.21.3	For pipes 350 to 450 mm diameter	each	303.00
19.22		Providing sand cast iron drop connection externally for 60 cm drop from branch sewer line to main sewer manhole including inspection and cleaning eye with chain and lid, sand cast iron drop pipe and bend encased all-round with cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) with all centering and shuttering required, cutting holes in walls and making good with brick work in cement mortar 1:4 (1 cement : 4 sand) plastered with cement mortar 1:3 (1 cement : 3 sand) on inside of the manhole wall lead caulked joints between sand cast iron pipes and fittings, stiff cement mortar 1:1 (1 cement : 1 fine sand)joints between sand cast iron tee and S.W. pipe, making required channels complete as per standard design and specifications :	.	
	19.22.1	100 mm dia. sand cast iron drop connection	each	2,978.00
	19.22.2	150 mm dia. sand cast iron drop connection	each	4,531.00

Item No.	Description	Unit	Rate (in Rs.)
19.23	Extra for depths beyond 60 cm of sand cast iron drop connection complete :	metre	1,005.00
19.23.1	For 100 mm dia. sand cast iron drop connection	metre	1,505.00
19.23.2	For 150 mm dia. sand cast iron drop connection		
19.24	Dismantling of manhole including R.C.C. top slab, C.I. cover with frame including stacking of useful materials near the site and disposal of unserviceable materials into municipal dumps within 50 m lead :		
19.24.1	Rectangular manhole 90x80 cm and 45 cm deep	each	389.00
19.24.2	Rectangular manhole 120x90 cm and 90 cm deep	each	681.00
19.24.3	Rectangular arch type manhole 140x90cm and 2.45m deep	each	750.00
19.24.4	Circular manhole 122 cm diameter and 1.68 m deep	each	988.00
19.25	Extra for depth of manholes dismantled:		
19.25.1	Rectangular manhole 90x80 cm and 45 cm deep	metre	310.00
19.25.2	Rectangular manhole 120x90 cm and 90 cm deep	metre	369.00
19.25.3	Rectangular arch type manhole 140x90 cm and 2.45m deep (up to 4.25 m depth).	meter	450.00
19.25.4	Circular manhole 122 cm diameter and 1.68 m deep (up to 2.29 m depth)	metre	523.00
19.26	Raising manhole cover and frame slab to required level including dismantling existing slab and making good the damage as required (Raising depth of manhole to be paid separately) :		
19.26.1	Rectangular manhole 90x80 cm with rectangular cover 600x450 mm of grade LD - 2.5	each	824.00
19.26.2	Rectangular manhole 120x90 cm with circular cover 500 mm dia of grade MD - 10	each	1,287.00
19.26.3	Rectangular manhole 120x90 cm with circular cover 560 mm dia of grade HD - 20	each	1,198.00
19.26.4	Circular manhole 140 cm dia with circular cover 600 mm dia of grade EHD - 35	each	115.00
19.27	Constructing brick masonry road gully chamber 50x45x60 cm with bricks of class designation 40 in cement mortar 1:4 (1 cement : 4 sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :		
19.27.1	With Modular bricks	each	2,248.00
19.28	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks of class designation 40 in cement mortar 1:4	each	2,358.00

Item No.	Description	Unit	Rate (in Rs.)
	(1 cement : 4 sand) with pre-cast R.C.C. vertical grating complete as per standard design :		
	19.28.1 With Modular Bricks		
19.29	Constructing brick masonry road gully chamber 110x50x77.5 cm with bricks of class designation 40 in cement mortar 1:4 (1 cement : 4 sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame and vertical grating complete as per standard design :		
	19.29.1 With Modular bricks	each	4,272.00
19.30	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 40 class designation bricks in cement mortar 1:4 (1 cement : 4 sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design : With Modular bricks class designation 40.		
	19.30.1 Inside dimensions 455x610 mm and 45 cm deep for single pipe line :	each	3,146.00
	19.30.2 Inside dimensions 500x700 mm and 45 cm deep for pipe line with one or two inlets :	each	3,591.00
	19.30.3 Inside dimensions 600x 850 mm and 45 cm deep for pipe line with three or more inlets :	each	4,069.00
19.31	Extra for depth beyond 45 cm of brick masonry chamber : With Modular bricks class designation 40.		
	19.31.1 For 455x610 mm size	metre	1,846.00
	19.31.2 For 500x700 mm size	metre	2,014.00
	19.31.3 For 600x850 mm size	metre	2,345.00
19.32	Making soak pit 2.5 m diameter 3.0 metre deep with 45 x 45 cm dry brick honey comb shaft with bricks of class designation 75 and S.W. drain pipe 100 mm diameter, 1.8 m long complete as per standard design. With Modular bricks class designation 40.	each	9,939.00
19.33	Constructing soak pit 1.20x1.20x1.20m filled with brickbats including S.W. drain pipe 100 mm diameter and 1.20 m long	each	1,075.00

Item No.	Description	Unit	Rate (in Rs.)
	complete as per standard design.		
19.34	Providing and fixing S.W. intercepting trap in manholes with stiff mixture of cement mortar 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :		
19.34.1	100 mm dia	each	198.00
19.34.2	150 mm dia	each	282.00
19.35	Providing and laying below ground unplasticised PVC pipe to with stand working pressure of 4 kg/cm^2 soild waste pipes confirming to IS:13592 and IS:4985 including jointing with seal ring confirming to IS :5282 leaving 10mm gap for thermal expansion all necessary fittings etc. complete.		
19.35.1	110 mm diameter OD	RM	225.00
19.35.2	160 mm diameter OD	RM	391.00
19.35.3	210 mm diameter OD	RM	754.00
19.35.4	260 mm diameter OD	RM	943.00
19.35.5	310 mm diameter OD	RM	1157.00
19.36	Providing and laying cement concrete 1:5:10 (1 cement : 5 sand : 10 graded stone aggregate 40 mm nominal size) all-round PVC. pipes including bed concrete as per standard design:		
19.36.1	100 mm diameter PVC. pipe	meter	331.00
19.36.2	150 mm diameter PVC. pipe	meter	405.00
19.36.3	200 mm diameter PVC. pipe	meter	472.00
19.36.4	230 mm diameter PVC. pipe	meter	517.00
19.36.5	250 mm diameter PVC. pipe	meter	546.00
19.36.6	300 mm diameter PVC pipe	meter	599.00
19.37	Providing and laying cement concrete 1:5:10 (1 cement : 5 sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of PVC. pipes including bed concrete as per standard design :		
19.37.1	100 mm diameter PVC. pipe	meter	157.00
19.37.2	150 mm diameter PVC. pipe	meter	255.00
19.37.3	200 mm diameter PVC. pipe	meter	300.00
19.37.4	230 mm diameter PVC. pipe	meter	329.00
19.37.5	250 mm diameter PVC. pipe	meter	349.00
19.37.6	300 mm diameter PVC. pipe	meter	403.00

CHAPTER XX
PILE WORK

Item No.	Description	Unit	Rate (in Rs.)
20.1	Providing, driving and installing driven cast-in-situ reinforced cement concrete piles of specified diameter and length below the pile cap M 35 in cement concrete, to carry safe working load not less than cost of shoe and the length of pile to be embedded in the pile cap etc. all complete. (Length of pile for payment shall be measured from top of shoe to the bottom of pile cap) : Excluding cost of Steel. And rates are inclusive of cost of concreate	metre	1452.00
20.1.1	400 mm dia piles	metre	1772.00
20.1.2	450 mm dia piles	metre	2140.00
20.1.3	500 mm dia piles	metre	2312.00
20.1.4	550 mm dia piles	metre	3881.00
20.1.5	750 mm dia piles.	metre	6346.00
20.1.6	1000 mm dia piles.	metre	8136.00
20.1.7	1200 mm dia piles.	metre	11367.00
20.1.8	1500 mm dia piles.		
20.2	Boring, providing and installing bored cast-in-situ reinforced cement concrete pile of specified diameter and length below the pile cap M 35 in cement concrete, to carry a safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of boring with, bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap etc. all complete, including removal of excavated earth with all lifts and leads (Length of pile for payment shall be measured upto bottom of pile cap). Excluding cost of Steel. And rates are inclusive of cost of concreate.		
20.2.1	300 mm dia piles	metre	1105.00
20.2.2	400 mm dia piles	metre	1345.00
20.2.3	450 mm dia piles	metre	1746.00
20.2.4	500 mm dia. piles	metre	2063.00
20.2.5	600 mm dia piles	metre	2706.00
20.2.6	750 mm dia piles.	metre	3885.00
20.2.7	1000 mm dia piles.	metre	6403.00
20.2.8	1200 mm dia piles.	metre	8256.00
20.2.9	1500 mm dia piles.	metre	11635.00
20.3	Boring, Providing and installing cast in situ single under reamed piles of specified diameter and length below pile cap in M 35 cement concrete, to carry a safe working load not less than specified, excluding the cost of steel reinforcement but induding the cost of boring with bentonite solution and the length of the pile		

Item No.	Description	Unit	Rate (in Rs.)
	to embedded in pile cap etc. all complete. (Length of pile for payment shall be measured upto to the bottom of pile cap) : Excluding cost of Steel. And rates are inclusive of cost of concreate		
	20.3.1 300 mm dia piles.	metre	1653.00
	20.3.2 400 mm dia piles	metre	1953.00
	20.3.3 450 mm dia piles	metre	2142.00
	20.3.4 550 mm dia piles	metre	2383.00
20.4	Extra over item No.20.3 for providing additional bulb in under reamed piles, under specified dia meter (Only the quantity of extra bulbs are to be paid).		
	20.4.1 300mm dia piles.	each	1043.00
	20.4.2 400mm dia piles.	each	1182.00
	20.4.3 450 mm dia piles.	each	1268.00
	20.4.4 550 mm dia piles.	each	1412.00
20.6	Vertical load testing of piles in accordance with IS 2911 (Part IV) including installation of loading platform and preparation of pile head or construction of test cap and dismantling of test cap after test etc. complete as per specification & the direction of Engineer in-charge.		
	20.6.1 Single pile upto 50 tonne capacity	per test	29038.00
	20.6.1.1 Initial test.	per test	20326.00
	20.6.1.2 Routine test		
	20.6.2 Single pile above 50 tonne and upto 100 tonne capacity	per test	37749.00
	20.6.2.1 Initial test	per test	25553.00
	20.6.2.2 Routine test.		
	20.6.3 Group of two or more piles upto 50 tonne capacity		
	20.6.3.1 Initial test	per test	49364.00
	20.6.3.2 Routine test	per test	33103.00
20.7	Cyclic vertical load testing of pile in accordance with IS Code of practice IS: 2911 (part IV) including preparation of pile head etc for.		
	20.7.1 Single pile.	per test	20326.00
	20.7.1.1 Upto 50 tonne capacity pile.	per test	25553.00
	20.7.1.2 Above 50 tonne and upto 100 tonne capacity pile.		
	20.7.2 Group of two piles.	per test	33103.00
	20.7.2.1 Upto 50 tonne capacity each.		

Item No.	Description	Unit	Rate (in Rs.)
20.8	Lateral load testing of single pile in accordance with IS Code ofpractice IS : 2911 (Part IV) for determining safe allowable lateral load on pile :		
20.8.1	Upto 50 tonne capacity pile.	per test	21488
20.8.2	Above 50 tonne and upto 100 tonne capacity pile.	per test	29038
	Boring, providing and installing bored cast-in-situ reinforced cemen concrete single under reamed pile of specified diameter and lengtl below the pile cap M20 in cement concrete, to carry a safe working load not less than specified, excluding the cost of stee reinforcement but including the cost of boring. The length of the pile to be embedded in the pile cap etc. all complete, including removal of excavated earth with all lifts and leads (Length of pile fo payment shall be measured upto bottom of pile cap). Excluding cost of Steel. And rates are inclusive of cost of concreate		
20.9.1	200 mm diameter.	meter	280.00
20.9.2	250 mm diameter.	meter	340.00
20.9.3	300 mm diameter.	meter	506.00
20.9	Extra for providing additional blub for item no.20.9		
20.10.1	200 mm diameter.	each	99.00
20.10.2	250 mm diameter.	each	229.00
20.10.3	300 mm diamet.	each	448.00

CHAPTER XXI
ALUMINIUM WORK

Item No.	Description	Unit	Rate (in Rs.)
21.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt etc. Aluminium sections shall be smooth,rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling,C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and paneling to be paid for separately) :		
21.1.1	For fixed portion		
21.1.1.1	Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC15)	kg	223.00
21.1.1.2	Powder coated aluminium (minimum thickness of powder coating 50 micron)	kg	231.00
21.1.1.3	Polyester powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	kg	246.00
21.1.2	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of PVC / neoprene gasket required (Fittings shall be paid for separately).		
21.1.2.1	Anodised aluminium (anodised transparent or dyed torequired shade according to IS: 1868, Minimum anodic coating of grade AC15)	kg	236.00
21.1.2.2	Powder coated aluminium (minimum thickness of powder coating 50 micron)	kg	255.00
21.1.2.3	Polyester powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	kg	261.00
21.2	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked, for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc.complete as per the direction of Engineer-in-charge.		

Item No.	Description	Unit	Rate (in Rs.)
	21.2.1 With stainless steel cover plate	each	1730.00
	21.2.2 With brass cover plate	each	1905.00
21.3	Providing and fixing powder coated aluminium work (minimum thickness of powder coating 50 micron) consisting of tee/ angle sections, of approved make conforming to IS : 733 in frames of false ceiling including aluminium angle cleats with necessary C.P. brass/ stainless steel sunk screws, aluminium perimeter angles fixed to wall with rawl plugs @ 450 mm centre to centre and fixing the frame work to G.I. level adjusting hangers 6 mm dia. with necessary cadmium plated machine screws all complete as per approved architectural drawings and direction of the Engineer-in-charge (level adjusting hangers, ceiling cleats and expansion hold fasteners to be paid for separately).	kg	300.00
21.4	Providing and fixing 6 mm dia. G.I. level adjusting hangers (upto 1200mm length) fixed to roof slabs by means of ceiling cleats made out of G.I. flat 40x3mm size 60mm long and expansion hold fasteners 12.5 mm dia. 40mm long complete as per direction of Engineer -in-charge.	each	72.00
21.5	Providing and fixing machine moulded aluminium covering of approved pattern & design, made out of machine cut aluminium sheet and machine holed for receiving screws, over expansion joints on vertical surfaces/ceilings with full threaded, cadmium plated steel screws 4mm dia. stem, 30mm long and aluminium washers 2mm thick, 15mm dia. at a staggered pitch of 200mm centre to centre including drilling holes in the receiving surface and providing expandable plastic sleeves in holes etc. complete.		
	21.5.1 Anodised aluminium sheet 2.5mm thick (anodised transparent or dyed to required shade according to IS:1868, Minimum anodic coating of grade AC15)	kg	364.00
	21.5.2 Powder coated aluminium sheet 2.5mm thick (minimum thickness of powder coating 50 micron)	kg	380.00
21.6	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.	metre	62.00
	21.6.1 Upto 5mm depth and 5 mm width		
21.7	Extra for applying additional anodic coating AC 25 instead of AC 15 to aluminium extruded sections.		
	21.7.1 For fixed portion	kg	9.00
	21.7.2 For shutters of doors, windows & ventilators.	kg	9.00

Item No.	Description	Unit	Rate (in Rs.)
21.8	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side having 12 mm air gap including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	sqm	3002
21.9	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in- charge complete.		
21.9.1	205 X 19 mm	each	197.00
21.9.2	255 X 19 mm	each	209.00
21.9.3	355 X 19 mm	each	264.00
21.9.4	510 X 19 mm	each	490.00
21.9.5	710 X 19 mm	each	900.00
21.10	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge.		
21.10.1	Anodized (AC 15) aluminium tubular handle bar	each	324.00
21.10.2	Powder coated minimum thickness 50 micron aluminium tubular handle bar.	each	348.00
21.10.3	Polyester powder coated minimum thickness 50 micron aluminium tubular handle bar	each	358.00
21.11	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	each	360.00
21.12	Providing and fixing anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868. Minimum anodic coating of grade AC 15) sub frame work for windows and ventilators a with extruded built up standard tubular sections of approved make conforming to IS: 733 and IS : 1285 fixed with rawl plugs and stainless steel screws etc.	kg	256.00
21.13	Providing fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.		
21.13.1	Anodized (AC 15) aluminium	each	37.00
21.13.2	Powder coated minimum thickness 50 micron aluminium.	each	43.00
21.13.3	Polyester powder coated minimum thickness 50 micron aluminium.	each	45.00

Item No.	Description	Unit	Rate (in Rs.)
21.14	Providing fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge		
21.14.1	Anodized (AC 15) aluminium	Each	41.00
21.14.2	Powder coated minimum thickness 50 micron aluminium	each	45.00
21.14.3	Polyester powder coated minimum thickness 50 micron aluminium.	each	51.00

CHAPTER XXII
WATER PROOFING WORK

Item No.	Description	Unit	Rate (in Rs.)
22.1	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in-Charge and consisting of : i) Ist layer of 22mm to 25mm thick approved and specified rough stone slab over a 25mm thick base of cement mortar 1:3 (1 cement : 3 sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound.ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 s and) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer. (with five years service gurantee).		
22.1.1	Using rough kota stone.	sqm	663.00
22.2	Providing and laying integral cement based treatment for water proofing on the vertical surface by fixing specified stone slab 22 mm to 25mm thick with cement slurry mixed with water proofing compound conforming to IS:2645 in recommended proportions with a gap of 20mm (minimum) between stone slabs and the receiving surfaces and filling the gaps with neat cement slurry mixed with water proofing compound and finishing the exterior of stone slab with cement mortar 1:3 (1 cement : 3 sand) 20mm thick with neat cement punning mixed with water proofing compound in recommended proportion complete at all levels and as directed by Engineer-in-charge : (with five years service gurantee).		
22.2.1	Using rough Kota stone	Sqm	786.00
22.3	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of :i) Ist course of applying cement slurry @ 4.4 Kg/sqm mixed with water proofing compound conforming to IS recommended proportions including rounding off junction of vertical and horizontal surface.ii) IInd course of 20mm cement plaster 1:3 (1cement:3sand) mixed with water proofing com-pound in recommended proportion including rounding off junction of vertical and horizontal surface.iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 Kg. per sqm of area.iv) IVth course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg/sqm.) (with five years service gurantee).	sqm	303.00

Item No.	Description	Unit	Rate (in Rs.)
22.4	Providing and Placing in position suitable PVC water stops conforming to IS:12200 for construction/ expansion joints between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc. complete : (with five years service gurantee).		
	22.4.1 Serrated with central bulb (225mm wide, 8-11mm thick).	metre	398.00
	22.4.2 Dumb bell with central bulb (180mm wide, 8mm thick).	metre	395.00
	22.4.3 Kickers (320mm wide, 5mm thick).	metre	395.00
22.5	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying : a) First layer ofslurry of cement @ 0.488 kg/sqm mixed with water proofing cementcompound @ 0.253 kg/sqm. This layer will be allowed to air cure for 4hours. b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry. (with five years service gurantee).	sqm	146.00
22.6	Providing and laying water proofing treatment on roofs of slabs by applying cement slurry mixed with water proofing cement compound consisting of applying: a) after surface preparation, first layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/sqm. b) laying second layer of Fibre glass cloth when the first layer is still green. Overlaps of joints of fibre cloth should not be less than 10 cm. c) third layer of 1.5 mm thickness consisting of slurry of cement @ 1.289 kg/sqm mixed with water proofing cement compound @ 0.670 kg/sqm and sand @ 1.289 kg/sqm. This will be allowed to air cure for 4 hours followed by water curing for 48 hours. The entire treatment will be taken upto 30cm on parapet wall and tucked into groove in parapet all around. (with five years service gurantee).	sqm	277.00
22.7	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs,balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300mm height induding cleaning the surface before treatment.b) Laying brick		

Item No.	Description	Unit	Rate (in Rs.)
	bats with mortar using broken bricks/brick bats 25 mm to 115mm size with 50% of cement mortar 1:5 (1 cement : 5 sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth type II grade - I tissue reinforced of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :(with five years service gurantee).		
	22.7.1 With average thickness of 150mm and minimum thickness at khurra as 75 mm.	sqm	744.00
22.8	Providing and laying four courses water proofing treatment with bitumen felt over roofs consisting of first and third courses of blown bitumen 85/25 or 90/15 conforming to IS : 702 applied hot @ 1.45 Kg per square metre of area for each course, second course of roofing felt type 3 grade-I (hessian based self finished bitumen felt) and fourth and final course of stone grit 6mm and down size or pea-sized gravel spread at 6 cubic diameter per square metre including preparation of surface but excluding grading complete with : (with five years service gurantee).		
	22.8.1 Bitumen felt (hessian base) type 3 grade I conforming to IS :1322.	sqm	185.00
22.9	Providing and laying six courses water proofing treatment with bitumen felt over roofs consisting of first, third and fifth course of blown bitumen 85/25 or 90/15 conforming to IS : 702 applied hot @ 1.45, 1.20 and 1.45 Kg per square metre of area respectively, second and fourth courses of roofing felt type 3 grade I conforming to IS :1322 (Hessian based self finished bitumen felt)	sqm	286.00

Item No.	Description	Unit	Rate (in Rs.)
	conforming to IS :1322 and sixth and final course of stone grit 6 mm and down size or pea sized gravel spread at 6 cubic dm per sqm including preparation of surface but excluding grading, complete. (with five years service gurantee).		
22.10	Providing and laying six courses water proofing treatment with bitumen felt over roofs consisting of first, third and fifth courses of blown or / and residual bitumen applied hot at 1.45, 1.20 and 1.70 kg per square metre of area respectively, second and fourth courses of roofing felt type 2 grade I (fibre base self finished bitumen felt) six and final courses of stone grit 6mm and down size or pea sized gravel spread at 6.00 cu.dm per sqm including preparation of surface, excluding grading, compete. (with five years service gurantee).	sqm	31.00
22.11	Providing and laying six courses water proofing treatment with bitumen felt over roofs consisting of first, third and fifth courses of blow or/ and residual bitumen applied hot at 1.45, 1.20 and 1.70 kg per square metre of area respectively, second and fourth courses of roofing felt type 2 grade II (glass fibre base self finished bitumen felt) and sixth and final course of stone grit 6mm and down size or pea sized gravel spread at 6.00 cubic dm per sqm including preparation of surface but excluding grading, complete. (with five years service gurantee).	sqm	310.00
22.12	Supplying and applying bituminous solution primer on roof and or wall surface at 0.24 litres per sqm.	sqm	16.00
22.13	Deduct for omitting in water proofing treatment final course of spreading stone grit 6mm down size or pea sized gravel :		
	22.13.1 At 6 cudm per sqm.	sqm	9.00
22.14	Grading roof for water proofing treatment with		
	22.14.1 Cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size)	Cum.	3473.00
	22.14.2 Cement mortar 1:3 (1 cement : 3 sand)	Cum.	5609.00
	22.14.3 Cement mortar 1:4 (1cement : 4 sand)	Cum.	4860.00
22.15	Providing and laying in situ seven course water proofing treatment with APP (Atactic poly-propylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40Kg per sqm,2nd, 4th & 6th courses of bonding material @ 1.20 Kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 1.5mm thick of 2.25 Kg/sqm weight consisting of five layers prefabricated with centre core as 20micron HMHDPE film sandwiched on both sides	sqm	278.00

Item No.	Description	Unit	Rate (in Rs.)
	with polymeric mix and the polymeric mix is protected on both side with 20micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 100 grouted with cement mortar 1:3 (1cement:3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat which shall be paid for separately. (with five years service gurantee).		
22.16	Providing and laying in situ five course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40Kg per sqm, 2nd & 4th courses of bonding material @ 1.20 Kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702,3rd layer of roofing membrane APP modified Polymeric membrane 2.0mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100micron HMHDPE filsandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20micron HMHDPE film. 5th, the top most layer shall be finished with brick tiles of class designation 100 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat which shall be paid for separately. (with five years service gurantee).	sqm	221.00
22.17	Providing and laying in situ seven course water proofing treatment with APP (Atactic Polypropylene) modified Polymeric memberane over roof consisting of first coat of bitumen primer @ 0.40Kg per sqm,2nd, 4th & 6th courses of bonding material @ 1.20 Kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 2.0mm thick of 3.00 Kg/sqm weight consisting of five layers prefabricated with centre core as 100micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20micron HMHDPE film. 7th, the top most layer shall be finished with bricktiles of class designation 100 grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat which shall be paid for separately. (with five years service gurantee).	sqm	373.00

Item No.	Description	Unit	Rate (in Rs.)
22.18	Providing and fixing APP (Atactic Polypropylene Polymer) modified prefabricated five layer 2mm thick water proofing membrance, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 ltr/sq. mtr. by the same membrance manufacture of density at 25°C, 0.87 - 0.89 kg/ ltr and viscocity 70- 160 cps. Over the primer coat the layer of membrane shall be laid using Butane torch and sealing all joints etc.,and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 350/300 N/ 5cm. Tear strength in longitudinal and transverse direction as 60/80N.Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacture of membrane. (with five years service gurantee).		
22.18.1	2mm (for corrugated roof sheets)	sqm	256.00
22.19	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer, 3mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 ltr/sqm. by the same membrane manufactured of density at 25°C, 0.87 - 0.89 kg/ltr and viscocity 70 - 160 cps. Over the primer coat the layer of membrane shall be laid using butane torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under: Joint strength in longitudinal and transverse direction at 23°C as 350/300 N/5cm. Tear strength in longitudinal and transverse direction as 60/80N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D-5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane: (with 5 yrs. service gurantee).		
22.19.1	3 mm thick	Sqm	290.00
22.20	Providing & laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3mm thick water proofing membrane, black finished reinforced with non-woven polyester matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 ltr/sqm. by the same membrane manufacture of density at 25°C, 0.87-0.89 kg/ltr and viscocity 70-160 cps. Over the primer coat the layer of membrane shall be laid using Butane Torch and sealing all joints etc., and preparing the surface complete. The		

Item No.	Description	Unit	Rate (in Rs.)
	vital physical and chemical parameters of the membrane shall be as under: Joint strength in longitudinal and transverse direction at 23°C as 650/450N/5cm. Tear strength in longitudinal and transverse direction as 300/250N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane: (with 5 yrs. service gurantee).		
	22.20.1 3 mm thick	sqm	337.00
22.21	Extra for covering top of membrane with Geotextile, 120gsm non woven, 100% polyester of thickness 1 to 1.25mm bonded to the membrane with intermittent touch by heating the membrane by Butane Torch as per manufactures recommendation [for Item No. 22.18 to 22.20].	sqm	48.00

CHAPTER XXI
LANDSCAPING AND HORTICULTURE

Item No.	Description	Unit	Rate (in Rs.)
23.1	Trenching in ordinary soil up to a depth of 60cm including removal and stacking of serviceable materials and then disposing of byspreading and neatly levelling with in a lead of 50m and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and manure before and after flooding trench with water(excluding cost of imported earth, sludge or manure).	Cum.	18.00
23.2	Supplying and stacking of good earth at site including royalty and carriage up to 1 km (earth measured in stacks will be reduced by 20% for payment).	Cum.	146.00
23.3	Supplying and stacking sludge at site including royalty and carriage up to 1 km (sludge measured in stacks will be reduced by 8% for payment).	Cum.	137.00
23.4	Supplying and stacking at site dump manure from approved source, including carriage up to 1 km (manure measured in stacks will be reduced by 8% for payment) :		
	23.4.1 Screened through sieve of I.S. designation 20mm	Cum.	84.00
	23.4.2 Screened through sieve of I.S. designation 16mm	Cum.	92.00
	23.4.3 Screened through sieve of I.S. designation 4.75mm	Cum.	99.00
23.5	Rough dressing the trenched ground including breaking clods.	100sqm	36.00
23.6	Uprooting weeds from the trenched area after 10 to 15 days of its flooding with water including disposal of uprooted vegetation.	100sqm	115.00
23.7	Fine dressing the ground	100sqm	86.00
23.8	Spreading of sludge, dump manure or/and good earth in required thickness (Cost of sludge, dump manure or/ and good earth to be paid separately).	Cum.	12.00
23.9	Mixing earth and sludge or manure in proportion specified or directed.	Cum.	9.00
23.10	Grassing with 'Doob' grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for mowing induding supplying good earth if needed(the good earth shall be paid for separately).		
	23.10.1 In rows 15 cm apart in either direction.	100sqm	130.00
	23.10.2 In rows 7.5 cm apart in either direction.	100sqm	228.00
	23.10.3 In rows 5 cm apart in either direction.	100sqm	313.00
23.11	Renovating lawns including weeding, cheeling the grass, forking	100sqm	1309.00

Item No.	Description	Unit	Rate (in Rs.)
	the ground, top dressing with sludge or manure, mixing the same with forked soil, watering and maintaining the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for mowing and disposal of rubbish as directed, including supplying good earth if needed but excluding the cost of sludge or manure (the good earth shall be paid for separately).		
23.12	Uprooting rank vegetation and weeds by digging the area to a depth of 60cm removing all weeds and other growth with roots by forking repeatedly, breaking clods, rough dressing, flooding with water,uprooting fresh growths after 10 to 15 days and then fine dressing for planting new grass, including disposal of all rubbish with all leads and lifts.	100sqm	1337.00
23.13	Preparation of beds for hedging and shrubbery by excavating 60cm deep and trenching the excavated base to a further depth of 30cm,refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20% : one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc.including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50m lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately).	Cum.	52.00
23.14	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately) :		
	23.14.1 Holes 1.2 m dia and 1.2 m deep.	each	154.00
	23.14.2 Holes 60 cm dia, and 60 cm deep.	each	20.00
23.15	Providing and fixing M.S. flat iron tree guard 60cm dia. and 2m height above ground level formed of 4 nos. 25x6mm and 8 nos. 25x3mm vertical M.S. flats rivetted to 3 nos. 25x6mm M.S. flat iron rings in two halves, bolted together with 8mm dia. and 30mm long bolts including painting two coats with paint of approved brand and manufacture over a coat of priming, complete in all respects.	each	1643.00

Item No.	Description	Unit	Rate (in Rs.)
23.16	Filling mixture of earth and sludge or manure in the desired proportion in trenches, flooding with water and leveling supplying earth and sludge or manure and mixing excluded).	Cum.	4.00
23.17	Excavation in dumped stones or malba including stacking of (cost of serviceable and unserviceable material separately and disposal of unserviceable material lead up to 50 m and lift up to 1.5 m disposed material to be neatly dressed.	Cum.	118.00
23.18	Flooding the ground with water including making kiaries and dismantling the same.	100sqm	70.00

APPENDIX 'A"

Quantity of Materials required for various building item of works

S.no	Description of Items (Mortar)	Materials	Unit	Quantity per unit
1	2	3	4	5
1	Cement Mortar(1:2)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	14.40 Bags
2	Cement Mortar(1:3)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	9.40 Bags
3	Cement Mortar(1:4)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	7.20 Bags
4	Cement Mortar(1:5)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	5.70 Bags
5	Cement Mortar(1:6)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	4.70 Bags
6	Cement Mortar(1:8)	Sand	Cum.	1.00 Cum.
		Cement	Cum.	3.50 Bags
7	1 Cement:1 Lime :6 Sand	Sand	Cum.	1.00 Cum.
		Hydrated lime	Cum.	0.166 Cum.
		Cement	Cum.	4.74 Bags
8	1 Cement :2 Lime : 9 Sand	Sand	Cum.	1.00 Cum.
		Hydrated lime	Cum.	0.222 Cum.
		Cement	Cum.	3.17 Bags
9	1 Cement :3 Lime : 12 Sand	Sand	Cum.	1.00 Cum.
		Hydrated lime	Cum.	0.249 Cum.
		Cement	Cum.	2.37 Bags
10	1 Cement : 1 Lime : 12 Surkhi : 18 Sand	Sand	Cum.	1.00 Cum.

		Hydrated lime	Cum.	0.055 Cum.
		Surkhi	Cum.	0.110 Cum.
		Cement	Cum.	1.57 Bags
11	1 Cement : 4 Lime : 6 Surkhi : 18 Sand	Sand	Cum.	1.00 Cum.
		Hydrated lime	Cum.	0.220 Cum.
		Surkhi	Cum.	0.330 Cum.
		Cement	Cum.	1.57 Bags
12	Lime Mortar 1 :2	Sand	Cum.	1.00 Cum.
		Unslaked Lime	Cum.	0.50 Cum.
13	Lime Mortar with R.O.H. Lime	Sand	Cum.	1.00 Cum.
		Hydrated lime	Cum.	0.33 Cum.
14	Filling foundations: Rammed moorum and metal	Metal	Cum.	1.00 Cum.
		Moorum	Cum.	0.33 Cum.
15	Rammed moorum and boulders	Boulders	Cum.	1.00 Cum.
		Moorum	Cum.	0.40 Cum.
16	Lime Concrete	Metal	Cum.	1.00 Cum.
		Lime Mortar	Cum.	0.50 Cum.
17	Brick Bat lime Concrete	Lime Mortar	Cum.	0.50 Cum.
		Brick Bats	Cum.	1.00 Cum.
18	Cement Concrete 1: 1: 2	Metal	Cum.	0.775 Cum.
		Sand	Cum.	0.387 Cum.
		Cement	Cum.	11.15 Bags
19	Cement Concrete 1:1 1\2:3	Metal	Cum.	0.856 Cum.
		Sand	Cum.	0.428 Cum.
		Cement	Cum.	8.20 Bags
20	Cement Concrete 1:2:3	Metal	Cum.	0.810 Cum.
		Sand	Cum.	0.540 Cum.

		cement	Cum.	7.75 bags
21	Cement Concrete 1:2:4	Metal	Cum.	0.880 Cum.
		Sand	Cum.	0.450 Cum.
		Cement	Cum.	6.35 Bags
22	Cement Concrete 1:2½:5	Metal	Cum.	0.905 Cum.
		Sand	Cum.	0.452 Cum.
		Cement	Cum.	5.20 Bages
23	Cement Concrete 1:3:6	Metal	Cum.	0.906 Cum.
		Sand	Cum.	0.453 Cum.
		Cement	Cum.	4.35 Bages
24	Cement Concrete 1:4:8	Metal	Cum.	0.960 Cum.
		Sand	Cum.	0.480 Cum.
		Cement	Cum.	3.45 Bages
25	Cement Concrete 1:5:8	Metal	Cum.	0.85 Cum.
		Sand	Cum.	0.530 Cum.
		Cement	Cum.	3.20 Bages
26	Cement Concrete 1:6:10	Metal	Cum.	0.900 Cum.
		Sand	Cum.	0.540 Cum.
		Cement	Cum.	2.60 Bages
27	Cement Concrete 1:8:15	Metal	Cum.	0.900 Cum.
		Sand	Cum.	0.480 Cum.
		Cement	Cum.	1.75 Bages
	PLUM CEMENT CONCRETE			
28	Plum cement concrete 1:5:8 with 60% plum	Plum	Cum.	0.60 Cum.
		Metal	Cum.	0.34 Cum.
		Sand	Cum.	0.21 Cum.
		Cement	Cum.	1.20 Bags

29	Plum cement concrete 1:5:8 with 40% plum	Plum	Cum.	0.40 Cum.
		Metal	Cum.	0.51 Cum.
		Sand	Cum.	0.32 Cum..
		Cement	Cum.	1.85 Bages
30	Plum cement concrete 1:5:8 with 25% plum	Plum	Cum.	0.25 Cum..
		Metal	Cum.	0.64 Cum..
		Sand	Cum.	0.40 Cum.
		Cement	Cum.	2.40 Bages
31	Plum cement concrete 1:4:8 with 60% plum	Plum	Cum.	0.60 Cum.
		Metal	Cum.	0.34 Cum.
		Sand	Cum.	0.17 Cum..
		Cement	Cum.	1.20 Bags
32	Plum cement concrete 1:4:8 with 40% plum	Plum	Cum.	0.40 Cum.
		Metal	Cum.	0.51 Cum.
		Sand	Cum.	0.26 Cum..
		Cement	Cum.	1.85 Bages
33	Plum cement concrete 1:4:8 with 25% plum	Plum	Cum.	0.25 Cum..
		Metal	Cum.	0.64 Cum..
		Sand	Cum.	0.32 Cum..
		Cement	Cum.	2.40 Bages
34	Plum cement concrete 1:3:6 with 60% plum	Plum	Cum.	0.60 Cum.
		Metal	Cum.	0.36 Cum.
		Sand	Cum.	0.18 Cum..
		Cement	Cum.	1.75 Bages
35	Plum cement concrete 1:3:6 with 40% plum	Plum	Cum.	0.40 Cum.
		Metal	Cum.	0.54 Cum.
		Sand	Cum.	0.27 Cum.

		Cement	Cum.	260 Bags
36	Plum cement concrete 1:3:6 with 25% plum	Plum	Cum.	0.25 Cum..
		Metal	Cum.	0.67 Cum..
		Sand	Cum.	0.34 Cum.
		Cement	Cum.	3.55 Bags
	MASONRY			
37	Random rubble masonry	Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.33 Cum.
38	Coursed rubble masonry	Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.33 Cum.
39	Fine ashlars Stone masonry	Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.12 Cum.
40	Cut Stone masonry	Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.16 Cum.
41	Cut Stone work for lintels beams etc.	Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.75 Cum.
42	Brick Masonry	Bricks	Cum.	500 Nos.
		Mortar	Cum.	0.25 Cum..
43	Honey comb brick masonry	Bricks	Cum.	360 Nos.
		Mortar	Cum.	0.05 Cum.
	PLASTERING AND POINTING			
44	6 mm. thick plastering	Mortar	100 sqm.	0.90 Cum.
45	13 mm thick Plastering	Mortar	100 sqm.	1.50 Cum.
46	20 mm thick Plastering	Mortar	100 sqm.	2.40 Cum.
47	Neat Finishing	w.w lime	100 sqm.	4.28 Bags
48	Neat cement plaster	Cement	100 sqm.	4.28 Bags
49	Rough cast cement plaster			

	(a) Base Coat	Mortar	100 sqm.	1.377 Cum.
	(b) Rough cast mixture	Aggregate	100 sqm.	1.377 Cum.
		Sand	100 sqm.	0.688 Cum.
		Cement	100 sqm.	13.11 Bages
50	Pebble dashing cement rendering	Mortar	100 sqm.	0.30 Cum.
		Pebble	100 sqm.	1.50 Cum.
51	Sand faced plastering base coat 13 mm thick Finishing coat 8 mm. thick Sand facing	Mortar	100 sqm.	2.70 Cum.
		Cement	100 sqm.	4.28 Bags
52	Rubbing on brick work	Mortar	100 sqm.	0.60 Cum.
53	Grooved or flush pointing			
	(a) Brick work	Mortar	100 sqm.	0.90 Cum.
	(b) Stone work	Mortar	100 sqm.	0.45 Cum.
54	Tuck pointing			
	(a) Brick work	Mortar	100 sqm.	0.90 Cum.
	(b) Stone work	Mortar	100 sqm.	0.45 Cum.
55	Raised Pointing to stone work	Mortar	100 sqm.	0.50 Cum.
56	Flush Cum. raised pointing to stone work	Mortar	100 sqm.	0.40 Cum.
57	Pointing to flag stone	Mortar	100 sqm.	0.30 Cum.
58	Drip course			
	(a) 4 cm. x 10 cm.	Bricks	100 R.M.	0.40 Cum.
		Mortar	100 R.M.	0.37 Cum.
	(b) 10 cm. x 10 cm.	Bricks	100 R.M.	1.00 Cum.
		Mortar	100 R.M.	0.70 Cum.
59	25 X 20 mm. Projected Patta	Mortar	100 R.M.	0.075 Cum.
60	25 X 25 mm. groove	Mortar	100 R.M.	0.12 Cum.
61	Throating of chajja	Mortar	100 R.M.	0.06 Cum.

62	20 mm. thick Architectural molding or cut back plaster	Mortar	100 sqm.	3.00 cum.
	FLOORING			
63	Brick on edge paving with moorum or cement mortar bedding & Joint	Bricks	100 sqm.	10.00 Cum.
		Moorum	100 sqm.	5000 Nos.
		Mortar	100 sqm.	4.50 Cum.
	C.M. pointing for a above	Mortar	100 sqm.	0.90 Cum.
64	Flag stone Flooring with moorum or mortar bedding	Flag Stone	100 sqm.	120 Sqm
		Moorum or mortar	100 sqm.	2.00 Cum.
	C.M. pointing for a above	Mortar	100 sqm.	0.30 Cum.
65	Machine Polished Red Stone slabs Flooring	Red Stone Slabs	100 sqm.	120 Sqm
		Mortar for Bedding	100 sqm.	2.00 Sqm
		Cement for Slurry	100 sqm.	8.50 Cum.
66	15 C.M. thick masonry stone paving	Masonry Stone	100 sqm.	15.00 Cum.
		Moorum Mortar for Bedding and joints	100 sqm.	7.00 Cum.
		Mortar for Pointing	100 sqm.	0.45 Cum.
67	20 C.M. thick masonry stone paving	Masonry Stone	100 sqm.	20.00 Cum.
		Moorum Mortar for Bedding and joints	100 sqm.	8.60 Cum.
		Mortar for Pointing	100 sqm.	0.45 Cum.
68	25 to 30 C.M. thick grouted Pitching	Rubble Stones	Cum.	1.00 Cum.
		Mortar	Cum.	0.20 Cum.
69	I.T. Flooring 75 mm thick with C.C. 1:3:6	Metal	100 sqm.	6.80 Cum.
		Sand	100 sqm.	3.40 Cum.
		Cement	100 sqm.	36. 86 Bages
70	I.T. Flooring 75 mm thick with C.C. 1:2:4	Metal	100 sqm.	6.60 Cum..
		Sand	100 sqm.	3.40 Cum..

		Cement	100 sqm.	51.84 Bages
71	I.T. Flooring 40 mm thick with C.C. 1:3:6	Metal	100 sqm.	3.60 Cum..
		Sand	100 sqm.	1.80 Cum..
		Cement	100 sqm.	21.59 Bages
72	I.T. Flooring 40 mm thick with C.C. 1:2:4	Metal	100 sqm.	3.50 Cum..
		Sand	100 sqm.	1.80 Cum..
		Cement	100 sqm.	29.55 Bages
73	I.T. Flooring 40 mm thick with C.C. 1:2:3	Metal	100 sqm.	3.24 Cum..
		Sand	100 sqm.	2.16 Cum..
		Cement	100 sqm.	35.12 Bages
74	I.T. Flooring 25 mm thick with C.C. 1:2:4	Metal	100 sqm.	2.20 Cum..
		Sand	100 sqm.	1.12 Cum..
		Cement	100 sqm.	20. 09 Bages
75	I.T. Flooring 25 mm thick with C.C. 1:2:3	Metal	100 sqm.	2.02 Cum..
		Sand	100 sqm.	1.35 Cum..
		Cement	100 sqm.	25.88 bages
76	6 mm. thick mosaic topping with 40 mm thick under layer C.C. 1:2:4	Mosaic Chips	10 sqm.	108 Kg.
		Marble Power	10 sqm.	0.368 Bages
		12.5mm Metal	10 sqm.	0.35 Cum.
		Sand	10 sqm.	0.18 Cum..
		Cement	10 sqm.	3.65 Bages
77	10 mm. thick mosaic topping with 40 mm thick under layer C.C. 1:2:4	Mosac Chips	10 sqm.	180 Kg.
		Marble Power	10 sqm.	0.61 Bges
		12.5mm Metal	10 sqm.	0.35 Cum.
		Sand	10 sqm.	0.18 Cum..
		Cement	10 sqm.	4.38 Cum..

78	6 mm. thick mosaic or terrazo for dado/skirting on 13 mm thick Plaster	Mosac Chips	10 sqm.	108 Kg.
		Marble Power	10 sqm.	0.368 Bages
		12.5mm Metal	10 sqm.	0.368 Bages
		Cement	10 sqm.	0.15 Cum.
		Topping	10 sqm.	1.11 Bges
79	10 mm. thick mosaic or terrazo for dado/skirting on 13 mm thick Plaster	Mosaic Chips	10 sqm.	180 Kg.
		Marble Power	10 sqm.	0.61 Bages
		Mortar	10 sqm.	0.15 Cum.
		Cement for Topping	10 sqm.	0.84 Bages
80	20 mm. thick precast coloured cement titles/mosaic/terra marble titles on 20 mm. thick bedding and cement slurry	Precast Title	10 sqm.	170 Nos
		Mortar	10 sqm.	0.24 Cum..
		Cement for slurry and joint	10 sqm.	1.72 bages
81	Laying Glazed ceramic tiles 152x152x6 mm. on C.M. bedding	Ceramic Tile	1 Sqm	48 Nos
		Mortar for Bedding	1 Sqm	0.015 Cum.
		Cement for Slurry	1 Sqm	0.080 Bages
82	Laying Glazed ceramic tiles 108x1190x4 mm. on cement mortar bedding	Ceramic Tile	1 Sqm	110 Nos.
		Mortar for Bedding	1 Sqm	0.015 Cum.
		Cement for Slurry	1 Sqm	0.080 Bages
83	Kotah/Ginno/Red sand for dado/Skirting over 13 mm thick plaster	Stones	10 sqm.	11 Sqm.
		Mortar	10 sqm.	0.15 Cum..
		Cement for slurry and joint	10 sqm.	1.72 Bages
84	Kotah/Ginnor/Cuddapah stone Flooring over 20 mm thick mortar bedding	Stones	10 sqm.	11 Sqm.
		Mortar	10 sqm.	0.24 Cum..
		Cement for slurry and joint	10 sqm.	1.72 Bages

85	Marble stone for flooring on 20 mm. thick mortar bedding	Marble Stone	10 sqm.	11 Sqm.
		Mortar	10 sqm.	0.24 Cum..
		Cement for slurry and joint	10 sqm.	1.30 Bages
86	Marble stone for dado/skirting on 13 mm. thick plaster.	Marble Stone	10 sqm.	11 Sqm.
		Mortar	10 sqm.	0.15 Cum..
		Cement for slurry and joint	10 sqm.	1.30 Bages
87	Polished red stone slab for she lves etc.	Stone slab	1 Sqm	1.1 Sqm.
		Mortar	1 Sqm	0.025 bages
	ROOFING			
88	Single wheel Tiling	Tiles	10 Sqm	1300 Nos.
		Mortar	10 Sqm	0.030 Cum.
89	Double wheel Tiling	Tiles	10 Sqm	2.600 Nos.
		Mortar	10 Sqm	0.060 Cum.
90	Mangalore Pattern Tiling	Tiles	10 Sqm	172 Nos.
		Mortar	10 Sqm	0.096 Cum.
91	Mangalore Pattern hip or Ridge Tiling	Hip or Ridge Tiling	10 sqm.	92 Nos.
		Mortar	10 sqm.	0.121 Cum.
92	Cut stone slab roofing	Cut stone slab	1 Cum..	1.00 Cum.
		Mortar for Joints	1 Cum..	0.20 Cum.
		Mortar for pointing	1 Cum..	0.04 Cum..
93	Fixing 100 mm. thick precast R.C.C. Jali	Cement	10 Sqm.	2.90 Begs
		Sand	10 Sqm.	0.30 Cum.
94	Fixing 40 mm. thick R.C.C. Jali	Cement	10 Sqm.	1.62 Bges
		Sand	10 Sqm.	0.15 Cum.
	PAINTING WHITE WASHING AND DISTEMPERRING			
95	White washing 3 coats	W.W. lime	10 Sqm.	0.03 Qtl.
96	White washing 2 coats	W.W. lime	10 Sqm.	0.02 Qtl.
97	White washing 1 coats	W.W. lime	10 Sqm.	0.01 Qtl.
98	Colour washing	Add. Ramraj		

		equal to 10% W.W. lime		
99	Chalk washing 3 coats	Chalk whiting	10 Sqm.	0.03 Qtl.
100	Chalk washing 2 coats	Chalk whiting	10 Sqm.	0.02 Qtl.
101	Chalk washing 1 coats	Chalk whiting	10 Sqm.	0.01 Qtl.
102	Cement washing 3 coats	Cement	10 Sqm.	3.21 Kg.
103	Cement washing 2 coats	Cement	10 Sqm.	2.14 Kg.
104	Cement washing 1 coats	Cement	10 Sqm.	1.07 Kg.
105	Distempering washing 2 coat	Dry. Distempering	10 Sqm.	1.00 Kg.
106	Distempering washing 1 coat	Dry. Distempering	10 Sqm.	0.50 Kg.
107	Distemper	Distemper Primer	10 Sqm.	0.81 Lit
108	Oil Bound Distempering 2 coat	Distemper	10 Sqm.	1.50 Kg.
109	Oil Bound Distempering 1 coat	Distemper	10 Sqm.	0.75 Kg.
110	Water Proofing cement paint 2 coats	W.P. cement paint	10 Sqm.	3.00 Kg.
111	Water Proofing cement paint 1 coats	W.P. cement paint	10 Sqm.	1.80 Kg.
112	Plaster Emulsion paint 2 coat	Plastic Emulsion paint	10 Sqm.	1.21 Litr.
113	Plaster Emulsion paint 2 coat	Plastic Emulsion paint	10 Sqm.	0.73 Lit.
114	Priming coat over steel and other metal surface with red oxide paint.	Ready mixed Red lead Paint	10 Sqm.	0.90 Lit.
115	Priming coat with Zinc Chromite over steel and other surface.	Zine Chromite Paint	10 Sqm.	0.54 Lit.
116	Priming coat with wood pink primer	Primer	10 Sqm.	0.90 Lit.
117	Priming coat with Aluminum brushing primer	Aluminum paint primer	10 Sqm.	1.00 Lit.
118	Ready mixed primer coat on concrete/masonry/A.C./Plastered surface.	Ready mixed Primer	10 Sqm.	0.84 Lit.
119	Priming coat with linseed oil on concrete/masonry etc.	Linseed Oil	10 Sqm.	1.16 Lit.
120	synthetic enamel painting on new steel/concrete/masonry etc. surface 2 coats.	enamel paint	10 Sqm.	1.25 Lit.
121	steel/concrete/masonry etc. surface 2 coats	1 cost	10 Sqm.	0.60 Lit.

122	synthetic enamel painting on old steel/concrete/masonry etc. surface 2 coats.	enamel paint	10 Sqm.	1.00 Lit.
123	Varnishing 2 coat on new wood work.	Varnish	10 Sqm.	1.45 Lit.
124	Do. 1 coat on old wood work.	Varnish	10 Sqm.	0.75 Lit.
125	Polishing with french polish on new wood work	French polish	10 Sqm.	1.60 Lit.
126	Do. On old wood work.	French polish	10 Sqm.	0.95 Lit.
127	Linseed oiling on new wood work.	Linseed oil	10 Sqm.	1.16 Lit.
128	Linseed oiling on old wood work.	Linseed oil	10 Sqm.	0.7 Lit.
129	Coal tarring 2 coat.	Coal tar	10 Sqm.	2.80 Lit.
		Kerosen oil	10 Sqm.	0.50 Lit.
130	Coal tarring 1 coat.	Coal tar	10 Sqm.	1.20 Lit.
		Kerosen oil	10 Sqm.	0.20 Lit.
131	Fixing R.C.C.N.P. 2. pipes and collars in cement mortar			
	(a) Diameter up to 30 C.M.	Mortar	each collar	0.0054 Cum.
	(b) Do above 35 and up to 40 C.M.	Mortar	each collar	0.0072 Cum
	(c) Do above 40 cm and up to 40 cm	Mortar	each collar	0.0090 Cum.
	(d) Do above 50 cm yp to 60 cm	Mortar	each collar	0.0108 Cum.
	(e) Do above 60 cm up to 70 cm	Mortar	each collar	0.0126 Cum.
	(f) Do above 70 cm to up 80 cm	Mortar	each collar	0.0144 Cum.
	(g) Do above 80 cm up to 95 cm	Mortar	each collar	0.0171 Cum.

APPENDIX "B"

Weight, Perimeter and sectional Area of Metric Steel Bars.

Diameter (mm)	Weight per meter in kg	Perimeter Cm	Sectional Area of steel bars in Sq. Cms.
5	0.154	1.571	0.196
6	0.222	1.887	0.282
7	0.302	2.2	0..385
8	0.395	2.514	0.503
10	0.617	3.143	0.786
12	0.888	3.771	1.131
14	1.208	4.4	1.54
16	1.578	5.028	2.011
18	1.998	5.657	2.546
20	2.466	6.286	3.143
22	2.984	6.914	3.803
24	3.551	7.543	4.526
25	3.853	7.857	4.911
36	4.163	8.171	5.311
28	4.834	8.8	6.16
30	5.549	9.428	7.071
32	6.31	10.057	8.046
34	7.13	10.686	9.083
36	7.99	11.314	10.183
40	9.87	12.571	12.571
45	12.5	14.143	15.911
50	15.41	15.714	19.643

APPENDIX "C"

TABLE No.1

Useful Conversion Factors

S.no	To Convert	Into	Multiply by	
1	2	3	4	5
1	Meters	Yards	1.09631	0.9144
2	Meters	Feet	0.28083	0.3048
3	Meters	Inches	39.37014	0.0254
4	Kilometres	Miles	0.62137	1.609344
5	Milimetres	Inches	0.03937	25.4
6	Square Kilometres(100 Mects)	Square Miles	0.386101	2.58999
7	square Metres	Square yard	1.19599	0.83613
8	square Metres	Square Feet	10.7639	0.092903
9	square Metres	Square inches	1550.00	0.00064516
10	square Centimetres	Square inches	0.155	9.4516
11	Hectare (10000 Sq. Metres)	Acres	2.47105	0.404686
12	Cubic Metres	Cubic Feet	35.3147	0.028317
13	Cubic Metres	Gallons (Imp.)	219.969	0.0045609
14	Cubic Centimetres	Cubic inches	0.061024	16.3871
15	Litres	Gallons	0.219976	4.54596
16	Kilograms	Pounds (Avoirdupois)	2.20162	0.4535924
17	(100 Kgs.) Quintal	Maund	2.67923	0.373242
18	(100 Kgs.) Quintal	Hundred weight	1.9684	0.50802
19	Tonnes (Metric ton)	Tons (British)	0.9842	1.01605
20	Tonnes (Metric ton)	Maunds	26.7923	0.0373242
21	Kilometres per Hour	miles per hour	0.62137	1.60934
22	Kilometres per Hour	Feet per second	0.91134	1.09728

23	Gram per Cubic Cm.	Pounds per Cu. Foot	62.428	0.0160185
24	Gram per Cubic Cm.	Pounds per Cu. Inch	0.0361273	27.6799
25	Gram per Litre	Pounds per Cu. Foot	0.062426	16.0189
26	Kilograms per Cum.	Pounds per Cu. Foot	0.0624	16.018
27	Kilograms per Litre	Pounds per Cu. Foot	62.426	0.0160189
28	Kilograms per Metre	Pounds per Foot	0.67179	14.8816
29	Tonne per Sqm.	Ton per Sq. inch	0.09143	10.937
30	Kilograms pe Sq. Cm	Pound per Sq. inch	14.2233	0.07037
31	Kilograms pe Sq. Metre	Pound per Sq. Foot	0.20482	4.8825
32	Kilograms Metres	Foot pounds	7.231	0.1382
33	Inch pounds	Kilogram centimeters	1.152	0.867962
34	Ton foot	Ton metre	0.3098	3.2278
35	Pounds per Cu. Ft.	Kg. per Cu. M.	16.0185	0.06243

APPENDIX "D"
Weight of Flats per meter

Width in mm.	Thickness in MM.														
	5	5.5	6	7	8	9	10	11	12	14	16	18	20	22	25
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12	0.471	0.518	0.565	0.659	0.753	0.848	0.942	1.036	1.130	1.319	1.507	1.695	1.884	2.072	2.355
16	0.628	0.691	0.753	0.879	1.005	1.130	1.256	1.381	1.507	1.759	2.009	2.261	2.512	2.763	3.140
20	0.785	0.863	0.942	1.099	1.256	1.413	1.570	1.727	1.884	2.198	2.512	2.826	3.140	3.454	3.925
25	0.981	1.079	1.177	1.374	1.570	1.766	1.962	2.158	2.355	2.747	3.140	3.532	3.924	4.317	4.906
32	1.256	1.381	1.507	1.758	2.009	2.360	2.512	2.763	3.014	3.516	4.019	4.521	5.023	5.526	6.279
40	1.570	1.727	1.884	2.198	2.512	2.826	3.140	3.453	3.768	4.395	5.023	5.651	6.279	6.907	7.849
50	1.962	2.158	2.355	2.747	3.140	3.532	3.924	4.317	4.709	5.494	6.279	7.064	7.849	8.634	9.811
63	2.472	2.720	2.967	3.461	3.956	4.450	4.945	5.439	5.934	6.923	7.912	8.901	9.890	10.879	12.362
80	3.139	3.454	3.768	4.395	5.023	5.651	6.279	6.907	7.535	8.791	10.470	11.303	12.585	13.814	15.398
100	3.924	4.317	4.709	5.494	6.279	7.064	7.849	8.634	9.419	10.989	12.558	14.128	15.698	17.268	19.622
125	4.905	5.396	5.887	6.868	7.849	8.830	9.811	10.792	11.773	13.736	15.698	17.660	19.622	21.585	24.520
160	6.275	6.907	7.536	8.791	10.047	11.303	12.558	13.814	15.07	17.582	20.093	22.605	25.117	27.628	31.396

Appendix "E"

Approximate outer DiaMetre and thickness of steel tubes

Nominal Bore		Approximate outer dia		Thickness in M.M.			Thickness in Inch			S.W.G.			Weight per metre of black tube plain ends in kg		
M.M.	Inch	M.M.	Inch	Light	Medium	Heavy	Light	Medium	Heavy	Light	Medium	Heavy	Light	Medium	Heavy
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	1/2"	21.3	27/32"	2.00	2.65	3.25	0.08	0.10	0.13	14	12	10	0.95	1.22	1.45
20	3/4"	26.9	11/16"	2.35	2.65	3.25	0.09	0.10	0.13	13	12	10	1.41	1.58	1.90
25	1"	33.7	111/32"	2.65	3.25	4.05	0.10	0.13	0.16	12	10	8	2.01	2.41	2.97
32	1¼"	42.4	111/16"	2.65	3.25	4.05	0.10	0.13	0.16	12	10	8	2.58	3.11	3.84
40	1-1/2"	48.3	129/32"	2.90	3.25	4.05	0.12	0.13	0.16	11	10	8	3.25	3.61	4.43
50	2"	60.3	23/8"	2.90	3.65	4.50	0.12	0.14	0.18	11	9	7	4.11	5.10	6.17
65	2-1/2"	76.10	3"	3.25	3.65	4.50	0.13	0.14	0.18	10	9	7	0.80	6.51	7.90
80	3"	88.9	3-1/2"	3.25	4.05	4.85	0.13	0.16	0.19	10	8	6	6.81	8.47	10.00
100	4"	114.3	4-1/2"	6.25	4.50	5.40	0.14	0.18	0.21	9	7	5	9.89	12.10	14.40
125	5"	139.7	5-1/2"	.-	4.85	5.40		0.19	0.21		6	5	–	16.20	17.80
150	6"	165.1	6-1/2	-	4.85	5.40		0.19	0.21		6	5	–	19.20	21.20